

Critical Issues in Information and Communication Technologies for Rural Development in Ghana

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INTRODUCTION

Information and communication technology (ICT) refers to systems for producing, storing, sending and retrieving digital files (Bartlett, 2002). These files can contain text, sounds and images, both still and moving. Information and communication technologies, and particularly the Internet, are transforming all human activities dependent on information, including those in rural areas.

In the developed world, the ICT revolution has affected every sphere of life and has been of immense benefit to the people. In India for example, information exchange by electronic means has revitalized the role of extension services in providing information, education and decision-making assistance to agricultural producers. The use of ICTs could therefore complement the conventional agricultural extension methods in rural areas in Ghana.

ICT INFRASTRUCTURE IN GHANA

In response to global policy changes in the ICT industry, Ghana was among the first African countries to reform its ICT sector and establish the necessary legal and regulatory frameworks to support the growth of the sector. Since 1990, the government of Ghana has liberalized the telecommunications sector with the aim of enabling the private sector to participate in the provision of services to increase access and coverage, introduce value-added services and boost consumer access to the state-of-the-art technology (Frempong and Atubra, 2001).

The liberalization policy was based on a 5-year accelerated development programme (ADP) for the telecoms sector, introduced in 1994. It aimed to increase teledensity from 0.31 percent to about 1.5–2.5 percent through provision of public and private payphones; improve public access in rural and urban areas; expand

coverage of mobile services; promote Ghanaian ownership of telecommunications companies; and retain overall public regulatory control of the sector through the creation of a single agency (Frempong et al., 2005).

By 2000 the ADP had achieved an increase in teledensity from 0.34 lines to 1.16 lines per 1,000 inhabitants, public phones from 0.001 to 0.16 per 1,000 inhabitants. A Second National Operator (SNO), Westel, was licensed, and numerous private FM and TV stations were operating (Wilson III, 2005).

The government of Ghana introduced its ICT4AD policy in the latter part of 2003. According to the basic premise of the policy, Ghana's development process can be accelerated through the development, deployment and exploitation of ICTs within the economy and society. The overall of ICT4AD was to engineer an ICT-led socio-economic development process with the potential to transform Ghana into a middle-income, information-rich, knowledge-based and technology-driven economy and society (Ghana Government, 2003).

Access to telephone services improved considerably in the early stages of liberalization, and until recently landlines dominated the telecoms landscape in Ghana and have had a sustained growth. The mobile phone market has been one of the fastest growing sectors of ICT in Ghana. In spite of the inroads made by mobile telephony, there is still a huge demand for landlines, with more than 180,000 people on the waiting list at the end of 2002 (Frempong et al., 2005).

The emergence of new wireless and satellite-based solutions is positioning the country to take advantage of the benefits to be derived from ICT (Cobbinah, 2003). The use of computers has increased tremendously in the past 5 years, while the number of Internet Service Providers (ISPs) has also increased. At the end of 2005, the National Communications Authority (NCA) had licensed a total of 114 companies to provide Internet services in the country. Of these, only 27 had actually commenced (National Communications Authority, 2006).

While Internet penetration in Ghana seems very low according to ITU Basic ICT Statistics (International Telecommunication Union, 2005), the number of Internet users per 10,000 inhabitants increased to 172 in 2004, which is higher than the African average of 123.21 (Frempong et al., 2005).

Unfortunately, ICTs have not played major roles in the development of rural areas in Ghana. Although a few advantages, such as efficient and effective communication systems for socio-economic development, easy and efficient information gathering, storage and dissemination, easy and fast access to information for various purposes have been derived from ICTs, rural dwellers rarely have direct access to them, and even in areas where they are available, they are hardly affordable to the rural dweller. With most rural dwellers subsisting on less than USD1.00 per day, it is difficult for them to pay USD0.30 per minute to make a telephone call from a communication centre.

INFORMATION NEEDS OF RURAL AREAS

Rural people constitute about 62.9 percent of the population in Ghana. They mainly depend on subsistence agriculture and often lack access to basic needs such as water, food, education, health care, employment and sanitation (Alemna, 1993). These have led to life expectancy at birth of 54.4 percent and an infant mortality rate of 59 per 1,000 live births in these areas. These conditions also result in their migration into urban areas, often in search of formal employment and a better life.

A study of the information needs and information seeking behaviour of rural dwellers in Nigeria indicated the following as their information needs (Momodu, 2002):

1. **Agricultural Information** – from ‘where to purchase fertilizers’ to ‘how to use them’, information on pesticides, herbicides, storage ... to information on speedboats, net making.
2. **Health Information** – how to handle the outbreak of certain epidemics, where to get the best treatment for different ailments ... to what they can do by themselves to get good health facilities.
3. **Political Information** – traditional leadership; civic rights; political parties, voting rights, etc.
4. **Community Development Information** – viable self help projects, how to mobilize people for the projects, what government agencies to contact and to lobby, etc.

5. **Educational Information** – school calendar, opportunities for educational self development, higher education and how it affects children ... adult education, continuing education, etc.

Furthermore, rural dwellers also require economic (industries; services; marketing, etc.), social (education; religion; culture, etc.) and environmental (natural resources; ownership rights, etc.) information.

POTENTIAL ROLE OF ICTS IN RURAL AREAS

One of the main attractions of ICT in rural areas in Ghana has been the ability to get in touch with relatives abroad. This accounts for the emergence of communication centres in the country. Most people in rural areas rely on communication centres for access to telecoms services, but the popularization of mobile telephone kiosks in the country may reduce this (Frempong et al., 2005). Before such ICT developments, contacts were mainly by post and personal contacts.

However, there have been other roles that are gradually taking shape. There are now some rural micro-finance institutions, for example, that are paying greater attention to the adoption of improved management information systems, with the aim of reducing administrative costs and increasing service quality.

The decentralization of government in Ghana also means that rural areas must be capable of playing the new roles prescribed by the central government. Some of these include the promotion of rural tourism which is done better and more cheaply with the use of webpages than traditional advertising media, participation in governance at the local level through the district assemblies and initiation of development projects with funds generated at the local level.

The introduction of distance education in Ghana provides learning opportunities to rural people, who, because of geographical distance to the centres of education or for limited financial resources, would be otherwise excluded from the educational system. The use of radio, television and video in education is now common in Ghana. Currently there are only three universities which offer distance education programmes. The University of Cape Coast and the University of Ghana took off in the 2001/2002 academic year with diploma programmes in Basic Education and Youth in Development Work, respectively. The University of Education Winneba started earlier in 1996 and offers a Post-Diploma Bachelor of Education (BEd) degree in four subject areas, namely: English Education,

Life Skills Education, Mathematics Education and Science Education (Mensah and Owusu-Mensah, 2002). There are at the moment seven Study Centres in the country which are based on the main campuses of the universities and in some district capitals. Computers have been acquired for the Study Centres so that both tutors and students can make use of them to facilitate effective teaching and learning.

Information and communication technologies contribute to improving the coverage of national health services in rural areas (Zappacosta, 2001). The application of ICTs to health-care delivery, called telemedicine, enables access to professional expertise irrespective of the geographical location of the patient or the doctor.

There is also the important role played by ICTs in gathering and updating information from rural areas to help the central government to build databases on issues such as climate, pollution, food production and deforestation. In particular, satellite and remote sensing technologies are increasingly being used for planning purposes.

Another role of ICT in rural development is in the area of entertainment. Different forms of entertainment can now reach rural villages through the diffusion of ICTs such as radio and video (VHS cassettes and DVD) and television broadcasting. This has not only improved the quality of life for rural people, but has also reduced their isolation and cultural distance from urban areas. In spite of the fact that most rural people lack electricity, they have an ingenious way of receiving transmission by using dry cell batteries for their radio and car batteries for the television set.

ICTs have also enabled non-governmental organizations (NGOs) that are based in rural communities to gain visibility at regional, national and international levels. Rural NGOs are widely and effectively using ICTs, particularly e-mail, to contact people and international organizations, to organize events, to coordinate actions and to establish networks.

CRITICAL ISSUES

In order that a country can utilize ICTs effectively for rural development, a strong policy framework is needed. Fortunately, Ghana has an ICT policy. According to the policy, the government shall encourage, promote and support the implementation of nation-wide ICT systems for development. This includes the modernization of agriculture to encourage

rural development in order to achieve long-term growth in the agricultural sector and the economy as a whole (Ghana Government, 2003). The policy also aims at promoting and facilitating the development of the physical and social infrastructure, targeting the rural areas to support the development of the agricultural sector.

Another important factor in ICTs for rural development is the availability and affordability of computers and other equipment. At present, the major means of access to ICT in the rural areas is through the few telecentres that have been established in these areas. Even then there is a major disadvantage because outside the national capital Accra, telecentres are mainly located in the regional and district capitals (Falch, M. 2004). In areas where ICT facilities are available, there have been problems when they break down because of lack of spares to replace equipment or the skill to repair the equipment.

Critical to the use of ICTs for rural development in Ghana is the availability of electricity. Many rural areas in Ghana have no electricity. In places such as Kpassa in the Volta region and Wachau in the Upper East region, where solar power has been experimented with, this has largely been unsuccessful due to lack of proper maintenance on the part of the local people. The poor electricity facilities also account for the over-concentration of telecentres in district and regional capitals.

Literacy rates are very low in rural areas in Ghana. The situation gets worse when it comes to computer literacy. There are fewer computer-literate personnel in the rural areas. On the other hand, if farmers are to make good use of ICTs, the staff who advise and train farmers need to have 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 Ghana.

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. It is therefore encouraging to note that the Ghana ICT policy intends to support the strategic use of ICTs to strengthen women's networking initiatives and community-based activities that defend and protect the rights of women to participate equally in civil and public life (Ghana Government, 2003).

The provision of ICTs in rural areas in Ghana also demands access to telecommunication services. Following the liberalization and subsequent privatization of telecommunication services in 1994, Ghana has experienced a substantial growth in the penetration of telecom facilities. In addition to this, mobile phone services have increased, and there is a tremendous growth in public pay phones. However, as in the case of electricity, telephone lines are highly concentrated around Accra and the regional and district capitals. Mobile telephony has made an impressive entry into the telecoms market. This versatile technology outstripped landlines within 10 years of its inception and is now triple that of fixed. In a recent study on mobile telephony in Ghana (Frempong et al., 2006), it was noted that the majority of mobile phone users (about 83 percent) were from the major towns in the country, 16 percent from other urban areas and an insignificant 0.4 percent from rural areas. The trend cannot be disputed because most of the operators have concentrated their services in the major cities and towns, where there is a huge market for their services. This is also confirmed by the urban-based pattern of telecoms development in Ghana and other developing countries.

As a sequel to the provision of telecommunication services, there is also the problem of access to the Internet in the rural areas. Owing to the small number (27) of Internet Service Providers (ISPs), access to the Internet is very expensive and highly limited to a few urban areas. Apart from some tertiary institutions like the University of Ghana and the Kwame Nkrumah University of Science and Technology that are able to provide Internet access, a number of small businesses known as communication centres also 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 cafés. But most rural areas are largely cut off from these services.

The unavailability of local content is also a critical issue in ICTs for rural development in Ghana. Statistics indicate that over 85 percent of the content on the net is in English. Thus, if one is not literate in English, there is very little or no benefit to be derived from the net (Alemna, 1999). The problem of local content is compounded by the multiplicity of languages in Ghana. Each tribe in Ghana has rich information that can be harnessed for development. But 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 languages in Ghana use characters that are not found on computer keyboards. Development and production of keyboards in the major Ghanaian languages is therefore essential. In order to improve access to indigenous and modern knowledge, the key lies in creative mechanisms for content development. Internet content should be produced in ways that are easily understood by rural people with low literacy, including streaming media, audiovisual and web-casting formats (Gyamfi, 2005).

Another important issue is the 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.

CONCLUSION

There is a great potential for the use of ICTs for rural development in Ghana. Unlike some other African countries, there is an ICT policy in Ghana which indicates the government's commitment to support ICT programmes in the rural areas. What is required now is policy implementation with emphasis on the provision of information to the rural areas.

One of the ways of improving access to ICT in the rural areas in Ghana is through the promotion of community ICT Centres. This has the advantage of mass usage, maintenance, the security of both service and equipment and the easier collection of charges. Individual communities should be assisted to build their own knowledge centres where indigenous knowledge is combined with exogenous knowledge to improve livelihoods.

The government alone cannot carry out this programme. Support is needed from various non-governmental organizations in this area. In all this, the urban-rural disparity in the distribution of ICTs which has created a localized digital divide must be considered.

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Abstract

Information and communication technologies (ICTs) hold tremendous potential for rural development in Ghana in the areas of agriculture, health, education and small scale industries. However, issues such as the availability of ICTs, electricity, literacy, telecommunications and content have to be addressed before any benefits can be obtained from ICTs for rural development.

Keywords: Information and communication technology; Rural development; Ghana

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MORE ON ICTS IN GHANA

ICT in distance education in Ghana

Martey, Alfred. *Library Hi Tech News*; 21 (5) 1 May 2004, pp. 16–18.

This article describes the ICT scene in Ghana from 1996 to 2004. The emphasis is on the benefits that distance learners in Ghana will derive from an ICT-enhanced distance education. The article also draws attention to the efforts made by various governments of Ghana and some agencies to solve the major problems facing ICT-driven distance education in Ghana. The attention of Distance education providers are made aware of the minor but disruptive operational hindrances to the use of ICT. Some suggestions are made as to how academic libraries in Ghana can assist distance learners now. (Original abstract)

(Box continued)

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Black star: Ghana, information technology and development in Africa

Zachary, G Pascal. *First Monday*; 9 (3) Mar 2004, no page numbers

The full text of this electronic journal article can be found at [URL:http://www.firstmonday.org/issues/issue9_3/zachary/]. Accra, the capital of the West African country of Ghana, is technologically marginalized but over the past ten years, the introduction of the Internet, wireless technology and freer radio broadcasts have vastly expanded communications and information. The Internet is widely available. Email usage is soaring. Wireless telephony is growing rapidly. Radio stations are proliferating. Once mired in information poverty, the people of Accra, Ghana now face the challenge of using information and connectivity to their best advantage. In examining how Accra adapts to technological change, we gain a better understanding of how people in poor African cities use technology and what they want from it. Debates over the so called digital divide can be enriched by close studies of lived experience in parts of the world where the revolution in information technology remains more prospect than reality.

Tele-centres as a way of achieving universal access: the case of Ghana

Falch, M; Anyimadu, A. *Telecommunications Policy*; 27 (1/2) Feb/Mar 2003, p. 21–39

Article included in a special issue devoted to the theme: Telecommunications in Africa. Creation of a countrywide network of telecommunications-based information centres ('tele-centres') offers a low cost opportunity to empower local communities in developed and developing countries to meet the challenges of the information society. Presents a field study of how tele-centres in Ghana have contributed to universal access and discusses their potential impact on rural development.

(Selected by the Editor from *Library and Information Science Abstracts*)