Library Philosophy and Practice (e-journal)   Libraries at University of Nebraska-Lincoln

2-2011

Information and Communication Technology for Sustainable Development in Nigeria

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Introduction

The development of any nation is usually barometered by the degree and extent of the sociocultural, socioeconomic, and political improvement that are brought to bear through the enterprises of science, technology and mathematics. According to Bajah and Fariwantan in Olorundare (2007). Sustainable development leads to fulfillment of societal ideals considered relevant to the needs and aspirations of the society. Factors, which influence such developments, are based on human ability to explore, invent, and utilize. Satisfaction of spiritual, physical and material needs and the mastery of the environment are parameters of development when applied to the human society. It has been stated by several authors and scholars that the development of any nation depends very much on the advancement and application of science and technology. The role of science in the development of modern societies is not in dispute more so now that the influence of modern technological innovations is far reaching in every sphere of man's life. If Nigeria is to build an organized, self-reliant, and technologically compliant society, much emphasis has to be continually made on science and technology.

There is no doubt that Information and Communication Technology has found its niche in every sphere of Nigeria 's polity. Information and Communication Technology has been defined as "a broad based technology (including its methods, management and application) that supports the creation, storage, manipulation and communication of information" (French, 1996). According Hang and Keen in Nworgu (2007), information technology means a set of tools that helps you work with information and perform tasks related to information processing". The definition of French is more encompassing than that of Nworgu, which was limited to information processing and did not extend to the communication of ICT. Actually, the term originated as Information Technology (IT) until recently when it was thought that the communication

component ought to be highlighted because of its significance. It was then that the concept transformed to Information and Communication Technology ICT (Olusanya and Oleyede, 2003).

The ICT industry according to Nworgu (2007) appears to be making significant in road into the Nigeria society. Prior to 1999, ICT resources and facilities were grossly limited in the country. Only very few wealthy Nigerians had access to these facilities and services. Internet facilities and services were rare to come by and the facsimile (ie. Fax) remained for a long time, the only means available to Nigerians for transmitting and receiving data or documents to other parts of the world. Public awareness of ICT and its application was low.

But now, the picture is entirely different. Huge investments have been made by both the public and private sectors in the ICT business in the country. Within the last three (3) years, the country has witnessed tremendous expansion in ICT resources and facilities. About 20 million Nigerians now have access to GSM. With the liberalization policy of the Federal Government, more GSM operators and Internet Service Providers (ISPs) have been licensed and are now operating in the country. Millions of Nigerians now have access to these facilities and services even in the rural communities.

A significant milestone in the development of the ICT industry in the country is the formulation of a National Information Technology Policy (NITP), which was approved in March, 2001 by the Federal Executive Council. With the enactment of this policy came the establishment of an implementing agency-the National Information Technology Development Agency (NITDA) in April 2001. This agency is charged with the responsibility of implementing Nigeria 's IT policy "as well as promote the healthy growth and development of the IT industry in Nigeria (Isoun, 2003).

The major thrust of the IT policy in Nigeria can be gleaned from its vision and mission statement. According to the then Honourable Minister of Science and Technology, Professor Turner Isoun, the vision of the policy is to make Nigeria IT-capable country in Africa and a key player in the information society by the year 2015, using IT as the engine for sustainable development and global competitiveness. On the other hand, its mission statement is to: Use IT for:

- Education
- Creation of Wealth
- Poverty Alleviation
- Job Creation
- Global Competitiveness

The policy relies on human capacity building as the major strategy for realizing its vision and mission (Isoun, 2003).

ICT Resources for Sustainable Development

According to Attama and Owolabi (2008)the following are primary ICT resources,

1. Computers: Computers are no longer just mathematical tools but essential management resources. As we all may know, different operations can be handled more efficiently using Computers. With the computer, such activities as information generation, processing, analyzing, storage and communication for sustainable development could be executed easily. The greatest assets of the computer are speed, cost-effectiveness and optimal utilization of available resources. Some other computer accessories worthy of mentioning are CD.ROM, diskettes, flash drive, etc.

2. The Internet: This has proven to the most valuable vehicle for accelerated information flow. According to Ogbomo (2004), it is a network of computers that communicate with each other, often over telephone lines. The potentials of the internet lies in the provision of global platform for information sharing among organizations and individuals. Information sharing creates awareness, ensures continuous use of products and services, provides feedback and support for organization. The contention here is that any organization or government that has current and useful information is empowered to enhance productivity and good governance.

3. Electronic Mail (E-mail): This is the most widely used resource of the Internet. It is provided for sending and receiving mails (messages) through electronic devices. Intra and inter organizational communication has been made faster and cheaper. E-mail has become the life-wire for many business and organizational communication.

4. World Wide Web (WWW): World wide web is also an Internet-based resource. It is a utility based on hypertexts (Hypertexts simply documents through keywords in document or page). A visit to a website helps individuals or organization to locate products, information, pursue political or social agenda and transacts business (Chilvetalu, 2003). From the above, we can infer that being on the web would put any nation or organization on the right course of speedy and sustainable development in line with the emerging changes in technology, economic and political paradigms. Consequently, many organizations, ministries and parastatals in Nigeria have their own websites through which they make relevant information available to members of the public.

Sectorial Impact of ICT in Nigerian Development

The importance of ICT to different sectors of national, economic and educational life of the nation cannot be over stressed. The specific benefits of ICT to these sectors and how the use has been contributing to sustainable national development are discussed under this segment.

ICT for Good Governance

The potential attributes and benefits of ICT to policy makers in the society have been accepted as imperative paradigm (Attama and Owolabi, 2008). In all intents and purposes, ICT is the acclaimed engine room of modern day global development and sustainable growth (United Nations Conference on Trade and Development, 2005). In the same vein, Anehobi (2007) maintains that no institution or organization can still rely only on the traditional printed information resources to perform efficiently.

The infusion of ICT into public administration enhances efficiency in the delivery of services to the people. Heber (1990) in his own view maintains that ICT helps in taking high quality decisions and at the same time saves time. It is in line with the laudable roles that the federal government of Nigeria in order to ensure the full exploitation of the potentials of ICTs in sustainable democracy laid foundation for e-government in Nigeria (Aragba-Akpore, 2004).

Countries that have adopted and applied electronic services (ICT) to their operations have witnessed dramatic improvement in their development efforts. For countries such as Singapore, United States, Canada, Japan and most European nations, ICT is a strong tool for sustainable development and improving governance, widening democratic space, increasing productivity, administrative effectiveness and cost savings (Adamali, Coffey and Safdar, 2006). It is not surprising therefore that the application of ICT in governance is engendering much concerns in many countries of the world.

ICT Application in Education

Most of the discussions and initiatives on ICT in Education tend to focus on the use of ICT for teaching and learning only (The Commonwealth of Learning, 2006; Becta, 2004; Akale, 2003). This emphasis on instructional applications of ICT in education has an antecedent. From the earliest times, educational interest in technology has always centred on the instructional application of such technology to improve teaching and learning. The case of the computer provides a perfect illustration of this point. Long before the emergency of ICT, educational interest in the computer centred on its instructional applications as exemplified by computer-assisted instruction (CAI), computer-aided testing (CAT), etc.

It is perhaps easy to understand why the emphasis at the basic and secondary education levels should exclude research application of ICT. The primary responsibility of the teachers at these levels is defined exclusively in terms of teaching. However at the higher education level, teachers¨primary responsibility is of a tripartite nature involving teaching, research and community service. In effect it can be suggested here that any approach to ICT adoption at the higher education level that stressed only instructional applications and ignores research applications, will be grossly inadequate in meeting the needs of both students and teachers:

The indispensability of ICT in education research in particular includes

- Learning how to optimize the creativity of African Scientists through participation in international networks and working with data sets.
- Accessing various kinds of research information, which would necessitate a link to the libraries group
- Learning new methods for disseminating knowledge produced in Africa and using them.
- ICT applications run through the entire gamut of the educational research process. The advocacy for the indispensability of ICT in educational research can be further strengthened by the following arguments that tends to underscore the values derivable from applying ICT in educational research.
- It reduced time and cost of conducting educational investigation.
- Data sets and library resources can be shared by institutions in different locations
- Educational researchers have easy access to current literature materials
- Data sets, irrespective of size can be stored and retrieved when needed.
- Researchers in different locations can collaborate more easily, etc (Nworgu, 2007)

Ijafuyi and Adebanjo (2006) while speaking on the usefulness of ICT in sustainable development advised on the need for a well-equipped ICT centres in all educational institutions to enable them live up to their social and political responsibilities.

Benefits of ICT in Legal System

Globalization driven by ICT is having a phenomenal impact on acquisition of legal, and other relevant learning, teaching and research materials in law libraries across the country. Through ICT, lawyers and students can have access to current court proceedings/cases and law reports anywhere, any time and in any form in the country.

There is no doubt that the integration of ICT into the practice of law is of much benefit to the profession in Nigeria in the 21st century. ICT is a

remarkable tool for providing comprehensive, current and timely legal services to the citizenry. (Okon and Bassey, 2008). The relevance of ICT adoption and utilization in Nigerian legal system for effective and efficient service delivery is a contributory factor to sustainable development in Nigeria.

ICT in Business Management

Information and Communication Technology (ICT) is an essential part of national infrastructure and factors greatly in both public and private sector business enterprises. It creates business opportunities, especially for companies located far from urban centres, and improves links among firms, suppliers and clients. When used well, ICT can also make management and operation more efficient.

In another development, Sangowusi cited by Attama and Owolabi (2008) maintains that ICT is very useful in corporate environment because it promotes performance and improves efficiency.

Summary and Conclusion

It has been commonly accepted and proven that information and communication technology (ICT) is the engine of the 21st century and beyond; as it will chart the economic, religious, cultural, legal and social life of nations, particularly that of developing countries (Ukodie, 2004). Hence, according to Nkereuwem (1996), the importance of information and communication technology for sustainable development, has long been recognized by developing countries. ICT has impacted on different sectors of the Nigerian economy. The application of ICT has emerged as the most radical development of the 21st century. It has facilitated speedy information transmission, high level decision making, reduces cost in resources/organizational management and as well opens vast opportunities for information sharing among individuals, companies and governmental institutions. It is a truism that information and communication technology (ICT) is very indispensable to Nigeria'n sustainable development drive. Today, ICT has been successfully integrated in the process of state administration, leading to a view concept of e-government. The potential benefits of ICT to sustainable development in Nigeria has been accepted as an imperative paradigm.

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