

# ICT AS A TOOL FOR ECONOMIC DEVELOPMENT IN THE 21<sup>ST</sup> CENTURY: THE NIGERIAN UNIVERSITY AS AN IMPORTANT PLAYER

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**ABSTRACTS:** This paper evaluates the critical importance of effectively utilizing new information and communication technologies (ICT) to meet the growing need for a more sophisticated labour force, manage information systems, and contribute to poverty reduction in Nigeria. ICT is an indispensable tool in the development process. ICT causes economic growth due to its ability to increase labour productivity. The roles of ICT in the education sector were properly enumerated. Universities (in developing nations) were identified as potentially important players in the economic development in the 21<sup>st</sup> century. "eReadiness" of universities was identified as a vital issue in economic development. We have proposed an initiative to build the ICT4D capacity in a regional group of Nigerian universities. The intent is to demonstrate the potential of universities as partners in such ICT-related development activities as community telecenters. Public Access telecenters constitute an important force in efforts to build an Information Society and to join the march to the Millennium Development Goals. Universities can be valuable actors in providing some of the resources telecenters needed for their survival. Hence, we recommend that Universities in the country should be e-ready.

**Keywords** — ICT, university, telecenters, e-ready

## 1.0 INTRODUCTION

Amongst various technological advancements of this century, the adoption and use of modern Information and Communication Technology (ICT) all over the world has been profound. To a lay man, the term '*information and communication technology*' generally connotes 'The Internet', computers and email, this term actually denotes all forms of technology used in collecting, storing, editing and passing on information in various forms [1]. Modern ICT focuses on the connotative meaning of ICT and has the potential to foster the communication process and permit its occurrence irrespective of geographical location or time. Therefore, we can define Information and Communication Technologies (ICTs) as the hardware, software, networks, and media used to collect, store, process, transmit, and present information in the form of voice, data, text, and images. They range from telephone, radio, and television to the Internet. Several organisations have

demonstrated that ICTs have tremendous potential for promoting and achieving sustainable development in the 21<sup>st</sup> century. Our question is "how does the university fit into the picture?"

## 2.0 INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AND ECONOMIC GROWTH

Generally, adoption and utilization of ICT is thought of as a source of economic growth. In addition, growth in ICT usage often occurs because of economic growth. ICT causes economic growth due to its ability to increase labour productivity and a positive externality effect it has in human and physical networks. Here we find ICTs being part of a larger structure composed of human and other physical assets to generate wealth. On the other hand, ICT usage can also be seen as the result of growth where higher incomes result in the desire to employ ICT to conserve the increasingly costly human inputs of time or where ICT is used to exploit the available opportunities (e.g. access to vast amounts of information) for the production of new applications that improve labour productivity, education or entertainment, [2].

ICT has been discovered to be an indispensable tool in the development process. They have the capacity to increase productivity, that is, to create more cost effective output with the same or less input, [2] . They also have great potential for expanding economic growth. They speed up transactions and as they develop and spread more markets, more goods and more services are created. In recent times, increasing emphasis is being placed on the importance of usable knowledge for development and the development of knowledge-based societies. In this realm as well, ICT has numerous significant prospects. It has the potential to ensure the widespread use and dissemination of information and thus facilitate information sharing and knowledge creation irrespective of geographical location or time. ICT is generally considered capable of creating earning opportunities and improving delivery and access to health and education. It also provides increased opportunity for transparency, accountability and effectiveness of government, business and non-profit organizations — all contributing to an enabling environment for development, [3].

### 3.0 INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AND EDUCATION

Most current literature is overwhelmingly positive about the potential for a variety of technologies to be powerful components in accomplishing educational visions. ICT provides an array of tools for acquiring and using information and for thinking and expression. These same experiences provide the skills that will enable students to perform effectively in the global, digital, information-based future they all face, [4 and 5].

The roles of ICT in the education sector include:

1. **ICT as a gateway to vast sources of information for staff and students in academia.** This includes the case for ICT having great potential to increase access to knowledge. Access to computers and the Internet has increased the ability of professors and students to carry out much more informed research. It has also provided opportunities to establish contact, cooperate, and maintain beneficial relationships with other researchers of similar interests. It has broadened the scope of their analysis and research and improved the quality of their work with the opportunity for diverse views from other colleagues acquired over increasingly short periods.
2. **ICT as a tool for increased productivity and professional effectiveness.** This is an impact of ICT felt by all in the education sector extending beyond professors and students to administrative and management staff, as well. Here ICT enables staff in the education sector do what they have been doing, only much faster and more effectively. As such, this role of ICT includes administrative software packages, which keep student records, generate and store payroll information and schedule classes to e-mail and word processing for improved communication to specially designed teacher tools like computerized grade books, test/worksheet generators, and curriculum templates.
3. **ICT as a promoter of conducive teaching and learning environments.** ICT has been shown to have a positive impact on the learning environment and students generally. Today, students use multimedia to learn interactively and work on class projects. They use the Internet to do research, engage in projects, and to communicate. The new technologies allow students to have more control over their own learning, to think analytically and critically, and to work collaboratively. This also involves the use of ICT as an information processing and productivity tool. The use by students at all grade levels of real-world productivity software like word processors, databases, spreadsheets, presentation programs, multimedia authoring tools, e-mail, video production equipment, digital reference materials, electronic indexes, and network search engines to complete complex, authentic projects is considered the proper instructional use of technology.
4. **ICT provides an avenue to improve education outreach and standards across the continent.** In developing

countries, especially in Africa, affordable ICT could attain these goals in three important ways. Firstly, it could be used to support and expand existing curricula by increasing the accuracy, presentation, user-friendliness and attractiveness of courses. Secondly, it could provide a crucial research resource for both students and teachers. And, thirdly, it could forge strategic linkages between educators in Africa and those in other countries, at one level, and between students and the wider global community on the other, [6].

5. **ICT as a course and program of study.** ICT plays a critical role in the further development of ICT, serving as a training tool for future developers and users of ICT.

### 4.0 UNIVERSITY eREADINESS

Alongside the role of ICT in education there is a role that education plays in the development and use of ICT in a nation. It is agreed that for the productive use of ICTs, there is often the need to acquire new skills and restructure the educational system. Though ICT use represents an improvement of human skills and capabilities, there is also a hierarchy of skills. This hierarchy begins with the attainment of basic literacy. Virtually all the work processes in which ICTs can make a contribution to business growth require basic literacy. Literacy is therefore the first attainment of the skill levels needed to use ICTs productively. Though the figures for Nigeria are disturbing, because of the increasing awareness of the importance of people not only being users but also developers of ICT, there is the potential to encourage more emphasis and general participation in the ICT field. Universities (in developing nations) are potentially important players in the economic development in the 21<sup>st</sup> century. Thus the author believes that the "eReadiness" of universities is a vital issue in economic development as this is clearly relevant to the global creation and distribution of knowledge, which, in turn, is a core challenge in the world's thrust toward the Millennium Development Goals.

### 5.0 AN APPROACH TO eREADINESS AND EDUCATION

A report released at the World Summit on the Information Society identified a significant role for information and communication technologies (ICT) in strategies for Africa's economic development in the 21<sup>st</sup> century. The report notes that the New Partnership for African Development (NEPAD) includes a strong focus on the dual strategies of ICT Development (ICTD) and ICT for Development (ICT4D).

- ICT Development in the university context refers to building media and digital facilities to support university internal functions, along with an academic and research program that prepares students to function effectively in an information society — in both the public and the private sectors.
- ICT for Development refers to the university applying ICTs in programs outside its walls in the service of communities and the nation.

Central to creating a digital resources and academic infrastructure is the question of universities' relevance to the world around them, and especially to the challenge of being an active player — "an anchor of a broad-based poverty alleviation strategy" in an increasingly knowledge-based economy.

The dimensions of university eReadiness include:

- (1) ICT facilities and network access for the university community
- (2) Personnel available to support design and production of digital materials such as CDs, web pages and distance learning (training) packages
- (3) Academic programs including field experience that prepare students for applying ICTs to community development
- (4) University policies that apply to faculty participation in outreach programs
- (5) Respondents' ICT posture, for example, what is their disposition regarding the use and efficacy of ICTs in education and learning.

## **6.0 HOW DO ICT IN EDUCATION INITIATIVES CONTRIBUTE TO THE MILLENNIUM DEVELOPMENT GOALS?**

Educators and policymakers alike agree that information and communication technologies are of paramount importance to the future of education. ICT in education initiatives that focus on the following areas are most likely to successfully contribute to meeting the Millennium Development Goals:

- **Increasing access through distance learning**

ICTs can provide new and innovative means to bring educational opportunities to greater numbers of people of all ages, especially those who have been historically excluded, such as populations in rural areas, women facing social barriers, and students with disabilities.

- **Enabling a knowledge network for students**

With knowledge as the crucial input for productive processes within today's economy, the efficiency by which knowledge is acquired and applied determines economic success. Effective use of ICTs can contribute to the timely transmission of information and knowledge, thereby helping education systems meet this challenge.

- **Training teachers**

Large numbers of school teachers will be needed to meet the Millennium Development Goals for education. The use of ICTs can help in meeting teacher-training targets. Moreover, ICTs provide opportunities to complement on the job training and continuing education for teachers.

- **Broadening the availability of quality education materials**

Network technologies have the potential to increase the availability of quality educational materials. Their interactivity and global reach allow for customized sharing of knowledge, materials, and databases, quickly and cheaply over long geographic distances. Furthermore, online resources offer teachers access to a vast and diverse collection of educational materials, enabling them to design curricula that best meet the needs of their students.

- **Enhancing the efficiency and effectiveness of educational administration and policy**

New technologies can help improve the quality of administrative activities and processes, including human resource management, student registration, and monitoring of student enrollment and achievement.

## **7.0 MOVING FORWARD**

We need to promote greater involvement of our universities in ICTD and ICT4D institution-building initiatives. Based on research and observation of the ICT and development initiatives around the world, we have proposed an initiative to build the ICT4D capacity in a *regional group* of Nigerian universities. The intent is to demonstrate the potential of universities as partners in such ICT-related development activities as community telecenters, and to persuade important policy-makers to factor universities into their ICT policies. The components of the initiative, express as outputs, include

- A consortium of networked Nigerian universities to collaborate with a consortium of universities in developed countries in ICT-for-development programs;
- Creation of a university-based centre of excellence (ICT Resource Centre) in states of the country for supporting the university consortium's ICT activities including practical training, production of educational and training materials, collaborative research, and exchange of information, knowledge and experience;
- A model curriculum and learning materials for ICT-for-rural development academic and training programs, adapted to the learning culture of the participating universities;
- A cadre of trained ICT for rural development "champions" on the staff of the participating universities, accomplished through collaboration with universities in developed countries;
- An explicit policy and program at each participating university for recruiting students and in-service training candidates into ICT-for-rural development courses and workshops;
- A plan of action for establishing communication linkages among ICT policy makers in Government, faculty in universities, scientists in research institutes, agricultural enterprises, farmer groups and rural communities especially to

promote development issues such as the Millennium Development Goals.

## 8.0 THE TELECENTER CHALLENGE

There is a strong interest and a great deal of activity in Asia, Africa and Latin America in using telecenters as a means of providing ICT resources for people who do not have their own computers and network connections. Many of these telecenters are struggling to survive. What they need are resources that universities might provide. For example:

- **Research** — Telecenters need to find out what kinds of information and communication resources their communities want and need. This is what help telecenters become demand-driven, a vital issue in their sustainability. Telecenters need research also to evaluate continuously how well they are serving the needs of their communities. Many universities have research capabilities that could be applied to the telecenter research needs we mentioned. In addition, universities could use telecenters as social research laboratories for their faculty and students.

- **Local and relevant content** — Too much content on the web is not relevant to farmers and other rural people. It is a common problem around the world, where external information dominates locally-tailored material. This is where credible, useful and user-friendly information needs to be crafted. The UNDP has suggested that the most important reason for the failure of telecenters is their lack of suitable content. Universities such as agricultural universities have access to science-based information that could be tailored to regional, provincial and local social, linguistic, and cultural characteristics, and could be matched with many of the Millennium Development Goals.

- **Training and Learning resources** — People in telecenters need to be trained in how information can contribute to development. We have telecenter managers who know a lot about computers but do not know how to link telecenter potential to health clinics, schools, agricultural extension, or local government. Likewise, telecenters need to make their communities aware of the value of information, such as peanut marketing information and technology transfer in silkworm enterprises, or the chances for more education through distance learning. Awareness of the value of information will help the communities realize the value of the telecenter. Naturally, universities have the capacity to teach and train, but equally important, they have the cultural credentials to give credibility to their knowledge resources.

- **Human resources.** — Telecenters need volunteers who can help make telecenters good places to visit – volunteers who can help people search and understand the basic rewards of a digital experience. The need for volunteers who can welcome special groups such as women and the elderly who are frequently shutout by culture can not be over emphasized. Universities have human resources such as students who could serve as telecenter interns, and faculty members who could serve as content and development advisors. There may be need to incorporate telecenter internships as part of National Youth

Service Corps' Scheme currently in place in Nigeria for young post graduation service requirement in Nigeria and perhaps service in a telecenter for young men and women could become an alternative to military service that some leaders in the country is proposing.

## 9.0 CONCLUSIONS

Globalization and rapid technological change have made knowledge a critical determinant of competitiveness in the world economy. The World Bank is playing an important role in assisting countries in taking advantage of the opportunities in information and communications technologies (ICTs) to contribute to education goals and poverty reduction strategies. With globalization, the information revolution, and increasing demands for a highly skilled work force, it is clear that nations must accord high priority to building the capacity to effectively utilize technology in education.

This paper recognizes the critical importance of effectively utilizing new information and communication technologies (ICTs) to meet the growing need for a more sophisticated labour force, manage information systems, and contribute to poverty reduction around the world. ICTs have tremendous potential for promoting and achieving sustainable development. We need ICTs to get more information to carry out productive, reproductive, and community roles; to conduct businesses, as a service of employment and to work in the ICT industry; to find resources for ourselves, families, work, and communities. In summary, we need ICTs to function in a digital world.

Public Access telecenters constitute an important force in efforts to build an Information Society and to join the march to the Millennium Development Goals. Universities can be valuable actors in providing some of the resources telecenters need for their survival. This is important because colleges and universities are enduring entities in most nations, and the social role of the university historically has been to create, store and diffuse knowledge, a collection of activities that partially parallels some telecenter operations. Yet, few major programs link universities to telecenters as an institutionalized source of information, knowledge and training — the basic commodities of a telecenter. University eReadiness is a good place to start.

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