

ICT AND POVERTY ALLEVIATION IN RURAL AND DEVELOPING COUNTRIES OF AFRICA

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Abstract

Poverty alleviation is a major stumbling block that must be overcome in the pursuit of sustainable socio-economic growth in Africa. This paper focused on poverty eradication in rural communities of Africa through Information and Communication Technologies (ICT). The causes, measures and consequences of poverty in Africa were discussed. The paper then highlighted past attempts and instruments to alleviate poverty in Africa. Areas and conditions where ICT could play a catalytic role in alleviating poverty in rural and developing countries of Africa were pointed out. The paper concluded with the need to grasp ICT opportunities for rapid rural development, empowerment and poverty reduction.

Keywords: Poverty Alleviation, Rural Communities, ICT Development and Empowerment

1. Introduction

Poverty is a condition in which some people are unable to meet their basic needs. It is a complex phenomenon and while it is closely linked with Income and Unemployment or Underemployment, so also, it is equally linked with deprivation of basic needs for human resource development, e.g. shelter, education, health and good environment. A poverty alleviation scheme therefore has to focus on equipping such people with the knowledge, skills and opportunities they need to pull themselves up. Abject poverty is starkly evident in all African cities where children hawk in the traffic and beggars line the streets; slums grow faster and loom larger than planned neighborhoods; where ramshackle kiosks choke road junctions and clutter house entrances. Rural poverty is even more serious, with most African villages boasting of zero economic viability: no paying jobs, few prospects for full life style, wretched opportunities for learning and no access to the health and social services. In search for better life, villagers migrate to the cities where they swell the ranks of the city have-nots and mostly end up on the streets. Meanwhile, for the industrial countries, the Industrial Age has given way to the Information Age, as technological advances in broadcasting, telecommunications, computers, media, software development and digital information have created a brand new economy that is truly global and knowledge-base.

Knowledge is power. Knowledge sharing is therefore empowering. One acquires new knowledge by receiving and processing new information. Just being able to quickly receive and process poverty alleviation information could radically transform the lives of African's poor. Much of the information most people

need for day-to-day survival is not in the airwaves but in books, computers or heads of inaccessible people. ICT offers opportunities for fast knowledge acquisition and innovative and profitable knowledge application. Such opportunities are relatively easy to spread around, which is why ICT has been the engine for a new, boundary-less, rapidly expanding, knowledge-based economy with proven poverty alleviating features.

This paper outlines ways in which ICTs can be applied and be integrated into development and empowerment programs, how it can be use to increase employment and alleviate poverty in the poor and rural areas of Africa countries.

2. Poverty: Causes and Measurement

There are multiple ways of defining poverty. But the UNDP categorizes poverty in the following way [4]:

- *Income Poverty*: the lack of sufficient income to satisfy essential needs;
- *Capability Poverty*: a deprivation in the range of things people do; and
- *Participation Poverty*: a deprivation in the range of thing people can be.

In Webster Century dictionary, poverty is a condition or quality of being poor, in need, indelicacy and lacking substance. It is an overall situation of lacking adequacy, scarcity and destitution of economic, political and social resources. In another way, poverty can be defined as a condition of insufficient resources and lacking of fulfillment of fundamental human needs such as adequate nutrition, clean water, clothing, health services and shelter. It is estimated that 1.6 billion people in the world are poor, living under extremely poor condition, surviving under less

than \$1 per day for all their needs. Of this number, 200,000 live in Africa as at 1996. Despite its abundant natural and human resources, extreme poverty and good falling standard of living has increasingly dogged Africa countries.

Poverty can also be grouped into two. We have *absolute and relative poverty*. Absolute poverty is defined as the inability of an individual to obtain the minimum necessities for the maintenance of merely physical existence; While Relative poverty is the inability to attain a given minimum contemporary standard of living. Whereas the concept of absolute poverty tends to identify those people who are literally starving, the concept of relative poverty identifies those people who are the poorest within the overall pattern of income distribution within a given country. The poor and the non-poor are generally defined within a given country by establishing a definition of a minimum standard of living relevant to that country. The first Millennium Development Goal (MDG) aims to halve the number of people living in extreme poverty between 1990 and 2015. The number of people living in extreme poverty in Sub-Sahara Africa (SSA) increases by 74 million between 1990 and 1999 [7]. According to World Bank report on World Development Indicators, poor countries are where more than one third of the population lives on less than one USD per day [8].

2.1 Causes of Poverty

Poverty is multi-dimensional in nature and must be effectively tackled. Poverty either as a plague or a cause or other specific under-development ailment afflicts Africa as it does all nations of the world. Its high level prevalence in Africa, which has an endowed nature of rich natural and human endowment, is very worrisome. In order to tackle this malaise, it is important to identify the causes, and they can be as a result of the following:

- (a) Lack of basic services, such as clean water, and health care.
- (b) Lack of assets such as land, tools, credit and networks of friends and family.
- (c) Lack of income or widening income inequality including food, shelter, clothing and empowerment (political power, confidence and dignity).
- (d) The environment discrimination on ground of gender, race, disability, age or ill-health.
- (e) Natural or human caused shocks, such as market collapse, conflicts, droughts, flood or fire.
- (f) Poor productive section or low application of technology.
- (g) Poor governance
- (h) Corruption
- (i) Social conflicts or war
- (j) High and growing unemployment level,

- (k) Rapid rate of population growth yearly given rise to high dependency ratio and pressure on resources in several areas.
- (l) High illiteracy rate.

2.2 Measure of poverty

While poverty eradication has been named the primary challenge for the millennium, how to measure and assess progress in this crucial area remains uncertain. One of the key issues of relevance to policy makers and others concerned with poverty alleviation however is that poverty cannot be measured by income alone (e.g. \$1 per day income poverty line) because of multi-dimensional nature of poverty. Other proxy measures must be considered which includes literacy, nutritional status, life expectancy and the right of the people to make choices.

2.3 Consequences of Poverty

- (i) Migration of people from rural areas to urban areas thereby stressing the services there.
- (ii) Influx of rural dwellers into urban areas without capability of partaking in any productive activity increases the level of urban poverty.
- (iii) It increases the level of social malaise characterized by anti social behavior, prostitution, robbery, drug peddling and use, etc
- (iv) General insecurity and disregard for human life and values.

3. Africa's Effort at Eradicating Poverty

African leaders have formulated and adopted policies and strategies to the MDGs. They have also embraced several global efforts aimed at reducing poverty in all member nations. Some of these policies and strategies are discussed below:

3.1 New Partnership for Africa's Development (NEPAD)

The NEPAD is a common vision of African leaders to eradicate poverty and place Africa on path of sustainable poverty and development thereby halting African's marginalization in globalization process and make Africa an active participant in world economy and body policy. The goals of NEPAD are to achieve and sustain GDP growth rate of over 7% for the next 15 year, and to ensure the achievement of MDGs through the following:

- Peace, security and governance
- Sectorial priorities-bridging infrastructure gaps, human resources development, agriculture, environment, culture, science and technology.

- Mobilization of resources- increased domestic resources, debt relief, official development assistance reform, private capital flows.
- Diversification of production- mining, manufacturing, tourism, private sector promotion services, intra-African trade promotion, removal of non-tariff barriers.

3.2 Africa Growth and Opportunity Act (AGOA)

The AGOA, passed in 2000 was designed to facilitate the promotion of united state trade and investments with Africa especially the sub-Saharan Africa. Its major objective is the reduction of the trade barriers and increase exports. The participating countries are expected to enjoy unlimited duty-free and quota-free access to the United States for 6,500 products including textiles. It will also grant trade incentives to participating countries till 2015. Some of the expected benefits of AGOA are:

- Creating jobs, reducing poverty, combating corruption, strengthening the rule of law, foreseeing open markets and goods governance, and improving living standards of Africans.
- Creating a conducive environment for the trading, encouraging foreign investors to put their confidence in the continent.

However for Africans and Africa industries to effectively compete, it requires the following:

- Adequate physical infrastructure
- Efficient transportation services
- Vocational and management education trainings
- Viable SME sector
- High quality products, high capacity utilization, and low cost of production
- On-time delivery of specified items
- Consumer protection

4. ICT and Poverty Alleviation

4.1 ICT Defined

ICT is defined as technologies that facilitate communication and the processing and transmission of information by electronics means. It consists of the hardware, software, networks and the media for the collection and storage, processing, transmission and presentation of information (voice, data, text, images) as well as related services. Both traditional technologies such as: telephones (fixed and mobile, radio, TV and print media) and newer technologies (internet and the World Wide Web, personal computers, broadband satellite and wireless

technologies, and mobile phones) are usually included in the concept of ICT [1, 5].

The demarcations between these delivery channels are increasingly getting blurred as the world becomes more networked with interconnected telephone services, standardized computer hardware, and seamless data transmission services. Today, we are witnessing a new revolution that will shape the knowledge society of the 21st century - "Digital Revolution". Driven by the accelerating convergence between the internet, broadcasting media and ICTs, this revolution indeed affects all aspects of our life- the way we learn, work and communicate with each other. New opportunities are opening up for those who can make effective use of information technologies, but a large percentage of people are not aware of this digital revolution and opportunities, they do not have access to those technologies and information which are also not affordable. Poverty reduction and the enhancement of the quality of life for the people are still on the high-priority list of developing countries and ICTs can play a great role in alleviating, facilitating and accelerating this menace.

4.2 Strategies for Poverty Eradication

Poverty reduction is the most difficult challenge facing Africa and the people. It is also the major hurdle that must be overcome in the pursuit of sustainable socio-economic growth. Despite advances on the parts of the developing world, hunger and poverty are increasing in Africa, approximately 186 million people are chronically undernourished [one out of every threes] and 291 million people live on less than a dollar a day [2]. The report in [2] further mentioned that the total number of hungry people in Africa has double during the past thirty years. The World Development Report on Attacking Poverty has summed up that "At the start of a century, poverty remains a global problem of huge proportions. Of the world's 10 billion people, 2.8 billion live on less than \$2 a day and 1.2 billion on less than \$1 a day. Eight out of every 100 infants do not live to see their fifth birthday. Nine of every 100 boys and 14 of every 100 girls who reach school age do not attend school. Further, the report adds "poverty is also evident in poor people's lack of political power, extreme vulnerability to ill health, economic dislocation, personal violence and the natural disasters. The frequency and brutality of civil conflicts, and rising disparities between rich countries and the developing world have increased the sense of deprivation and injustice for many" [8]. The latest trend estimates of world population of 9 to 10 billion persons around the year 2050 have the following global goals, aimed at poverty eradication for the coming decades:

- Control of population and environmental degradation.

- ii) Policies for provision of food, energy and employment.
- iii) Implementation of programmes for provision of safe drinking water and shelter.
- iv) Provision of basic services like health, education, right shelters for slum and squatters settlements and footpath dwellers.
- v) Promotion of “Public led” development with strong “Public Participation”.

Based on the above global goals, the Information and Communication Technologies strategies for poverty alleviation will need significant innovative approach so that they are more responsive to the needs of the poor and the environment. ICTs can contribute significantly to the development, poverty reduction and empowerment of Africa developing countries if properly harness.

The following ICT possibilities can empower the poor in Africa and energize the economy.

4.2.1) Voice services for the poor

Rich or poor, we all need to talk with people who are not always within earshot. The poor therefore need telephone service as much as anyone else - to find and respond to job vacancies, to keep in touch with distant relatives, to seek information from various sources and for various reasons, to call for help in emergency situations. But at current and foreseeable acquisition and usage costs, the poorest of the poor cannot afford to own telephone sets. The following voice communications options can therefore be placed at the poor disposal.

a) Public telephone booths in the cities: The long queues of ordinary folks at working telephone booths attest to the poverty alleviation potentials of public telephone booths. But the outlets are pitifully few and far between. They are totally absent where most of the poor live and work. Better coverage based on copper in the local loop could be hampered by cost constraints, right of way issues and security concerns. But solar-powered, fixed wireless local loop equipments sited in carefully chosen and reasonably secure public buildings in every major urban population centre could be used to ensure even distribution of public telephone booths in the towns and cities. Each suitable location could feature a sizable cluster of working phones sharing power, antenna and security infrastructure.

b) Community telecentres in the villages: Every village with a population of up to five thousand people should have a community telecentre with fixed wireless telephone terminals if within the footprint of the wireless phone network or with a satellite terminal otherwise. Such centers will enable poor villagers reach out to the world and pull in the information they need for better life. Properly organized, they might even allow the world push some relevant information

to the villages. The service could be from licensed telecomm operators while funding could be from a variety of potential sponsors, including NGOs, Governments, Philanthropies, village Unions and cooperatives.

c) Affordable personal fixed wireless terminals: While better than nothing, community telecentres have serious limitations. Weather, time-of-day and distance from homes could constrain spontaneous or emergency communication. In-bound calls are almost pointless, unless some kind of human relay service can be put in place. Even then, time will be lost. Therefore, the marginal poor and small businesses that can afford reasonably priced telephone solutions should not have to rely totally on telephone booths or telecentres. Since the promise of volume clearly exists, deliberate steps should be taken by government and vendors to make the total cost of owning fixed wireless telephone terminals affordable.

d) Affordable citizens band radios: Carefully chosen license-free frequency bands should be set aside for individuals and businesses to implement person-to-person or business -to- business communication solutions. Citizen Bands (CB) and armature radios are very big business even in the United States which has one of the world’s best and most expensive telephone networks. One could have a versatile 40-channel CB kit for charges-free communication with other CB band operators. A school or remote hospital can maintain essential contact over the CB band. For those in the transportation businesses CB and Amateur radios could determine the difference between life and death.

e) Cellular phone rental services: For individuals or small business that have only very occasional need for telephone calls from own premises in location poorly served by land line telephone network, a rental cellular or fixed wireless phone service will be helpful if the tariff is right and the service is well managed..

4.2.2) Online Access for the Poor

Online access relate to the use of a networked computer terminal to interact with information resources or services running on remote computers.

a. Internet cafes: Internet cafes are public places where individuals can access the internet for a small fee, usually for e-mail and web browsing. Students are a big segment of the urban and rural poor. They are also the population segments that need online access the most and have the potential to embrace it quickly but they lack access. Schools lack online infrastructures. Computers are expensive. Power supply is erratic, requiring additional investment in UPS and standby generators. Software is equally expensive. Maintenance support (for hardware and software) is mediocre and expensive.

Telecommunications and ISP costs are in the clouds. In short, the total cost of owning a networked PC in the continent of Africa is so high that most African students may still not be able to afford a personal PC. Small businesses in developing countries of Africa are mostly bread and butter businesses that may not afford the cost of computer systems and the support that goes with these, let alone the ISP costs. Internet cafes in libraries, schools, churches, health centers, local government headquarters and other public buildings can empower the poor and small businesses with online capabilities.

b. Wireless internet access solution: For individual business in rural locations, dialup internet access could be very poor where a copper local loop happens to be available. Rural settlement patterns are such that loop limits are easily exceeded, resulting in poor link quality and low data speeds. This is on top of “normal” line availability and call competition problems. Purpose-built radio solutions for broadband access now exist for locations as far away as 30Km from ISP nodes. But complete broadband wireless IP packages are too expensive for all but major businesses and the best heeled individuals. Deliberate government policy can and should help make these products available for internet cafes, user groups, community centers, and similar group access points.

4.2.3) National Information Infrastructure

The cost of putting the poor and small businesses online cannot really yield full dividends unless efficient support services and relevant local contents are available and easily accessible. A national information infrastructure is highly imperative. These should comprise a broadband IP backbone linking all major cities and institutions, national databases, and a wide variety of online information services. Some of these must be put in place by Governments (Federal, State and Local), but private sector input must be substantial and could be, given the right investment and competitive climate.

4.2.4) Online Awareness

Private operators will not pursue affordable online services for the people unless they are sure of high patronage. Without education and awareness, the poor majority will not be in a position to cross the digital divide in a large enough numbers to present the necessary volume for online services to respond with lower prices. If, for lack of awareness and volume, the costs of online services do not come down, a self-sustaining cycle of high cost and low demand will keep the poor trapped behind the digital divide. There is therefore, the need for governments and agencies to support programs and projects that are targeted at raising awareness among all citizens of the benefits of ICTs or online services and the capacity of such services to meet the basic needs of the poor.

4.2.5) Online Services

Here is a short list of the online services that are possible for the poor in developing countries to rise above poverty level.

a. Online jobs: Online services mean jobs – new, relatively high paying jobs with low barriers to entry. Poor Indians are casting off their poverty in droves by writing expensive software for American companies right from their Indian living rooms. Anyone proficient in the use of basic computer productivity software can land a reasonable job with relative ease. Vacancies exist for various skill levels: from word processing clerks at business centers to web content developers in ISPs, from spreadsheet experts on the shop floor to database managers in top flight banks, from invitation card specialist in business centers to computer graphics experts in major publishing houses, from antenna riggers to telecom infrastructure planners.

b. E-mail service: The postal service is inefficient and leaky in African cities and virtually non existence in the villages and urban slums. Yet in the advanced societies that boast secure and efficient mail delivery, postal service is now dubbed “Snail Mail” and is mostly used as a courier of last resort for things that cannot be faxed or e-mailed. The poor of Africa need e-mail to call the bluff of the world’s worst snail mail system. And they do not even need to understand computers to use e-mail. Any internet café, business center or well managed community communication center can send and receive e-mail on behalf of the computer illiterate for fees comparable to the cost of inter-city postage stamp.

c. Education services: Online access holds the promise of integrating schools together so that they can tap into national and international centers of excellence, share best practices and help each other out. E-mail can enable remote students question teachers or transfer work for comment and correction quickly and securely. Where video conferencing is possible, real time remote course delivery will enable the school system get around inadequate teaching resource for courses like English, Mathematics, Physics and Chemistry. The World Wide Web holds a growing wealth of course materials and other information which all students can tap into at their own pace. Even working professionals looking to enhance their knowledge and qualification can pursue all sorts of professional certification program and computer-based training (CBT) online. In our environment of permanent scarcity or high cost of good books, absence of good public libraries, constant school shutdowns and lack of willing and capable mentors, the World Wide Web could be a cheap alternative source of learning materials for the poor.

d. Health services: Health services are inadequate for all in Africa especially for the rural poor. There are serious deficiencies in the number and caliber of rural health care practitioners and the resources available to them. Online health services involve two-way transfer of voice, text and image data to support remote clinical consultation, remote clinical diagnosis, remote counseling, public health information and professional development activities. They may require video conferencing capability for full effect. They certainly have the potential to reform rural health care in developing countries by enabling remote access to specialists, thus reducing patient transfers and increasing support for rural health care practitioners. There is also a wealth of public health information on the internet, which the poor and their local health workers can tap into.

e. Commercial services: There aren't many banks in rural communities of Africa. The few available don't offer full range of banking services. In any case, a serious business in a rural setting is very likely to be targeting an urban market and may well do its banking where it does its selling. Lingering security concerns are stalling e-commerce initiatives everywhere. When e-commerce takes off in developing countries, rural business may well be among potential early beneficiaries since they can use it to bridge the distance between them and their markets and banks. Just being able to retrieve bank statement and transaction details online could save rural businesses lots of time and money.

f. Agricultural extension service: Online agricultural extension service could help governments optimize its extension service resources while reaching many more farmers and farmer's co-operatives with timely and consistent message. It could help minimize corruption and exploitation in the service. Farmers could promote their products and handle simple transactions such as orders over the Web while payment transactions for the goods can then be handled offline [3]. It has been shown to be cheaper and faster to trade online than on paper-based medium, telephone or fax. Electronic commerce could therefore enable entrepreneur to access the global market information and open up new regional and global market that fetch better prices and increase farmers' earnings.

4.2.6 Electronic Government

E-Government is the use of ICTs to transform government by making it more accessible, effective and accountable. E-government benefits in rural areas can be manifested in but are not limited to the following [6]:

- **Healthcare:** by providing information to rural doctors and nurses, informing the rural poor of the health services they can acquire, recording new-born

babies online, and responding to inquiries about health issues and services;

- **Pensions:** providing rural old people with information about pension schemes, allowing access to the pension account, enabling the users to view their employment profile and modify it if they wish;

- **Information on economic activities in rural areas:** such as the latest techniques in crop production and other activities.

5. Conclusion

ICTs pose enormous opportunities for the developing countries and their enterprises. However such opportunities have often been confirmed to urban areas in a number of these African countries. Many rural areas, as well as some impoverished urban locations in Africa are still isolated from the technological revolution sweeping the continent, and hence, deprived from ICT benefits. This paper describes how Information and Communication Technologies can be applied in poor and developing countries of Africa to help change condition and poverty level of the poor. The paper explores the ICTs infrastructure and services that could be placed at the disposal of the poor, outlines the potential obstacles in providing such infrastructure and services and suggest the way forward.

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