# INVOKING THE EFFICIENCY OF ICT FOR SOCIO-ECONOMIC DEVELOPMENT AND POVERTY ERADICATION

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***ABSTRACT***

*This schoolwork explores the dimensions of invoking the efficiency of ICT as a panacea to socio-*economic deve*lopment and poverty eradication in selected Kalabari Communities of Rivers State,* Nigeria. *The nation Nigeria has been emmeshed with various socio-economic challenges over decades that have increased poverty rate and reduced economic strength of states, urban and rural areas abruptly. It is necessity to apprise the study area in order to ascertain available ICTs capabilities that could revolutionize the socio-economic status of the area in order to unravel the hidden efficiencies of ICTs for gross poverty reduction. ICT has various prospect for socio-economic development and poverty eradication like e-marketing of local products, web technology, data/call centre etc. Poverty negative impacts to the standard of living of the citizenries have been observed in terms of general scarcity, dearth, and lack of basic need such as food, clothing and shelter. This study adopted a cross-sectional design from selected communities (Ama), with instruments of questionnaires, Group Discussion Forums and Town hall meetings in ascertaining the position of ICT and poverty in relation to their impact. From the study, it was obvious that not all components of ICTs were fully understood by the citizenries because of its level of technicalities and mode of operations involve, thereby limiting them from accessing and utilizing ICTs available resources in ravaging the nomadic effect of poverty. It further identifies ICT as a machinery pavement of poverty and socio-economic development enhancer if properly implemented. It therefore recommends that all levels of government, NGOs, and well doing individuals should initiate ICT midpoint for the benefit of her citizenry, while the youth should develop interest in acquiring more ICT knowledge in furtherance of socioeconomic development.*

**Keywords**: Information Communication Technology, Knowledge, Socio-Economic, Poverty, Citizenry

## INTRODUCTION

Information and Communications Technology (ICT) has been identified in various quarters and by various researchers as a critical tool with endowed efficacy and efficiency of enabling socioeconomic development (Kayisire and Wei, 2016). Identifiably, some of these tools are said to include Mobile phones, internet of things (loT) big data, radio frequency identification (RFID) and geographic information systems (CIS), cyber cafe, application software utilities amongst other that had been previously deployed in Africa and other socio-economic developed nations like China to enforce development and eradicate poverty (Kyem, 2012).

Analysing the phrase, ICT efficiency denotes the efficacies, impact and abilities of deploying ICT tools and the related-relevant effect it fosters in delivering it importance. Information and communication Technology have impacted immensely and diversely, across borders of professionalisms, career and socio-economic development and eradicating poverty in numerous quarters. In identifying it measures, it can be used to create various opportunities for self-employed job and seekers in many areas that includes: web design, administration and

management, ICT design; data programming etc. (Drew & Foster 2014).

Exploring further on the efficiency of ICTs in socio-economic development levi, inayatullah & Tony opined, the new information and communication technologies (lCTs) are widely perceived as major tools for kick-starting ailing economies and consequently assist developing societies 'catch up' with the developed world, including those groups that have lost out of the mainstream of development (Levi, Inayatullah &Tony. 2013). Accordingly, its crises affecting the ranging levels of people's standard of living, poverty level has now gained the attention of economic observers throughout the world. They have linked the problems of under employment and socio-economic crisis to information inadequacies. In this context. Information Communication Technologies (ICT) have been perceived as availability and accessibility of internet facilities, telecommunication equipment's and services media and broadcasting, libraries and documentation centres, commercial information providers, network-based information services and other related information and communication activities (Odufowokan, 2010).

Poverty is a complex philosophical state of being, and as it were, there is no singular definition in outlining it rather. However, the easiest method, or customary definition of who is poor and who is not could be extracted from the living conditions of people, economical position of an ethic, community or nation to get an idea of their situation. Typically, it is when an entity experiences a fundamental deprivation of well-being economically and otherwise. Relatively, a comparative investigation unto two or more existing individuals, families or communities, nations etc. to the living standards of the broader community could be considered as been poor from research point of view if the researcher discovers their needs are far below compare to others, then in such case, the researcher does the classification on the bases of such comparative analysis to conclude and describe an entity as being poor in relative nature (Relative Poverty).

The Kalabaris has one of the greatest development potentials in Nigeria given the vastness of her resources and all her rich human resource endowment. But regardless of these potentials, she is still among the poorest ethnic group in Nigeria, if one may tend to ask if Nigeria is not poor compare to other countries. The economy is mired by multiple difficulties. On the basis of widespread economic crisis, and the recent global economic meltdown, the region is unable to raise the standard of living of its citizens to an appreciable height Thus poverty, in both absolute and relative terms, constitutes one of the most serious problems confronting the region and Nigeria as Whole.

Statistically, between 1960 and 1980, the poverty level covered about 28.0 percent of the population; by 1996 it rose alarmingly to about 66 percent of the population (Aliju, 2011). An extract from UNDPH Report (2012-20I8) which combined such component as; level of equality, life expectancy at birth, standard of living and access to knowledge, and education, between 2010 and 2017 poverty in Nigeria has worsened from 0.43 to 0.49, This shows that despite vast resources. Nigeria tanks among the 25 poorest countries of the world. In fact, poverty has a serious challenge to governments in Nigeria. Its effect, which Includes lack end deprivation basic necessities of life, it worrisome besides the introduction of half-living N-power programmes and others.

Poverty humiliates and dehumanizes its victim Ukpong (2016). To this end government and in authority almost always strive to ensure that adequate structural programs are enshrined

to see that poverty if not eradicated, is reduced to the barest minimum, Today, continued economic development is constrained by the lack of economic freedoms. Economic liberalization requires extending property rights to the poor, especially to land, financial services, notably savings, can be made accessible to the poor through technology, such as mobile banking etc.

While poverty may appear to be wide spread in rural areas like Obonnoma, Usokun, Atala- Degema. Krakrama and Ilelema communities of the Kalabari Kingdom, the Urban areas, cities and communities like Buguma, Abonnema, and others are not exempted. The Kalahari Kingdom is privileged to have an abundance of natural resources that can be converted by invoking ICTs efficacy for higher socio-economic empowerment than expected. With our teeming population of highly entrepreneurial Kalabari youths in 1CT, wide availability of access to ICTs, a huge potential for employment and wealth creation that will lead to poverty eradication can be surged.

The readiness to tap into this potential and develop the area with strategies and measures for poverty reduction and indeed eradication is a call for responsiveness, the position of this paper, exploring applicable and adoptable efficiencies of ICTs for the purpose enhancing socio-economic development and eradicating poverty.

The issue of poverty within this region of Rivers State has become bottleneck, which affect the standard of living in these areas. Many citizens of these communities are ever ready to work but readily provision of tools that could enhance the standard of living within the areas seems not issue brings unsecured economy, protection of life and properties are not guarantee because of presumed attitude of youths within the areas under study. As this problem lingers, the for the author of this paper to explore on Information and Communication Technology efficiency to enhance socio- economic and proffer measures in eradicating poverty to its barest minimum.

The study attracts the following objectives:

a. To examine the impact of information and communication technology in Kalahari region in promoting economic activities
b. To access various ways information and communication technology could be used in promoting socio-economic activities within the study area for poverty eradication.
c. To evaluate derivable benefits from information and communication technology by Kalahari citizenry that could be deployed to overcome poverty.

## LITERATURE REVIEW

### Perception, Causes and Consequences of Poverty

Poverty has no precise definition but, in the simplest form. It refers to the Inability of an individual lo attain the minimum standard of living. It is a social condition characterized by inadequate access to basic human needs (food and non - food) to the sustenance of socially acceptable minimum standard of living in a given society. Some of these basic determinants of wellbeing include adequate food, shelter, portable water, Healthcare, education and employment opportunities (Akintola and Yusuf, 2011). However, Ajakaiye and Adeyeye (2010) conceptualize poverty as a function of education, health, child mortality and other demographic variables. Poverty to them is the availability or otherwise of the above

parameters. In a nut shell, poverty can be seen as a situation in which an individual is unable because of socio-economic, political and psychological incapacitation, to provide himself and his family the barest basic necessities of life.

**Poverty: Causes and Consequences**

Research has not vehemently proven the actual cause(s) or determinant(s) of poverty. Nevertheless, the combination of several complex factors could contribute to poverty, and these include low or negative economic growth, inappropriate macroeconomic policies, deficiencies in the labor market resulting in limited job growth, low productivity and low wages in the informal sector, and a lag in human resource development and utility, and ignorance in the utility of available socioeconomic enhancement tools. Obadan (2017) identified some factors as the causes of poverty among which are; inadequate access to employment opportunities, inadequate physical assets, inadequate access to markets, destruction of natural resources, lack of power to participate in development programs and inadequate access to assistance for those living at the margin. On the consequences of poverty. Aku et aI. (2016) opined that there is general lots of confidence in a society stricken by poverty and this renders government policies ineffective. Poverty also results in increasing the fragility and vulnerability of members of society to external influences. Furthermore, poverty makes production remain largely subsistence due to lack of capital needed for expansion. Labour becomes intensive and marginal productivity remains low.

**ICT's and Poverty Eradication Relationship.**

From the assumed changes, there is a need to draw a clear relationship between the two fields; ICTs and poverty eradication. In order to do this, some themes need to be identified:

- The earlier uses of ICTs only have an indirect technological impact on the lives of the poor hut of recent, they are increasingly direct users of the technology. Direct use may have a different impact to indirect use.
- Many earlier uses of ICTs were associated with government and can be seen as often connected more with social development or with the broader development context Only later was ICT applied in a way that had an immediate link to economic development particularly to business and enterprise. Given the obvious association of economic development with poverty eradication, there may be a different impact between usage for economic and usage for non-economic development; to the extent those can be disentangled.
- There are two categories of ICT use that need to be distinguished. The great majority of ICT application takes an existing activity and alters it in some way through digitisation; perhaps reducing its cost or improving its quality. On the other hand, ICTs may give rise to some new activities that did not exist before lCTs. The main example of the latter would be anything that falls into the ICT sector, from manufacture of hardware to software development to selling mobile phones to providing computer training etc. There could be different impacts between these ICT sector and non-ICT sector categories of use.
- Finally, within the category of existing activity, a distinction can be made between the use and application by the poor for income-generating enterprises, and other uses of ICT. Yet again, one might anticipate different impacts comparing these two sub-categories of ICT

application relationship between the two that is figuratively expressed in fig. 1 below.

**Invoking ICT in Rural Communities for Poverty Eradication**

The new information and communication technologies (ICTs) are widely perceived as major tools for kick-starting ailing economies and consequently assist developing societies 'catch up' with the develop world, including those groups that have lost out of the mainstream of development. (levi, Inyatullah & Tony 2013). Accordingly, information communication ranging levels of people's standard of living, poverty level has now gained the attention of economic observers throughout the world. They have linked the problems of under employment and socioeconomic crisis to information inadequacies. In this context, Information Communication Technologies (1CT) have been perceived as availability and accessibility of internet facilities, telecommunication equipment's and services media and broadcasting, libraries and documentation centres, commercial information providers, network-based information services and other related information and communication activities (Odufowokan, 2010).

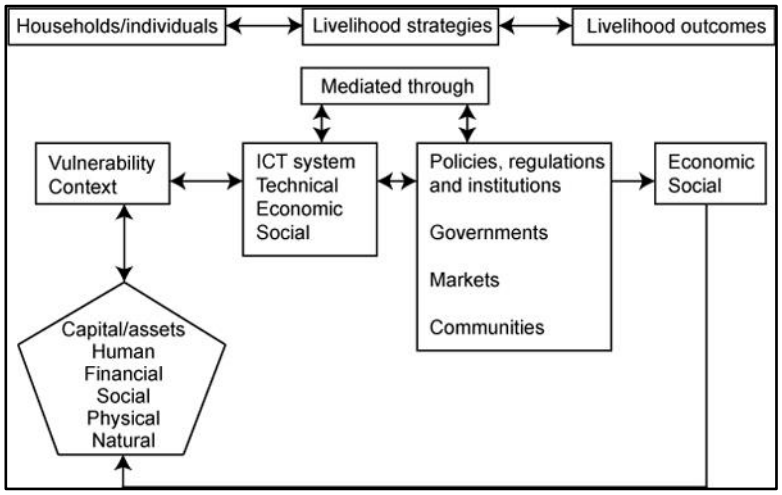


Figure 1: conceptual relationship of ICT and poverty eradication (Richard 2017)

ICT applications offer a number of opportunities for creating employment and alleviating poverty. Nevertheless, ICTs must not be perceived as panacea to all the ills of poverty and poverty, but as a tool that can only be effectively used in **c**onjunction with adequate national policy frameworks and local measures aimed at employment creation and poverty alleviation. Information and communication technologies (ICTs) serve as new tools for escaping from poverty, empowering impoverished communities, and providing access to vital resources and information. By creating new jobs**,** reducing Poverty, establishing new distribution channels and providing new competitive advantages, ICT applications geared towards employment creation and poverty alleviation will eventually contribute to reducing the gap between the rich and poor in the third world countries (united nations, 2005)

**ICT for Income Growth and Poverty Eradication.**

The longest-standing and most-fundamental understanding of development to see it as an expansion of wealth, typically measured in terms of GDP per capita. On this basis, poverty is seen in its simplest terms as a lack of money, and the eradication of poverty is a strategy for

delivering greater income to the poor.

From Fig. 1 above, three different types of ICT application for this purpose could be deduced:

a. Other ICT Uses: a common, albeit limited, financial gain associated with ICTs is a saving of money through journey substitution. Examples falling outside the enterprise and ICT sector applications could include migrants saving money because they feel less necessity to travel to their home villages (Mehta 2013), and citizens seeking services needing to travel less often to government offices (Bhatnagar & Singh 2010). ICTs can also be used to deliver more substantial amounts of money. For example, figures from Africa show an unweighted average across 17 countries of 46% of mobile phone owners had received airtime as a financial transfer from a friend or family member (Comninosetal, 2019). Where am or formal mobile- money system is used, the typical average value of transfer is US$35 (Duncombe, 2012)
b. *Enterprise ICT Use:* savings through journey substitution area common benefit reported for those involved in production and trade since they can coordinate these activities without the need for physical meetings of Boatengetal 2014. Micro-entrepreneurial so make significant use of mobile money to receive payments. More substantially, ICTs can be used to help increase the income earned.by micro-entrepreneurs. Jensen's (2007) much-cited work on mobiles and fishermen in Kerala, for example, shows phone users gaining an average Rs.205 (c.US$4.5) per day increased revenue. Aker's (2008) work on West African grain traders shows similar results in increasing profitability by 29% per year. Katengeza et al (2014) report Malawian farmers gaining US$90 additional income through participation in an ICT-based market information service. Overall, data concurs with Chew et al (2011:11) that there is a "small, albeit statistically significant, relationship between total ICT access and (micro enterprise) growth"
c. ICT Sector: ICTs can also help by creating a new employment-related income. A well-known example here is that of the Grameen "Phone Ladies" who earned an income averaging around US$300 per year from acting as a mobile phone call sales person an average 24% of household's total income (Richardson et al 2000)7. Other evidence drawn from an impact sourcing8 initiative in Kerala that created IT jobs forum employed women from below- the families suggested they earned an average US$540 per year, representing 43% household income (Heeks & Aran 2010).

Judging the size of new employment generated by ICTs - particularly for those who would otherwise be classified as below-poverty-line — is not that easy. One overall sense of job creation comes from Pakistan, where the telecommunications sector is responsible for creation of an estimated 1.4 million jobs (UNCTAD 2010) and from India where an estimated 2.8 million people were employed directly or indirectly in the mobile sector and a further 7 million in induced employment (World Bank 2014). Similarly, the GSMA (2016) estimates around 3.3 million direct and indirect jobs created by the mobile sector in Africa in general.

**ICT efficiency for Poverty Eradication**

Taking one further step away from the idea of poverty as being just about money, it can be understood in the sense of poverty of opportunity: the lack of abilities and chances to do what is necessary to progress in life. Money will be one part of this. There are also links to

livelihoods ideas such as the assets one has, the context one is in, and the strategies one is able to adopt. These ideas were best encapsulated by Amartya Sen in the capabilities approach, which sees development as the expansion of individual freedoms: "what the person is free to do and achieve in pursuit of whatever goals or values he or she regards as important" (Sen 1985: 203). What a person is free to do represents their capabilities; what they actually achieve represents their functioning. This is not just a theoretical notion. If asked, residents in poor communities can readily explain that what they seek from ICTs is greater opportunity; in particular a greater ability to undertake economic and social activities (kivunike, 2011)

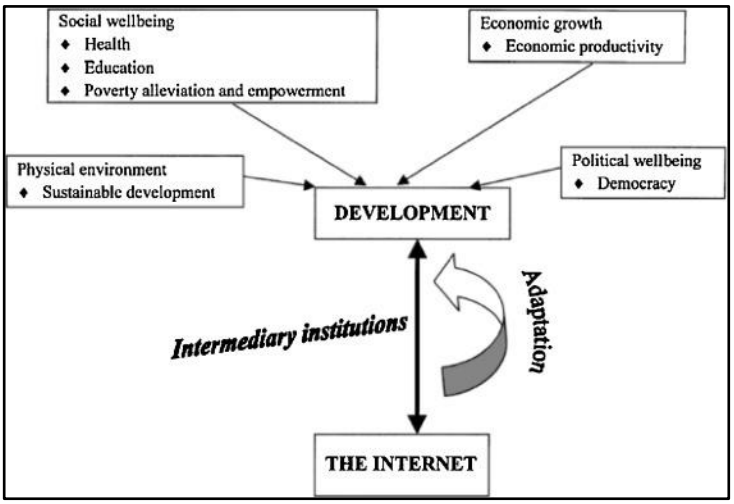


**Figure 2: ICT efficiency Framework: A citizens' perspective (source: Kivunike et al 2011).**

This understanding of development - of poverty eradication as an eradication of poverty of opportunities – can be seen as Sens intends it: as at once the broadest but also most fundamental view idea of development. Sens idea of development as freedom as freedom, and of capabilities, goes beyond the more lay nation of capabilities or efficiency – ass kills and as knowledge. It takes a much broader view of what capabilities are, and the impact terms the interest is mainly realized functioning. Put more simply, its main interest is therefore in what ICTs enable people to be and to do.

This can be encapsulated in the notion of the roles that people play through ICTs; a role being both who you are and what you do. Developing from the concept of roles within the workplace (Biddle 2016, Huvila 2008), we can define a role as a set of tasks and behaviours that are performed by an individual. Roles therefore represent something halfway between a realised functioning and a livelihood. They are shaped by "a mix of both social dynamics and technological affordances" (Postigo 2011:184). Analysing a set of roles will be analysed that the poor can play vis-a-vis ICT; represented as a ladder, as shown in Fig. 3. In simple terms, climbing the ladder could be read as a greater intensity of engagement with the technology. It is also a ladder of technological capability: each step reflecting higher-level competencies (skills, knowledge and perhaps also attitudes) that are required for this type of ICT use but which are also created by this type of ICT use. And it also represents Sen's ideas, with each successive role being a greater level of realised functioning; and hence one more step in the climb away from poverty.

Although the alignment is not exact, the various roles can be understood in relation to

the categories of ICT use identified in Figure 1. These are summarised in Fig. 3, and detailed below.

a. **Non-Use**: these roles, members of poor communities are not direct users of either the technology or the information and services it carries:

- Delinked: there is no obvious connection between particular ICT applications and poor communities. An example might be applications within a large corporation which does not produce goods or services of relevance to poor communities.
- Indirect: this represents a very large category of ICT applications in organisations in which the poor have no direct connection with the ICT, but in which the ICT application does deliver some benefit. Examples might include the use of ICTs to provide ethical and fair trade information which then drives better working terms and conditions to poorly-paid factory or farm workers (Heeks& Duncombe2004, Light 2010), and the use of ICTs in large firms to improve supply, distribution and marketing to base-of-the-pyramid markets (Subrahmanyan & Gomez-Arias 2008, Chickweche & Fletcher 2013).

b. **Other ICT Uses to Enterprise ICT Use:**

In these roles, the poor make direct use of either the technology or the information and services it carries. They can do this either as entrepreneurs or in other roles:

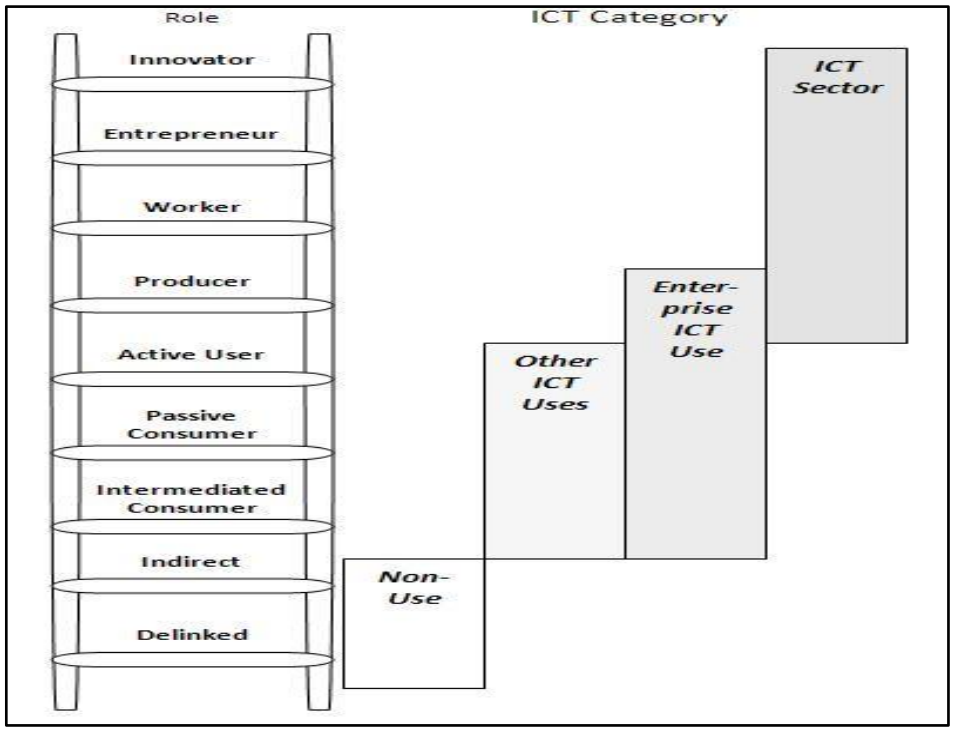


**Fig 3. Ladder of ICT-Related Roles (Source: www.wordpress.com)**

- Intermediated consumer: this can represent all three main levels of consumption-related use of ICTs - one-way broadcast of information interaction, transaction - but in no case is the consumer a direct ICT user; hence there is limited ICT-enabled change in role. A typical example might be the delivery of e-government services in India (Bhatnagar & Singh 2010). These services are undertaken at kiosks and service centres staffed by intermediaries. Evaluation shows that impacts vary quite significantly across projects but that they are relatively limited in terms of changing the consumer's pattern of functioning

and opportunities.

- Passive consumer: a role in which there is direct use of the ICTs but just to receive "broadcast" information e.g. about health (KJiner et al 2013) or market prices (Katengeza et al 2014). As noted, the role can partly be seen as the starting point of an information impact chain which will only lead to development outcomes if fully enacted; that enaction requiring other resources and entailing a different role
- Active user: digitally-enabled interaction and transaction with socio-economic contacts; for example, the remittance of "mobile money" from urban migrants to rural relatives (Duncombe 2021), or the use of telecentres by farmers to get agricultural guidance from distant advisers (Heeks & Kanashiro 2009a), or use of the of mobiles by micro-enterprise to contact customers (Donner & Escobari 2010).

c. **Enterprise 1CT USE to ICT Sector**: In this tola, those in poor communities make direct use of ICTs:

**Producer**: creation of enduring digital content. This could be undertaken by an entrepreneur, for example, advertising goods and services on a voice - activated information service (Agarwal et al 2010). But it also overlaps into the ICT sector category; for example, musicians or video producers recording then sharing content on mobile phones (Impio et al 2008, Walton et al 2012).

d. **ICT Sector**: In these roles, the use of ICTs is so central to the livelihood that it is seen as lying within the ICT sector:

- Worker: employment in an ICT-based activity (one that could not exist without ICTs); for example, those employed to undertake data entry and other digitization tasks as part of IT impact sourcing contracts (Madon & Sharanappa, 2013) and rural BPO contracts (Knowledge Wharton 2010). Though only indirectly connected to the technology, one might also include here entire new livelihoods that are directly attributable to the ICT sector, such as the ancillary staff who work in ICT enterprises (e.g. Lakshmi Ratan et al 2009). (More questionable still would be the inclusion of induced employment; for example, those who work as cooks, cleaners, etc. for households of those employed in the ICT sector.)
- **Entrepreneur:** creation of a self- employed ICT-based livelihood (one that could not exist without ICTs); for example, the umbrella people selling phone calls by the. roadside (Neuwirth 2011, Baro & Endouware 2013). or the PC kiosks providing digital photography, e-ticketing and e-goverament services (Rangaswamy & Nair 2012).
- **Innovator:** adaptation of the technology by modifying the technology itself such as the "street Hacks" that alter mobile to accept dual SIMs (Chipchase 2009), or by modifying ICT-enabled. Processes such as the mobile money agents who adapt methods of service delivery to match their local context (foster & Heeks 2013).

## METHODOLOGY

A cross sectional survey method as a systematic means of data collection was adopted for the study. According to Obeka (2011), a survey method is a distinctive method applicable to research with extensive applications. This methodology helps the researcher to study a group of people or items by collecting and analysing data from a selected group to represent the

entire study. The dataset used were questionnaires, Group Discussion Forums and Town hall meetings from the selected and targeted communities and villages (Ama). This was because of no individual target rather a collective group.

## CONCLUSION

In drawing a conclusion, there are some differentiation in terms of technology. In a fast-moving field, there is always problems that any published data tends to be somewhat ‘‘behind the curve". But the picture painted so far in 2010s is one in which the poor are struggling to reach even passive consumer status related to Internet-connected PCs. Certainly, there are jobs, enterprises and innovations related to PCs and the Internet but they are not extensive. For example, Agboma (2010) reports one-sixth of all registered enterprises in Benin City, Nigeria, were PC/Internet related micro-enterprises (IT training, software, Internet service provider, cybercafe). If (and it is a very big if), that figure could be extrapolated, it would suggest 100,000 such enterprises across all of Africa. By contrast, most of the higher-level role examples found were related to mobiles. All mobile users (who now form the majority of developing country populations) are at least passive users; and increasing numbers will be active users and even producers. The number of jobs created by the mobile sector is far greater than that for other parts of the ICT sector as seen above, perhaps 2.8 million in India and 3.3 million in Africa. Evidence cited above suggests a significant proportion of these will be based in poor communities. At least on the basis of current evidence, then, it is the mobile phone rather than other digital technologies that is offering a route up the ladder and away from poverty but all are ICT efficiencies, which can be adopted in such Kalabari regions for the purposes of poverty eradication.

## RECOMMENDATIONS

This paper hence, makes the following recommendations:

a. The explosion of ICT usage has not been matched by its explosion for knowledge development. There are much more needed to be understood about the emerging roles of ICTs in poor communities, therefore policies should be put in place for proper implementation.

b. Collaborative innovation should be done and be made working in such rural areas. This will enable the designs of ICT systems that will develop such poor rural areas and enhance socio-economic activities.

c. Grassroots (“per-poor”) innovation by and within poor communities should be established. Given the foundation of such innovation within this communities, their designs are already likely to be appropriate, for example, the Honey Bee Network).

d. Finally, changing ICT designs to match closer to poor rural realities, and changing poor community realities to match closer to ICT designs, will establish greater opportunities for ICTs to be a technology of poverty eradication rather than a technology of inequality. This will allow for appropriation, even innovation, of the technology within poor communities, and in turn, will allow poor individuals to move further up the ICT role ladder and thus capture more of the gains from the “digital revolution”.

## REFERENCES

A4AI (2013) The Affordability Report 2013 Alliance for Affordable Internet http://a4ai.orK/wp-content/uploads/2013/12/Affordabilitv-Report-2013 FlNAL.pdf

Addison T. Hulme D. & Kanbur R. (2008) Poverty Dynamics: Measurement and

Understanding from an Interdisciplinary Perspective

Agarwal SK, Kumar Nanavati A.A. & Rajput N. (2010) User-generated content creation and dissemination in rural areas Information Technologies and International Development 6(2) 21-37

Agboma F. (2010) A Multi-Level Assessment of Entrepreneurship in the Nigerian IT Sector, PhD thesis submission. Institute for Development Policy and Management University of Manchester UK

Agola N.O. &Awange J.I. (2014) Globalized Poverty and Environment, Springer, Heidelberg

Aguero, A., tie Silva, H. & Kang, J. (2011) Bottom of the pyramid expenditure patterns on mobile services in selected emerging Asian countries, Information Technologies and International Development, 7(3), 19-32

Aker. J.C. (2008) Does Digital Divide or Provide? The Impact of Cell Phones on Grain Markets in Niger, BREAD Working Papers (177), Bureau for Research and Economic Analysis of Development, Duke University, Durham, NC

Aker, J.C. & Fafchamps, M. (2013) Mobile Phone Coverage and Producer Markets: Evidence from West Africa, Discussion Paper 9491, Centre for Economic Policy Research, London, UK

Alzouma, G. (2013) Dimensions of the mobile divide in Niger, in The Digital Divide, M. Ragnedda & G.W. Muschert (eds), Routledge, 297-208

Avgerou, C. (2009) Discourses on innovation and development in information systems in developing countries research, in: Assessing the Contribution of ICT to Development Goals.

Byme, B. Nicholson & F. Salem (eds), Dubai School of Government, 1-21 http://ifip.dsg.ae/

Baro, E.E. & Endouware, B.C. (2013) The effects of mobile phone on the socio-economic life of the rural dweller in the Niger Delta Region of Nigeria, Information Technology for Development, 19(3), 249-263

Barrantes, R. & Galperin, H. (2008) Can the poor afford mobile telephony?, Telecommunications Policy, 32, 521 -530 Manchester Centre for Development Informatics Working Paper 58

Bass, J.M. & Heeks, R. (2011) Changing computing curricula in African universities: evaluating progress and challenges via design-reality gap analysis. Electronic Journal of Information- Systems in Developing Countries, 48(5), 1-39 https://www.ejisdc.org/ojs2/index.php/ejisdc/article/view/856

Bhatnagar. S.C. & Singh. N. (2010) Assessing the impact of e-government: a study of projects in India, Information Technologies and International Development, 6(2), 109-127

Biddle, B J. (1986) Recent development in role theory, Annual Review of Sociology, 12,67-92

Boateng, R., Hinson, R., Galadima, R. & Olumide, L. (2014) Preliminary insights into the influence of mobile phones in micro-trading activities of market women in Nigeria, Information Development, 30(1), 32-50

Burrell, J. &Matovu, J. (2008) Livelihoods and the Mobile Phone in Rural Uganda, The Grameen Foundation http://www.grameenfoundation.applab.org/uploads/burrell_needs_assessment_final

Calandro, E. & Wang, R. (2012) Predictors of mobile internet usage in 10 African countries, paper presented at 19th ITS Biennial Conference, Bangkok 18-21 Nov.

http://www.econstor.eu/bitstream/10419/72487/1/741722321.pdf

Chepken, C.C. & Muhalia, A. (2010) The poor and the mobile phone related spending. Internal ion Journal of Computing and ICT Research, 5(1), 10-19 http://www.ijcir.org/volume5-number1.pdf

Chew, H.E., Levy, M. & llavarasan, V. (2011) The limited impact of ICTs on microenterprise growth, Information Technologies and International Development, 7(4), 1.-16 http://www.itidjoumai.org/index.php/itid/article/viewFile/788/329

Chikweche, T. & Fletcher, R. (2013) Customer relationship management at the base of the pyramid: myth or reality? Journal of Consumer Marketing, 30(3), 295-309

Chipchase, J. (2009) Mobile Phone Practices & The Design of Mobile Money Services for Emerging Markets. http://www.janchipchase.com/publicalions

Comninos. A., Essclaar, S., Ndiwalana, A. & Stork, C. (2009) Airtime to cash: unlocking the potential of Africa's mobile phones for banking the unbanked, paper presented at IST-Africa 2009, Kampala, http://miun.diva-portal.Org/smash/get/diva2:358905/

de Silva, H., Zainudeen, A. &Ratnadiwokara, D. (2008) Perceived economic benefits of telecom access at the bottom of the pyramid in emerging Asia, paper presented at ICA 2008, Montreal, Canada, 20-21 May

Pai, N. & Pol, M. (2013) Mobile health to improve tuberculosis care and control: a call worth making, The International Journal of Tuberculosis and Lung Disease, 17(6), 719

FID (1999) Sustainable Livelihood Guidance Sheet Section 2, Department for International Development, http://www.liveIihoods.org/info/guidance_sheets_pdfs/section2.pdf

DI (2013) Investments to End Poverty, Development Initiatives, Bristol, http://devinit.org/wp-content/uploads/2014/02/lnvestmcnts-to-End-Povertv highlights.pdf

Dormer, J. (2007) Customer acquisition among small and informal businesses in urban India: Comparing face to face, interpersonal, and mediated channels, The Electronic Journal of Information Systems in Developing Countries, 32(3), 1-16

Donner, J. & Escobari, M. (2010) A review of the research on mobile use by micro and small enterprises in developing countries, Journal of International Development, 22(5), 641-658

Duncan, J. (2013) Mobile network society? Affordability and mobile phone usage in Grahamstown East, Communication, 39(1), 35-52

Duncombe, R. (2007) Using the livelihoods framework to analyze 1CT applications for poverty reduction through microenterprise, Information Technologies and International Development, 3(3), 81-100

Duncombe, R. (2012) An evidence-based framework for assessing the potential of mobile finance in sub-Saharan Africa, Journal of Modern African Studies, 50(3), 369-395

Duncombe, R. (2012) Understanding Mobile Phone Impact on Livelihoods in Developing Countries, Development Informatics working paper no.48, University of Manchester, http://www.seed.manchester.ac.uk/medialibrarv/lDPM/working_papers/di/di_wp48,pd

Forestier, E., Grace, J. & Kenny D. (2002) Can information and communication technologies be pro-poor? Telecommunications Policy, 26 (11), 623-646.