Poverty Alleviation through Information and Communications Technology: A Case Study of Nigeria

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Abstract– **The flexible nature of ICTs allows them to help address problems in health, education famine and livelihoods. They can enable people's empowerment and strengthen human rights. Due to this, the study evaluates information and communications technology (ICT) as a means of reducing poverty using Nigeria case. Human Development Index (HDI) and Gini Coefficient were used as standardized measures of poverty. This evaluates ICT as it relates to poverty alleviation. The study reveals Nigeria's Human Development Index (HDI) was only 0.416 and that about 70% of the population was living below the poverty line and ranked 156 out of 187 economies. While, the Gini Coefficient of Nigeria was 0.4470 in 2010 indicating that inequality keeps growing between the poor and the rich. In conclusion, appropriate policy suggestions were suggested for efficient use of ICT in reducing poverty and bridging the gap between the poor and the rich in Nigeria.**

Keywords– **Gini Coefficient, Poverty Alleviation, Nigeria and Human Development Index (HDI)**

I. INTRODUCTION

Over the last decade, there has been an ongoing debate regarding the role that Information and Communications Technologies (ICTs) should play in development and in areas of improvement in standard of living, and poverty alleviation in most countries (Mohammed, 2009). ICT applications for poverty alleviation may largely focus on basic technologies and not the old technologies. Nonetheless to become more realistic and sustainable, the ICT sector must include all modern ICTs available in developed countries. The specific role ICT should play in the development of a society depends on different activities such as: financial, administrative purposes, security issues etc (Maung, 2007).

Poverty has different dimensions and has been defined as the inability to attain a minimum standard of living (World Development Report, 1990). It can be divided into two main dimensions: income poverty, which is the lack of income necessary to satisfy basic needs; and human poverty which is the lack of human capabilities for example poor life expectancy, poor maternal health, illiteracy, poor nutritional levels, poor access to safe drinking water and perceptions of well-being (UNDP, 2003).

Eradicating poverty is the greatest challenge facing the world today and an indispensable requirement for sustainable development, particularly for developing countries. The US government came up with a policy to improve the poorly developed areas through the national information infrastructure, an initiative which has contributed majorly in the widespread diffusion of internet globally. It was a US government project initiated by the department of commerce so as to promote development and these have not been replicated in some developing countries. Over the past years, Africa has suffered immensely with lack of basic amenities, which is why the name Africa is nowadays synonymous to poverty (Ogunmola et al, 2006). However, there are several global initiatives focused on poverty eradication that African countries have pledged commitment to implement. Governments at the World Summit for Social Development held in Copenhagen, Denmark in 1995, pledged to eradicate poverty through decisive national actions, which include implementing national anti-poverty plans and international cooperation.

The Millennium Summit of 2000 adopted the MDGs as a powerful agenda for a global partnership to fight both income and human poverty. It set income poverty eradication target of cutting extreme poverty by half by the year 2015 that is the proportion of the world's people whose income is less than one dollar a day, those who suffer from hunger, and those without access to safe drinking water. The Plan recognizes that although each country has the primary responsibility for its own sustainable development and poverty eradication, the role of national policies and development strategies cannot be overemphasized (ECA, 2004).

The Zambian government introduced a tele-centre to assist its citizens in improving their communication with relatives outside the country. Tele-centre is actually a free public access to computing or technological devices to support the less privilege in getting solutions to a particular task. Nigeria being the major focus of this paper have also established various forms of empowerment programmes to alleviate poverty (NPC, 2004). Some of these include establishment of the Department of Food, Roads, and Rural Infrastructure (DFFRI) with the major aims of opening up the rural areas and to improve the conditions of the vulnerable poor, this project had long been abandoned; establishment of National Directorate of Employment (NDE) to tackle the problem of mass unemployment; the establishment of People's Banking Nigeria (PBN) to cater for the credit needs of the less privileged Nigerians; National Economic Empowerment Development Strategies (NEEDS); National Agricultural

Land Development Authority (NALDA); The Strategic Grains Reserve Authority (SGRA); and the Accelerated Crop Production (ACP) which was established to improve the productive capacities of peasant farmers as well as improving their incomes and well-being and so on (Agbaje, 2010).

Having the right information at the right time can help in finding a solution to the issue of poverty and ICT is one of the solutions. However, the questions to ask include Do ICT really contribute to the global effort to reduce poverty? How Can ICT alleviate poverty in Nigeria? How can ICTs achieve measurable results/impacts in a reasonable time frame? Do various stakeholders (national state and local governments, national and international development agencies, non-governmental organisations and public agencies) in Nigeria have a better understanding of ICT and development? However, there are little published articles that attempt to provide any guidance on how to select and design projects in the areas of ICT that could help in the way of alleviating poverty. The major focus of this study is providing direction into how information and communications technology (ICT) could help in reducing poverty using Nigeria as a case study.

The objectives of this paper are to:

- evaluate the standardized measures of poverty
- assess ICT Applicability/Approaches to poverty alleviation; and
- provide useful policy directions as it relates to Nigeria

II. LITERATURE REVIEW

Much of the literature on ICTs and poverty alleviation is informative and insightful. It is easy to find reports that discuss how specific uses of ICTs should theoretically be helpful, but there are little published articles that attempt to provide any guidance on how to select and design projects (Mathison, 2005). Where recommendations have been made, they are often too narrow, missing some of the best opportunities. Many researchers have been advocating for ICT as a solution to poverty alleviation, as it is able to help personal and community communication and to support sector based activities such as education, livelihoods, healthcare and government. Arguments are that the development of a modern nation to its full potential in contemporary world can never be attained without adequate ICT infrastructure. This implies that the development of ICT infrastructure will significantly boost economic growth and development. The quantum development in the ICT industry all over the world is very rapid as one innovation replaces another in a matter of weeks. A major breakthrough is the wireless telephone system, which comes in either fixed wireless lines or the global system for mobile communication (GSM) (Wojuade, 2005).

According to Balogun (2000), the emergence of GSM facilitates economic development as it provides easy and effective communication needed to stimulate and promote trade between Nigerian and its foreign partners in the world. According to Tella (2007), GSM has emerged as in integral essential part of the culture and life of Nigerians. It had played a significant role in communication and encourages investment. In respect of employment, Manuaka (2008) and Okereocha (2008) found that, over 1,000,000 Nigerians have been directly and indirectly employed by its operators. While supportive enterprises and service organizations like banking, haulage, consultancies, insurance etc. have themselves blossomed. According to Soyinka (2008), mobile phone has empowered the poor by opening up veritable windows of wealth generation for them to get out of the scourge of poverty.

For Adebayo (2008), the introduction of mobile telecoms has the potential for reducing the cost of doing business and increasing output. Soyinka (2008) and Ndukwe (2008) reported that the GSM business has contributed to the economy in the area of GSM recharge card printing. This has had the effect of saving Nigeria of about $150 million monthly while providing employment and new skills to the dealers. It has also improved entertainment and networking among Nigerians, using short message service, SMS, and the signal calls. According to Okereocha (2008), the telecommunication sector has become a major tool for empowering Nigerians, and with the continued inflow of massive investments and the doggedness of the industry regulator, the future look bright.

III. METHODOLOGY

The study made use of the standardized measures of poverty and made use of the available data on poverty rate in Nigeria. Human Development Index (HDI) and Gini Coefficient were used in the study. The Human Development Index (HDI) offers a global perspective on the question of how well people are living. Devised by the United Nations in the 1990s, the HDI is a composite of three different indicators: (1) life expectancy at birth, (2) education as measured by a combination of school enrollment and adult literacy, and (3) standard of living as measured by a variation on GDP per capita that adjusts for price differences between countries (purchasing power parity in U.S. dollars). To ensure as much cross - country comparability as possible, the HDI is based primarily on international data from the United Nations Population Division, the United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Statistics (UIS) and the World Bank. Gini Coefficient (Inequality Measurement) measures the spread of income or expenditure between people with countries.

IV. DISCUSSION

The tables and figures provided the trend of Poverty and ICT in Nigeria.

Table 1: The Non-Poor, Moderately poor and Core Poor in Nigeria

Year	Non-poor %	Moderately poor %	Core poor %
1980	72.8	21.0	6.2
1985	53.7	34.2	12.1
1992	57.2	28.9	13.9
1996	34.4	36.3	29.3
2004	43.3	32.4	22.0
2010	46.7	47.2	6.1

Source: Federal Office of Statistics/ National Bureau of Statistics 1996, 2001, 2006 and 2012
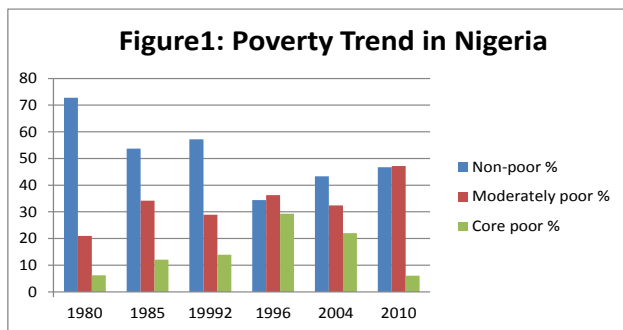
Fig. 1: Poverty trend in Nigeria

Table 2: Poverty Level in Nigeria 1980 – 2011

Year	Estimated total population (millions)	Population in poverty (millions)	Poverty level %
1980	65	17.7	27.2
1985	75	34.7	46.3
1992	91.5	39.2	42.9
1996	102.5	67.1	65.6
2008	151.5*	96.9	64***
2010	163**	112.47	69.0**

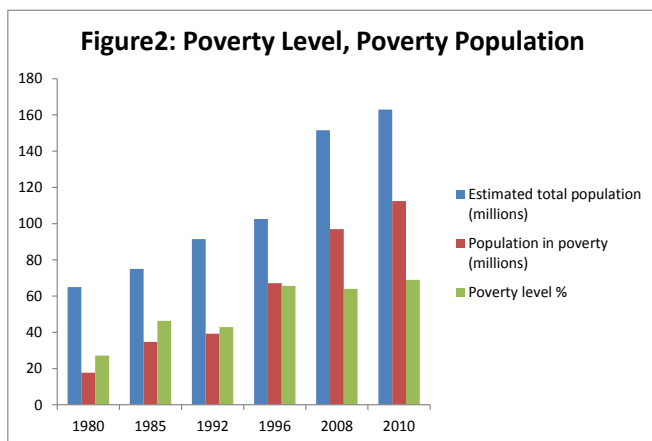Source: World Bank* 2009, National Bureau of Statistics **2012, UNICEF***2010

Fig. 2: Poverty level, poverty population

Table 1 shows the distributing of population into non-poor, moderately poor and core poor from 1980 to 2010.

Figure 1 shows that the non-poor percentage was highest for the years examined except for the year 1996 which it was slightly the same with that of moderately and core poor.

Though, Nigerian economy is growing in terms of Gross domestic product, the proportion of Nigerians living in poverty is increasing every year as shown in Table 2. The proportion of the population living below the poverty line increased significantly from 1980 to 2010.

Table 3: RGDP Ratio, Telecommunication contribution to RGDP and Number of Subscribers for 1999-2009

Year	RGDP (N' Million)	ICT contribution to GDP in Nigeria (N' Million)	Number of Subscribers (NS)
1999	312,183.5	195.5	N/A
2000	329,178.7	207.5	588374
2001	356,994.3	2,398.7	866782
2002	433,203.5	2,983.1	2271050
2003	477,533.0	3,785.5	4021495
2004	527,576.0	6,015.9	10201728
2005	561.931.4	7,851.7	19519154
2006	595,821.6	10,567.9	33603761
2007	634,251.1	14,226.8	41975275
2008	672,202.6	19,159.2	64296117
2009	716,949.7	25,812.4	74518264

Source: National Bureau of Statistics (NBS), Central Bank of Nigeria Statistical Bulletin, Nigerian Communications commission, 2011
Notes: GDP was compiled from 1999 to 2009 using 1990 as constant basic prices and RGDP means Real Gross Domestic Product.

Table 3 shows the contribution of Telecommunication (a component of ICT) to RGDP for the years 1999 – 2009 and this increased significantly from 1999 – 2009. The number of subscribers also increased significantly from 1999 – 2009.
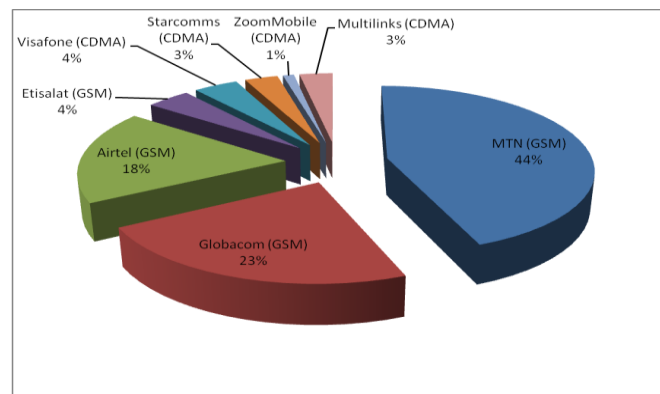

Fig. 3: Mobile Operator penetration into Nigeria market structure (Source: National Bureau of Statistics, 2011)

By 2010, the total number of mobile subscriber has risen to about 80,000,000 and MTN has the major part of those subscribed, showing their involvement in promoting developmental growth. Figure 3 shows mobile network providers and their penetration rate in the Nigeria market. As a result of this positive penetration lots of jobs have been created from this opportunity and this was in line with the work of Ojukwu, D (2006).

The statistics on human development and social provision revealed that the population of Nigeria is increasingly becoming one of the poorest in the world, and poverty rate will keep increasing as population increases as shown in table2. In 1999, the World Bank's report indicated that Nigeria's Human Development Index (HDI) was only 0.416 and that about 70% of the population was living below the poverty line. In 2011 the Nigeria's Human Development

Index (HDI) was only 0.459 (UNESCO, 2011) and ranked 156 out of 187 economies indicating a little increasing of about 9.4%.

In 2004, the Gini Coefficient of Nigeria was 0.4296 whereas in 2010 it was 0.4470 (NBS, 2012) indicating that inequality increased by 4.1 percent in the country and this also a critical measure of poverty.

V. AREAS OF ICT APPLICABILITY/APPROACHES

A) Communications

The wide-scale deployment of mobile telephone communications had radically changed the ICT landscape in many parts of the developing world. With the help of appropriate regulation and policy, coverage will be close to complete. For occasional use, this technology is now affordable by a large part of the world's poor, and as we address the financial aspects of poverty, this will approach universal access. Such personal communications are important in linking families, providing access to government and commercial services, and addressing livelihood issues. Communications of all forms also serves to address one of the core symptoms of poverty which is the inability to know and influence the events controlling their lives. Communications also has the potential for helping to improve human rights and democracy. With the number of subscribers of update to 75million as at 2009, then the issue of communication problem can be reduced.

B) Education

ICTs are applicable in all forms and aspects of education. The connection with direct poverty alleviation is not very strong, but it is well accepted that increased education ultimately helps alleviate poverty, and it is becoming accepted that ICT can help improve the quality of education. ICT use in the classroom also helps increase a country's ICT capacity.

C) Agriculture

With proper diffusion of ICT, it could aid rural farmers in acquiring knowledge that is suitable for increase in farm produce.

D) Healthcare

The thoughtful use of ICTs in healthcare has the potential for large-scale benefits in modest time-frames. Typically the use of ICT is not in the direct delivery of healthcare, but it its management and in facilitating the fast and effective flow of information.

E) Government

There are many opportunities for using ICT in government, but most will not directly aid the poorest segment of the population. The potential benefits related to transparency and corruption reduction are nevertheless important. There are large potential benefits to the use of ICT in the collection, processing and (often graphical) display of demographic and statistical data. This data can provide the quantitative projections of poverty. The ready analysis of such data is crucial to understanding and addressing many aspects of poverty.

F) Best Practices in the Use of ICT to Reduce Poverty

- It is important for countries to develop a robust ICT industry, complete with the newest digital facilities. Such an industry will help ensure that all forms of ICTs are available and supportable when they are needed in support of poverty alleviation activities. An active ICT sector is also a strong driver for positively priced communications, supporting both the social aspects of poverty alleviation as well as the ICT-based solutions.
- A robust and agile ICT sector is an enabler allowing the selected use of ICTs in poverty alleviation. Moreover, the ICT sector must address many other needs at all levels, and it is the enabler allowing the country to participate in the global ICT-based economy.

VI. CONCLUSION & POLICY RECOMMENDATION

A strong case can be made supporting the selective use of ICTs for significant poverty alleviation. It is important that the Nigerian government encourages a robust local ICT sector encompassing all aspects of ICTs to ensure that the country has the capacity to utilize them as needed in its fight on poverty.

Using information communication technologies (ICTs) for poverty reduction are more effective when embedded and synchronized with other policies and resources for instance a conducive environment, which includes freedom of expression, competitive markets, independent regulators, a universal service fund and other elements etc.

National poverty reduction strategies or sector specific strategies, ownership by the local communities, partnership and networking are keys to effective poverty reduction programmes. Donors should not look for implementers of their visions but for partners with their own vision and encourage and support them in implementing it. Partners are required at the local and national level as are specialized institutions in all areas which matter in a specific context.

In the absence of any mechanism, government should develop programs that create awareness on the benefits of ICT and sensitize the people on the best ways of utilising ICT facilities at their disposal.

In conclusion, with the enabling environment it confirms that it is possible, practical and affordable to use ICTs to the benefit the poor. This is a wakeup call for all countries to have a presence in the emerging technology-based economy. ICTs have the potential to be effective instruments in support of poverty reduction. The flexible nature of ICTs allows them to help address problems in health, education, government, security etc. In addition, they can enable people's empowerment, strengthen human rights and bring peace to the world at large.

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