VOL. 17 NO. 8
ISSN: 2359-1991
MARCH, 2020

African Scholar Publications & Research International

African Scholars Journal of Contemporary Education Research (JCER-8)

Adoption of Information Communication Technologies for Facilating Business Education Classroom Instructions in Nigerian Tertiary Institutions

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Abstract
Adoption of information communication technologies (ICTs) is fundamental in broad-spectrum of human endeavor due to continuous advancements in knowledge and technological sophistication across the globe. In developed regions such as Europe, the use of ICTs has become significantly remarkable in all sectors, especially education, whereas in the least developed regions such as Africa (Nigeria inclusive), uptake of ICTs is yet to be fully realized. But, to be able to cope with global educational ideals, teachers in the least developed regions have to effectively utilize ICTs in their classrooms. This paper attempts to present highlights regarding the status of ICT adoption in Nigerian tertiary colleges with reference to extant literature and with special focus on business education faculties.

Keywords: *Africa, Business Education, ICT Adoption, ICT Policy, Nigeria, Tertiary Colleges*

Introduction
Adoption of Information communication technologies (ICTs) can be indicated by ubiquitous internet access and use; and it is key to the transformation that the world desires (ITU, 2012). Out of the estimated population of nearly 8 billion people in the world, 4.5 billion have access to

the internet, and are using it; with the highest penetration rate from North America - 89.4%; and the least from Africa – 39.6% (IWS, 2019). See Table 1.

Extant literature has shown that across the globe, there has been a wide digital divide between regions that are characterized by highly integrated ICT transformation and those that are yet to be transformed (UNESCO, 2010). For instance, although in Nigeria internet penetration rate (IPR) has grown from 0.1 percent in year 2000 to 55.6 percent in 2019, (See Table 2); average internet connection speed has remained as low as 3.9mb/s against 28.6mb/s in South Korea (IWS, 2019).

Consistently, while most teachers around the world exploit highly sophisticated computer hardware and software, plus interactive learning tools and modules like the 'collaborative blackboards' Larkin & Belson (2005), teachers in Nigeria still use obsolete tools like the manual typewriter in the classroom (Isiyaku, Ayub & Kadir 2015). This digital divide, is crucial for research, and it is the central concern of this paper.

Table 1 Internet World Penetration Rates by Geographic Regions – Midyear 2019

World Regions	Population (2019 Est.)	Population % of World	Internet Users 30 June 2019	Penetration Rate (% Pop.)	Growth 2000-2019
Africa	1,320,038,716	17.1 %	522,809,480	39.6 %	11,481 %
Asia	4,241,972,790	55.0 %	2,300,469,859	54.2 %	1,913 %
Europe	829,173,007	10.7 %	727,559,682	87.7 %	592 %
Latin America / Caribbean	658,345,826	8.5 %	453,702,292	68.9 %	2,411 %
Middle East	258,356,867	3.3 %	175,502,589	67.9 %	5,243 %
North America	366,496,802	4.7 %	327,568,628	89.4 %	203 %
Oceania / Australia	41,839,201	0.5 %	28,636,278	68.4 %	276 %
World Total	**7,716,223,209**	**100.0 %**	**4,536,248,808**	**58.8 %**	**1,157 %**

Source: IWS (2019)

Table 2 Internet Penetration Rates for Nigeria - 2000 to 2019

Year	***Users***	***Population***	***Penetration Rate (% Pop.)***	***Usage Source***
2000	200,000	142,895,600	0.1 %	ITU
2006	5,000,000	159,404,137	3.1 %	ITU
2009	23,982,200	149,229,090	16.1 %	ITU
2011	45,039,711	155,215,573	26.5 %	ITU
2015	92,699,924	181,562,056	51.1 %	IWS
2019	366,496,802	200,962,417	55.5%	NCC

Source: IWS (2019)

The Meaning of ICT

In the late 1970s Information Technology (IT), was the term used for computers and computer peripherals like printers, floppy disks drives, scanners and the early digital cameras; whereas the term Information Communication Technology (ICT), describes technologies of the internet along with computer networks, World Wide Web, e-mail and search engines used in producing and sharing information (UNESCO, 2010; 2012). This means ICT refers to those technologies that enable us receive information and communicate or exchange such information with others.

ICT Utilization Model

To ascertain the stage of ICT integration, reached by a region, a country, a district, an individual school, or even a class within a school UNESCO, (2010) proposed a model as a scaffold or framework for interpreting stages of ICT adoption and use. The model has proposed two dimensions of ICT integration and five stages of ICT integration in education explained as follows:

Technology dimension: The technology dimension of ICT integration is symbolized by the systematic acquisition of all the tools that an ideal ICT system is comprised of.

Pedagogy dimension: The pedagogy dimension is represented by a continuum of changing teaching practices owing to the adoption of varieties of ICT tools.

Emerging stage – characterized by a scenario where teachers frequently use available equipment for personal and professional purposes of word-processing and spreadsheet tasks, e-mail, internet and the likes.
Applying stage – characterized by a scenario where schools have acquired vast ICT equipment and have adopted policies and strategies that support the implementation of ICT content curricula in different subject areas, leading to the application of a wide range of ICT tools for designing, modeling and simulations in their teachings. Accordingly, UNESCO, (2010) stated that at this stage the teachers' opportunity to apply ICT is only limited by lack of ready access to ICT facilities and resources.
Infusing stage – characterized by a scenario where almost all classrooms are fully equipped with computers, and all school offices and the library are connected to internet; plus, a wide range of other ICTs in laboratories and administrative offices across the institution. Hence, teachers are now able to integrate ICTs in all aspects of their professional lives to improve their own learning as well as the learning of their students.
Transforming stage – the transformation stage is an offshoot of the infusing stage. Here, ICTs are fully integrated in all regular classroom learning activities in a way that symbolizes a rethink and renewal of the overall institution in creative ways. The symbol of this transformation is the complete adoption and utilization of ICTs as part of the daily life of the institution (UNESCO, 2010).
Unvaryingly, UNESCO, (2010) has highlighted that the stages in their ICT Adoption Model are not necessarily hierarchical, but rather they are stages that teachers typically experience in developing competence to use ICTs with confidence and ease, while their pedagogies and the learning experiences of their students are positively transformed.

ICT Policy in Nigeria

The need for a policy on national Information Technology (IT) was marked out in Nigeria after the participation of the Nigerian delegation in the first African Development Forum on the Challenge to Africa on Globalization in the Information Age, held in Addis Abba in October 1999 (FRN, 2001). Sequel to this, a national workshop on the National Information and Communication Infrastructure (NICI) was held in Abuja in March 2000. Professional bodies including Computer Association of Nigeria (COAN), Information Technology

Association of Nigeria (ITAN) and the Institute of Software Practitioners of Nigeria (ISPN) submitted various draft proposals for the Nigerian IT policy. Afterwards, more efforts were put together and at the end of the day a master plan for the development of a national ICT program "ICT 2000" was produced. This program was nicely articulated and documented in the same year – 2000, as the *"Nigerian National Policy for Information Technology (IT)*, with a cliché that says "Use IT"

The National Information Technology Policy (NITP) as it was called, underpinned the utilization of a highly efficient IT system to drive the nation towards becoming a key player in the emerging information age, (FRN, 2004). To achieve that goal, a vision statement was adopted - "*…to make Nigeria an IT capable country in Africa and a key player in the Information Society by the year 2005, using IT as the engine for sustainable development and global competitiveness.*" In addition to that, a mission statement was also adopted – "*…to use IT for education, wealth creation, poverty eradication, job creation and global competitiveness."* According to FRN, (2004) some of the fundamental objectives of the policy were as follows: (i) to integrate IT into the mainstream of education and training; (ii) to empower the youth with IT skills and prepare them for global competitiveness; (iii) to ensure that Information Technology resources are readily available to promote efficient national development; (iv) to empower Nigerians to participate in software and IT development; (v) to encourage local production and manufacture of IT components in a competitive manner; (vi) to establish and develop IT infrastructure and maximize its use nationwide. (vii) To create IT awareness and ensure universal access in order to promote IT diffusion in all sectors of our national life. (viii) To create an enabling environment and facilitate private sector (national and multinational) investment in the IT sector; (ix) to develop human capital with emphasis on creating and supporting a knowledge-based society; (x) to build a mass pool of IT literate manpower using the NYSC, NDE and other platforms such as "train the trainer" (TTT) scheme for capacity building; (xi) to set up Advisory standards for education, working practices and industry; (xii) to establish appropriate institutional framework to achieve the goals; (xiii) to generate additional foreign exchange earnings through expanded indigenous IT products and services.

FRN, (2004) has reported that Nigeria had mapped out some strategies for the achievement of the objectives of its IT policy as follows: (i) establishing a coordinated program for the development of a National Information Infrastructure (NII), State Information Infrastructure (SII) and Local Information Infrastructure (LII) backbone by using emerging technologies such as the satellite, including VSAT, fiber optic networks, high-speed gateways and broad band/multimedia technologies; (ii) providing adequate connectivity to the Global Information Infrastructure (GII); (iii) restructuring the education system at all levels to respond effectively to the challenges and imagined impact of the information age and in particular, the allocation of a special IT development fund to education at all levels; (iv) utilizing IT opportunities to restructure government, citizens and business interfaces for better governance, improved trade and commerce and administrative effectiveness.

FRN, (2004) also reported that to achieve the short and medium term objectives of the Nigerian IT policy with maximum effectiveness, Government decided to establish a National Information Technology Development Agency (NITDA) to implement the IT Policy and regulate, monitor, evaluate and verify its progress on an on- going basis, under the supervision and coordination of the Federal Ministry of Science and Technology. Also, to ensure the adequate funding of the ICT policy and projects, it was strategized that a National Information Technology Development Fund (NITDEF) be established, under the aegis of the National Information Technology Development Agency (NITDA), to be funded with a startup grant of at least $150m and two percent of the national budget to be allocated to the fund until the articulated vision is attained. Also, 3% tax on all imported finished IT products was suggested to be directly paid to the fund. Based on the foregoing, one would assume that Nigeria has put everything in place to guarantee and appropriate uptake of ICTs in all its sectors. Yet, the question remains – where is Nigeria today with regard to ICT adoption, especially education?

ICT Adoption in Nigeria Today

ITU, (2012; 2018) had used an ICT Development Index (IDI) to rank the IDI performances of 155 countries across the world in 2010 and 2011; and 176 countries in 2016 and 2017 with regard to ICT infrastructure and uptake (See Table 4). Their report has shown that out of the 155 countries ranked in 2010

and 2011, Nigeria was on the 124th position in 2010 and moved forward a bit to 122nd position in 2011. South Korea was ranked first in 2010 as well as in 2011; whereas Chad Republic was ranked the last (155th) in 2010 while in 2011 Niger Republic took the last position. The report also showed that Malaysia was ranked 57th in 2010 but moved back a bit to the 58th position in 2011. Consistently, out of the 176 countries ranked in 2016 and 2017 Nigeria was ranked the 143rd in 2017 as well as in 2016. Iceland was ranked first in 2017 while in 2016 it was ranked the 2nd whereas Eritrea was ranked the last (176th) in 2017 while in 2016 it was on the second to the last position (175th). The report also showed that Malaysia was ranked 63rd in 2017 while in 2016 it was on the 62nd position in 2016. Below is a table extracted from ITU, (2012; 2017) that shows the IDI for Iceland, Malaysia, South Africa, Nigeria, Eritrea, Korea, Chad and Niger:

Table 3 (ICT Development Index (IDI) Ranking - 2010, 2011, 2016 and 2017)

Country	**Iceland**	**Malysia**	**South Africa**	**Nigeria**	**Eritrea**
Year	**2017**	**2017**	**2017**	**2017**	**2017**
Rank	**1st**	**63rd**	**92nd**	**143rd**	**176th (Last)**
IDI	**8.98**	**6.38**	**4.96**	**2.60**	**0.96**
Year	2016	2016	2016	2016	2016
Rank	2nd	62nd	88th	143rd	175th
IDI	8.78	6.14	4.91	2.44	0.96
Country	***Korea***	***Malaysia***	***Chad***	***Nigeria***	***Niger***
Year	**2011**	**2011**	**2011**	**2011**	**2011**
Rank	**1st**	**58th**	**154th**	**122nd**	**155th (Last)**
IDI	**8.56**	**4.82**	**0.94**	**1.93**	**0.88**
Year	2010	2010	2010	2010	2010
Rank	1st	57th	155th (Last)	124th	154th
IDI	8.45	4.63	0.85	1.75	0.88

Source: ITU (2012; 2018)

Implicit in the foregoing discourse, Nigeria has been ranked low with regard to ICT adoption, even though it has launched its ICT policy several years ago. Pertinently, some significant developments have been recorded with regard to ICT adoption in sectors like banking and finance; but not much has been

accomplished in most other sectors, including education. In sum, some of the notable areas that have been impacted by ICTs in Nigeria are as follows:

E-banking: To place the Nigerian banking system on an electronic payment platform, the Central Bank of Nigeria (CBN) has in August 2003, issued *"Guidelines on Electronic Banking in Nigeria"* (FRN, 2003). The Guidelines focused on future conduct of financial institutions (the commercial banks) in e-banking and electronic payments delivery. The guidelines applied to both retail and commercial customers, and financial institutions (banks) use it for evaluating and implementing authentication systems and practices whether they are provided internally or by a service provider. Accordingly, the commercial banks have made a significant headway in recent years, by offering various electronic banking and payments services through the internet, mobile telephony, Internet banking and ATMs (Ibitola & Longe, 2013).

E-financing: With the adoption of electronic payment system across all government agencies in the country the Nigerian financing system is in the process of being digitalized. Emphasis on electronic payment systems is continuously being made and there is also a strong initiative for the attainment of a cashless society which has continued to increase (Olusola, Oludele, Chibueze, & Samuel, 2013). The e-financing policy commenced in Lagos State, in early 2013, and on 1st July, 2013, the policy extended to Kano State, Abia State and Abuja – the Federal Capital of the nation. Presently, the nation has launched an integrated payroll and personnel information system (IPPIS) to help in planning and managing payroll budget by ensuring proper electronic control of personnel cost. With this policy, staffers can generate their pay slips from the internet and get it sent to their emails upon request.

E-Governing: In a study conducted by (Asogwa, 2013) on electronic governing in Nigeria, it was stated that Nigeria has set up an e-government initiative, termed the "National e-Government Strategy" (NeGSt) for the purpose of using ICT infrastructure to enhance public services. It was expected that e-government would enable the Nigerian government at all levels to offer effective and efficient service in the public sector and ensure higher productivity and economic growth in the country. However, according to the study, it was regrettable that the e-services envisaged seem not to be impacting much on public service delivery in the country.

Distance Education: It was posited by (Ololube, Egbezor, & Kpolovie, 2008) that the ICT status in Nigeria has not been capable enough of enabling colleges and universities in the country to succeed in the effective implementation of distance education programs; thereby incapacitating the drive towards the development of a knowledgeable society. But, a number of researchers such as Howell, Williams, & Lindsay, (2003), have confirmed the growing importance of distance education programs in the development of knowledge. Accordingly, Ifinedo & Ololube, (2007); Ololube, (2006), have posited that one of the key essences of distance education is that it provides opportunity of attaining higher education without necessary attending conventional institutions of learning.

ICT in Nigerian Educational System

The potential benefits of utilizing ICTs in school system have been long identified by the Nigeria government Yusuf & Yusuf, (2009). This has been evidenced in Nigeria's educational reform policies aimed at integrating the use of ICTs in the Nigerian school system. However, Yusuf, (2005) has observed that the Nigerian national policy for information technology was inadequate for making any significant positive impact on the Nigerian education system. According to Yusuf, (2005), this stems from the fact that the policy's philosophical frame of reference was market driven, and that there was little emphasis on the integration of ICT in instruction. In addition, Yusuf, (2005) claimed that the strategies outlined in the document were not followed.

Therefore, in 2004, the Federal Ministry of Education, (2004) came up with another document on ICT, which was the Ministerial Initiative on e-Education for Nigerian Education System. (Yusuf, 2005), stated that unlike the previous documents, the initiative was drawn based on input from major educational and human development commissions and boards such as (National Universities Commission (NUC), National Colleges of Education Commission (NCCE), National Board for Technical Education (NBTE), Education For All (EFA), and Universal Basic Education (UBE). However, according to Yusuf, (2005) the document could not be successfully implemented along the line, and since then, no other national document had been developed on the integration of ICT in Nigerian educational institutions until in the year 2007. Nevertheless, there were some few governmental and non-governmental agencies that initiated ICT-driven projects and programs to impact on all levels of the educational

sector, such as the Education Tax Fund (ETF), the Nigerian Communication Commission (NCC), the Digital Bridge Institute (DBI) and Zinox Technologies Ogunsola & Aboyade, (2005). Hence, it was in February, 2007, that the Ministry of Education created its ICT department (Agyeman, 2007).

ICT Adoption in Nigerian Education

Going by the UNESCO's model of ICT adoption and use in education, (Iloanusi & Osuagwu, 2011) hypothesized that 90% of Nigerian educational institutions are in the emerging phase of ICT adoption and use, while only 7% are in the applying phase, and only 3% in the infusing and transforming phases. This signifies the infancy stage of Nigeria in the adoption of ICTs in its educational sector. Unfortunately, literature has indicated high levels of poverty and corruption as the causes of poor ICT adoption in Nigeria. Hence, Asogwa, (2013); Delaviz, Andrade, Pouwelse, & Epema, (2012); Ololube et al., (2008), posited that much of the difficulty faced in Nigerian education lies generally in the ICT infrastructural deficiencies and the weak economic state of affairs of the country that has for long been characterized by gross embezzlement, theft, bribery and corruption, plus shortage of skilled manpower, poor electricity and serious neglect of the education sector.

Accordingly Ololube et al., (2008), have noted that academic standards have fallen severely over the years and educational achievements amongst students have become purely self-guided, with a little or no significant support from the teachers. Consistently, Aduwa-Ogiegbaen & Iyamu, (2005) noted that instructional materials that aid teaching and learning, such as textbooks, classrooms, laboratory equipment, access to computers and the Internet have been grossly inadequate over the years. This situation has grossly weakened the growth of Nigerian education sector along the pace of the trends in technology.

Adoption of ICTs in Teaching Business Education in Nigeria

Business education has emerged over the past 400 years, from the status of hands-on application of existing knowledge to an apprenticeship system; to a classroom setting and to a research-based method (Benson, 2004). Today, it has become a big business across the globe – with a dual nature of being theoretical and practical.

Business education is an offshoot of vocational education that is concerned with the acquisition of productive skills in business, as well as the intellectual processes involved in earning a living. Business education, has to do with preparing individuals for advancing into the business world to function intelligently as employees or employers and as consumers or producers of goods and services, able to cope with possible challenges and changes in future developments.

According to Nanassy, Malsbary, & Tonne, (1977) business education is education for and about business. That, business education for business is geared towards enabling beneficiaries to develop occupational skills such as recording, retrieving, coordinating, analyzing, organizing, and reporting data used for business decisions as well as skills for marketing and managing the flow of goods and services. On the other hand, Nanassy et al., (1977) posited that business education about business, is geared towards enabling beneficiaries to improve their understanding of business and its relationship to the total economy, thereby developing personal consumer competence and skills that relate to business success.

From the foregoing, business education, has to do with preparing individuals for advancing into the business world to function intelligently as employees or employers and as consumers or producers of goods and services, able to cope with possible challenges and changes in future developments. To buttress this view, Renshaw, Trott Jr, & Friedenberg, (1988), described business education as an indispensable part of liberal education, which is fundamental to human survival.

Earlier definitions of business education such as Crank & Crank, (1977) had centered around skills acquisition for employee or employer roles, in aspects of marketing and distribution, economic literacy and personal business activities. But definitions such as (Anao, 1986; Fafunwa, 1983; Ulinfun, 1982; Williams, 1981) had incorporated concepts such as data processing, automation and technology in the scope of their definitions for business education. Isiyaku, (2009) posited that although business education has no universal definition, it should not be constrained within the clustered walls of skills acquisition for working in an enterprise; but rather, it should integrate all aspects of intellectual development and capacity building for educational, technological and business

competence. Hence, to think of business education without ICTs in contemporary age is like perforating an egg and keeping its shell for dinner.
In consistence with the foregoing, Rienties & Townsend, (2012) observed that traditional forms of business education has been devoid of optimal learning experience for business students and suggested that the way teachers in business education design, teach, implement and assess their courses must change and comply with the expanding possibilities of ICTs like the web 2.0 for online collaborations, lifelong learning and research. Unfortunately, it was revealed in Isiyaku, et al., (2015) that the quality of teaching business education in Nigerian tertiary colleges has remained low for the past several years - characterized by the use of obsolete technologies, lack of skilled manpower and lack of adequate ICT facilities, such that sometimes teachers resort to buying and using ICT tools for classroom purpose out of their own volition. Consistently, the UNESCO's model for measuring ICT adoption and use has implicitly submitted that most of the business education faculties in Nigerian tertiary colleges are still at the emerging stage of ICT adoption - characterized by the introduction of computers, mainly for learning rudimentary ICT skills and identifying ICT apparatuses. Basically, in this stage, teachers cynically use existing paraphernalia for data processing or spread sheet tasks and the classroom practice is still very much teacher-centered.

Changes in Global Business Education

Extant research has indicated dramatic changes in business education across the globe. A study by Mountjoy, (2007) showed a shift in business education over the decades, from teaching subject contents like typewriting and shorthand to teaching computer and ICT related subject contents. Classically, this shift has brought important positive changes in business education across developed regions of the world, such as America, Europe and Asia. This suggests that regions that are yet to be developed (Nigeria inclusive) particular must join the trend and embrace technology because the current generations of students would benefit from the same teaching and learning approach and content without an alteration, considering the emerging trends of our knowledge-based society (Kulshrestha & Pandey, 2013; Redecker, 2008; Simplicio, 2000; Zhu, Wang, Cai, & Engels, 2013).

Conclusions and Recommendations

One of the key factors that has retained Africa on the list of the least developed regions across the globe is its poor status of ICT uptake over the past several decades. With an IPR of 39.6% in year 2019 it was the least among the seven regions of the world while North America was the first with 89.4%. Nonetheless, Africa has recorded the highest IPR growth (11,481%) in the world between year 2000 and year 2019, signifying a bright future for the region.

Consistently, although ICT adoption in Nigeria has generally remained in an emerging stage over the past several years, it is pertinent to say that some noteworthy strides have been made towards improving the ICT status of the country. With recent reports showing that Nigeria has attained an IPR of 55.5% in 2019 against 0.1% in 2000, it implies that the future is bright for the country with regard to ICT adoption in general. However, the country must improve on its average internet connection speed which has remained as low as 3.9mb/s against 28.6mb/s in South Korea.

Finally, since there is a paradigm shift in business education across the globe from teaching subject contents like typewriting and shorthand to teaching computer and ICT related subject contents, this paper recommends that faculties of business education in Nigerian tertiary colleges should update their curricula and abolish any obsolete tools and incongruous course contents from their teaching and learning programs.

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