The Role of Information and Communication Technology in Developing the Nigerian Educational Sector

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Abstract

In today's society, technology is central to human activity. Every work process involves some form of technology; every human activity has technology intertwined in the process. It also plays a key role in the development of national economies such as wealth creation, improvement of the quality of life, and real economic growth and transformation in any society. This paper aims to examine the role of technology in developing the Nigerian educational sector. This is desktop research. Data are obtained from secondary sources and analyzed using content analysis. The paper concludes that improved ICT education in Nigeria is essential to the creation of effective human capital. This calls for the need to improve the teaching of ICT skills in schools at levels of learning in Nigeria.

Keywords*: Information Communication Technology, Development, Education*

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Background to the Study

The role of Information and communication technology (ICT) in the development of any economy cannot be overstressed. ICTs have become inseparable entities in all aspects of human life. The use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavor within the business, governance, and civil service. It affects all facets of the economy. ICT has emerged over a century as one of the most important drivers of economic growth in developed and developing economies. In a rapidly changing world, computer education is essential for an individual to be able to access and apply information. The ICT is an invaluable intervention in this modern time. ICT has remained a powerful catalyst in addressing the needs and interests of low-income communities in developing countries like Nigeria. Although, it was only in the last fifteen years that the consciousness of the appreciation for the ICT sector's role in expanding economic opportunity was appreciated (Kramer, 2007).

The inherent attributes of ICT such as accuracy, high-speed performance, reliability, and capability to store a very large amount of data have made it possible for its applicability to all human endeavors including teaching, learning, and research in educational institutions. The Economic Commission for Africa has indicated that the ability to access and use information is no longer a luxury, but a necessity for development (Aduwa, Ogiegbean and Iyamu, 2008). With emerging realities, culture and society have to be adjusted to meet the challenges of the knowledge age.

Like most other countries, the use of ICT in education and training has been a key priority in Nigeria in the last decade, although progress has been uneven. ICT has had a major impact on the education sector, organization, and teaching and learning methods. ICTs have the potential to accelerate, enrich, and deepen skills, motivate and engage students, help relate school experience to work practices, create economic viability for tomorrow's workers, as well as strengthen teaching and help schools change (Davis and Tearle, 2010; Yusuf, 2011).

The adoption and use of ICTs in schools have a positive impact on teaching, learning, and research. However, this advantage has not been fully maximized. Most schools have embedded ICT into the curriculum, and demonstrate high levels of effective and appropriate ICT use to support teaching and learning across a wide range of subject areas. Education systems around the world are re-designed to rely more on electronic delivery methods. No conventional tertiary institution can successfully cope with the ever-growing demand for admission into further learning. The quest for quality education by all stakeholders has led to radical change in school practices and a unique way of managing the challenges of the technological environment. The removal of wastages and management of tasks cannot be effectively achieved without the application of Information and Communication Technology in all areas of tertiary institutions' operations. The development of ICT in Nigerian educational institutions; primary, secondary and tertiary must therefore be improved to enhance global competitiveness.

The Federal Government of Nigeria, in the National Policy on Education (the Federal Republic of Nigeria, 2010), recognizes the prominent role of ICTs in the modern world and has integrated ICTs into education in Nigeria. To actualize this goal, the document states that government will provide basic infrastructure and training at the primary school. At the basic school, computer education has been made a pre-vocational elective and is a vocational infrastructure and training for the integration of ICTs in the school system. It should be noted that 2004 was not the first attempt the Nigerian government made to introduce computer education in schools. In 1988, the Nigerian government enacted a policy on computer education. The plan was to establish pilot schools and diffuse computer education innovation first to all secondary and tertiary schools and then to primary schools. Unfortunately, the project did not really take off beyond the distribution and installation of personal computers (Okebukola, 2007; cited by Aduwa-Ogiegbaen and Iyamu, 2008).

To ensure the implementation of its ICT policy, in April 2001 the Federal Executive Council approved the establishment of the National Information Technology Development Agency (NITDA), the implementing body. The policy empowers NITDA to enter into strategic alliances and joint ventures and to collaborate with the private sector to realize the specifics of the country's vision of, "making Nigeria an IT capable country in Africa and a key player in the information society by the year 2005 through using IT as an engine for sustainable development and global competitiveness." This vision is yet to be fulfilled. Outlined below are some of the objectives of Nigeria's ICT policy:

1. To ensure that ICT resources are readily available to promote efficient national development
2. To guarantee that the country benefits maximally, and contributes meaningfully, by providing global solutions to the challenges of the Information Age. To empower Nigerians to participate in software and ICT development
3. To encourage local production and manufacture of ICT components in a competitive manner
4. To establish and develop ICT infrastructure and maximize its use nationwide
5. To empower the youth with ICT skills and prepare them for global competitiveness
6. To integrate ICT into the mainstream of education and training
7. To create ICT awareness and ensure universal access in promoting ICT diffusion in all sectors of national life. To create an enabling environment and facilitate private sector (national and multinational) investment in the ICT sector
8. To encourage government and private sector joint venture collaboration
9. To develop human capital with an emphasis on creating and supporting a knowledge-based society.
10. To build a mass pool of ICT literate manpower using the NYSC, NDE, and other platforms as a train-the-trainer scheme for capacity-building.

The goal of the national policy on ICT in Nigeria is to utilize ICT in energizing and supporting the various programmes and sectors that contribute to the nation's socio-economic development including Agriculture, Education, Finance, Health, etc (FGN 2012:26). Emphasizing the importance of ICT for development, Ikponmwosa, and Ezomo (2013) argue

that ICT enhances revenue collection that helps to overcome the activities of fraudsters and make more funds available to the government for development in the society, and hence, improve upon the living standards of the people. This policy framework has been strategic in the integration of ICT in the educational system in Nigeria. However, some other schools are in the early phase of adopting ICT, characterized by important enhancements to the learning process, and some developments of e-learning (ICT-enabled learning), but without any profound improvements in learning and teaching (Balanskat et al., 2006). Efforts geared towards the integration of ICTs into the school system, have not had much impact. Problems such as poor policy and project implementation strategies and poor information infrastructure militate against these efforts. This study is therefore designed to examine the effects of ICTs in the development of the Nigerian educational sector. The significance of this study is the premise of the role of ICT in accelerating, enriching, and deepening basic skills in teaching and learning, it also helps in motivating and encouraging students in learning, as they are encouraged to be more dependent and responsible for their own learning.

ICT and Educational Development in Nigeria
Information and Communication Technologies (ICT) is defined as computer-based tools and techniques for gathering and using information. It encompasses the hardware and software, the network, and several other devices (video, audio, photographic camera, etc) that can convert information, images, and sound into common digital form. It includes electronic information in processing technologies such as computers and the internet, as well as fixed-line telecommunication networks.

Yakubu and Aboho (2015), assert that information and communication technologies (ICT) are an umbrella term that includes any communication device or application, encompassing; radio, television, cellular phones, computer and network hardware and software, satellite systems, as well as the various services and applications associated with them; such as video conferencing and distance learning. ICT is an eclectic application of computing, communication, telecommunication, and satellite technology (Yusuf, 2000). The information accessed through digital technologies can promote innovation, increase productivity and enrich the quality of life. ICT in education is a broad, deep, and rapidly growing field of study (Moursund, 2005). ICT utilizes a broad range of technologies that are applied in the process of collecting, storing, editing, retrieving, and transfer of information in various forms. One of the major factors or agencies of national development and global competitiveness is education.

ICT is a driving force for educational reforms and an integrative part of national education policies and plans in the 21st century. According to Desai (2010), ICT is a cluster of associated technologies defined by their functional usage in information access and communication of which embodiment is the internet. It is an umbrella name for any communication device or application, encompassing radio, television, cellular phones, power-point, slides, computer networks, hardware, software and electronic mail, facsimile, satellite systems, as well as the various services and applications associated with them (Adomi and Kpangban, 2010).

The use of ICT in education as a means of enhancing skills and building capacity for the promotion of economic development is critical to bringing about viable changes within the education system (Aduwa-Ogiegbaen and Iyamu, 2005). Information and Communication Technology in education encompasses the use of computers and their peripherals like printers, software, scanners, and projectors for the purpose of teaching and learning. Indeed, ICT represents a paradigm shift in the way mankind processes information using the computer and the internet. It has moved information exchange from a static to a dynamic mode. A typical example of information processing at the static stage is seen in an African village where drums and metal gongs were used to herald events. Information at this stage is not portable beyond the carrying capacity of the wind, sight, and the state of readiness of participants (Dike, 2013).

The role of ICT in educational development, at all levels, is numerous. Some of them are stated below to include,

1. Access to various kinds of research information, which would necessitate a link to the libraries group.
2. Learning new methods for disseminating knowledge produced in Africa and using them.
3. It reduces the time and cost of conducting an educational investigation, especially with the help of electronic libraries. Data sets and library resources can be shared by institutions in different locations.
4. Promoting research endeavors. Educational researchers have easy access to current literature materials. Data sets, irrespective of size can be stored and retrieved when needed. At the same time, researchers in different locations can collaborate more easily, etc.
5. For students, ICT use allows for increased individualization of learning. ICT application and use have proven beneficial in improving Nigeria's educational system and giving students a better education.

No doubt, ICT is the engine of the 21st century and beyond and it plays a key role in the development of the Nigerian educational sector. However, this is without challenges. Not much has been achieved in this regard due to several challenges as examined below.

Challenges facing ICT education in Nigerian schools
The following are challenges facing the implementation of computer education in Nigeria:

1. Poor functioning ICT Centers in Schools. While some schools could be said to be in the vanguard, the majority of Nigeria's universities, polytechnics, nursing and midwifery schools, and colleges of education lack computers. It is worst at the secondary and primary school level of learning. Many of the lecturers in these public institutions have to go to commercial cyber cafés before they can have access to a computer.

2. Lack of qualified teachers to teach ICT in schools: The demand for ICT learning has been tremendous and the number of teachers who are trained to teach ICT cannot meet the demand. There are more students willing to be taught computing skills than there are teachers to transfer the skills.

3.   Lack of computers: Computers are still very expensive and despite spirited efforts by government agencies, Non-Governmental Organisations (NGOs), corporate organizations, and individuals to donate computers to as many schools as possible, there are still many schools that cannot purchase computers for use by their pupils. Computers are still expensive in Nigeria In a country with a high rate of inflation, the majority of the individuals and schools cannot afford to buy a computer. This affects the utilization of its gains in teaching and learning.

4.   Unreliable power supply: Many schools are still not yet connected to electricity; Nigeria being a developing country, the government has not been able to connect all parts of the country to the national electricity grid. Consequently, those schools that fall under such areas are left handicapped and may not be able to offer computer studies.

5.   Poor maintenance culture: Broken down computers while a good number of schools have benefited from donated used computers, they have not been adequately equipped with the same maintenance and repair, hence it's very common to see a schools computer lab full of broken down computers, some repairable and some not. This has actually been a major problem, and the government has now put strict measures on any person, NGO, or corporate body willing to donate second-hand computers. (It is seen as a dumping ground); e-waste management.

6.   Burglary: The fact that computers are still very expensive in Nigeria; makes them a target for thieves who usually have ready markets to another party at a much less figure. This has made many schools incur extra expenses trying to burglar-proof the computer rooms. This extra expense makes some schools shy away from purchasing computers for their students.

7.   Lack of internet or slow connectivity: Most schools are not able to connect to the World Wide Web, due to the high costs involved in the connectivity. On average, it may cost approximately $150 per month to connect to about 15 computers on a bandwidth of 128/64kbps. This is considered very expensive for a very slow speed.

8.   Increased moral degradation: Internet pornography, cyberbullying, and other anti-social behaviors is a worrying emerging problem. The dilemma which arises in providing educational technology stems from a lack of financial resources and a limited distributive capacity. In addition, many African countries have not been able to employ teachers, and provide resources to keep up with this demand. This brings about compromised quality of education.

Conclusion and The Way Forward
The study examined the role of ICT in the development of the Nigerian economy, with particular reference to the educational sector. It has been established that ICT plays a key role in research, teaching, and learning. However, the effective implementation of the nation's ICT policy is faced with a lot of challenges. While addressing the challenges listed above, the government should ensure that ICT policy statements are translated into reality. An ICT

policy implementation commission should be created. This commission should be funded and given the power to provide ICT facilities in the schools and monitor their use. Computer/ICT education should be made compulsory for all secondary school students. Government should work on our power supply in order to foster ICT development.

References

Adamali, A. (2006). *Trends in national e-strategies: A review of 40 countries. In the World Bank information and communication for development: Global trends and policies*. Washington DC: The World Bank.

Adeyemo, A. V., & Adejumo, O. O. (2014). Prospects for achieving sustainable development through the millennium development goals in Nigeria, *European Journal of Sustainable Development, 3*(1), 33-46.

Adoni, E. E. (2010). *Application of ICTs in Nigerian secondary schools*, Library Philosophy and Practice.

Aduwa-Ogiegbean, S. E., & Iyamu, E. O. S. (2008). Using information and communication technology in secondary schools in Nigeria, *Educational Technology & Society, 8*(1), 104-112.

Afolabi, A. F. & Abidoye, J. A. (nd). *The integration of information and communication technology in library operations toward effective library services*. Proceeding of 1st International Technology, Education and Environment Conference at African Society For Scientific Research (ASSR).

Aina, A. J., Okunnu, H. O., & Dapo-Asaju, H. S. (2014). ICT integration for sustainable development of Nigeria academic libraries: Issues and challenges, *International Journal of Information Research, 3*(4), 334-345.

Ajayi, K. (2004). Information technology and legal practice: Continuing legal education, *Workshop Series.* 1-12.

Anaehobi, E. S. (2007). *Availability of ICT facilities in academic libraries in Anambra* State. Information and Communication Technologies in Libraries.

Aragbe, A. S. (2004). Why e-government for Nigeria, *The Guardian, 59,* 41-45.

Ashikuzzaman, M. (2014). *ICT based user services of blog*, Retrieved from

Chissenga, J. (2014). *ICT in libraries: An overview and general introduction to ICT in libraries in Africa. A paper presented at INASP ICT workshop held at Johannesburg, South Africa.* Retrieved from www.inasp.info/ISP/ICT-workshop-2004/sectionalchisenga.ppt

Dave, P. A., & Tearle, J. (2010). Impact of ICT based distance learning: The African story, *The Electronic Library, 21*(5), 476-486.

Fidelis, A. A. (2012). Impact of information communication technology (ICT) on corporate performance: A case study of cement manufacturing firms in Nigeria, *Journal of Management and Business Studies, 1,* 259-263.

Garuba, R. O. (2014). ICT and democratic governance in Nigeria, *Fountain Journal of Management and Social Sciences, 3,* 73-77.

Gbenga, B. (2004). Information communication technology and e-commerce: Challenges and Opportunities for the Nigeria legal system and Judiciary (JILT). *Electronic Law Journals.*

Group Information Technology Development (2015). The World Bank.

Idowu, A. O. (2011). Effective library services in the college, A paper delivered at the 1st library workshop at Adeyemi College of education, Ondo

Igwe, K. N. (2011). *Issues in the automation of libraries and information centres. In R. A. JImoh & K. N.*

Igwe (Eds.) *Information and communication technology (ICT) systems for library services.* Offa: Wunmi. Commercial Press

Janakiiirman, A. & Subramanian, N. (2015). *The role of information and communication technology (ICT) in library and information science (LIS) in India*, Retrieve from https://www.researchgate.net/publication/2995975501

Kramer, W. J. (2007). The role of the information and communication technology sector in expanding opportunity. *Economics Opportunity Series.*

Mishra, L. & Mishra, J. (2014). ICT resources and services in university libraries*, International Journal of Digital Library Services, 4*(3), 243-250.

Nwabueze, A. U. & Ozioko, R. E. (2011). *Information and communication technology for sustainable development in Nigeria*: *Library Philosophy and Practice*, Retrieved from http://digitalcommons.edu/libphilprac/600.

Ogidan, J. (2007). ICT for good governance and socio-economic development in Nigeria, *World Scientific News WSN,* 522-534.

Okebukola, W. E. (2007). Integrating ICTs into the globalization of the poor developing countries, *Information Development, 22* (3), 167-179.

Okwudishu, C. H. (2005). *Awareness and use of information and communication technology (ICT) among village secondary school teachers in Aniocha South Local Government Area of Delta State,* Abraka: Delta State University. Unpublished B.Sc. (LIS) project

Olise, F. P. (2010). Information and communication technologies (ICTs) and sustainable development in Africa: Mainstreaming the millennium development goals (MDGS) into Nigerian's development agenda. *Journal of Social Science, 24*(3), 155-167.

Raji, S. K. (2018). *The role of ICT as a panacea for national development*, Retrieved from www.nacoss.or.ng.

Reffell, R., & Whitworth, O. G. (2010). Factors affecting the development of information infrastructure in Africa, *Library High Tech News 24*(2), 15-20 Federal Republic of Nigeria (2010). *National Policy on Education. 4th ed*. Lagos: Nigerian Educational Research and Development Council.

Siadu, A., Tukur, Y., & Adamu, S. H. (2014). Promoting sustainable development through ICT in developing countries, *European Journal of Computer Science and Information Technology,* 2(2), 24-29.

Umana, K. (2018). *ICT resources for sustainable development in Nigeria*, Retrieved from https://researchcyber.com/icr-

Yusuf, M. O. (2011). Information and communication education: Analyzing the Nigerian national policy for information technology. *International Education Journal, 6*(3), 316-321. www.nitda.gov.ng/documents/ICT4D_SAPI_Book.pdf 2015.