THE INSTITUTION OF ENGINEERS TANZANIA
AND THE ENGINEERS REGISTRATION BOARD

24th NATIONAL CONFERENCE

ON

THE ROLE OF ENGINEERING IN ACHIEVING THE NATIONAL STRATEGY FOR GROWTH AND REDUCTION OF POVERTY

6th - 7th December, 2007

Kunduchi Beach Hotels and Resort, Dar es Salaam, Tanzania.

EXPLOITING ICT FOR ACCELERATED DEVELOPMENT IN TANZANIA

S.T. Wara, I.R. Ilaboya, F.K. Hymore, E. Njugbwen And A. Abayomi - Alli
Center For Information And Communcation Studies: Gen. Abdusalam. A. Abubakar College Of Engineering. Igbinedion University, Okada. Pmb 0006, Benin City, Edo State. Nigeria.

ABSTACT
ICT plays a great role in nation building today. Its relevance in rural development cannot be overemphasized, owing to it's immerse contributions through the use of services made possible by new technological developments. A comprehensive analysis on the status of ICT in Tanzania was carried out; this analysis was done to ascertain the depth to which ICT has gone in the country. Factors hindering a progressive ICT in Tanzania were also studied, analyzed so as to proffer concrete solutions to them. Also highlighted in this research paper are the potential uses of ICT coupled with the role of ICT in human development and reduction of poverty which is the focal point of the research work. It was discovered at the end of the research, that though Tanzania has embraced ICT in most areas, some other areas still needs attention. The paper highlights among others the need for proper awareness on the relevant of ICT to human and economic development and also the need for manpower development to ensure maximum exploitation of ICT in Tanzania.

Key words: ICT, Human Development, Poverty reduction, Awareness creation and Urban and Rural development.

1.0 INTRODUCTION

Unfortunately, most developing countries are on the losing side of the accessibility to information and communication technology (ICT). This trend is much more pronounced in developing countries, particularly those in Africa, where access to ICTs remains limited. It is even more pronounced in the traditionally excluded population that resides in rural areas of the region and that makes up 70% of the population. In the World Telecommunications Developments Report, 1998, access to communications is considered to be a basic human right. Accessibility issue can be assessed on the basis of tele-density and also on Internet penetration, assess to computers and data services by households, public institutions, private sector, etc [1]. ICT permeates almost every aspect of society and life and their impact is usually accessed by looking at the way they are used, not by how much they are used. In Nigeria for instance, the use of manual typewriter is still a common feature and even when computers are available, they are commonly used as stand-alone computers, which are not connected to the Internet or Local Area Network (LAN). The development in most developing countries in Africa towards provision of local Internet services shows a positive trend. However, Internet penetration, especially in rural areas in Sub-Saharan Africa, is still very low [2]. A measure used in assessing the level of accessibility to telecommunications facilities is the level of technological divide that exists between rural and urban areas. Data reveals that in most developing countries, a larger percentage of the total telephone lines are located in major cities and that provision of these services is biased towards urban user [3]. This has further widened the Digital Divide gap. ICT (Information & Communication Technology) finds a significant place in rural development, not only in terms of technological advancement but also in terms of reducing poverty. Information Technology, more precisely the Information and Communication Technology (ICT), has emerged world over as a technology of the new millennium. By augmenting the process of information exchange and reducing the transaction costs, this ubiquitous technology will be instrumental in increasing productivity, efficiency, competitiveness and growth in all spheres of human activity [4]. The potential benefits of ICT, however, can be harnessed only if the technology diffuses across the different sectors of the society. Unfortunately, we are living in a world of 'digital divide' wherein half of the world populations have never made a telephone call. The digital divide is not only an international problem, but for most developing nations including Tanzania, it is also a national phenomenon. Nonetheless, it has been argued that in an era of globalization, the ability to harnes this technology for the 'rural' improves the capability of the developing country [5].

2.0 STATUS OF ICT IN TANZANIA

Tanzania tele – density is low, with the number of fixed and mobile standing at 12 telephone lines per 10(people (i.e. a tele – density of 1.2) and the number of mobile phone subscribers currently stands at 81 p 10,000 inhabitants. In contrast, the city of Dar es Salaam has 5 fixed lines and 10 mobile phone subscrit per 100 people. Tanzania Public Switched Telephone Network (PSTN), has reached 95% digital, but

coverage is only limited to the urban areas and thus lack of telecommunications and other infrastructures in the rural areas remains a basic impediments to the provision of such new ICT services. Internet services in Tanzania are relatively very scarce and quite expensive. This may be due to the fact that the present data operators have isolated initiatives of connecting their points – of – presence (PoPs) to the global internet backbone. All connections regardless of the data service provider are small capacity international links that connects to the global internet back bone in countries such as Norway. Hence the limited international bandwidth is scarce and extremely very expensive. Isps stands at 23 providing between 10,000 to 15,000 dial – up accounts. Available e – readiness studies suggest that there is large unsatisfied demand in the country for internet access. Overall, Tanzania has a small emerging skilled capacity to support the ICT industry in terms of developing, selling or supporting hardware and software. Currently, very few educational institutions have computer labs and other multi – media facilities. At the university and other tertiary institutions, very few computers are available for use by students and academic staffs, coupled with the very low capacity of human capital in the use and maintenance of ICT. Internet access bandwidth at the institution is limited ranging from 32Kbps – 512Kbps. So far, there has been remarkable progress in the status of ICT in Tanzania. Key statistics indicators benchmark at Tanzanian independence reveals the following data (6).

Table 1: Progress of ICT in Tanzanian. (1961 – 2002)

INDICATORS	1961	1993	2002
Population (in million)	12.3	26.7	33.6
Fixed line exchange capacity.	11,300	125,703	234,640
Mobile operators	Nil	1	4
Mobile subscribers	Nil	1,500	700,000
Teledensity (lines per 100 people)	0.10	0.32	1.22
Data communication operators	Nil	Nil	16
Internet service providers	Nil	1	23
Internet subscribers (Dialup accounts and wireless)	Nil	10	14,000
Internet capacity (total bandwidth Kbits)	Nil	64	44,000
Television licenses	Nil	1	24
Radio broadcast licenses	1	2	18

Though there is every course to celebrate, but considering the time frame (41 years of independence) one could be force to say that the progress so far is remarkably too slow and needs attention. Solutions to problems are best analyzed by first identifying some of the factors hindering a progressive ICT world in Tanzania.

2.1 FACTORS HINDERING A PROGRSSIVE ICT IN TANZANIA

A critical divergence into the status of ICT in Tanzania reveals that progressive ICT development has being hampered by the following constraints.

1. Awareness on the potential uses of ICT. Most people in Tanzania especially those in the rural areas do not have knowledge of what ICT can do for them vis a vis the advantages and business prospect that ICT can offer (7).
2. Computer studies syllabus and computer laboratories in most secondary schools which would have form a solid beginning for ICT at the grass root level is not properly planned. Some of the available computer laboratories are faced with problems of insufficient computers to meet the demand, or some of the computers are rather not functioning (2).
3. Training the Trainers programme not available. This results in lack of adequate man power to train people on the uses / maintenance of computer hardware. Software trainers are very limited. This problem has been identified as the major reason for the stunted progress in ICT development in Tanzania.
4. Very small unsatisfied demand for internet access caused by acute bandwidth problems. Bandwidth is very low and cannot carry the internet demand of the entire country coupled with unavailability of credit card and master cards making internet transaction almost impossible (3).

5. Poor policy which do not encourage or create the required enabling environment for ICT development in Tanzania. Present Policies do not create partnership in ICT among civil society and all other stake holders at the local, national and international levels (2).
6. Poor leadership. Tanzania ICT environment needs leaders that will takes into account the multi – sectoral nature of ICT itself.
7. Lack of adequate and reliable power supply. This has crumble most of the ICT initiatives and has also made internet access very limited and highly expensive (8).

2.2 THE WAY FORWARD: TOWARDS A BETTER ICT ENVIRONMENT IN TANZANIA

Unless substantial changes take place in the way information and its underlying technologies are perceived and applied, the effectiveness of ICT interventions will remain somewhat limited. Awareness must be built and best practices and knowledge shared to induce new thinking on the importance of information especially for human development and the empowerment of the underprivileged. Policies that would help raise awareness must be put in place. Tanzania government should also make strategies that would help expand rural use of ICTs. Poverty reduction is important if the use of ICTs in the country must increase. A lot of rural dwellers in Tanzania have been deprived of the information and access needed to participate in and benefit from activities and services of the society at large. Appropriate ICT infrastructure should be established immediately, both in the public and private sectors (9). There is need for provision of funds for improvements of social infrastructure like electricity, transportation, roads, water etc. Investing in infrastructure is vital in the move towards progressive ICT in Tanzania thereby harnessing the full benefits of the information age. Youth should also be exposed to Internet usage because they have the greatest share of the ICT cake. Developing countries can help bridge the Digital divide by making the use of IT mandatory at all levels of educational institutions through adequate financial provision for tools and resources. As at the year 2000, more than 90% of academic institutions in Nigeria do not have Internet connectivity. Even now that the situation has slightly improved, most of the institutions connected still manage with unstable dial-up connectivity using the NITEL lines, with bandwidth in the range of kbps. In the U.S. however, over 200 universities and 85% of the primary schools have Internet connectivity with very high speed in the range of Mbps. The starting point should be the strengthening of the formal education system, so that it incorporates the effective use of the new technologies. There is need to reform the National Educational systems in Tanzania to embrace the use of ICT by learners and teachers alike. Tanzania must ensure effective Internet connectivity at all levels of education. There should also be allocation of adequate IT development fund to the educational sector. Higher institution should also develop curricula that will ensure that all graduates are ICT literate. Youth in Tanzania should have access to ICTs especially the Internet to enable them to move into information and knowledge-based societies and develop their young talent in ICT. The use of telecenters is another strategy to ensure a progressive ICT in Tanzania. Telecenters is a way to build sensible development strategies, consistent with the situation of poor countries and marginal areas. This strategy holds that there is no point in investing heavily in extending access to those area, given their limited production capacity and purchasing power, but recognizes the potential impact that increased access could have on their development (7). Telecenters can be used to provide access to the Internet and to computers, telephone services and Radio Broadcasting. They can broadcast or ret-transmit radio programming, and they can also play the radios that receive the programs. They can draw upon the content provided by the Internet and create their own local programs. Use of Telecenters would enable a rural inhabitant, for example, to gain on-line access to distant productive assets and sources; to crucial market intelligence through informal networks that enhances bargaining power; to information on projects, financial institutions and options and support for the rural populations (5). A Telecenters can be a powerful instrument but to be effective, it must be part of a comprehensive economic and rural development strategy that includes investment in complementary sectors. For any Telecenters to be successful in bringing about economic and social development, Telecenters initiatives need to target a low-income population and be run by people that are committed to the project. Most developing countries either do not have policies used in the ICT sector nor have policies that are not being implemented Tanzania not an exemption. There is an urgent need for them to have regulatory agencies that can be in charge of analyzing data that can guide them in policy decision-making. Contributions from NGOs, consumers and group of people should also be encouraged as done by the Nigerian Communications Commission (NCC) since this provides perspectives that might otherwise be overlooked. Government policies are needed to strengthen the legal and institutional framework to foster the development (primarily by private enterprise) of sites and Internet solutions that facilitate e-commerce, particularly by small and micro-entrepreneurs. The lack of secure, on-

line payment mechanisms accessible to all types of producers is one obstacle that needs to be overcome with urgency. Government and regulators need to review policy and regulation frameworks to encourage the introduction and use of new technologies for better and cheaper services to the consumers [9]. Government policies should encourage ICT resource inflow by creating an enabling environment, and provide for specialized subsidies to rural ICT center operators [5].

3.0 THE ROLE OF ICT IN HUMAN DEVELOPMENT AND POVERTY REDUCTION

As the world continue to move towards an information-based society, it is becoming increasingly evident that the digital revolution will play a vital role in the economic and social developments of any nation. The Millennium Development Goals (MDGs) were agreed at the United Nations Millennium Summit in 2000, and they cover issues such as poverty, education, gender equality, health care, child mortality, HIV/AIDS, environmental sustainability, and global partnership. ICT can be used as a tool to achieve all these. ICT can help improve a nation's economic and business potentials by helping the people make sound decision since this is dependent on the availability of comprehensive and timely and up-to-date information. ICT benefits a nation through creation of employment opportunities and also enable entrepreneurs to access global network information and open up new regional and global market that fetch better prices. ICT also serve as powerful tools for International marketing, as their application allows users direct access to a number of trade information sources that are useful in doing market research and preparing for trade promotions. The World Wide Web (WWW) creates an opportunity for organizations from the smallest company in the remotest part of the world to the largest manufacturing firm in a major metropolitan area to access the global market place. Many organizations have websites on the Net and use this to better facilitate their business. Another importance of ICT to human development is that it contributes tremendously towards economic growth. Research done suggests that every 1% increase in Teledensity results in an increase of about 3% in GDP. Increased access to information will allow the poor and those in isolated areas to gain access to a wider range of options and therefore, to play a wider role in their future. At the local level, ICT can provide people with information about local market prices and services that can benefit them, such as sound health practices and opportunities to obtain practical skills, knowledge, and education. At the state and national, more complex ICT systems carry information about jobs and investment opportunities, and trading of goods and services. For example, some national and multinational companies publish information about vacancies on the web [10]. Also at the global level, ICT systems connect to the global information and market infrastructure. ICT can help reduce poverty through different types of interventions. The first type benefits the poor directly and usually at the local level. For example, VSAT network can be established in the local government headquarters for internet access to make information available to the farmers and others in the villages. Medium – sized computer training centers can be included at such headquarters so that young people in the village can avail themselves of the opportunity to acquire self – sustaining skills. This will enable them to telecommute from the village thereby reducing rural – urban migration [8]. The farmers can get daily market prices and can subsequently buy seeds at 20% less and sell produce for 20% more by eliminating brokers. With time, such LGAs can develop a data base containing number sand types of school, agricultural products, minerals and tourism centers, etc. government will find such timely information useful for planning. This will mark the beginning of development for such communities since they can now be seen from any where in the globe and they also have access to information from other parts of the country and beyond. The second type is indirect intervention, which occurs where the benefit of ICT are felt "upstream" from the poor, but may trickle down through the socioeconomic fabric. An example is a child who came from a poor home but manage to go to school. He / she now work in the capital city, at a job that uses ICT and then uses his / her salary to support relatives in the villages [5].

4.0 POTENTIAL USES OF ICTs

ICT applications are useful in numerous instances to facilitate the development of various aspects of the society.

- **PUBLIC ADMINISTRATION**
  Public administration is key aspect of civil society and it includes a range of services to citizens and industry. It provides various functions that enhance the social, economic and political development of the citizenry. Most importantly, it has public information that is useful to the community at large. ICT

facilitate these public administration activities. For e – Government is a concept that defines a situation where government activities and public information are available via the use of ICT. The Public Information Terminals (PIT) in South Africa is a good example, in which internet kiosk are installed in post office around the country which provide instant access to the internet, e – mail, government and educational services as well as e – commerce (2).

- URBAN AND RURAL DEVELOPMENT

  ICT applications are useful in facilitating development programme in many countries. These technologies help in supporting economic and social developments. Mansell and when noted that "diverse current and historical data sets on health, education, water supplies, sanitation and population growth and movement can be captured, collated, manipulated and presented" they also noted that "economic development can be fostered by tele – working and tele – services in some of the developing countries". The establishment of telecenters in rural communities can facilitate economic empowerment. Mobile telephony can also help rural entrepreneurs in keeping in touch with their market outside their communities (5).

- IMPROVING QUALITY OF LIFE SUCH AS IN HEALTH

  ICT applications are becoming valuable resources in the medical field. They support efficient exchange of information. Between health professionals, they enable transfer of patient records between sites and they can improve clinical effectiveness, continuity, and quality of care by health professionals (Mansell and When). ICT applications facilitate telemedicine – "the use of ICT to provide medical demand independent of person- to – person contact. Telemedicine provides medical services to people in geographically diverse settings: at home and in isolated places or in emergencies.

  An example of the impact of ICT on medicine is the recent operation that was performed at the Chris Hani Baragwanath Hospital. Separated by 8917km, two surgeons made South Africa medical history when they jointly performed an operation on a two – year – old. Dr Bob Banieghbal at Chris Hani Baragwanath Hospital in Soweto and Professor Benno Ure at his office in Hannover, Germany, made use of the latest advancement in surgery – the telementoring system, 'Socrates' – to perform a laparoscopic surgery (Green, 2003). 'Socrates' works that links surgeons in the operating room with colleagues anywhere in the world.

  For many people with physical disabilities, ICT can be extremely useful in providing access to communication, education and open opportunities for them. The use of Braille Keyboards and printers can help alleviate some common literacy and numeracy problems for visually impaired or blind people. Most telecommunication services are now being specially designed to meet the special needs of the physically challenged. For instance, the Short Message Service (SMS) can be used to send and receive message by the hearing impaired, the voice activated dialing service can be used by visually impaired (4).

- EDUCATION AND AGRICULTURE

  The education sector is arguably one area that ICT are playing a remarkable role. These technologies help in facilitating learning and exchange of educational materials. ICT are helping library professionals store and manage academic information. Libraries have migrated from the traditional Dewey cataloguing system to an on – line system, which is a web based cataloguing and search application. The on – line learning system is another web – based application that is revolutionalising the learning platform of education. This system compliment the face- to -face teaching and learning format. In the on – line system, students can access class notes, submit assignment and also join a discussion group with other learners. At the micro level, ICT applications can be used to impart information directly to farmers and the farming community. There are expert systems designed to handle agricultural issues such as water utilization and management, pest control, harvest management and so forth (1).

- MANUFACTURING AND ELECTRONIC COMMERCE

  ICT applications are linking the process chains in manufacturing as opposed to improving or facilitating single steps in the production lines. The old 'Fordist' or mass production of goods and services is gradually giving way to a net – work based production and manufacturing system. There has been a shift from the old production system to a new mode which is facilitated by information and

communication technology. Electronic commerce or e – commerce is the use of telecommunication or the internet to carry out business of any type. Common examples are on – line shopping, online banking, online stock trading etc., one advantage is the reduction of transaction costs. Other applications of ICT are in Travel and Tourism where ICT are used in providing multi media information about destination to prospective travelers, book accommodation and do other forms of flight payments (8).

5.0 CONCLUSION

Today we are facing a rapid acceleration of change. The awareness of the need to embrace technology is unmistakably present throughout the developing countries in Africa. ICT offer the potential for increased availability of information, new means of communication, re-organization of productive processes and improved efficiency in many different economic activities. Despite the enormous benefits that these ICT have to offer, developing countries still have a lot of challenges in assessing them. This is because developing countries lack the basic things needed to make these technologies function. These include; inadequate human resources, illiteracy, poor infrastructure, high access and usage costs, limited rural access, inadequate regulatory framework and lack of entrepreneurship. Today, the limited capacity of the government to provide basic social service is perceived as the main cause of poverty and hardship. ICT can be a powerful integrative tool for the widely dispersed people of Tanzania, since it can bring diverse users and government together through better communications and at the same time allow them to retain their individual identity. ICT has tremendous potentials to improve health, education and governance, to promote trade and economic growth, to spread knowledge and integrate people and countries alike into the global knowledge economy thereby reducing poverty. ICT can;

- Virtually aggregate production so that cooperatives (e.g. in fishing and agriculture) can access larger market.
- Bring even very small enterprises (e.g. micro – tourism resorts or agro – tourism) to the attention of the global audience.
- Improve communication between governments, assistance agencies and the donor community thereby ensuring effective NEEDS, FEEDS and SEEDS collaboration.
- Increase speed, volume, quality and transparency of transaction through faster access to, and distribution of information. ICT also makes possible entirely new procedures and minimizes the negative effects of distance and time.

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