ICT FOR SUSTAINABLE ECONOMIC DEVELOPMENT AND GROWTH IN RURAL AREAS

OJU, ONUOHA and ONYEBUKA, CHIDINMA
Department of Computer Science,
Abia State Polytechnic, Aba
ojuonuoha@yahoo.com, oludinma2123@yahoo.com

Abstract
During the last decade, largely due to the spread of mobile phone technology in rural areas, information and communication technologies (ICT) have demonstrated the positive and significant impact they can have on economic development by improving the business environment in rural areas. ICT provide access to market and business information, bring financial services literally to the hands of rural consumers, help local communities organize and link themselves, and, through the connection with others, exchange know-how and ideas. This paper explores the roles that information and communication technologies (ICTs) have to play in improving the economies of rural areas in developing countries, focusing particularly on those rural areas that are currently least affected by the latest advances in the _digital revolution'. Which is aimed at looking beyond the current _digital divide' debate that focuses on information disparities to assess the potential role of ICTs in the context of current rural development paradigms. It also addresses the current divergence between the technology drivers and the potential beneficiaries in rural areas in developing countries, together with the opportunities arising from the continued convergence of ICTs, old and new.
Keywords: ICT, rural areas, digital, technology, economy

1.0 Introduction

Information and Communications Technology (ICT) has become a catchword with different interpretations and viewpoints even among experts. As the name suggests, ICT encompasses all the technology that facilitates the processing, transfer and exchange of information and communication services. In principle ICTs have always been available since the advent of the printing press. The only difference is that from the late twentieth century, rapid advances in technology changed the traditional ways in which information was processed, communications conducted, and services available (Adu 2002). These technological advances have changed business operations and the way people communicate. They have introduced new efficiencies in old services as well as numerous new ones. One could even imagine to go as far as replacing the term "Post-industrial Society" with ―Information Society", that is a society where the ability to access, search, use, create and exchange information is the key for individual and collective well-being (Kaplan 2001).

In the 1990s with the rise of the Internet, many have seen ICT as a formidable tool to close the gap between the developing world and the developed world by skipping certain stages of

industrial development and leapfrogging into the Information Economy (Negroponte, 1998). The validity of this theory is yet to be proven. But detailed analysis of experience around the world reveals ample evidence that, used in the right way and for the right purposes, ICT can have a dramatic impact on achieving specific social and economic development goals as well as play a key role in broader national development strategies (Digital Opportunity Initiative, 2001). During the last decade, largely due to the spread of mobile phone technology in rural areas, information and communication technologies (ICT) have demonstrated the positive and significant impact they can have on economic development by improving the business environment in rural areas. ICT provide access to market and business information, bring financial services literally to the hands of rural consumers, help local communities organize and link themselves, and, through the connection with others, exchange know-how and ideas. However, this paper will provide a snapshot of the picture of ICT in developing countries by presenting a number of successful implementations of ICT applications. In our opinion these illustrations allow a better understanding of what has been achieved so far by giving an overview that complements the more detailed academic case studies and the theoretical frameworks and action papers provided by the big international initiatives in the domain of ICT and development.

Information and communication technologies have always been essential for the promotion of development whether such knowledge was derived from the centuries old endowment of indigenous practices or from the latest cutting-edge technologies. Today, the technologies of the information and communication revolution are those at the cutting edge and their applications offer momentous opportunities for development. They present the developing countries with enormous opportunities and challenges, not only for accelerating their development but also in helping to bridge the economic and prosperity gaps between them and the developed countries. It also presents the developing countries with a unique opportunity to leap-frog onto a higher level of development. Some developing countries have in fact made significant strides in embracing and accessing the opportunities and applications of the new information and communication technologies. Yet, billions still live untouched by the digital revolution. Only 5% of the world's population can claim connectivity and the greater majority of these are from the developed countries. Yet, only those countries with a significant level of development have been in a position to take advantage of the new opportunities.

For the majority, the new low cost technology represents a double-edged sword. On the one hand it holds out unprecedented opportunities for rapid development, but on the other, such technologies raise the level of competition too high for their current capabilities. Rather many developing countries are being bypassed as the tidal wave of the information revolution relentlessly sweeps across the world, thus running the increasing risk of being marginalized in the race for knowledge. As a result, the gap between the developed and developing countries is being further aggravated by a worsening digital divide and it holds ominous consequences for employment levels, under-development and poverty. This adverse scenario could also lead to increased national and international tensions and instabilities. We must therefore ask why and how we should redress this worsening situation. Part of the reason we believe, is that, while

ICTs have vast potential for development, the reality is that to harness these forces for promoting development is a formidable and complex task that few developing countries have found a successful formula for overcoming. First, there is the formidable expense of connectivity. These cost factors tend to inhibit the spread of information and communication technologies and undermine their universal usage. Moreover, while it may be true that certain development problems can be resolved through technological leap-frogging without having to rise through the traditional stages of development, it is also true that access to such solutions presupposes a relatively high level of development, which many developing countries simply do not have. Unless there is affordable and equitable access and adequate connectivity for the peoples of the developing countries, the prospects of effectively participating in the knowledge economy are anything but optimistic.

1.1 Rural Development and Governance

In the rural context, development does not mean the urbanization of far areas but it also involved optimum utilization of use of men (human resource), machine (technology), land (natural resource) and for sustainable economic growth and social development of the rural economies. The term rural development also represents improvement in quality of life of rural people in villages. As per Chambers (1983) ―Rural Development is a strategy to enable a specific group of people, poor rural women and men, to gain for themselves and their children more of what they want and need.‖ India is a developing country where still we have number of villages where basic infrastructure is awaited. For them government is armed with many E-governance projects to improve their living standard. ―Sustainable Rural Development can make a powerful contribution to four critical goals of: poverty reduction, wider shared growth, household, national, and global food security and sustainable natural resource management‖ (World Bank, 1997). Globally all countries are focusing more on rural development. Any improvement, in the social or economic status of rural areas would not just directly benefit rural poor but would also bring down the migration-pressures on cities and contribute by positive ripple effect in global stride towards development. (Malhotra et al., 2007)

1.2 ICT and Governance

Information Communication Technologies (ICT) can be defined as ―electronic means of capturing, processing, storing and communicating information. ICT may be computer hardware, software and networks. They also include intermediate technologies like radio and television, literate technologies like books and newspapers and organic technologies based on human body like brain and sound waves‖ (Heeks, 2002). ICT is an essential for required development in rural area because whenever any government services comes in to our mind automatically we think of long queue, several visits to government offices and also sometimes ―extra fees‖ for completion of task. And Nigeria being a developing country is in need of radical change in governance and this can only be achieved by reengineering existing governance process with the help of ICT. ICT applications can enhance poor people's opportunities by improving their access to markets, health, and education. Furthermore, ICT can empower the poor by expanding the use of government services, and reduce risks by

widening access to micro finance (Cecchini and Scott, 2003). The uses of ICT can lead the nation to overall economic sustainable development.

Experience shows that certain conditions and success factors must be in place to maximize ICT for development potential. Regulatory stability, the ease of doing business, a low prevalence of corruption, trust in ICT-processes and legal protection are among the key factors that affect the adoption and diffusion of ICT for development. A recent World Bank study (GICT and DECDG, 2006) analyzed the most common barriers to ICT adoption for companies in developing and emerging countries. This study shows that inadequate legal protection, concerns about privacy issues and lack of skills to use e-applications are among the top obstacles. While this analysis concerns the use of ICT by firms for business operations, studies that analyze the use of ICT for development show similar results. The United Nations ICT Task Force compendium ―Creating an Enabling Environment: Toward the Millennium Development Goals‖ emphasizes

> ―…in order to maximize the social and economic benefits of ICT, a favorable economic, political and regulatory environment is needed. Each of the stakeholders — governments, development agencies, international financing institutions, consumers and business — plays an important part in creating the required conditions. Governments are responsible for eliminating barriers to competition, encouraging investment in communications infrastructure, and establishing an independent regulatory authority. Development agencies could do their part by allocating sufficient resources to support the deployment of ICT in the developing world while respecting fair competition. International financing institutions can assist by giving priority to Information Society development. Industry could contribute by developing more efficient, user-friendly and affordable technologies and solutions, bringing ICT within reach of millions, and also joining various digital bridging and community involvement programs and actions‖ (Gilhooly, 2005)

Of equal importance is the need to ensure that the laws, regulations and Information Society initiatives are implemented in a transparent, consistent and effective manner. A study by Aubert (2004) on promoting innovation in developing countries highlights ―the crucial importance to go beyond the formal appearance of laws and to examine how laws are applied in practice in taking due account of the more or less informal relations regulating transaction among economic agents.‖

In other words: the adoption and use of ICT for development challenges is linked to the governance conditions that are specific to each country. Weak governance, comprising corruption and bureaucracy, was identified by executive managers in developing and developed countries as the most binding constraint for doing business in their country (Kaufmann, 2004). Although the clusters of finance, labor markets/human capital, tax regime and infrastructure also pose significant obstacles in many countries, they lag far behind the governance cluster. More generally, weak governance and prevalence of corruption distorts the rule of law, weakens the institutional foundations of countries, disrupts the provision of public services,

deters the development of markets and is thereby one of the main challenges to the effectiveness and sustainability of development efforts.

2.0 ICT A Multi-Sector Infrastructure

Many who are not familiar with the subject wonder if ICT is relevant to the poor. They argue that poor people in developing countries not only have less access to ICT, but they also have fewer schools and teachers, fewer doctors and nurses, and a lower calorie intake per capita than people in wealthy countries. At a first glance these other issues may seem more relevant the fight against poverty than access to a telephone or the Internet? In fact, the debate cannot be framed in these terms. ICT and applications that rely on it are increasingly important in the delivery of services such as health and education, in the creation of economic opportunities for poor people, and in amplifying the voices of the poor. It is not a matter of choosing between ICT and health or ICT and education, but instead that of choosing the most effective way for ICT to help in the delivery of health, education, and small business development services (World Bank, 2002). However, capitalizing on the opportunities of ICT depends not only on the existence of infrastructure and access, but to a large degree on the existence of ICT related human capacity. These capacities can be divided into three main groups, which are infrastructure related, sector application related and user related (see figure 1). First, ICT can only flourish where the capacity to provide and maintain infrastructure at a reasonable price in a sustainable way exists. Second, ICT only becomes valuable to people when useful local content is available. Therefore a new class of entrepreneurs must develop the capacity to imagine, create and maintain useful applications in different sectors that are based on ICT and make sense to the local community. Finally, users must develop the capacity to understand and use these applications.

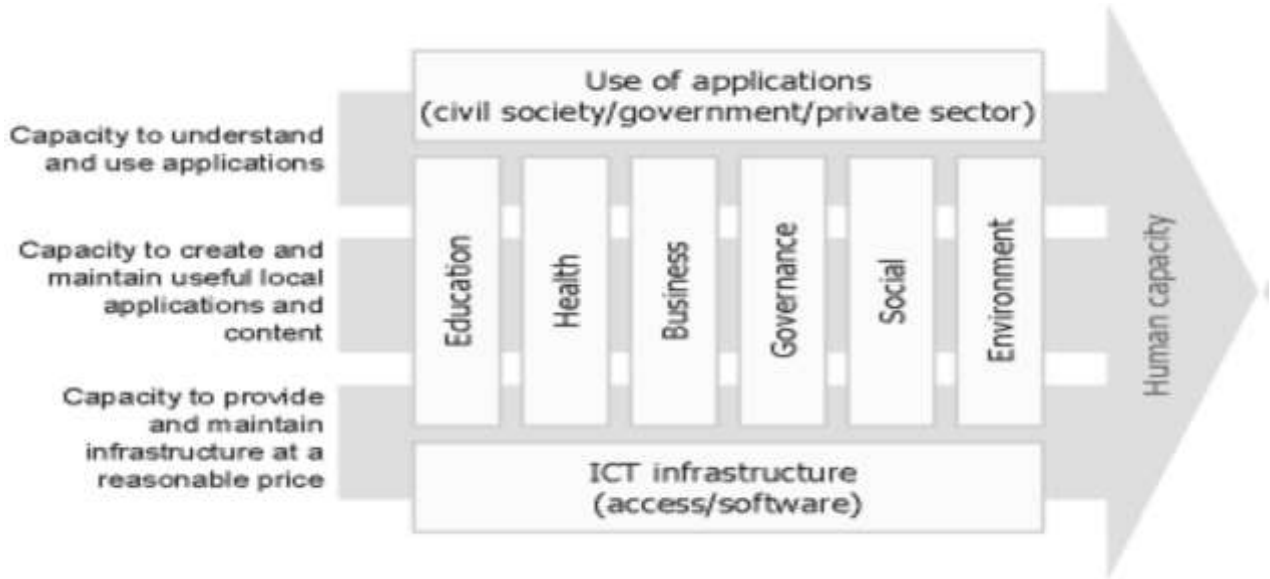

Figure 1: Cross-sectoral impact of ICT

2.1 A tool for socio-economic development

Hargittai (1999) and other studies have shown that the rate of IT diffusion is correlated to the general level of socioeconomic development. A most recent finding is that ICT plays a vital

role in advancing economic growth and reducing poverty. A survey of firms carried out in 56 developing countries finds that firms that use ICT grow faster, invest more, and are more productive and profitable than those that do not. Dabla (2004) has made comprehensive literature references enticing the relationship between ICTs and Socio-Economic Development. Similarly, Jeremy Grace et. al (2004) have deliberated the characteristics and forces in ICTs which can play a pivotal role in the economic growth of a country. These results tend to indicate that to achieve IT induced development, developing countries will have to wait until they cross the hub of per capita income growth and human development. Hence, developing countries are trapped in the vicious circle of low per capita income that leads to a low level of IT diffusion, resulting in turn in low per capita income and growth (Joseph, 2002). The same is verified by Hargittai (1999) in his study about the Internet diffusion in OECD countries. ICTs can be used to directly influence the productivity, cost effectiveness and competitiveness in industries, which is the advantage developing countries can build their economies upon. Catching up on developed economies in terms of application of technology and resulting economic benefits had never been that easier. On the other hand, the results for not being able to adopt ICTs can also be disastrous. As noted by the Noeleen Heyzer, Executive Director, United Nations Development Fund for Women ―If you look at the opportunities and the threats which exist in the context of globalization, information technology can become a tool of either decreasing the inequalities that already exist in the world or increasing it‖. But ever since the advent of computers, government policy advisors and international development agencies have pointed to the opportunities the technology opens for development.

More recently, however, the link between ICT and development has been articulated in the alarming terms of the _digital divide‘. There is concern that developing countries are deprived of the opportunities for economic growth and life improvement generally enjoyed by advanced economies because of the scarcity of ICT, particularly limited Internet connectivity. The lack of ICT is understood to be an important factor contributing to the widening of the gap between _developed‘ and _developing‘ countries, as shown by world socio-economic indicators published in the annual reports of international development agencies, such as those from the World Bank and the United Nations Development Programme (UNDP). Many high profile initiatives have been undertaken to remedy this problem. They typically aim to create awareness on the benefits of ICT, raise investment, and promote policy measures for the deployment of telecommunications infrastructures and the diffusion of ICT applications in all societal sectors.

3.0 What can ICT do for Rural Economic Development?

In rural areas of developing countries, the promotion of economic development is closely linked with income generation. Livelihood opportunities are enhanced by improving the access of small-scale producers and small businesses to markets for goods, services and commodities, to basic services (e.g. education, vocational training or finance) and to information on market conditions. Improving the business environment for rural producers in a way that allows them to participate in and benefit from local, national and international markets is a key driver for rural economic development. Improving access to markets, however, requires overcoming a

number of challenges that frequently prevent rural producers from being competitive, including:

a) insufficient market orientation of their production and dependence on a small number of economic activities,
b) remoteness and sparse population density,
c) a lack of transport infrastructure,
d) insecurity and lack of effective rule of law,
e)inadequate infrastructure and basic services,
f) dysfunctional land and property ownership structures.

Over the past decade, ICT applications have demonstrated in a series of examples across the developing world that they can be powerful tools to bridge the gaps described above. Moreover, they can play a significant role in fostering efficiency, productivity and innovations in rural areas. ICT can provide rural businesses with access to information (e.g. on price, market conditions or ―know how‖) as well as financial and non-financial services (e.g. business development services). In particular, it can be a major driver in enhancing access to agricultural financial services thereby directly contributing to improvements in agricultural productivity and food security. At the same time ICT generate new business opportunities and improve the business enabling environment by reducing transaction costs and improving the investment climate. By connecting rural areas more closely to national and global information, knowledge, or social networks, new mobile technology can motivate young entrepreneurs to stay in these regions.

But given the importance of Information and Communication Technologies (ICTs) in national development, countries across the globe have put in place mechanisms such as Universal Service Funds and other forms of Government intervention to achieve Universal Access to ICTs. These focus inter alia on bridging the digital divide between urban areas/populations and rural areas/populations. The significance of bridging this divide in developing countries stems mainly from the fact that rural areas often lack or lag behind urban areas in terms of essential infrastructure and services such as transportation, health, education and government services. This creates a politically and ethically unacceptable inequality of services and opportunities for rural populations and prevents them from participating appropriately and fully in socio-economic and political life of the nation. Rural isolation and deprivation can negatively impact growth and certainly growth cannot be sustainable unless it is inclusive. This is especially true of a nation like India where more than 70% of population resides in rural areas and is largely engaged in low productivity agriculture and allied activities. ICTs can overcome many infrastructural constraints. Through ICTs people in rural areas can connect with the local, regional and national economy and access markets, banking/financial services and employment opportunities. ICTs also serve as a instrument of awareness creation and feedback giving rural people a voice in the nation‘s sociopolitical life. ICTs can act as a channel of delivery of e-Government services including

health and education. Thus bridging the digital divide also bridges the overall infrastructural gap and addresses other constraints faced by rural areas. ICTs can help mainstream rural populations.

3.1 How Can ICT Advance Economic and Social Development?

One fundamental question raised in the ICT for development debate is whether the usage of ICT can enhance economic growth and promote social development. According to a recent World Bank study, the appropriate use of ICT can indeed play a very important role in advancing economic growth and reducing poverty (GICT and DECDG, 2006). A survey of firms carried out in 56 developing countries found that enterprises that used e-mail to communicate with their clients and suppliers grew 3.4 percent faster per year in terms of sales and 1.2 percent faster in terms of employment creation than those that did not (GICT and DECDG, 2006). The summary of this finding is as reported:

- ICT plays a vital role in advancing economic growth and reducing poverty. A survey of firms carried out in 56 developing countries found that firms that use ICT grow faster, invest more, and are more productive and profitable than those that do not.
- Over the past 25 years, developing countries have considerably increased ICT access, especially for telephone services. Between 1980 and 2005, the number of telephone subscribers in developing countries increased by over 30 fold. In 1980, developing countries accounted for only 20 percent of the world‘s telephone lines. In 2005, 60 percent of telephone lines globally were in developing countries. This expansion has been driven by the technological revolution of mobile telephony, as well as by increased private sector competition.
- Opening up to private sector competition has led to huge inflows of investment from overseas. Between 1990 and 2003, 122 of 154 developing countries received about USD $200 billion in foreign investment for telecommunications alone.
- While the transition to well-regulated and competitive service provision is important for increasing ICT access, there is some way to go in this transition. For example, nearly half of countries globally retain monopolies on the service provision of ICT.
- While the developing world has seen huge progress in the rollout of basic ICT infrastructure, the picture is more mixed for the advanced use of ICT. Worldwide, Internet use more than quadrupled between 2000 and 2005, but differences in the number of secure Internet servers, a proxy for the availability of e-commerce, remain stark. While developed nations on average reported more than 300 secure Internet servers per 1 million people, developing nations reported less than 2.
- There is a continued need for government and private sector support of initiatives that extend ―access‖ to ICT. The report describes innovative examples of public-private partnerships that can extend access to ICT in rural and remote areas.
- A review of 40 national e-strategies from developing countries found that more than 85 percent of these strategies aim to expand ICT use in governments and schools, expand telecommunications infrastructure, and provide for an adequate legal and regulatory framework.

- Although many countries have made large advances in the area of ICT, more work is needed to use ICT as an effective tool for development. The report calls for ―e-strategies‖ to develop clear cross-sectoral objectives and specific interventions with clarity in terms of budget and responsibility.
- The report also recommends that countries should increase efforts to collect and share ICT data, and the international community can help facilitate the improved coordination of such efforts.

3.2 Challenges of ICTs Role In Rural Development

The role of ICTs in rural development is faced by many challenges, which include the following:

Unavailability of Electricity

Critical to the use of ICTs for rural development in Nigeria is the availability of electricity. Many rural areas in Nigeria have no access to electricity. In some places where solar power has been experimented, this has largely been unsuccessful due to lack of proper maintenance on the part of the local people. The poor electricity power supply also account for the overconcentration of ICT centres in places where they are mostly connected to the national grid for regular supply of power.

High Cost ICTs Equipment

Another challenge in ICTs for rural development is unavailability and affordability of computers and other equipment, as well as their maintenance. At present, the major means of access to ICTs in the rural areas is through the few telecentres that have been established in these areas. Even then, there is a major disadvantage because most of them are mainly located in the local government headquarters (Falch, M. 2004). In areas where ICT facilities are available, there have been problems when they break down because of lack of spares parts to replace equipment or the skill to repair the equipment.

Low Literacy Levels and Lack of ICT Personnel

Literacy rates are very low in rural areas in Nigeria. The situation gets worse when it comes to computer literacy. There are fewer computer-literate personnel in the rural areas compared to the urban centres. On the other hand, if farmers are to make good use of ICTs, the Extension Officers who advise and train farmers need to acquire more knowledge and skills in ICTs. As this is presently not the situation, it has created a negative effect in the use of ICTs in the rural areas of Nigeria. In relation to rural development, one major target group is women. They form a large proportion of the workforce in these areas. They also make up the largest number of illiterates in these communities. In the area of ICT, there is an even smaller number of women in rural areas capable of making use of these facilities.

Lack of Telecommunications Services

The provision of ICTs in rural areas in Nigeria also requires access to telecommunication services. However, as in the case of electricity, most of the telecommunication services are highly concentrated around the regional and district

capitals. Telecommunication companies are reluctant to move to the rural areas due to lack of electricity and fear of incurring loses.

Internet Access

There is also the problem of access to the Internet in the rural areas in Nigeria which is a major pre-requisite to the provision of effective telecommunication services to these places. Owing to the small number of Internet Service Providers (ISPs), access to the Internet is very expensive and highly limited to a few urban areas. A number of small businesses known as communication centres or internet cafes provide public access to Internet services. This confirms the assertion by Ahiabenu II as quoted by Frempong et al. (2006) that most of those using the Internet gain access at collective access points such as work, school or cyber cafes. But most rural areas are largely cut off from these services.

Local Content

Poor local content and unavailability of instructional manuals in local languages is also a major challenge in the role of ICTs in rural development. Statistics indicate that over 85 percent of the content on the internet is in English. Thus, if one is not literate in English, there is very little or no benefit to be derived from the internet (ITU 2011). The problem of local content is compounded by the multiplicity of languages. Each tribe has rich information that can be harnessed for development. However, because of the oral nature of information provision, transfer of information from one tribe to another is often difficult (Alemna, 1998). The same problem arises when some technical terms have to be translated from English to a local language. This is not even to mention the fact that many local languages use characters that are not found on computer keyboards.

User Acceptance

Another challenge is user acceptance of ICTs in the rural areas. It is often taken for granted that any technology transfer to the rural areas would be accepted. What is often forgotten is that the rural dwellers have their own established cultural and traditional ways of doing things. Any outside imposition of ideas or systems might therefore not be easily accepted. While recommending the need for sensitization, it should also be noted that information available through global networks must have some technical relevance for people living in rural areas.

4.0 Conclusion

Information and communication activities are a fundamental element of any rural development activity. Creating information-rich societies is a key element of poverty alleviation and sustainable development. While education and training develop cognitive skills, it is information that gives content to knowledge. The importance of information for development is undoubted but important issues surround whose reality the information reflects, who is able to make use of that information and for what purpose. The role and potential of ICTs for rural development, it is useful to distinguish between knowledge gaps that refer to unequal distribution of technical knowledge and information problems, both of which contribute to underdevelopment. ICTs have the potential to address both these barriers to rural development by facilitating improved knowledge sharing and information exchange. However effective application of these technologies requires greater understanding of both the potential of the technologies in question and the social, political and cultural context in which they could be used. A number of simple approaches to ICTs are being developed in this way and the

opportunities for experimentation and creative adoption of ICTs are likely to grow as the technologies become increasingly flexible.

Although it has been argued that ICT can contribute to poverty reduction, if it is tailored to the needs of the poor and if it is used in the right way for right purposes and complemented with required reforms. Like all technologies, ICT offers tools and applications but no solutions. The solutions to the problem of poverty are what they have always been: economic growth, enabling infrastructure, the creation of livelihoods, social capital, education and healthcare, and sufficiently democratic government to ensure that economic benefits are not cornered by the powerful elites. By providing cheap and efficient tools for access to information and exchange of ideas and knowledge, ICT can become an enabling tool for wider socioeconomic development. When properly used, it can greatly increase the ability of the poor people to benefit from economic development and from development programs meant to help them.

References

Adu, B. (2002) "Building a National Consensus for Sustainable and Business Friendly ICT", *African Telecom Summit 2002*, Accra, Ghana, 12-14 March

Alemna, A.A. (1998) Information in African society. *Information Development,* 14 (2), p. 69 72.

Aubert J.E (2004). *Promoting Innovation in Developing Countries: A Conceptual Framework*. Washington DC: World Bank Institute.

Castells, M. (1998) "Information Technology, Globalization and Social Development", *UNRISD Conference on Information Technologies and Social Development* http://www.unrisd.org/infotech/conferen/castelp1.htm

Cecchini, S and Christopher, S. (2003). Can information and communications technology applications contribute to poverty reduction? Lessons from rural India, Information Technology for Development, Vol. 10, Issue 2 (2003): 73 – 84.

Chambers, R. (1983). Rural Development: Putting The Last First, Robert Chambers, 147.

London: Longman, 1983.Chariar, V.M. (2005), Rejuvenating Traditional Knowledge Systems of India‖ (unpublished).

Dabla, A, (2004)―The role of IT Policies in promoting social and economic development: The case of the state of Andhra Pardesh, India,‖, *EJISDC* 19, 2004, 5, 1-21

Digital Opportunity Initiative, (2001) "Creating a Development Dynamic: Final Report of the Digital Opportunity Initiative", Accenture, Markle Foundation, UNDP.

Elsevier, UNDP-APDIP, An Overview of ICT Policies and e-Strategies of Select Asian

Economies, 2004, p.46

Falch, M. (2004) Telecentres in Ghana. *Telematics and Informatics*, 21, p. 104.

Frempong, G.K. et al. (2005) Towards an African e-index:household and individual ICT access across 10 African countries. Chapter 6: Ghana. [online]. Available at

http://link.wits.ac.za/papers/e-index-ghana.pdf.

Gilhooly D. [Editor] 2005. *Creating an Enabling Environment: Toward the Millennium Development Goals, Proceedings of the Berlin Global Forum of the United Nations ICT Task Force.* New York: United Nations ICT Task Force.

Hargittai, E.(1999) "Weaving the Western Web: Explaining Differences in Internet Connectivity Among OECD Countries", *Telecommunications Policy*, 23, 1999, 701–718,

Heeks, R. (2002). i-Development and not e-Development, Special Issues on ICTs and Development, Journal of International Development : 141-151.

International Telecommunication Union.(2005) Basic Statistics. [online]. Available at http://www.itu-int/ITU-D/ict/statistics/at-glance/basic. Accessed 4th Deember, 2011.

Jeremy, G, Charles K and Christine Q(2004) Information and Communication Technologies and Broad-Based Development: A Partial Review of the Evidence. Washington DC: World Bank Working Paper No. 12. January 2004

Joseph, K.J. (2002) ―Growth of ICT and ICT for Development‖, United Nations University, Discussion Paper No. 2002/78, August 2002

Kaplan, D. (2001) "Defining the Information Society, Initial Preparatory Workshop", *United Nations World Summit on the Information Society*, Coppet, Switzerland, 5-6 December

Kaufmann D. 2004. ―Corruption, Governance and Security: Challenges for the Rich Countries and the World‖ in *The Global Competitiveness Report 2004/05*, A. LopezClaros, M. E. Porter, X. Sala-i-Martin, K. Schwab, 83-103. Geneva: World Economic Forum.

Malhotra, C, Chariar, V. M, Das, L. k and Ilavarasan, P. V. (2007) ICT for Rural Development: An Inclusive Framework for e-Governance.New delhi,India : computer society for India

Negroponte (1998) "The Third Shall Be First", *Wired Magazine*, issue 6.1., January, 1998

The World Bank Report. (1997). Rural Development: From Vision to Action – A Sector Strategy. Washington D.C.

World Bank (2002) "Information and Communication Technologies, A World Bank Group Strategy", The World Bank Group, Washington D.C.