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Nigeria's Development Challenges in a Digitalized Global Economy *(Pp. 111-122)*

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Abstract
The paper assesses Nigeria's digital opportunity index in a digitalized global economy. Given the rising knowledge intensity that permeates every aspect of life, Nigeria is inevitably drawn into the digital global economy indexed by information and communication technology. The paper argues rather succinctly that, the Digital Opportunity Index score reveals a bleak cloud over Nigeria in comparative terms. This degrading status, it earns due to the challenges of corruption in governance, inadequate energy and power supply, widespread insecurity, poverty and high illiteracy level. In other to overcome these challenges, the paper recommends among others sound anti-corruption policy, transparent governance, revamping the infrastructural base for information and communication technology, adequate and steady energy and power supply viable security measures and making information and communication facilities and services easily affordable and accessible to the common man. It is only through effective implementation of the recommendations that Nigeria can lead or at least secure a seat among the comity of nations in the digitalized global economy.

Keywords: Nigeria, Information, Internet, Economy, Digital divide.

Introduction

The breakthrough in technology and the growing digitalization of activities have left Nigeria with no option than to be drawn into the digital global

economy. This is against the background that the rising knowledge intensity has permeated every aspect of cultural, economic, ecological and political spheres of society. It has become obvious that digitalization over the years and their increasing role in development has made it imperative for developing and developed nations of the world to struggle for enhanced information technology for socio-economic transformation of their societies.

The current phase in the evolution of society is characterized by a paradigm shift from industrial age to information age. This shift is based on the emergence of global information infrastructure with a system of governance that is novel and convoluted. The prevalence of information has led to origination of several concepts such as computer revolution, scientific technological revolution, third wave, post industrial revolution, information and communication technology e.t.c. What underlie these concepts is that information both in content and context has become digital. Thus, information has assumed electronic and binary forms capable of being measured in digits (Negroponte, 1995)

With the emergence of the information infrastructure, information has been codified in a manner that renders its processing and distribution quick and cheap. This ability to codify and process gives transformative potency to information such that human society and affairs are positively affected. For instance, in the economic sphere, it has resulted in the creation of knowledge economy thus bringing about qualitative and quantitative alteration in function, process and structure of the economy. Also this development has increasingly eliminated distance in a spacio-temporal sense, thereby moving the world towards a borderless society where individual live and work with great flexibility.

The elimination of distance is made possible with the manipulation potency of the information infrastructure mainly computer and internet. They can manipulate image, video and sound as easily as they can manipulate numbers and letters-akin to giving the computer the gift of sight, imagination and expression (Koelsch, 1995). Today, the telephone, television networked computer and human beings are interlocked in intricate relationships that provide training without paper, buying stocks from any part of the world, students can take academic courses in the best institutions, doctors can diagnose patient, and initiate treatment from any part of the world via handheld devices or wireless communication channels.

The Emergence of a Digitalized Global Economy

The information age or digitalized society was preceded by the industrial age. The speed with which the information and communication technology emerged is quite phenomenal. The revolution started during the World War II with the first large 50 feet long, eight automatic general electro-mechanical calculators known as Harvard Mark I. A second revolution was in the 1970s with the invention of the first processors on a chip and magnetic disc. Micro processors became embedded in an ever increasing range of systems of airplanes, control panels of hydroelectric power station, video players, credit cards, remote control, cameras, hotel room door lock, digital scale in bathrooms, car, fuel injection system to mention but a few, marked the third revolution (Anao, 2002).

The fourth revolution started with the guide line drawn up for communication computer. The net was developed out of the system used in the Pentagon, the headquarter of the American military. The system was first known as the Advance Research Project Agency (ARPA) net with the sole aim of making scientists working on military contracts in different parts of America to pull their resources and share the expensive equipment they were using. The inventor thought of a way of sending messages too. Thus, the electronic mail (E-mail) emerged, (Gibbons 1990, Castells 1996,). The fifth revolution is the wireless phone. Although initially big and bulky, the phones have now been transformed into small devices.

In all these revolutions, Nigeria and indeed the African continent play the role of users of the finished products. It should be noted that the usage of the information and communication technology infrastructure is highly restricted as most African countries including Nigeria ranked very low in its usage. This brings us to the concept of digital divide - a concept that illustrate the current trend in unequal global distribution of technological advancement between and even within countries. Africa has made some effort in recent time to address the disparities in information and communication technology. The effort is evident in the

- The establishment of the OAU-Science, Technology and Research Commission (STRAC) in 1965.
- The OAU partnership with UNESCO and UNECA conference on the Application of Science and Technology-CAST- Africa 1 in Dakar 1974 and CAST-AFRICA 2 in Arusha in 1987.

- The priority given to Science and Technology in Lagos Plan of Action, 1980.
- Consolidated plan of Action on Science and Technology
- The setting up of the AU/NEPAD African ministers conference on Science and Technology.

These efforts however, have not yielded the desired results due to some structural factors that militate against the actualization in the African continent.

Understanding the Disparity in Information and Communication Technology

The imperatives of the emergent information technology become highly manifest as the world turned a new century. This is mostly necessitated by the impact of the technology on mankind. This importance is underscored by Aragba-Akpore:

> Of all the technical changes that have influenced our lives in recent years it is those in information technology that had the greatest impact. This will continue to be so, at least until the end of the first half of next century when other major technological breakthrough in the area of materials, biotechnological or energy may force entirely new ways of living on mankind (Aragba-Akpore 1999:22).

In spite of the influence of the information technology on mankind, the relative level of preparedness varies between developing and developed nations of the world. On the other hand, disparity still exists within developing countries. It is the disparity in acquisition of the information technology that ushered in the concept of digital divide into the lexicon of the information and communication technology in the 1990s.

Digital divide is simply the troubling gap between those who use computer and the internet and those who do not. In a broader term, it is inequitable access to information and communication technology such as the computers, telephones, and other internet technologies (Kalegan 2004, Mutula 2008) Digital Divide is a multidimensional phenomenon encompassing global divide (a divide between the developing and developed nations) social divide

(divide between the information rich and information poor within a nation (Specter 2000, Noris 2001, Servon 2002).

The concept of digital divide according to International Telecommunication Union (ITU) highlights the uneven distribution difference or gap that exists in opportunities to access and use of information and communication technology amongst diverse groups (individual, households or region (ITU 2005). The divide can either be vertical (the gap existing between users and non users) or (horizontal (analyzing the gap among information and communication technology users). Digital polarity is not indexed by technological access and exclusion. It is rather, the under utilization of computers and internet by people of disadvantaged socio-economic background who for various reasons are disconnected from technology resources (Warschauer, 2002).

Digital divide obviously depicts that access to information and communication is embedded in a complex array of factors encompassing physical, digital, human resources etc. Thus digital divide is anchored on inequalities which the growth of and access to information and communication technology have inherited, widened and intensified (Cairncross 2001). The digital divide is evaluated through the Digital Opportunity Index (DOI). Digital Opportunity Index is an internationally accepted information and communication technology indicators that is developed to capture the divide technologically.

The Digital Opportunity Index lends itself to a logical sequential classifications of three categories namely, opportunity, infrastructure and utilization. This is graphically represented in Fig 1 below:

- Utilization category indexes the extent of information and communication technology *usage* and the *quality* which reflects a level of access that enables higher degree of functionality. This is measured by the following indicators: proportion of individuals that used the internet; ratio of fixed broadband subscribers to total Internet subscribers; and ratio of mobile broadband subscribers to total mobile subscribers.
- Infrastructure category includes *network* indicators as well as *devices* that provide interface between the user and the network and has the following indicators: proportion of households with a fixed line telephone; proportion of households with a computer;

proportion of households with Internet access at home; mobile cellular subscribers per 100 inhabitants and mobile Internet subscribers per 100 inhabitants.

- The opportunity category encompasses *accessibility* and *affordability* with the following indicators: percentage of population covered by mobile cellular telephony; Internet access tariffs as a percentage of per capita income; and mobile cellular tariffs as a percentage of per capita income.

The classification represents a transition from a lower level (basic voice communication) to a higher level (broadband connectivity). Access to infrastructure is determined by users having opportunity to be covered by the service and being able to afford it while utilization depends on having infrastructure and a device.

Overview of Nigeria's Digital Opportunity Index

Nigeria's position, within and outside the continent, reveals that it falls within the countries with low digital opportunity index scores. Within the African continent, digital opportunity Index (DOI) in 2005 by International Telecommunication Union (ITU), Nigeria stands in a disgusting contrast with most African countries. It ranks 31 with very low score of 0.41; 0.03 and 0.00 for opportunity, infrastructure and utilization respectively. This is contrastingly low compared with the first nine countries: Seycheles, Mauritus, Morocco, Algeria, Tunisia, Egypt, South Africa, Botswana, Libya with opportunity scores within 0.92-0.98 scores (ITU 2005).

The digital opportunity index for internet use in Nigeria reveals that it belongs to the group of countries with low digital opportunity index economies. Nigeria is widely known for hosting dormant websites. At the level of parastatals, agencies and ministries, very few has impressive record in the creature of functional websites. Numerous others have websites that do not go beyond home pages. At the state level, 12 out of 36 states of the federation do not have official website presence (Adewuyi 2009) in other words, those state are not information and communication technology compliant.

In states that are information and communication technology compliant, several cyber cafés are established. However, it should be noted that most of the cyber cafés are patronized by young persons, mainly males. Thus, internet use is a male dominated enterprise (Ogege 2009). This creates a

digital divide along gender and rural-urban disparity, as there is no internet presence in the rural areas.

In the areas of digital opportunity index in which Nigeria, like most countries with low digital opportunity index economies score very high, is in mobile telephony. The teledensities of Nigeria has witnesses a phenomenal growth in recent times. This is made possible with the auction of digital mobile licenses in 2007 and the introduction of unified licenses by the Nigerian Communication Commission (NCC). This enables operators to deliver multifarious services, under a single platform. Currently, Nigerians can listen to radio on mobile phones which also have camera, video recording and internet browsing function with the revolution in the telecommunication , Nigeria's teledensity has increase from 500, 000 active fixed lines in 2001 to over 60 million active fixed and mobile lines in 2006(Atojoko 2007).

Within a decade of its introduction, the Global System for Mobile Communication (GSM) in Nigeria, the technology has in recent time, made it possible for GSM handsets to be owned irrespective of class. This was unlike what was obtainable in its early stage of introduction when it was a status symbol. Then, owning a GSM handset was an exclusive reserve of the rich or people in the upper class. The crave for owning mobile phones and lines has become a passion for all classes in Nigeria. Today artisans, market women, brick layers, carpenters, okada riders and even the under aged (infants) now brandish GSM handsets with different shape, design and quality. This is so because the sim card of Mobile Telephone Network (MTN) that initially sold for as much as N30, 000 (thirty thousand naira) between 2001 and 2003, now sells for a paltry N250 (two Hundred and fifty naira) only.

It should be noted however, that with the high score in telecommunication, there still exists a perplexing digital disparities especially along urban-rural lines. Most rural areas in Nigeria are still without telephone networks. In some areas where there are Global System of Mobile networks, the people access to handsets is highly incapacitated due to high level of poverty that pervade rural areas in Nigeria,.

The Challenges of Nigeria in the Digitalized Global Economy

The near pervasiveness of the digital technology in Nigeria and the intellectual barrier to its entry is gradually being minimised. Consequently, Nigerians, can now choose software development as a career, regardless of background. Beside this, there are other high-tech job options in the creation and maintenance of websites that are open to Nigerians. Besides the software

and website jobs, the telecommunication has impacted on the socio-economic lives of Nigerians. This positive impact is more visible in the areas of employment generation. The telecom revolution has given birth to a new class of entrepreneurs who might have otherwise been jobless. There is currently a nationwide network of dealers, vendors, telephone accessory retailers and the ubiquitous umbrella-stand of telephone operators all making a living from the fast growing telecommunication sector.

In spite of the explosion in the telecommunication sector and its unprecedented level of employment generation, Nigeria is plagued with some major challenges. It is these challenges that account for the disparaging low scores in its digital opportunity index in contrast with other countries in Africa and other continents of the world. The overall picture is that a country that would have rated high has its information and communication technology skewed in its disfavour, thus, creating a very wide digital divide gap in the opportunity, infrastructure and utilization categories of the digital opportunity index.

A major challenge is that of corruption in governance. The prevailing political culture of governance in Nigeria has increased the rate of official corruption among public office holders. A recent global corruption index puts Nigeria as the third most corrupt nation in the globe. This status it earns mainly in electoral malpractice, inordinate looting of public treasury etc. Corruption distorts the allocation of resources and the performance of government and this has a hindered investment inflow through the impairment of confidence by the international community. This also impairs the creation of an enabling environment for Nigeria to lead or even occupy a seat in the digitalized economy.

Technological breakthrough in information and communication is dependent on undisrupted energy and power supply. This is a fundamental challenge in Nigeria in its bid to bridge the digital divide. Nigeria ranks lowest in terms of energy supply and consumption globally. Currently, power generation has reduced to 1, 000 MW (Adekeye 2009). This is grossly inadequate for a country with a population of over 140 million. This erratic energy and power supply is currently forcing many blue chip companies to shut down or relocate to other countries with safety and favourable energy and power supply. These have serious implications for information and communication technology development in Nigeria.

The spate for insecurity is another challenge that Nigeria has to contend with in trying to come out of problem of low digital opportunity index. The recent surge of kidnapping is a serious threat to internal security. Kidnapping for ransom has become a burgeoning business among hoodlums in Nigeria especially in the south eastern states of Anambra, Enugu, Imo and Abia. Not even the serenity and safety of Abuja-the nation's headquarter is spared. With this high rate of kidnap incidents, information and communication technology companies are afraid to come to Nigeria. The existing ones are even withdrawing their valuable staff for fear of being abducted. This state of insecurity hinders growth in the information and communication technology.

Another challenge to information and communication development in Nigeria is poverty. The poverty level in Nigeria is so high that most people do not have the means to secure the most basic necessities of life. Sometimes, those who may be able to afford basic necessities are still not able to maintain an average standard of living. The proportion of the population that falls within this poverty level portends real indicators for low score in the digital opportunity index especially in the opportunity category and will continue to be low. This is because an individual or a household must have income that can substantially afford the basic necessities of life before thinking of acquiring a mobile telephone, a computer or other information and communication technology facilities.

Information and communication technology requires a high level of literacy for its usage. This poses another challenge for the digitalized economy in Nigeria. Many Nigerians are illiterates. A proportion of the population above 15 and above that can read and write is 57.1% (http://wikipeda.org2007). Besides the high level of illiteracy, not everybody who can read and write can afford or have access to information and communication technology and services. This, in no small measures, affects the digital opportunity index scores for Nigeria and thus serves as a bane to information and communication technology development in Nigeria.

Conclusion

This discourse presented in this paper shows that a paradigm shift to a digitalized global economy is underway and Nigeria is inevitably drawn into it. However, the country's score of digital opportunity index is abysmally low when compared with other countries in Africa and beyond. This becomes more disturbing when viewed against its enormous wealth in natural and human resources which give it the status of the Giant of Africa. The current

score in the digital opportunity is earned mostly in mobile cellular telephony while it lags far behind in internet accessibility and usage. If Nigeria must measure up with other countries of the world with enviable digital opportunity index scores, then the following recommendations must be taken seriously:

Nigeria must take bold step in evolving a political culture of governance that is people and development oriented. It needs some giant strides in tackling corruption which is not only eating deep into the country's development agenda but also hindering foreign investment inflow, and impairing policy regulatory framework. The moment the war against corruption is won, a transparent and committed system of governance is put in place, the challenges of inadequate energy and power supply, poverty and high illiteracy level will be surmounted and there will be an enabling environment for information and communication technology development in Nigeria.

Nigeria should evolve a policy framework that is consistent with making information and communication technology the nucleus of its long term national planning. Emanating from the policy is the development of a digital 'mega city' that is akin to American's Silicon Valley which will meet the high-tech intellectual power needs of the country. Accompanying this is the formulation of viable maintenance policies.

Information and communication will not attain the envisioned critical mass or high digital opportunity index score in Nigeria unless the infrastructural base for information and communication technology is revamped. Essentially, the power grid and the telecommunication infrastructure must be upgraded. Those in charge of governance should make mobile telephony computer and information and communication technology services more easily affordable and accessible by the common man. It is only when the recommendations are religiously implemented that the digital gap in Nigeria can be bridged.

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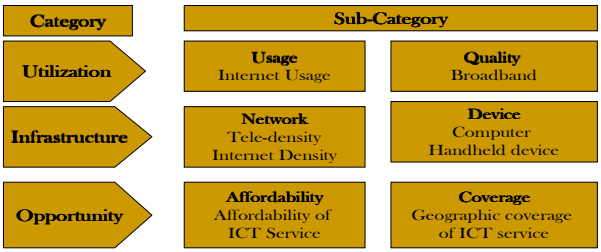
Figure 1: Classifying the Digital Opportunity Index

Figure 1: Classifying the DOI



Source: ITU (2005: 24)