
Information and Communication Technology as a Tool for Sustainable Development in Developing Countries: Nigeria as A Case Study.

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ABSTRACT

ABSTRACT: This paper outlines how Information Communication Technology in general will promote sustainable development in developing countries. This can be promoted through acquiring ICT skills in various ways which include: software development commercial outfit, computer training maintenance, networking and internet service as well as enhancing teaching and learning activities. Also the paper revealed the possibilities for locating independent working environment through ICT facilities such as economic sustainability, social sustainability, and political sustainability. It also looks at the possible challenges of implementing ICT such as lacks of maintenance culture, budgetary constrain, and infrastructure related problems. Finally the paper emphasizes that proper utilization of ICTs is necessary for promoting sustainable development in developing countries.

Keywords: Information Communication Technology (ICT), Skills, Sustainable Development, Nigeria

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1. INTRODUCTION

One of the problems that are facing developing countries today is sustainable development. Information and Communication Technologies (ICTs), which includes radio and television, as well as newer digital technologies such as computers and the internet, have been touted as potentially powerfully enabling tools for educational change and sustainable development. When used appropriately, different ICTs are said to help expand access to sustainable development. Strengthening the relevance of ICT in education; organization (both private and public sectors) will lead to the success of achieving goals and objectives for self-reliance. ICTs stand for information and communication technologies which can be defined as a “device set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information” These technologies include computers, the internet, broadcasting technologies (radio and television), and telephony. (Blurton, 2011). The term “ICT” describes the use of computer-based technology and the internet to make information and communication services available to a wide range of users. The term is used broadly to address a range of technologies, including telephones. Central to these is the internet, which provides the mechanism for transporting data in a number of formats including text, images, sound, and video.

Additionally, ICT deals with the application layer, the systems that enable information to be collected and distributed, analyzed, and processed. ICT is an integration of the technologies and the process to distribute and communicate the desired information to the target audience and making the target audience more participative in nature. The term ICT also refers to: information channels such as the World Wide Web, online database, electronic documents, management and accounting systems, intranet, etc. communication channels such as e-mail, electronic discussion groups, electronic conferences, the use of cell phones, etc. hardware and software used to generate, prepare, transmit, and store data, such as computers, radio, TV, computer programmes /tools, etc. (International Institute for Sustainable Development, 2007)

2. MEANING & CONCEPT OF ICT

Information and communication technology (ICT) Information and communication technology, or ICT, is defined as the combination of informatics technology with other, related technologies, specifically communication technology. ICT is technology that supports activities involving information. Such activities include gathering, processing, storing and presenting data. Increasingly these activities also involve collaboration and communication. This definition implies that ICT will be used, applied, and integrated in activities of working and learning on the basis of conceptual understanding and methods of informatics. It depends on the local culture and the particular ICT available and how it is configured and managed. The understanding, management and configuration of the available technology might vary the concept of ICT from a collection of tools and devices used for particular tasks, eg, publishing, course delivery, transaction processing... an organised set of equipment (like a 'workshop') for working on information and communication components of integrated arrangements of devices, tools, services and practices that enable information to be collected, processed, stored and shared with others components in a comprehensive system of people, information and devices that enables learning, problem solving and higher order collaborative thinking, that is, ICT as key elements underpinning a (sharable) workspace.

3. CONCEPT OF SUSTAINABLE DEVELOPMENT

According to Ayodele, (2007), sustainable development can be broadly defined as the ability of the economy to support the needs of the people of a country over a time, taking into consideration the economic, social and ecological constraints of the country. The fundamental concept is "sustainable requirement," namely that the fulfillment of the needs of the present generation should not compromise the ability of future generations to meet their own needs. (The Bruntland Report, WECD, 43). Furthermore, ICT for sustainable development on the other hand represents a catalytic process for social change that seeks to foster through education training and public awareness-the values, behaviours and lifestyles required for sustainable future. It is about learning needed to maintain and improve our quality of life of generations to come. It is about individuals, communities, groups, business and government to live and act sustainably; as well as giving them an understanding of the environmental factor, good moral behaviours and economic issues involved (Ayodele, 2007).

4. OBJECTIVE OF ICT FOR SUSTAINABLE DEVELOPMENT

Some of the objectives of ICT in sustainable in development countries include

1. To develop high-end entrepreneurship using IT methods, tools and infrastructures.
To network agencies, academic institutions and organizations to create a support system for ICT skills
2. Development
3. To act as a policy advisory body for ICT development
4. To facilitate and conduct various information services relating to promotion of ICT skills.
5. Furthermore, according to Saidu et al (2008), the objectives include to actively facilitate e-learning and teaching in the manner that the goals of sustainable development could be promoted
6. To encourage creative and integrative teaching and learning which ensures that learning becomes student focused and ideas as well as individual initiatives are directed towards various learning pathways so as to achieve the national development goals of developing countries
7. To ensure easy access to educational materials, high quality data, information and knowledge as well as research findings relevant to the problems of developing countries.

5. ICT AS A TOOL FOR SUSTAINABLE DEVELOPMENT

What follows are ways in which ICTs can be utilized for sustainable development

Web site design: Young school leavers can be fully engaged in web design thereby bringing market information closer to the rural dwellers through the use of local language that is understood by the people.

Programming: Many Small and Medium Enterprise (SMEs) today employ the use of database in their daily business transaction. Young programmers can adequately earn a living by coding the programs that will run these SMEs.

Maintenance: One of the major requirements in the ICT world is the technical skill to service the computer and other ICT facilities. Youths can develop themselves in this area and then becomes self-reliant as they can even serve as consultants to the governmental and non-governmental organization

Commercial Computer Outfits: There is great demand for printed document in today's society. Thus youth can empower themselves with the necessary computer skills that can make them self-employed in meeting this demand.

Computer Training Centres: young people are increasingly being engaged in the training of other youths (i.e. train the trainers) in acquiring computer literacy thereby getting their source of livelihood from running the training centres.

Computer Networking: this play an important role for easy and effective dissemination of information in industries, organization, institutions and almost all governmental parastatals.

Hence, young generation can be empowered with IT skills on how to do computer networking.

Cyber Café: young men are being employed to manage various cybercafé throughout the world there by giving them job opportunities for self-reliance.

Economic Sustainability: ICT play an important role in sustaining the economy of a country. Through internet GSM, radio, television etc. Different transactions takes place all over the world in 24 hours. With the use of credit card you can make transaction anywhere in the world without waste of energy and time. Banks also use ATM card for withdrawal of money in 24 hours. Therefore, the process of e-banking and e-commerce is very important in promoting the economic development of a country in the context globalization.

Social Sustainability: ICTs equipments give people access to listening and reading news as well as entertainment. It is possible to chat with a friend through internet both audio and visual. This is also applicable to GSM also allows teleconferencing (more than two people communicating at the same time).

Political Sustainability: This is the greatest weapon that politician use in doing their campaign. Television, radio and internet play very important role here. With these equipments they reach everybody in the whole world during campaign. Sophisticated software is used in casting and counting vote which minimize injustice during election. In fact, in the 2008 US election, Obama relied heavily for his success in the polls on the internet through which millions of dollars were collected as donations for his campaign.

Enhancing Teacher Training: ICTs have also been used to improve access to and the quality of teacher training. For example, institutions like the Cyber Teacher Training (CTTC) in south Korea are taking advantage of the internet to provide better teacher professional development opportunities to in-service teachers. Active learning: ICT enhanced learning mobilizes tools for examination, calculation and analysis of information, thus providing a platform for student inquiry, analysis and construction of new information learners therefore learn as they do and, whenever appropriate, work on real-life problems in-depth, making learning less abstract and more relevant to the learner's life situation. In this way, and in contrast to memorization-based or rote learning, ICT-enhanced learning promotes increased learner engagement. ICT-enhanced learning is also "just-in-time" learning in which learners can choose what to learn when they need to learn it.

Collaborative learning: ICT-supported learning encourages interaction and cooperation among students, teachers, and experts regardless of where they are. Apart from modeling real-world interactions, ICT-supported learning provides learners the opportunity to work with people from different cultures, thereby helping to enhance learners' teaming and communicative skills as well as their global awareness. In models learning done throughout the learner's lifetime by expanding the learning space to include not just peers but also mentors and experts from different fields.

Evaluative learning: ICT-enhanced learning is student-directed and diagnostic. Unlike static, text-or print-based educational technologies, ICT-enhanced learning recognizes that there are many different learning pathways and many different articulations of knowledge. ICTs allow learners to explore and discover rather than merely listen and remember. Direct class teaching, where broadcast programming substitutes for teachers on a temporary basis; school broadcasting, where broadcast programming provides complementary teaching and learning resources not otherwise available, and general educational programming over community, national and international stations which provide general and informal educational opportunities.

6. CONCLUSION

From the foregoing, it is clearly shown that ICT plays an important role in sustainable development for both developed and developing countries.

In conclusion, government and any other stake holders must take necessary measures on proper implementation of ICT facilities in order to achieve goals and objective of sustainable development.

RECOMMENDATIONS

The first proposal is for the issues described in this paper to be analyzed in greater depth by both sustainable development and ICT/Internet communities, acting jointly. One way of doing this would be for a small commission of experts to review and analyze the evidence for consideration within international forums concerned with both sustainable development and ICTs.

The second recommendation of this report is that the industry and consumer organizations should work together to develop guidelines for environmental impact assessment and mitigation of negative environmental outcomes that can apply at different points along the supply chain. These points can include standard-setting, network configuration, the design of data centres and terminal devices, the ways in which services are routed to end-users, life-cycle choices concerning equipment (including addressing the challenges of obsolescence and disposal) and the responsible use of energy and ICT equipment by commercial and domestic users. The aim would be to help different actors reduce the negative environmental impact of their engagement with ICTs.

Thirdly, there is a need for policy-makers to think more about process: about identifying ways in which policy approaches can be made sufficiently flexible to suit rapidly changing circumstances, so that they can meet broad objectives (such as universal access) without locking government, business or citizens into particular technologies or market mechanisms. Adaptiveness is crucial to this evolution in governance. ICTs also have much to offer changing governance framework.

Moreso, government should provide adequate fund for ICT facilities maintenance and otherwise.

Also government should create monitoring and evaluation team in respects to the ICT facilities distributed to the various intuitions and organizations.



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