

Bridging the Digital Divide: The Nigerian Journey So Far

Iwara I Arikpo

Department of Mathematics/Statistics & Computer Science

University of Calabar – Nigeria

iiarikpo@gmail.com

Adenike Osofisan

Department of Computer Science

University of Ibadan – Nigeria

mamoshof@yahoo.co.uk

Abel Usoro

School of Computing, Paisley Campus

University of the West of Scotland – UK

abel.usoro@uws.ac.uk

ABSTRACT

The global nature of Information and Communications Technology (ICT) provides developing countries with a unique opportunity to compete in a global economy that was hitherto beyond their reach. ICT has the potential to reduce physical obstacles, increase market access and trade efficiency, as well as provide a competitive stimulus among these countries in a global information society. Digital divide can be described as the information technology gap between developing and developed countries.

This paper outlines the challenges, opportunities and potentials in the use of ICT for education, research and development in Nigeria. It presents several initiatives that have been made by the Nigerian Government and other agencies to bridge the digital divide between Nigeria and the developed world, with emphasis on some projects and policies such as CANI, PSNet, NUNet, National Information Technology Policy, licensing of the Global System for Mobile Communication (GSM) operators and Second National Operator (SNO), Mobile Internet Unit (MIU). The respective roles of such organizations as Nigerian Computer Society (NCS), Computer Professionals (Registration Council) of Nigeria – CPN, and National Information Technology Development Agency (NITDA) in bridging this gap is also presented.

Challenges facing the continuing development of ICT in the country are identified, and solution strategies to harness the full potential of ICT as an indispensable vehicle for socio-economic development in Nigeria are discussed.

Keywords: Digital divide, information technology, economic development, telecommunications, ICT.

INTRODUCTION

The global nature of information and communications technology (ICT) provides developing countries with a unique opportunity to compete in a global economy that was hitherto beyond their reach. ICT has become a vital engine of any economy, be it developing or advanced. It is an essential infrastructure that promotes the development of other sectors such as

agriculture, education, industry, health, banking, defence, transportation and tourism. It is indispensable in times of national emergencies or natural disasters (as we saw Americans use it during the 9/11 attacks, Tsunamis, etc). It considerably reduces the risks and rigours of travel and rural-urban migration. ICT has the potential to reduce physical obstacles, increase market access and trade efficiency, as well as provide a competitive stimulus among these countries, in a global information society.

Over the years, several initiatives have been conceived by the government of Nigeria and other agencies to develop the ICT infrastructure so as to bridge the digital (information technology) divide between Nigeria and the developed world. Prominent among these initiatives are the licensing of the Global System for Mobile Communication (GSM) operators and Second National Operator (SNO), Public Service Network (PSNet), Nigerian Universities Network (NUNet), among others. There have also been massive investments in ICT infrastructure by Nigerians and non-Nigerians alike, the activities of which cover the whole country. Besides, the government of Nigeria, the International Centre for Theoretical Physics (ICTP), Italy, NIIT, Oracle, APTECH, Microsoft, and many other agencies have trained thousands of professionals in ICT and related areas, to provide necessary knowledge and skills to support ICT activities in the country.

According to the Information Economy Report – 2007/2008 (UNCTAD, 2008), between 2001 and 2004, Nigerian Communications Commission (NCC) issued 523 new telecommunications licenses of various types many of which authorise companies to invest in developing parts of the physical network interconnections and exchanges. However, not all of these licenses have been fully operational and many types of licenses are held by a single company. Currently in Nigeria, there are approximately 30 fixed and mobile service

companies, including four GSM operators, as well as at least 80 Internet Service Providers (ISPs) and VSAT companies. According to an ITU (International Telecommunications Union) Report, released May 11, 2008, there are 10,000,000 Internet users in Nigeria as of March, 2008. This is about 7.2% of a total population of 138,283,240 people. Table 1 shows the growth in the number of operators in the Nigerian telecommunications sub-sectors between 1999 and 2004.

Service category	1999	2000	2001	2002	2003	2004
National carriers	1	1	1	2	2	2
Mobile (GSM) telephony	1	1	3	3	4	4
Fixed telephony	9	16	16	17	20 **	24 ***
VSAT networks	N/A	N/A	N/A	N/A	51	52 *
Internet services	18	30	30	35	35	36
Total	29	48	50	57	112	118

Note: * confirmed; ** including 3 fixed wireless access (FWA) operators; *** including 6 fixed wires access (FWA) operators
Source: NCC (2005).

Table 2: Nigerian telecommunications sub-sectors between 1999 and 2004

Despite these massive investments in ICT infrastructure and ICT-capacity building, Nigeria is still not fully connected to the Global Village, because it lacks the critical drive and strategies to harness the full potential of ICT for the socio-economic development of the country.

LITERATURE REVIEW

ICT Indicators in Nigeria

Nigeria has a population of about 140 million people, 70% of whom live in underserved and remote areas of the country. It also has the fastest growing ICT market in Africa and its telecommunication penetration has improved from 400,000 lines in 1996 to 4.7 million in March 2004. Teledensity rose dramatically from 0.4% in 1996 to 8.5% in 2004, exceeding

the International Telecommunication Union's (ITU's) minimum recommendation of 1%. Nigeria has the most lucrative telecommunications market in Africa, growing at twice the African average (Odufuwa, 2006).

According to a Thisday Newspaper report of June 18, 2008, Nigeria's GSM subscriber base has increased to 47,205,063 at the end of April, 2008, with an increase of over two million from the 45,899,711 recorded active subscriber base for the month of March, 2008. The latest results posted on the website of the Nigerian Communications Commission (NCC) also showed that teledensity has also increased to 33.72% from 32.79% recorded at the end of March 2008.

Subscribers' base in the country has continued to increase since 2001 when the GSM technology was introduced. The teledensity ratio, which was 0.73% in 2001, has steadily increased over the years till it hit the 33.72% in April 2008. A breakdown of the data showed that the total active subscriber base increased from 45,899,711 to 47,205,063 up from 42,915,867 recorded in January 2008. Out of this total, GSM recorded 43,786,542 active lines, mobile CDMA 567,185 and fixed wired/wireless 1,545,984. Total installed capacity also increased to 88,471,789 from 84,698,559 with mobile GSM also the highest with 79,625,308, mobile CDMA 3,170,000, and fixed wired/wireless 5,676,481.

Over the years, since the introduction of the GSM technology, subscriber base has consistently showed increases, quarter by quarter and year by year. Table 2 shows the Nigerian Communications Commission (NCC) published subscriber information from Year 2001 – March, 2008, while Figure 1 is a chart showing Nigeria's teledensity from 2001 to April, 2008.

	OPERATOR	2001	2002	2003	2004	2005	2006	2007	Jan-08	Feb-08	Mar-08
Connected Lines	Mobile (GSM)	266,461	1,569,050	3,149,472	9,174,209	18,295,896	32,184,861	54,413,784	56,492,255	57,720,782	57,622,901
	Mobile (CDMA)	N/A	N/A	N/A	N/A	N/A	N/A	824,741	621,604	702,146	780,938
	Fixed Wired/Wireless	600,321	702,000	872,473	1,027,519	1,223,258	1,673,161	2,449,019	2,454,443	2,417,705	2,537,504
	Total	866,782	2,271,050	4,021,945	10,201,728	19,519,154	33,858,022	57,687,544	59,568,302	60,840,633	60,941,343
Active Lines	Mobile (GSM)	N/A	N/A	N/A	N/A	N/A	N/A	40,011,296	41,049,103	42,483,091	43,786,542
	Mobile (CDMA)	N/A	N/A	N/A	N/A	N/A	N/A	384,315	413,198	424,325	567,185
	Fixed Wired/Wireless	N/A	N/A	N/A	N/A	N/A	N/A	1,579,664	1,453,566	1,430,616	1,545,984
	Total	N/A	N/A	N/A	N/A	N/A	N/A	41,975,275	42,915,867	44,338,032	45,899,711
Installed Capacity	Mobile (GSM)	N/A	N/A	N/A	N/A	N/A	N/A	76,545,308	77,545,308	77,545,308	79,625,308
	Mobile (CDMA)	N/A	N/A	N/A	N/A	N/A	N/A	1,540,000	1,520,000	3,720,000	3,170,000
	Fixed Wired/Wireless	N/A	N/A	N/A	N/A	N/A	N/A	6,578,303	5,633,251	5,576,481	5,676,481
	Total	N/A	N/A	N/A	N/A	N/A	N/A	84,663,611	84,698,559	86,841,789	88,471,789
	¹ Teledensity	0.73	1.89	3.35	8.50	16.27	24.18	² 29.98	30.65	31.67	32.79

¹ Teledensity was calculated based on population estimate of 126million people up till Dec 2005; from Dec 2006, Teledensity was based on a population estimate of 140m.

² Teledensity from December 2007 was based on active subscribers

Table 2: Subscriber information on Nigeria Telecoms from Year 2001 – March, 2008.

Source: NCC, March 2008

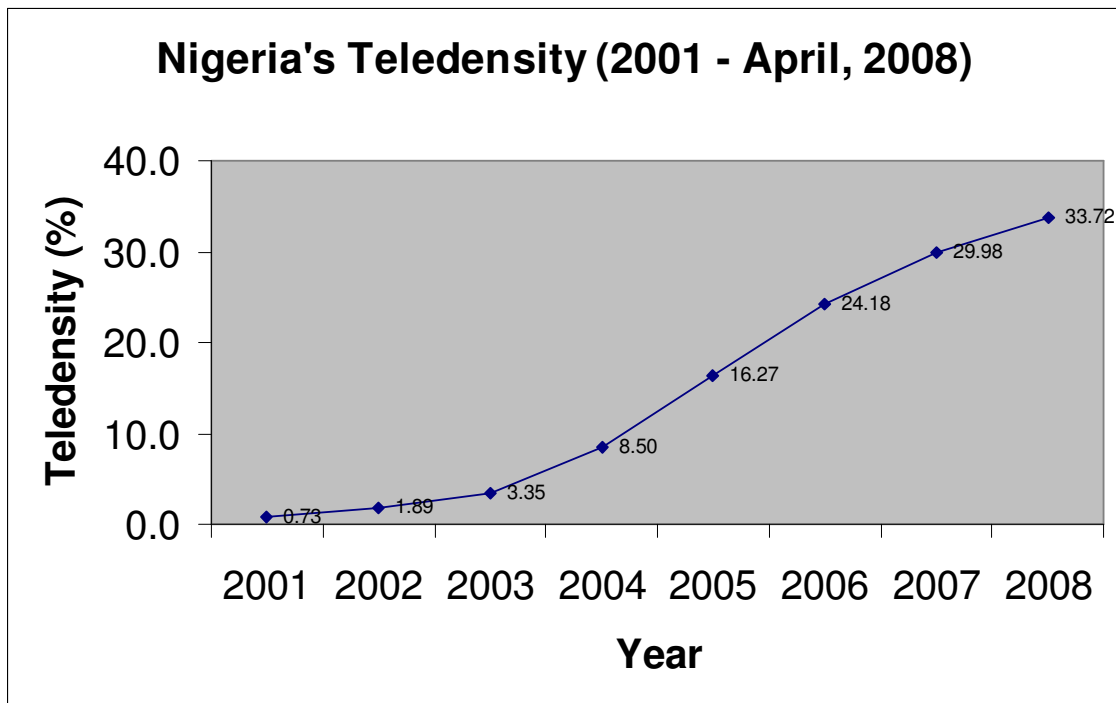


Figure 1: Nigeria's Teledensity Chart from 2001 – April, 2008.

In spite of this obvious and significant progress, Nigeria's performance on a global scale is still far behind countries like Sweden that has 100% access. On the global Digital Opportunity Index, as at 2006, Nigeria ranked 155th, with an index of 0.17, South Africa ranked 86th, with an index of 0.42 and a country like Namibia ranked 113th with an index of 0.35 (WISR, 2007). In the global ICT Diffusion Ranking, Nigeria ranked 161st, staying even lower than countries like Ethiopia at 146th, Senegal at 149th and Mali at 157th (UNCTAD, 2005). For a country as big as Nigeria, these indices are a "far cry" from the expected.

ICT Infrastructure for Education, Research and Development

The high subscription and infrastructure costs, coupled with the poor quality of service by service providers at inception, was a major hindrance to the use of ICT in education, research and development in Nigeria. To create an enabling environment for the use of ICT, foster information exchange among local scientists, and facilitate the interactions and collaboration between researchers in Nigerian institutions and their counterparts across the globe, so many initiatives have been put in place.

Nigerian Universities Network (NUNet) Project

The National Universities Commission (NUC) commenced the plan of an electronic communication network for Nigerian Universities on 16th October 1994, when a Committee was constituted to study the feasibility of introducing Email services.

At its conception in 1995, the Nigerian Universities Network (NUNet) was designed on the one hand to facilitate dial-up email connectivity between the National Universities Commission (NUC), and all Federally-owned universities and Inter-Universities Centres and between the Nigerian University System (NUC, Federal and State Universities and Inter-Universities Centres and other tertiary Institutions) and the outside world on the other hand using the Internet infrastructure. Figure 2 shows the initial setup of NUNet.

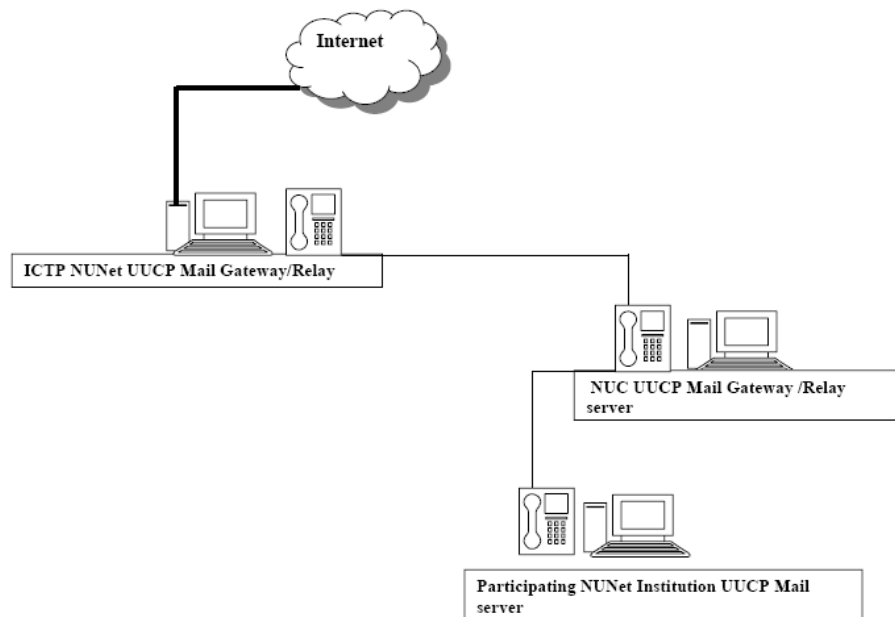


Figure 2: Initial setup of NUNet (Source: NUC)

To achieve this, a MoU was entered into with the International Centre for Theoretical Physics (ICTP), Trieste, Italy in 1996, to:

- Assist in registering domain names for the NUC and all the Federal Universities and Inter-universities centres;
- Serve as the Mail eXchanger and relay for these institutions, and

- Train Network and system administrators on Linux system and network administration.

Under this arrangement, dial-up UUCP mail servers on Linux boxes were installed at each of the initial 29 participating NUNet institutions and configured to periodically (at least 3 times daily) dial into the UUCP Email-gateway at the National Universities Commission Secretariat in Abuja to forward and retrieve respective institutional mails using UUCP's "Store and Forward" mechanism. The Email-gateway at the NUC on its part was configured to periodically dial into the NUNet UUCP mail server at the ICTP, forwarding and retrieving NUNet mails.

In 2000, when the NUC acquired its own VSAT, the Email-gateways at the NUC and ICTP were reconfigured to relay outgoing and incoming NUNet mails between themselves via the VSAT link. Since then, a majority of the federally-owned universities have also deployed their own VSAT earth stations but not many of them locally host their DNS, web and SMTP mail servers. Figure 3 shows this setup.

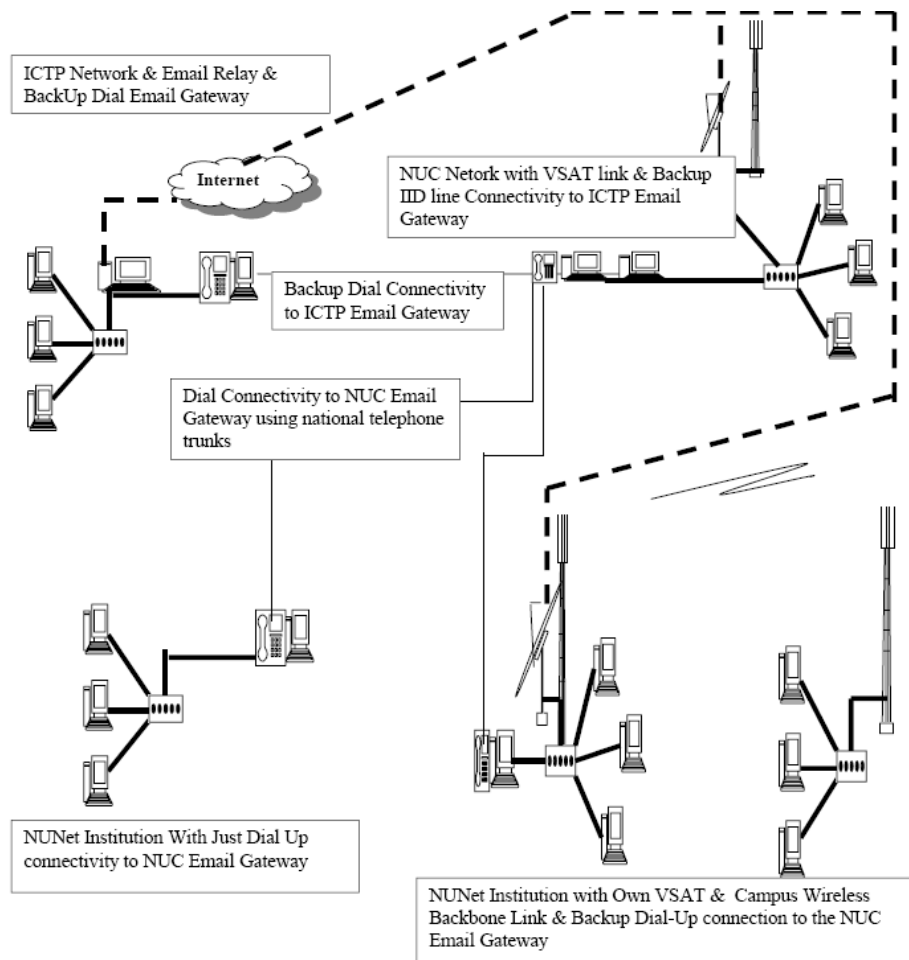


Figure 3: The NUNet topology at the inception of VSAT (Source: NUC)

Wonderful as the vision of the NUNet project was, the fact that the only service provided was email, drastically limited the capacity of the project. Moreover, the increasing deployment of VSATs by institutions greatly reduced the institutional user-base of NUNet. At the same time, the availability of free web-based mail services and lack of intranet services in the universities have hindered the building of true network communities even within the institutions, so that most campus networks are really not more than cybercafés (Ibrahim, 2004). It could be added that university Internet initiatives, though coming with great publicity and enthusiasm have such narrow bandwidths and slow service that it is very doubtful whether any meaningful academic research activity, eg access to e-journals, can be

carried out with them. Again, the facilities mostly are glorified Internet cafés running at slower speeds than some of their counterparts in town.

The NUNet project would have been the most significant impetus for research and development (R & D) in Nigeria, because, it would have fostered research collaborations among Nigerian universities, as well as facilitated academic linkages with their foreign counterparts. However, the project could not realize set objectives, because of lack of proper planning and deployment of resources, as well as, inadequate manpower and training for relevant IT staff at each base station of participating universities.

Notwithstanding the deployment of VSATs in these institutions, the lack of needed funding to equip the universities with computers and other hardware and software resources affected the success of the NUNet project. This is the reason these universities could not deploy services like intranet and web mail services; and most of the base stations have been turned into glorified cybercafés.

Public Service Network (PSNet)

This project, conceived by National Information Technology Development Agency (NITDA), is to address the major problem of ICT infrastructure, and to serve as a pipe for ICT services in the Nigerian Public Service. PSNet involves the development of a National Information Backbone (NIB) for IT development in Nigeria. It is designed to form the bedrock of other technology initiatives in the country. Its vision is to provide standard best effort IP end-to-end service and offer premium mega end-to-end IP service with richer

deployment of e-governance, e-commerce and other Internet services. Thus, scalability is the key in its implementation.

This project is ongoing and involves the deployment of:

- i) A VSAT hub at NITDA's Head Office.
- ii) Wireless Hot spot in Abuja Federal Public Service (comprising Wi-Fi for phases I, II and III of the federal secretariat complex).
- iii) Interconnection of the above-mentioned two buildings (i.e., NITDA Head Office and Federal Secretariat Complex) using fibre optic cables.
- iv) VSAT Remote terminals in 36 states (15 states are already covered as at 2007).
- v) Broad band wireless extensions in 27 states.
- vi) Routing and switching facilities at NITDA's Head Office for the 36 states.
- vii) Collaboration applications, video conferencing, messaging, distance learning, security, etc.

The central hub should ensure:

- Central and efficient management of bandwidth, nationwide.
- Low cost single point of interconnection to states and federal public service.
- Central consolidation for the integration of services.
- Seamless integration of other IT-based programmes of the government including: rural internet access, video conferencing, messaging, distance learning and security.

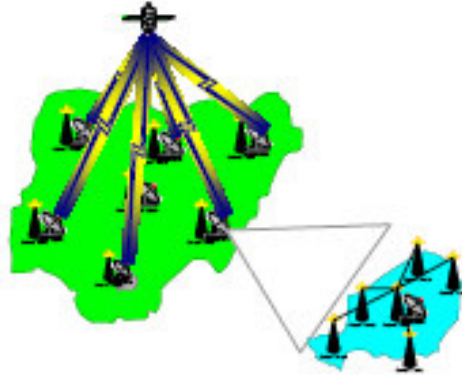


Figure 4: Layout of PSNet (Source: NITDA).

Deliverables of the PSNet are:

- Internet access.
- Messaging, collaboration and Virtual Private Network.
- Switching and routing (traffic prioritizing).
- The provision of the much desired backbone infrastructure upon which e-government applications would be driven.
- The facilitation of the optimal functioning and better interaction for and with all the institutions attached to the three major arms of government (executive, legislature and judiciary).

Through this project, internet connectivity is already being provided to the Presidential Villa, National Planning Commission, and Federal Ministries of Finance; and Science and Technology, amongst others in Abuja. Some are also being assisted in the development of their websites in order to have online presence. PSNet is currently operational in 15 states. Some of the states have even set up their Ministries of Science and Technology or Information Technology Departments/Units under the supervision of their respective

Governors' Offices (NITDA, 2007). The problem of lack of prompt funding and the required political vigour by the government has delayed the completion of this project.

Computers for All Nigerians Initiative (CANI)

The aim of this initiative is to improve Nigerians' access to computer hardware. It includes a funding mechanism whereby civil servants are able to own computers by hire purchase, and then pay the balance (in the form of a loan) at a very low rate of interest. Launched in July 2006, Computers for All Nigerians Initiative (CANI) is a typical example of a public-private partnership. It is being coordinated by NITDA and involves Microsoft, Zinox and Omatek. It is on-going, and promises to be very successful. Related to the CANI initiative is a Petroleum Technology Development Fund (PTDF) plan to build and equip computer centres in higher education institutions across Nigeria. However, this plan does not include internet access (GISW, 2007).

National Rural Telephony Project (NRTP)

The NRTP was expected to provide 500,000 connected lines to 343 local governments in Nigeria within one year. In 2003, the Federal Government of Nigeria accessed credit from the World Bank's International Development Association (IDA), and a part of the funds obtained was to be set aside to improve national teledensity, as well as to step up telecommunication penetration in rural areas. The government also signed a memorandum of understanding (MoU) with the Peoples Republic of China, supported by a concessionary loan of USD 200 million for the NRTP. The project was to be executed in two phases by Alcatel-Shangai and ZTE. However, it was only flagged off in August 2004. The supervising Ministry of

Communications reports that implementation is currently on-going in 108 of 218 targeted local government headquarters in Nigeria. The project is expected to combine with the Universal Service Provision Fund (USPF) to offer concessionary licensing for the providers (GISW, 2007).

The Digital Bridge Institute

The growth in the number of skilled manpower in the telecommunications industry over the years has been remarkable. The Nigerian Communications Commission (NCC) took certain timely initiatives to ensure that the dearth of skilled Nigerians to run the fast expanding telecommunications industry in the country was remedied. A milestone was achieved on May 20, 2004 when the then Nigerian President, Olusegun Obasanjo commissioned an ultra-modern Digital Bridge Institute (DBI) in Abuja, established by the NCC as an international centre for advanced telecommunications studies. Since then, the institute has trained many Nigerians and foreigners on different areas of telecommunications.

Mobile Internet Unit (MIU) Project

A project of National Information Technology Development Agency (NITDA), the Mobile Internet Unit (MIU) is a locally-made 18-seater bus that has been converted into a mobile training and cyber center. Its interior has 10 high-tech workstations, all networked and connected to the Internet to facilitate access to several IT resources. It is equipped with printers, a photocopier and a number of multi-media facilities. Internet access is provided via a VSAT equipment with a 1.2m dish mounted on the roof of the bus. It was commissioned on 10th September, 2003, by the then President, Olusegun Obasanjo.

The unit is also equipped with a small generator to ensure regular power supply. The MIU provides everything you need in a high-tech cyber centre and it has the added advantage of being mobile. It takes the Internet to places that have no other means of access e.g., the rural areas. It has also been deployed to various schools (primary and secondary) and the plan is to get all states and possibly Local Government Areas (LGAs) to have their own MIUs so as to facilitate the penetration of the Internet and ICT around the country (Ajayi, 2003).

Although this project is on-going, it has suffered unnecessary delay due to lack of the required financial commitment on the part of government, as well as inadequate grassroots awareness and mobilization.



Figure 5: Mobile Internet Unit bus

Other projects and initiatives:

Universities Bandwidth Consortium

This is a pilot programme by which six of the nation's universities are able to bulk purchase bandwidth for academic purposes. The scheme holds promise for the over 600 higher education facilities in Nigeria.

Internet eXchange Points (IXPs)

The establishment of Internet exchange points will help keep local Internet traffic within the country, which reduces the need to use international bandwidth and thus significantly lowers costs. An IXP allows different Internet Service Providers (ISPs) to exchange Internet traffic between their autonomous networks without cost.

National Virtual Library Project

The National Virtual Library Project was established in 2001 as one of the several strategies devised to bolster the quality of teaching and learning in Nigerian schools. This is cast within the critical role the library plays in the educational enterprise of any country. Virtual Libraries are described as libraries in which computer and telecommunications technologies make access to wide range of information resources possible. They are called "virtual" because in an electronic wide area networked library, the user enjoys the euphoria of being in distant libraries, and yet he has not physically moved (NUC, 2008).

ICT ORGANIZATIONS IN NIGERIA

National Information Technology Development Agency (NITDA)

NITDA was set up by the Federal Government of Nigeria on 18th April 2001, to ensure the implementation of the National Information Technology (IT) Policy and to coordinate the development and regulation of the Information Technology Sector. NITDA's mandate is diverse and vast, but all their responsibilities fall under the aegis of fostering the development and growth of IT in Nigeria.

In an effort to ensure that the implementation of the IT policy proceeds with maximum effectiveness, NITDA regulates, monitors, evaluates, and verifies progress on an on-going basis under the supervision and coordination of the Federal Ministry of Science and Technology (NITDA, 2008).

Computer Professionals [Registration Council] of Nigeria (CPN)

The Computer Professionals [Registration Council] of Nigeria (CPN) was established on 10 June 1993 with the core responsibility of advancing in Nigeria the knowledge of computer science and the use of computational machinery and techniques related thereto.

Currently, CPN partners with the National Universities Commission (NUC) and the National Board for Technical Education (NBTE) in the development of Computer Science Curricula in Nigerian Universities and Polytechnics, respectively.

As a result of the lack of adequate trained IT manpower in Nigeria in the recent past, most IT departments were manned by non-IT professionals, especially in the public sector. This has slowed down the pace of IT development, e-government and overall service delivery. CPN is trying to reverse this trend by pressing for legislation that will prohibit non-IT professionals

from heading IT-based departments. The Nigerian Legislature is highly in support of this, except for some political hiccups that have delayed the passage of a bill to this effect.

Nigerian Computer Society (NCS)

The Nigerian Computer Society (NCS) is a society for Nigerians around the world in the Information Technology industry, from students to professionals. The aims of the Society, among others, are to:

- Bring together Nigerians around the globe working or interested in computer technology,
- Promote computer and internet technologies within Nigeria.
- Promote a forum for technology development and utilization in Nigeria.
- Help businesses and government agencies in Nigeria better understand the benefits of today's technologies and prepare for tomorrow's advances.
- Provide an independent forum for discussion on the provision and implementation of a robust, scaleable and secure Internet infrastructure in Nigeria.
- Support and encourage IT in Nigeria.
- Provide an online learning and development knowledge base accessible to all Nigerians.
- Ensure that all Nigerians within Nigeria have access to computers and the Internet.

EVALUATION

Challenges, Opportunities and Potentials

The role of the government in creating an enabling environment for the ICT sector has faced considerable challenges, despite support by pan-African bodies like the UN Economic Commission for Africa (UNECA), with its National Information and Communication Infrastructure (NICI) process, and the New Economic Partnership for Africa's Development (NEPAD), with its eSchools Initiative. The National Information Technology Development Agency (NITDA), which is charged with the implementation of the Nigerian ICT policy, began to work with UNECA on the country's NICI process in March 2000. While a draft ICT policy has been produced by NITDA, it is yet to be finalized, due to lack of consistent attention on the part of government.

A Presidential Task Force on ICT Harmonization was inaugurated in August, 2006. Its job is to examine the duplication of efforts and absence of cross-sectoral convergence in the government's ICT strategies. Various sub-committees have prepared reports, but it appears that their efforts have been overtaken by an unexpected announcement in December, 2006 by the Federal Executive Council that several of the 27 government ministries have been merged, reducing the total number to 19. The merger of the ministries has also impacted negatively on the work of a team of Nigerian experts that has been drafting a strategic plan for 2005 to 2008 with support from an UNECA consultant. It was hoped that the plan would streamline the various ICT initiatives in the country. As can be seen, these all-important assignments have been derailed by the same body (government) that initiated them, due to the merger of ministries. After the merger, new ministers were appointed, most of who did not share in the visions of their predecessors. This is one of the greatest challenges to policy-making and implementation in Nigeria, usually resulting in a "back-to-square-one" situation

whenever new ministers (and other top government functionaries) are appointed, or a complete change of government is effected.

Another challenge facing the development of the full potential of ICT for education, research and development in Nigeria is the lack of a truly enabling environment and a sound ICT roadmap and strategies by policy makers resulting in unsustainable ICT development activities. Other challenges include:

- High running and subscription costs,
- Inadequate identification of information sources that meet the needs of users,
- Poor Quality of Service (QoS) of the Internet and Telecommunication services,
- Regulatory issues,
- High cost of hardware,
- Ineffective management of network traffic and infrastructure.

The solution strategy for bridging the digital divide requires an aggressive human capacity-building in ICT through training, in collaboration with local and international institutions. The capacities of relevant institutions must be strengthened and research and development must be demand-driven, focusing on the provision of products to meet local needs.

RECOMMENDATIONS

To develop and utilize the full potential of ICT in Nigeria, thereby bridging the digital divide, there is need to set up an effective ICT taskforce with representatives from all stakeholders.

This, will among other things:

- Assist policy-makers in the formulation of sustainable ICT programmes-roadmap,
- Manage and coordinate the activities of the research and educational network,
- Develop innovative ideas for the efficient utilization of ICT infrastructure (e.g., distance education and virtual libraries & laboratories for teaching and research),
- Provide training in the use of new ICT-based tools, and
- Promote the use of cost-effective ICT technologies such as open source and wireless technologies.

Besides the afore-mentioned recommendations, there must be a conscious and spirited effort by the Nigerian Government to expand and stabilize power supply (which is anything, but stable), since computers and ancillary equipment depend on power (energy).

It is pertinent to also recommend that a Ministry of ICT be created and headed by an ICT-professional, who has the required “know-how” to advise government on ICT issues, as well as lead the government ICT-implementation team as much as possible. This is very fundamental for a developing country like Nigeria that desires to bridge the gap and catch up with a global ICT-driven economy.

Our major financial institutions currently are very willing to make huge lendings to traders who import container-loads of merchandise most of which are not IT related. Such willingness should be diverted (or at least extended) to IT projects in tune with the development in the ICT sector by packaging both local and international facilities to support competent ICT companies.

Finally, Regulatory authorities like NITDA (National Information Technology Development Agency), NCC (Nigerian Communications Commission), and CPN (Computer Professionals Registration Council of Nigeria) have a crucial role to play in the development and strengthening of the ICT industry. Governments of developing countries like Nigeria should support the establishment and development of regulatory environments that provide mobile firms, investors and consumers with the confidence and trust that will facilitate ICT-enabled development and its positive implications for overall economic development.

CONCLUSION

Information and Communications Technology has become one of the most evasive industries in modern history. It is now the driving force and catalyst for the development of modern economies. No country can effectively participate in the new global economy without a formidable ICT base. It is this consciousness that has informed all the ICT projects and policies initiated by Nigeria, as presented in this paper.

Nevertheless, these projects and policies aimed at bridging the digital divide will continue to suffer as long as there is no policy continuity (as mentioned earlier) on the part of the Nigerian Government and her functionaries. Besides, no matter how big the dream to conquer the ICT world may be, if the current epileptic power supply persists, everything will end up in the hands of a few privileged Nigerians who can afford power generators, and hence a failure to bridge the gap. The power supply issue has greatly hampered ICT training and development efforts in rural Nigeria.

The Nigerian Government and People must come to the realization that ICT is highly capital-intensive, and so, the required funding must be done to the sector. They must also understand that ICT infrastructure requires continuous (preventive, corrective and adaptive) maintenance, and the needed funding must be channeled towards it.

The challenges facing the full implementation of ICT for education, research and development in Nigeria notwithstanding, Nigeria still holds promise to lead Africa in ICT, with a market value projection of \$10 billion in the year 2010 (Umoru, 2008).

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