ICTs and Youths:
Benefits and Challenges

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Introduction

This Paper is on ICTs and youths: Benefits and challenges. It is worth observing that ICT is an acronym for Information and Communication Technology. Balunywa (2000) defines Technology as "scientific knowledge that deals with methods of doing things. It is the application of science to a practical use mainly for industrial use. It is constituted by the technological skills, means and characteristics of a group, period, organization or country". Ikoja-Odongo (2007 citing Priti, 2004) observes that Information and Communication Technology (ICT) is an umbrella term that includes any communication device or application, encompassing radio, television, cellular phones, computer and network hardware, and software, satellite systems, and so on. Okoja-Odongo (2007) adds that ICT is a diverse set of technological tools and resources used to communicate, and to create, disseminate, store and manage information.

Bakkabulindi (2002; 2000) observes that ICTs are of two major types namely; (i) ICTs for converting or processing data into information such as adding machines, calculators, typewriters and computers; and (ii) ICTs for communication data and/ or information from one place to another: These include telegraph, telephone, telefax and computer networks. On the historical side it is worth noting that the search for fast ICTs has been on, for centuries and this has called for the participation of the whole world and all academic disciplines. For example the Chinese are believed to have invented the Abacus about 3,000 before Christ (or 3570 before Mohammed).

English clergyman William Oughtred invented the Slide Rule in 1620 AD while Blaise Paschal a French mathematician invented the Mechanical Arithmetic Calculator in 1642. In 1890 Dr Herman Hollerith an American statistician working with the US Census Bureau, invented a so-called "tabulating machine" to help with generation of frequency tables resulting from demographic census data. In 1896, Hollerith left the US Census Bureau to start a company for making "tabulating machines". It was this

very company which in 1924 after merging with other companies because known as International Business Machines (IBM) the largest computer manufacturing company in the World today. On the side of communication ICTs, the telegraph was invented in 1790; the telephone in 1876, telefax in mid 1970s while computer networks were initiated in the late 1960s.

Worth noting on the historical side, is that up to about 1940, ICTs in existence were either "mechanical" (i.e. relying on movement of metals) or "electro-mechanical" (i.e. relying on electrically moved metals). Hence they were slow; noisy; subject to wear and tear; and liable to make errors. While as suggested by the above history, ICTs have been around since time immemorial, this Paper is more concerned about modern ICTs ushered in around 1940 when electronic ICTs were invented, starting with the Atasoff-Berry Computer, ABC in 1942 at Iowa State University. Since that time, according to Bakkabulindi (2000), ICTs have progressed through "generations" reflecting gradual reduction in size; increase in speed; increase in ease of use; and so on. A phenomenon of this Electronic or Digital Era of much relevance in this Paper are computer networks (Bakkabulindi, 1997) particularly the International Network of Networks or Internet (Bakkabulindi, 2001; 1999). The term "youth" is a noun from the adjective "young". Sykes (1982) refers to the term "youth" as the quality of being young or adolescent; as the period between childhood and full adulthood; as young people collectively. For purposes of this Paper the term "youths" will refer to individuals beyond the age of childhood (18 years) and below the age of adulthood (35 years). The Paper now turns to benefits of ICT to youths.

Benefits of ICTs to youths

Since ICTs are not used in isolation of other technology, it is not easy to deal with ICT benefits alone. Thus benefits are divided into two; those provided by technology in general and thoseTc(d) Tj4.180 Tc(0 Tc(Benefit)Iut ar) Tj0 Tc(e) Tj1.598 Tw-

place to another using motor vehicles, aeroplanes, and other modes of transport. It has enabled us explore the skies and look for life and resources on other planets. It has enabled us communicate quickly and instantly through phone, fax, Internet and satellite. It has enabled us recreate conditions so that we can do what was not possible before, because of such conditions. Location of industry is a case in point. It is possible to locate an industry in areas where it was not possible to do so, because conditions can be recreated. It has enabled farming in deserts. The benefits of Technology are thus in form of new and better products, new uses of old products, new or improved processes, faster methods of doing things. It has cut time to produce products, increased efficiency and reduced cost of production.

Benefits of ICTs to youths

Having given the benefits created by Technology in general, what benefits do ICTs offer youths? In this Paper it is argued that most youths (aged 18 to 35 years) are building personal networks; they are also either studying or seeking employment. Thus their concerns are mainly to do with communication, education and employment. Because modern ICTs (ushered in, in 1940s) are electronic, they work very fast. This is because an electron moves at half the speed of light. Thus with technological advancement, modern ICTs (e.g. computers) obey trillions of instructions per second. What benefit does this offer the youths? Kasozi (2002: 4) observes that because of this, the "movement of ideas from one part of the World to the other which used to be transmitted in letters, books, newspapers, telephones, radios and the like, is now achieved electronically in seconds".

This is an opportunity youths can take advantage of, given that the cost of sending data and/ or information is falling dramatically.

The cost of sending a trillion bits of information from Boston to Los Angeles has fallen from $150, 000 in 1970 to 12 cents in 2001 (citing UNDP, 2001). While the power of the computer chip doubles every 18-24 months, the cost of one megabit of storage falls at the same time. For example the latter fell from $5,257 in 1970 to $0.17 in 1999 (citing UNDP, 2001). A three-minute call from New York to London that cost $300 in 1930, costs less than one dollar now. E-mailing a document of 40 pages from Kampala to New York or Washington costs less than one dollar ...."

What does all this faster communication mean to youths? Youths now find themselves in a World where it is easier to send mail using e-mail as opposed to slow snail (or postal) mail. Youths find it easier to transfer funds say from parents' accounts to school fees-collecting accounts (using e-funds transfer, EFT). Many youths are attending global institutions of learning very far from where they physically are, thanks to e-distance education such as that offered by African Virtual University (Okuni, 1999). Youths are now enjoying e-publications (e.g. on-line jobs on Internet; delegates to this Conference can read newspapers at home on-line; etc.). Youths are enjoying e-conferencing facilities: For example this very Conference could have many participating in it from afar. We would go on naming such opportunities, which enhance communication, education and employment of the youths. For details refer to such documents as Bakkabulindi (2002; 2001; 1999; 1997).

Challenges of ICTs to youths

Despite the many benefits Technology in general and ICTs in particular, offer youths and other global citizens, modern ICTs pose several challenges including the implied costs, keeping up-to-date with ever changing technology and abuse.

Costs

Cost considerations with respect to ICT not only involve initial investment costs (e.g. of acquiring computers, mobile phones, Internet connection, etc.) but also on-going maintenance and technical support costs (Kyazze, 2002). While these costs are progressely reducing (Kasozi, 2002) many developing countries, where many Afro-Arab nations belong, are not able to prioritize ICT. This is thus worsening the Digital Divide between developing nations and developed ones. For example, Kasozi (3006) quotes World Bank (2002) as observing that while US and Canada then contributed over 65% of global Internet usage; Europe over 22%; New Zealand, Austria and Japan over six %; developing countries where many Afro-Arab nations belong, hardly contributed six % of global Internet usage!!

Kasozi (2002) further quoted World Bank (2002) as observing that while Switzerland, a typical developed nation, then had one computer per 348 people, Burkina Faso, a typical developing nation and Afro-Arab one at that, had one computer per 1000 people!! Thus in order to enhance ICT

benefits for youths, Afro-Arab nations in particular and developing ones in general must target to fully computerize their economies particularly their educational institutions (Kasozi, 2002). This implies improvement of telecommunications infrastructure, making power supply more adequate and reducing costs of access to such facilities (Obonyo, 2000).

Keeping up-to-date

Because of rapid technological changes we are experiencing today, modern ICTs such as computers are subject to becoming outdated very quickly. For example according to Kasozi (2002: 5), "microprocessor technology has enabled computing power to double every 18-24 months. Advances in fibre optics and network technologies are making it possible for communication power to double every six months". One result of this is that for example; "In Germany, researchers established that on average materials acquired by Computer Science graduates become obsolete two to three years after their graduation" (Kasozi, 2002: 21).

The implication of this is that even ICT graduates find it hard to keep up-to-date with the ever-changing ICT unless they are ready to train and retrain. What about other non-ICT graduate youths? What of the majority youths who have not even accessed higher education where ICT is usually offered as a course? On the cost side, because of constant ICT change, youth face the challenge of ever-replacing computers, mobile phones and other ICT in order to "maintain standards" befitting the day. This has a lot of cost implications on the youths and their benefactors.

Abuse

ICTs in general and networks in particular, have a major short-coming as an attraction for youths to indulge in e-crime and e-unethical behavior. E-crime or ICT crime is the "commission of unlawful acts by using ICT" (Ssemogerere, 1996). E-crimes committed include theft, fraud, destruction of people's property and vandalism (Alonso, 1995). Young ICT graduates are empowered to commit such crimes. For example many ICT-savvy youths write viruses to disturb other ICT users. They usually enjoy "eavesdropping" (or illegally listening to messages) on networks and "vandalism" (i.e. temporarily or permanently destroying) of other people's network resources (Ssemogerere, 1996). To complicate matters, ICT crimes are harder to trace, easier to get away with, and are infrequently prosecuted.

For example in cases of e-theft, no blood is spilt, no finger prints are left behind, nothing is visibly broken and it appears as if nobody is hurt and no evidence is left behind to point to the perpetrator (Ssemwogerere, 1996). E-unethical behaviour involves propagation and enjoyment of "pornography" on say the Internet.

Conclusion

Having given the background to ICTs this Paper outlined benefits of Technology in the form of new and better products, new uses of old products, new or improved processes, faster methods of doing things; in cutting time to produce products, increased efficiency and reduced cost of production. In particular the Paper raised several benefits that youths can enjoy thanks to ICT, mainly to do with communication, education and employment. However several challenges to full use of ICT were raised, including implied costs; keeping up-to-date with ever changing technology; and abuse. These challenges ought to be removed by governments if youth are to fully enjoy ICT benefits. Afro-Arab nations in particular and developing ones in general must target to fully embrace ICTs and other technologies in their economies particularly their educational institutions via improvement of telecommunications infrastructure, making power supply more adequate and reducing costs of access to such facilities.

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