

TRANSFORMATION OF HIGHER EDUCATION IN NIGERIA: THE CATALYTIC ROLES OF ACADEMIC LIBRARY, ICTS AND KNOWLEDGE INTEGRATION

By

E. A. AKPAN-ATATA, Ph.D
*Akwa Ibom State University Library,
Obio Akpa Campus, Oruk Anam L.G.A.,
Akwa Ibom State.*

E. T. EYENE
*Akwa Ibom State University Library,
Obio Akpa Campus, Oruk Anam L.G.A.,
Akwa Ibom State.*

and

IMO S. AKPANYA
*Akwa Ibom State University Library,
Obio Akpa Campus, Oruk Anam L.G.A.,
Akwa Ibom State.*

Abstract

Libraries, documentation and other information centres have been impacted greatly by the epoch-making development in information and communication technologies. The result and effect is that, ICT has kick-started a new era in educational processes and indeed have fundamentally changed conventional methods of information seeking and pattern of teaching and learning in higher institutions among the civilized world of the 21st century. The change has transformed and its transforming information seeking behaviours and learning experiences of both teachers and learners almost on daily basis. It has been realized that in the rhythm of change the breathless leap from the seeming abyss unfathomable wisdom to the sinewy trapping of modern ICTs have wreaked great disruption in the educational system of the non-initiates. It is

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particularly important to pay attention to the optimal context of the library and ICTs policy outcome for in the absence of a strong bridge between both, the transformation will not live up to the expected reality. This study therefore was based on qualitative research methods using observations and documents for data generation and analysis. The study found out that the use of libraries, ICTs and other information centres in the country is hindered by so many inadequacies such as lack of well equipped libraries, poor ICTs infrastructures epileptic electricity supply, poor funding incompetent and poorly trained ICTs personnel. It therefore recommends that key players in the transformation of Education in Nigeria should be proactive and sensitive to the provision of up to date library and ICTs infrastructures, trained manpower and conducive academic environment.

Key words: Library, ICT, Knowledge Integration, Management and Higher Institutions.

The concept of Educational Transformation subsumes the growth and unfettered progress of all aspects of Education be it technological, aesthetic industrial, commercial and even political spheres. Of these spheres of educational transformation that library is regarded as the oxygen of Educational development. Knowledge Integration which is the focal point of education transformation in this context is housed mainly in the library with its ICTs infrastructures. ICT has been and will continue to be a permanent tool for academic propagation, public enlightenment, social security and National stability. And therefore acts as a development yeast that ferment knowledge acquisition and integration. Denga, (2015).

In order to transform our education, Nigeria needs to boost her library services and infrastructures from cradle to tomb, a well developed library facilities at the primary, secondary and tertiary levels will lead to the promotion of literate and information (knowledge) conscious citizenry and the desired skills and manpower to foster national development.

ICT centred education cover the use of computers, online self-learning packages, interactive CDS, Satellites, optical fibre technologies, tele-pressure system and all information technology hard-ware and software. Akpan-Atata (2015). It holds out the opportunity to revolutionize learning and teaching methods, expand accessibility to quality information and education, improves knowledge integration and information dissemination among others.

Knowledge Integration may be seen as a process of synthesizing multiple facets of knowledge into a common unified or holistic and coherent understanding. It may

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further be viewed as a process of adopting an interdisciplinary approach to achieve a meaningful correlation, or interconnection of models of knowledge. As noted by Denga (2015), the option of presenting subjects as independent “states” within the “Federation of knowledge” with rigid boundaries demarcating the areas of knowledge does not promote the unity of knowledge. It simply compartmentalizes knowledge and makes the heuristic understanding rather disjointed. The interaction and correlation of knowledge facilitate a unified power derived from a correlation of connectivity from different areas. The nexus between the three is what this paper is all about.

The Need:

Promoting and developing a knowledge society through computer-based and web-based learning technological tools is one of the strategic plans that is increasingly adopted in recent times by knowledge advancement institutions around the world who wish to progress and support Educational growth for national development (Ololube, Ubogu & Egbezor, 2007). Higher education institutions worldwide in particular are saddled with the responsibility of growing in importance as agencies for the development of knowledge (Akuegwu, Anijaobi-Idem & Ekanem, 2011). As a result, a number of countries, particularly those in the west have been proactive towards developing strategies to drive efforts aimed at providing institutions of higher education the opportunity to achieve knowledge parity for their citizens (Department of Education and Skills, 2011). However, despite advances in ICT, colleges and universities in the Third World are posed with complex problems especially in their academic programmes in reaching the goals of promoting the development of knowledgeable society (Johnson, 2007).

Global efforts at proactively creating knowledge society through ICT include components of computer hardware and software, network connectivity and several other devices, are essential to achieving effective knowledge management. The components include but are not limited to audio, camera, e-mail, facsimile (Fax), internet, intranet, main-frame computer, minicomputer, micro-computer, photography, teleconference, video, websites, word processing computer etc. (Nwafor, 2005). According to Lopez (2003) ICT has provided innovative opportunities for teaching, learning, research and administration in higher education.

The ICT literacy rate in many institutions of higher learning in the Third World has been a case for major concerns and has transformed how we see other countries of the world (Maclkemejima, 2005). ICT literacy rate in this context is the competence (familiarity, skills and ability) of students, academic and non-academic staff of identify, explore actual fact, presents and diffuse information in order to assemble knowledge and

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develop the spirit of learning to be critical and self-critical, and learn to create knowledge significant to a theme of study (Ololube, 2012). To be able to create knowledge is the ability to generate new knowledge on the basis of one's own experiences and constructing knowledge where none is available. This has given rise to progress in our conducts in life because ICT has transformed and impacted on educational methodologies in higher education globally. However, it is pertinent to note that the revolution taking place in higher education is not widespread and there is the need to strengthen ICT penetration to reach a larger percentage of students, academic and non-academic staff in our institutions of higher education (Ifinedo, 2005, 2006). Therefore, knowledge integration and management approaches (Bellinger et al, 2004) will guarantee successful national transformation of Nigeria's education and society. These approaches involve the process of including novel information into an existing body of knowledge using multiple approaches. The processes entail the determination of how new information and the existing knowledge interrelate to each other, how existing body of knowledge should be made to other to accommodate new information, and how new information should be structured to reflect existing knowledge (Cardenas, Al-Jibouri, Halman & van Tol. 2013).

The Academic Landscape:

According to Wilson (2015), Nigeria is one country where a serving ruler and their cronies promote their private institutions to the detriment of the ones they are paid to protect and develop. And the citizens ask no questions. It is perhaps only in Nigeria that the academic staff of Universities can go on strike for months and it does not bother government. Rather than ameliorate the situation, the rulers move from one lying session to the other, articulating dubious positions, mobilizing market women and disoriented and unemployed youths to protest against the lecturers who strive to improve on the conditions of their learning environment. After this, Government then signs an agreement with the teachers' union clearly indefensible move; it sometimes organizes murders and assassinations through road traffic crashes and mysterious Robberies and disappearances. All these are happening in a world that has become so small that everyone depends on each other and appears to be drawn closer through the power of the modern instruments of communication.

On a serious note the academic landscape of Nigeria's higher education includes teaching-learning process, along its research processes. Additionally, it includes the certificate and degree programmes and courses, theses, disseminations and academic publications; the libraries and information services; higher education administration and management. [The Nigerian national policy on education (FRN, 2004) perceived higher education as post-secondary education system which is given in universities,

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Polytechnics, Colleges of Education and Monotechnics, as well as those organization offering correspondence courses. The Federal Republic of Nigeria (FRN, 2004, p. 36) through its national policy on education stated that the goals of higher education shall be:

- To contribute to national development through high level relevant manpower training;
- To develop and inculcate proper value for the survival of the individual and society;
- To develop the intellectual capacity capability of individuals to understand and appreciate local and external environments;
- To acquire both physical and intellectual skills which will enable individuals to be self-reliant and useful members of society;
- To promote and encourage scholarship and community service;
- To forge and cement national unity; and
- To promote national and international understanding and interaction.

The Federal Republic of Nigeria through its higher education institutions shall pursue these goals to make for favourable contributions to national development. And ICT is seen as an indispensable constituent towards the move for knowledge integration (Oyovwe-Tinuoye & Adogbeji, 2013). Nonetheless, ICT diffusion, use and its penetration into research, teaching and learning in higher education are dependent upon the resources availability, which is heavily dependent on government policies and the political environment, moreover these policies and political atmosphere have necessitated gaps in addressing innovative ideas, free enterprise, development problems, strategic planning and the digital divide in Nigerian academic landscape especially in higher education. Renowned ICT scholars (e.g. Mac-Ikemenjima, 2005; Ifinedo, 2005; Ololube, 2009; Cardenas, Al-Jibouri, Halman & van Tol. 2013) believe that ICT has a lot to offer towards knowledge integration and creation. However, the Nigeria government has failed to deliver on that front in line with international best practices, because a great deal of time and efforts have been and is still being put in developing policy guidelines, instead of effective implementation of ICT programmes aimed at elevating and positioning Nigeria in the global academic community (Ololube et al., 2013 and 2015).

Challenges:

As posited by Olaopa, (2015). In the midst of the advent of internet of everything (IOE) how is our Education system stacking up or leveraging the digital technologies? To what extent are students using their smart phones for learning? How many of the lecturers are using social media & ICT technologies to connect with the

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“digital generation” students as part of the detaching process. How will the role of lecturers change with respect to being facilitators of knowledge instead of custodians? To what extent do research projects in our Higher Institution reflect global best practices like innovations taking place in Silicon Valley and Education innovation taking place in Boston Axis of USA? How many are commercialized and marketable. How much of the terabytes of data being generated by these students using their smart phones and other ICTs are being captured, analysed and used for decision making by their respective education institutions. How much of the aforementioned advances are we using as a nation to address the myriad of challenges facing our educational system today particularly with respect to insufficient capacity within the traditional brick-and-mortar education institution, shortage of Lecturers at all levels, examination malpractice, cultism, outdated library facilities, historic insufficient funding and projected dwindling resources from failing oil revenues, exorbitant cost of printing and distribution of hard copy textbooks, under stock libraries with no internet access.

For instance, high cost of traditional populated textbooks and limited access to learning resources is a hindrance to Nigeria educational advancement. In term of ICT, there is the issue of inadequate and sometimes missing infrastructure like, broadband and internet access. There is also a problem of inadequate or poor coordination between Research outputs and production enterprises. Most of discoveries and inventions in our universities and Research institution are never implemented, commercialized and marketable, because there is little or no exchange of information between them. Therefore Knowledge Integration remains also a challenge to transformation of education in Nigeria.

Literature Review

The Contexts of Libraries ICT, Knowledge Integration and Management as opined by Agbor & Ololube (2015); as humans we are challenged with the need for resolving our daily problem in every life and in academics. The knowledge we possess and the capability to make the most of the appropriate information in our daily lives require meeting some certain task. Taking tactical decision requires sharing of knowledge among colleagues and during teaching and learning processes. Basically, knowledge refers to the understanding an individual has about information and the integration and management of knowledge is a comprehensive process, which includes all the processes that allow for knowledge capitalisation in higher education (Oladejo & Osofisan, 2011). Information communication technology (ICT) literacy has been recognised to influence the search for relevant information to solve daily and academic problems (Ifinedo & Ololube, 2007).

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The acceptance and use of ICT to boost knowledge integration and management processes is valuable for higher education in positive ways – enhancing and enabling and in negative ways – blocking and frustrating methods. However, ICT can increase the knowledge content of the teaching-learning methods and the type of students who graduate from higher education institutions. It can facilitate as well as hinder the processes of knowledge integration, acquisition, diffusion, relevance and preservation. Agbor & Ololube (2015). The acceptance and use of ICT to enhance and facilitate knowledge integration and management has brought to the centre stage the burning need for new policies and methodology towards achieving quality higher education around the world (Omona, van der Weide, & Lubega, 2010).

Akpan-Atata, Akwang & Eyene; (2015) observed that ICT fundamentally refers to the application of technology in communication to influence the teachers and learners acquisition of knowledge. It facilitate the achievement of educational goals, benefits the advancement of critical literacy including technological literacy among teachers and students using computer-based teaching and learning methods (CBTL) (Ifinedo, 2005; Ololube, 2009). CBTL improves methods of teaching and learning and makes them more efficient and even more effective; it makes teaching and learning extremely interesting to both the teachers and the learners, it deepens knowledge acquisition for the teachers and learners, but has superior impact on learners. It increases the ability of learners and adds value to knowledge (Ololube et al., 2013). Thus, CBTL improves the quality of information, knowledge integration and management. The Challenges of Library, ICT Usage, and Knowledge Integration for transformation of education in Nigeria

As observed by Agbor & Ololube (2015), the most recent Global Information Technology Report (2015) featured the latest Networked Readiness Index (NRI). NRI assessed the indicators, policies and institutions that facilitates and enables a country to fully influence ICTs for improved competitiveness and knowledge integration. The timing and release of this report is germane when many economies around the world are struggling to make sure that economic growth is equitable and provides benefits for their entire populace. As shown in the 2015 report, ICTs act as means of social development and transformation by improving access to basic services, enhanced connectivity, creating employment opportunities and knowledge societies. In this year's NRI ranking, Nigeria dropped seven places to rank 119th out of 143 countries. NRI for 2014 was 112th out of 148 countries, while that of 2013 was 113th out of 144 countries. The low ranking is due to several factors as indicated in table 1 below.

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Table 1: 2015 Nigeria’s Networked Readiness Index

Group	I n d i c a t o r s	Global Ranking/143 Countries		
A.	E n v i r o n m e n t S u b i n d e x	1	2	0
	1 st Pillar: Political and regulatory environment	1	1	6
	2 nd Pillar: Business and innovation environment	1	1	1
B.	R e a d i n e s s s u b i n d e x	1	2	3
	3 ^{r d} P i l l a r : I n f r a s t r u c t u r e	1	2	1
	4 ^{t h} P i l l a r : A f f o r d a b i l i t y	1	0	4
	5 ^{t h} P i l l a r : S k i l l s	1	3	5
C.	U s a g e S u b i n d e x	1	0	4
	6 ^{t h} P i l l a r : I n d i v i d u a l u s a g e	1	1	4
	7 ^{t h} P i l l a r : B u s i n e s s u s a g e	7		9
	8 ^{t h} P i l l a r : G o v e r n m e n t u s a g e	9		5
D.	I m p a c t s u b i n d e x	1	0	4
	9 ^{t h} P i l l a r : E c o n o m i c i m p a c t s	8		1
	10 ^{t h} P i l l a r : s o c i a l i m p a c t s	1	1	6

Source: Global Information Technology Report for Nigeria (2015, p. 213)

Table 2 presents a detailed analysis of the indicators that necessitated Nigeria to be listed amongst the ICT low ranked countries. The most important indicators to this study are the 3rd, 4th, 5th, 6th, and the 10th pillars. Indices in the 3rd pillar – infrastructure revealed that the electricity production per Kwh is very low to boost and power ICT tools and services. Nigeria rank 125 out of the 143 countries surveyed as a result of the poor electricity supply in the country. The mobile network coverage per percentage of the population showed that Nigeria ranked 116 out of the low. Information on the international Internet bandwidth per kb for each user show that Nigeria ranked very low, in a position of 130 out of the 143 countries evaluated. Same is true of the data for secure Internet servers/million of the population. The revelation is that Nigeria ranked 119 of the 143 countries examined.

The NRI for the 4th pillar – affordability indicates that prepaid mobile cellular tariffs for PPP \$ minute shows a great improvement. This means that the population is willing to pay as high as one United State Dollar per minute tariff. Nigeria ranked 118 for its fixed broadband Internet tariffs for PPP \$ month. The result revealed that the fixed broadband Internet tariffs for PPP \$ month is low. On Internet and telephony competition Nigeria was ranked 1 in a 0-2 (best) rating. This means that Nigeria is comparatively competing moderately fine with its counterparts in the west because Nigeria is one of the fastest emergent telecommunications market in the world.

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The 5th NRI revealed astonishing results when Nigeria ranked 121st of the 143 countries surveyed based on quality of educational system. This is in the same way true when no Nigerian university was ranked amongst the 1000 best universities in the world. Nigeria was ranked 132nd of the 143 countries examined on quality of math and science education. This result did not portray Nigeria in good light. On secondary education gross enrolment rate percentage of the population placed Nigeria at a distant 125th position. The adult literacy rate percentage of the population of Nigeria positioned her in 108th out of the 143 countries surveyed. This low ranking could be deduced that the low ranking is as a result of Nigeria’s ICT penetration.

The Readiness Sub index: 3rd pillar: Infrastructure, 4th pillar: Affordability and 5th pillar: Skills are influenced by vandalisation of ICT infrastructure, insecurity and inadequate electrical power supply for operations, local participation in key ICT areas, inadequate skills and enabling environment (Okwuwke, 2013).

Data for the NRI for the 6th pillar – individual ICT usage revealed that mobile phone subscriptions/100 population placed Nigeria in the 87th position, slightly above half of all the 143 countries surveyed. Individuals using Internet per percent of the population depicts that Nigeria ranked 119th of the 143 countries. Information on households/personal computer revealed that Nigeria was ranked 112th. The fixed broadband Internet subscription/100 population is 140th which means Nigeria is among the last four countries that are low in fixed broadband Internet subscription. Mobile broadband subscription/100 population placed Nigeria in 98th position while on the use of virtual social networks; Nigeria was moderately placed at 82nd position.

The NRI for the 10th pillar – social impacts portray Nigeria very low in the NRI Nigeria was ranked 123rd of the 143 countries surveyed on the impact of ICTs on access to basic service. The report rated Nigeria low on Internet access in schools at 111th position, and ICT use and government efficiency in 119th place, while the e-participation index rated on 0- 1 (best), Nigeria was rank 88th. These demining results are nothing to write home about considering Nigeria’s position as a major player in world economy and Nigeria’s ambition to position itself to be one of the top 20 countries in the world by 2020, (Agbor & Ololube, 2015)

Table 2: Detailed Analysis of the 5th Pillar

I n d i c a t o r s	Global Ranking/143 Countries		
3^{r d} Pillar: Infrastructure			
Electricity production, kwh/capita	1	2	5

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Mobile network coverage, % pop.	1	1	6
In'l Internet bandwidth, kb/s per user	1	3	0
Secure Internet servers/million pop.	1	1	9
4th pillar: Affordability			
Prepaid mobile cellular tariffs, PPP \$ min	3		5
Fixed broadband Internet tariffs, PPP \$ Month	1	1	8
Internet & telephony competition, 0-2 (best)		1	
5th pillar: Skills			
Quality of educational system	1	2	1
Quality of math & science education	1	3	2
Secondary education gross enrolment rate, %	1	2	5
Adult literacy rate, %	1	0	8
6th Pillar: Individual Usage			
Mobile phone subscriptions/100 pop		8	7
Individuals using Internet, %	1	1	9
Households w/personal computer	1	1	2
Fixed broadband Internet subs/100 pop	1	4	0
Mobile broadband subs/100 pop		9	8
Use of virtual social networks	8		2
10th pillar: social Impacts			
Impact of ICTs on access to basic service	1	2	3
Internet access in Schools	1	1	1
ICT use & govt. Efficiency	1	1	9
E-Participation index 0-1 (best)	8		8

Source: Global Information Technology Report for Nigeria (2015, p. 213)

A comparative analysis of three years NRI for selected countries in sub-Saharan Africa and the west revealed that among the sub-Saharan African countries, Nigeria 119th, Gambia 108th, Ghana 101st, Senegal 106th, and South Africa 75th, was found by the report to have low NRI, meaning that all the indicators for improved ICT penetration are not well developed compared to the countries from the west who topped the list, Finland, Sweden, USA, UK, German and ranked 2nd, 3rd, 7th, 8th, 13th and respectively in the 2015 NRI. (See table 3 and figure 2 for detail). The overall results indicated that given the existing ICT penetration rate, it may take African countries and indeed Nigeria over 100 years to catch up with the west in drive for improved knowledge integration and management.

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Table 3: Networked Readiness Index for Selected Countries

Country/Year	2	0	1	3	2	0	1	4	2	0	1	5
N i g e r i a	1		1	3	1		1	2	1		1	9
G a m b i a	9			8	1		0	7	1		0	8
G h a n a	9			5	9			6	1		0	1
S e n e g a l	1		0	7	1		1	4	1		0	6
South Africa	7			0	7			0	7			5
G e r m a n y	1			3	1			2	1			3
F i n l a n d			1				1				2	
U S A			9				7				7	
U K			7				9				8	
S w e d e n			3				3				3	

Source: Global Information Technology Report for Nigeria (2015)

Discussion

In this paper, it is evident that a library and ICT infrastructure enhances knowledge integration and management in higher education. The several outstanding issues that will bridge the current existing gaps between the requirements and the challenges facing the acceptance and use of ICT to enhance knowledge integration and management in higher education must be addressed. This work highlights the relationships between library, ICT and knowledge integration and management in the higher education systems.

This unique study realises that in spite of the unparalleled mobile penetration and the substantial market prospects and potentials, Nigeria is far from being near the digital age if plausible and credible policy measures are not immediately established, because library and ICT services and products are changing by the day. The effort put so far does not guarantee success; what matters is the implementation and the speed of incorporating new library and ICT trends into Nigeria’s higher education (Osugwu, 2015).

According to the Global Information Technology Report (2015) on NRI, less than 40% of the world population enjoys access to the Internet in spite of the fact that more than half of the population now own a mobile phone. Africa is ranked as one of the highest in mobile phone penetration but the report found that lack of access to Internet is depriving many African higher education institutions the opportunity to take

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full advantage of blended learning and web-based learning and services to enhance knowledge integration and management for development to strive.

At this point, African and indeed Nigerian higher education industries can make massive strides in connecting more of their students, academic and non-academic staff to bring about positive knowledge integration by improving its Networked “Readiness Indices. Government policies and the political and regulatory environment will show commitment to bring the benefit of ICTs to our knowledge institutions. Africa and indeed Nigeria needs to prioritise ICT usage, knowledge, skills, and development if it has to benefit from the new knowledge economy and the competences needed to stimulate national development.

Conclusions

This paper has shown that the process of transformation of Higher Education in Nigeria is intractably linked to the practical reality of the library, ICT and knowledge management linkages. The good news is that advances in digital technologies provides tremendous opportunities for a country such as Nigeria to transform her education system beyond what was possible few years ago.

There are a lot of factors that are playing to our favour. First of all the culture of using ICT for learning and teaching is gradually becoming a standard culture in most of our higher education institutions.

Secondly, the gradual efforts of rolling out ICT infrastructures both in libraries and ICTs, computer units is becoming a reality in most of our institutions, of course the increasing level of internet penetration and the dropping prizes of mobile devices will remove current infrastructure inadequacies. Also the Federal Government of recent has programmes set to enhance ICTs and knowledge integration in our higher institutions. This includes National ICT policy, National Broadband Plan, Nigeria Local content development in ICT, and the National e-government initiative and Cyber security have among others? (Olaopa, 2015).

Recommendations

There is abundant evidence that Nigeria is already taking advantage of some of the emerging ICTs and digital technologies to transform its education subsector. However it is recommended that to truly transform our education, ICT should not be used as an afterthought rather there is an urgent need to come out with a new and sustainable education models designed for a digital era. Again this new model must be designed within the context of connected world of digital technologies and social media.

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Same can be said of our new set of libraries. In order words digital, virtual e-library mindsets, world view and culture must be an integral part of the design of our libraries if we are really to transform our education. Thus we must bring library development on the agenda of the government and the library message to a more diverse and enlarged audience by re-inventing the librarian skills and services to match 21st century best practices emplacing why libraries are both unique and variable for the transformation of Nigeria Education System.

There should by a synergy between our higher educational institutions and production enterprises.

The 2015 Global Information Technology report suggests that investment in ICT and education infrastructure; including creating and promoting an enabling environment and competition through sound higher education policies and regulation will correct the imbalance in Nigeria's academic landscape in Higher education. Therefore, genuine strategies that will strengthen digital transformation are direly needed at this stage of our national development.

Not until Nigeria formulates enabling policies, regulations and laws that will improve access to ICT infrastructure in all spheres of life. The building of an ever-present broadband infrastructure, supporting device ownership for all Nigerians, encouraging local content development, stimulating transparency, efficiency and productivity in government and citizen engagement; our aims of multiple policies will be a waste.

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