Nexus between Economic Growth and Poverty in a Digital Era

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ABSTRACT

Most of the countries of the world are in the digital world. With digitalization, these countries expand their rate of economic growth and management in return enhance the living conditions of their people. In recent years, the Nigerian economy has experienced an increase in the economic growth rate although disappointedly or unfortunately the poverty rate is equally increasing even at an alarming rate in the economy. This paper aims to analyze the impact of the rate of economic growth on poverty in a digital era in Nigeria. Time-series data used for the study were collected for twenty-seven years (i.e. from 1990 to 2016). Simple regression analysis was used to analyze the data using the Econometric software package of Stata. The findings show that there is no statistically significant impact of economic growth on poverty in Nigeria. p-value is greater than alpha 0.05 i.e. p-value= 0.5584?0.05. It connotes that economic growth alone cannot do it all to guarantee significant poverty reduction in the economy of the country. Other macroeconomic issues should be incorporated such as equitable distribution of income, wealth, resources and benefits from growth, full employment, intensify effort to reduce corruption as well as education for all, these are possible with more support for the technology to realize a meaningful poverty reduction.

Keywords: Digitalization, Economic Growth, Nigeria, Poverty, Poverty Reduction

Jel Classification Code: H11, H14

1.0 INTRODUCTION

The impact of digitalization cannot be overemphasized in the area of production, distribution and consumption of goods and services in the economy. This has been proven in the economy of advanced countries as the United States of America, the United Kingdom and part of the Asian countries. Though there is little or no significant impact of this digitalization can be traced to the economies of the developing world including Nigeria. Digital devices reflect the economy of Nigeria in the areas of business, economic management, growth and development, although, the effects of this digitalization are hard to be found in the various sectors of Nigeria's economy.

According to Katz (2017) "digitalization means transformation triggered by the massive adoption of digital technologies that generate, process, share and transfer information." Digitalization forms from the development of multiple technologies. This affects the society and economy at numerous phases through ICTs, the internet and computers, resulting in those who are technology users experiencing income and wealth growth. Katz (2017) enumerates positive effects of the first wave of digitalization on economic management and growth in the following areas, see also (Ustyuzhanina, et al. 2017);

i- Improved productivity as a result of the introduction of more efficient business processes supported by ICTs.
ii- Revenue growth resulting from extended market coverage.
iii- Impact on the composition and deployment of industrial value chains.
iv- Growth of some industries within the services sector (software development and business process outsourcing).

This paper aims to analyze the impact of economic growth on the rate of poverty in a digital era in the Nigerian economy for 28 years (between 1990 and 2017). Economic growth is the process by which national income or output is increased. An economy is said to be growing if there is a sustained increase in the number of goods and services per capita (Todaro, 1997). In other words, economic growth refers to the increase in the number of goods and services the entire economy can produce over and above what was produced in the last year. Suppose national income in the years 2015 and 2016 was $50millions and $60millions, respectively. Assume also that during the period, the economy experienced inflation of 10%. Therefore, the nominal growth rate in monetary terms is $10millions (i.e. 20%) and the growth rate of the economy in real terms for the year 2015 is only $5millions (i.e. 10%).

Economic growth does not necessarily make the masses to be better-off. For masses to have a higher standard of living and do well depends on which goods and services in the economy have increased in supply. For instance, if the government builds more nuclear weapons and Weapons of Mass Destruction (WMD), total output appears to be soared but the masses may not be better-off in the economy. Similarly, if an increase in real output is simply shared out among a few wealthy and powerful politicians, the majority of the people in the economy may not be better off. Also, if the increase in population is growing faster than the goods and services produced in the economy, many people would share the output, consequently, GDP per capita would fall, eventually, masses would worse-off (Todaro, 1997).

1.1 Research Question
Does economic growth lead to poverty reduction in a digital era?

1.2 Research Hypothesis
Ho: Economic growth does not lead to poverty reduction in a digital era.

2.0 LITERATURE REVIEW
2.1 Conceptual Review
2.1.1 Poverty
There are numerous definitions of poverty because many see it as multi-dimensional situations which mean different things to different people, societies and countries. It is quite difficult for humanity to comprehend the concept of poverty and the coincident poverty reduction measures as the latter has no consensus (Akindola, 2010; Aderonmu, 2010). It could mean homelessness, unemployment, frustration, hostility, anger and powerlessness, depending on the situation or experience of individuals according to Ropers and Hinton, 1991. That is why people do not substantively have a common definition of poverty, thus, they do disagree on what the problem of poverty is or be, however, poverty is seen as an undesirable state of affairs

(Alcock, 1993).

The extent of rural poverty results from a combination of low per capita income and highly unequal distribution of that income. Poverty represents a specific minimum level of income needed to satisfy the basic physical needs of food, clothing and shelter to ensure continued survival. Economic characteristics of poverty groups and the most valid generalizations about the poor are that they are disproportionately located in rural areas, primarily engaged in agriculture and related activities, more likely to be women and children than adult males, and often concentrated among minority ethnic groups and indigenous peoples (Todaro, 2000:170).

Poverty is classified into two forms: absolute poverty and relative poverty. "The former means that a person's basic subsistence needs such as food, clothing, and shelter, are not being met while the latter means that a person's needs are not being met in comparison with the rest of his or her society" (Alters, 2009:1-2). Absolute poverty is equally defined as a situation where goods and services essential to the welfare of an individual or family cannot be attained due to lack of economic resources while relative poverty is viewed as a situation where the income earned by an individual is less than the average minimum wage of a population (Schiller, cited in Uthman & Adesina-Uthman, 2012). Similarly, Okunmadewa cited in (Ibid) that absolute poverty refers to lack of access to resources needed to obtain the minimum necessities of life that engender physical efficiency and effectiveness while relative poverty refers to lack of access to acquire a given minimum standard of life.

In the Human Development Report 1997, cited by Alters (2009:1-2), UNDP incorporated two distinct elements to the standard definitions of poverty, is income poverty and human poverty where each is further sub-divided into two. Income poverty consists of extreme and overall poverty and the first is the inability to meet basic food needs, which are defined by minimum calorie requirements while the second is the inability to afford food and other basic needs, such as shelter, clothing and energy. Human poverty also includes the direct and indirect impact of poverty on human life. The first effects of poverty on people include illiteracy, hunger and malnutrition, shortened life spans, illness or death from serious diseases, while the second effects include a sheer lack of access to essentials such as energy, sanitation, clean drinking water, health care, transportation, and communication services.

2.1.2 Economic Growth

Economic growth is an increase in the capacity of an economy to produce goods and services, compared from one period of time to another. It can be measured in nominal or real terms, in which the latter is adjusted for or taken into consideration the changes in the prices of goods and services in the economy (i.e. inflation). It is commonly measured in terms of the rise in the aggregate market value of additional goods and services produced, using estimates such as gross domestic product (GDP) (www.investopedia.com).

The term economic growth means the increase in the overall productivity that is measured by the GDP, productivity means the tendency of a state to produce goods and services from its resources. Any rise in productivity marks an increase in economic growth (www.basic-concept.com).

Haller and Romanla (2012) view economic growth in two senses i.e. narrower and wider senses. The former means an increase of the national income per head, this includes the analysis in quantitative terms with a focus on the functional relations between the endogenous variables while the latter sense refers to the rise in GDP, GNP and NI, therefore of the national wealth which includes the production capacity, expressed in both absolute and relative size, per capita, encompassing also the structural modifications of the economy.

2.1.3 Digitalization

Digitization is the process of converting information into a digital (i.e. computer-readable) format, in which the information is organized into bits. The result is the representation of an object, image, sound, document or signal (usually an analogue signal) by generating a series of numbers that describe a discrete set of points or samples. The result is called *digital representation* or, more specifically, a *digital image*, for the object, and *digital form*, for the signal. In modern practice, the digitized data is in the form of binary numbers, which facilitate computer processing and other operations, but, strictly speaking, digitizing simply means the conversion of analogue source material into a numerical format; the decimal or any other number system that can be used instead (www.en.wikipedia.org).

Digitization is of crucial importance to data processing, storage and transmission because it "allows information of all kinds in all formats to be carried with the same efficiency and also intermingled".[6] Though analogue data is typically more stable, digital data can more easily be shared and accessed and can, in theory, be propagated indefinitely, without generation loss, provided it is migrated to new, stable formats as needed. This is why it is a favoured way of preserving information for many organizations around the world (www.en.wikipedia.org).

Digitalization is also viewed as the integration of digital technologies into everyday life by the digitalization of everything that can be digitalized. The literal definition of digitalization gives a manifest notion of growth, development and a technology-reliant globe (www.igi-global.com).

2.1.4 Relationship between Economic Growth and Poverty

Skare and Prziklas (2016) analyze that economic growth (GDP Growth) is necessary for poverty reduction but the former is insufficient to ensure the everlasting and sustainable effect on the latter. It is widely suggested that growth leads to a reduction in the level and extent of poverty problem among the poor in the economy. For the poor to experience the improved living conditions there is essential for a country to witness economic growth. It is equally found that diverse effects on poverty alleviation can be realized from similar growth patterns in the economy. The level of income inequality and/or inequalities, in general, may not strongly deprive the effect of growth on poverty reduction, as the growth occurs poverty declines. Ravallion (2007) claims that "growth tends to be less pro-poor in poor and unequal countries."

Similarly, Anderson et al. (2016) identify some factors that restrict the impact of economic growth on poverty reduction as well as factors that influence the relationship between economic growth and poverty in Nigeria. These factors are enumerated below:

i. High initial income inequality
ii. A reliance on non-labour-intensive sectors for growth
iii. Low human capital

iv. Low government expenditure on social services
v. Lack of openness to the world economy
vi. The large role of the crude oil sector in the economy
vii. Persistent high unemployment
viii. Corruption
ix. Poor educational and health status.

They conclude that growth does not necessarily equivalent to poverty reduction. The relationship between the two variables/factors i.e. economic growth and poverty reduction is not an automatic happening.

2.2 Empirical Review

Tahlquist (2013) investigates the impact of economic growth on poverty in the economies of 123 low- and middle-income countries across the developing world for the decade between years 2000 and 2009, using Brazil as a case study. He employed empirical cross-sectional regression for the analysis of the data collected for the period. The findings show a reduction in poverty as growth increases in the countries of interest. Growth has positive impacts on the poverty reduction in those economies. He also finds an inverse relationship between the level of poverty and the reduction in extreme poverty. That is, countries with a pool of poverty-stricken groups sluggishly react to a reduction in extreme poverty.

Suryahadi et al. (2012) examine the correlation between economic growth and poverty reduction in Indonesia in the pre-and post-Asian financial crisis. Their study shows more poverty reduction before the crisis than after the crisis due to the economic growth in the various sectors of the economy. In other words, it shows a larger reduction in poverty in the pre-Asia financial crisis than in the post-Asian financial crisis subject to the growth in agriculture, industry and service of rural and urban areas. The findings reveal that the growth elasticity of poverty in Indonesia didn't change significantly between before and after the Asian financial crisis era. This implies that the Indonesian economy and its population were doing well before the Asian financial crisis of the late 1990s.

Ijaiya et al. (2011) carry out a study on the economic growth and poverty reduction in Nigeria using a multiple regression analysis for the time-series data collected for the study. Their findings stress that the initial level of economic growth is not prone to the reduction of poverty while a change (increase) in economic growth is prone to poverty reduction. Overall, any positive change in economic growth would result in meaningful improvement in the life and living conditions of households by increasing their consumption-outlay in Nigeria. To realize this effect and positive relationship between the two variables, there must be reasonable economic policies and measures put in place in the economy, such as abundant investment in the agricultural sector and massive infrastructural development.

Agrawal (2008) studies economic growth and poverty reduction using regression analysis via a cross-section regression for the province-level data in Kazakhstan. His finding reveals the significant role of GDP growth (as a proxy economic growth) on poverty reduction in the country. Poverty level falls due to more expenditure on certain sectors of the economy in which is possible as a result of higher growth rates in the economy.

Nindi and Odhiambo (n.d.) find the relationship between poverty reduction and economic growth in the economy of Swaziland using majorly ARDL-bounds testing approach, Co-integration and Granger Causality Method for analysis. The findings reveal that economic growth does not Granger-cause poverty reduction in both the short- and the long run. Instead, the findings prove a causal flow from poverty reduction to economic growth only in the short run due to a high level of income inequality. With skyrocketing income inequality, poverty cannot only be checked by economic growth in the economy. Similarly, there is a difference in short- and long-run causal flow from economic growth to financial development on one hand and financial development Granger causes poverty reduction on the other hands, in the short-run in the country.

It is equally argued that there is a positive link between economic growth and poverty reduction in some developing economies. According to Department for International Development, DFID, (n.d.), economic growth transforms society from a worse-off economic situation to a well-off economic situation in which consequently drive the poor out of poverty problem (see also Rodrik, 2000). Findings have shown that economic growth remains an engine of poverty reduction especially reduction of income poverty among the poor in most of the developing economies such as in Sub-Saharan African and South Asia (Angelsen & Wunder, 2006).

To conclude, most of the literature and previous studies are consensual on that strong and sustainable economic growth would tend to ensure employment generation, reduce income inequality, improve income earning and even distribution of income and benefits from growth, improve health conditions and education, thus, reduce poverty in the society. It makes a large decrease in the number of people living in absolute poverty.

3.0 METHODOLOGY

3.1 Model Specification

The study adopts a single-equation linear regression model specification as

$Y_1 = \beta_1 - \beta_1 X_1 + \mu_1$ ……………………………………..1

Extending the notation: single-equation linear regression model rewritten as:

$Pov_1 = \beta_1 - \beta_1 EG_1 + \epsilon_1$ $({}_1 = 1, 2, \ldots, N)$ ……………………..2

Where:

$Y_1 = Pov_1$ = the ith observation of the dependent variable

$X_1 = EG_1$ = the ith observation of the independent variable

ϵ_1, μ_1 = the ith observation of the stochastic error term (or disturbance term) a term that represents the variation in Y that cannot be explained by the model.

β_1, β_2 = the regression coefficients

N = the number of observation

${}_1$ = t = time series/year

Therefore, estimated regression equation:

$Pov_1 = \beta_1 - \beta_1 EG_1 + {}_1$ ……………………………….3

To estimate the model, a single-regression analysis is used to comprehend the explanatory nature of the variable of interest. It can be deduced from the model and theory, our a priori expectations or the expected pattern of behaviour between the dependent variable(Pov_1) and the independent variable (EG_1), where EG_1 0, Eg_{11} 0 and ${}_1$ is the error term.

Suggesting that an increase in the initial level of economic growth and a positive change in economic growth are expected to decrease poverty in Nigeria's economy.

3.2 Measurement of the Variables

Gross Domestic Product (GDP) growth was used in this study as a proxy for Economic growth which represents the final value of all goods and services produced and offered within the Nigerian economy over some time of a year. This comprises of all that is produced and offered by the three sectors in the economy that is, the government, firms and individuals. While poverty, absolute poverty measures the low level of the economic welfare of Nigerian people with regards to their living conditions in absolute terms. The poverty measurement used in this study for Nigeria is adopted from the National Bureau Statistics in the Nigerian Poverty Profile which measures absolute poverty as both food expenditure and non-food expenditure using the per capita expenditure approach. The two variables used in this study are secondary data.

3.3 Data Source

The data used in this paper was purely secondary. Time series data for the period 1990 to 2017 on Gross Domestic Product (GDP) growth rates and absolute poverty rates, whereby GDP is a proxy as a measure of economic growth rate in Nigeria was used. The data were obtained via Nigeria Poverty Profile by Nigeria's National Bureau of Statistics (NBS) 2010, Ripples Nigeria 2017, International Monetary Fund (IMF) 2015, World Economic Outlook Database, CIA and World Factbook 2016. The econometric software package of Stata was used to analyze the data.

4. RESULTS AND DISCUSSION

This section presents the Stata output of the variables (poverty and economic growth) in the model and the analysis of the results.

Table 1: Simple Linear Regression (Stata Output of Poverty and Economic Growth)

.reg pov, gdp(eg)

Source	SS	df	MS
Model	33.8395597	1	33.8395597
Residual	2404.67896	25	96.1871584
Total	2438.51852	26	93.7891738

Number of obs	= 27
F(1, 25)	= 0.35
Prob > F	= 0.5584
R-squared	= 0.0139
Adj R-squared	= -0.0256
Root MSE	= 9.8075

pov	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
gdp(eg)	-.1759761	.296688	-0.59	0.558	-.7870165	.4350642
_cons	58.56372	2.498633	23.44	0.000	53.41769	63.70975

Source: Author's Computation, 2021.

Table 1, shows that there is no statistically significant impact of the economic growth on the level of absolute poverty in Nigeria. In other words, economic growth is little helpful for explaining absolute poverty. the p-value is greater than alpha 0.05 i.e. p-value= 0.5584?0.05, therefore, the null hypothesis which states that "Economic growth does not lead to poverty reduction in Nigeria" cannot be rejected. The finding is simpatico to the findings of Skare and Priziklas (2016), Anderson, et al. (2016) and Nindi and Odhiambo (n.d.). Ijaiya et al. (2011) only find that the initial level of economic growth does not necessarily reduce poverty in Nigeria. In this study, economic growth explains only 1% of the variance in absolute poverty, R-squared is 0.01 and Adjusted R-squared is -0.03.

Similarly, the t-value doesn't reveal the significance of the variable in the model. For one unit increases in economic growth, absolute poverty scores decrease by 0.176 units. Therefore,
Y = 59 – 0.176X that is, the expected value of POV = 59 – 0.176EG.

From the result above, a unit increases in the growth of the economy would bring about a 0.176 reduction in the level of poverty in Nigeria. This connotes that the growth of the economy in the era of digitalization has an insignificant impact on the poverty reduction in the country. Nigerian poor and less privileged are not benefited from the economic growth in Nigeria. Enhancement in poverty level cannot be strongly traced with the economic growth despite the spring up of digitalization in the various sectors in the economy, although, the level of digitalization is not yet much felt in Nigeria's economy. More so, the distribution of benefits from economic growth is not evenly done in Nigeria.

It has been revealed from the study that economic growth has not much to tell about poverty reduction in Nigeria's economy. This might be partly attributed to the following reasons;
i- Digitalization and related technologies have not been impacted on the Nigerian economy to serve as resilience to turnaround the economy into a digital economy.
ii- The Nigerian government has been committing/expending more national income on military weapons and national security for more than a decade, particularly, to fight Boko Haram sects and Niger Delta militants.
iii- Corruption – a situation where an increase in real output is simply shared out as national cake by the few Nigerian politicians and rich people, which creates a highly unequal distribution of income and wealth.
For these reasons, the majority of Nigerians are not better off. Poor and average Nigerians are suffering due to their denial of benefits from economic growth as well as from the dividends of democracy.

5. CONCLUSION AND RECOMMENDATIONS

The study has proven that despite the positive change in the annual GDP growth (as a proxy for Economic growth) for more than two decades, the number of people who are living in absolute poverty is still an alarming figure in Nigeria with entering into the digital era. Impact of the digitalization was not so much reflected in the growth of the economy as well as in the poverty alleviation in Nigeria. The average economic growth rate of 7.4 per cent claimed by the country since a decade was barely translated its benefits on the majority of Nigerians to enhance their living conditions. To uplift the living conditions or reduce the poverty status of Nigerian people, other economic issues ought to be provided and improved in the economy. The following measures are recommended for Nigeria's government to avert the poverty problem in the economy:

i- More incentives ought to be given to digitalization in the country.
ii- To give more support in all ramifications to science and technology.
iii- To ensure equitable distribution of the benefits from economic growth, national income and wealth, this would bridge the gap between the better-off and worse-off groups in the sharing formula.
iv- To curb the rate of corruption in the country, more support in all ramifications should be given to the existing anti-corrupt graft like EFCC and ICPC in the country.
v- Provision of employment opportunities for unemployed young graduates as well as the creation of a conducive business environment for those who have business ambition in the economy.

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