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ICT AFFORDANCES AND UTILIZATION CHALLENGES IN TERTIARY INSTITUTIONS: A SETBACK TO ATTAINING NIGERIA VISION 20:2020

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Abstract
ICT utilization in tertiary institutions is essential for promoting teaching and learning. It is also needed go overcome surmount barriers of time and place as it provides teachers and students opportunities for endless research and learning via the internet. The study x-rayed Nigeria development plans from independence to Vision 20-2020. It examined the contributions of ICT to tertiary education, reviewed the status of Nigeria with respect to ICT development index, challenges of ICT utilization in Nigerian tertiary institutions. The study further surveyed the implications of these challenges to tertiary education and proffered solutions to the setbacks stated.

Keywords: ICT utilization, Tertiary institutions, Vision 20-2020

Introduction

The success of any government is determined to a large extent on its level of economic growth and development entrenched in its development plans. Olaseni and Alade (2012) observed that African countries such as Nigeria use development planning as strategy for achieving economic and social development at independence. These plans begin with a visison statement and then a scientific identification of the set goals and objectives plus a clear breakdown of the means for achieving them (Sanusi & Akpotu, 2015). Nigerian government from the time of independence, charted economic/development plans aimed at setting the country on a part of advancement by using the countries resources to advance economic growth and enhance development and well being of its citizenry.

According to Sanubi and Akpotu (2015) the first post-independence national development plan was from 1962 -1968 which resulted in an impressive average growth rate of 5% per annum. The second plan was between 1970 and 1974 which targeted post-war rehabilitation and reconstruction; this was followed by the third from 1975 1980 which aimed at accelerating industrial development through import substitution strategy (Ayodele, Obafemi & Ebong, 2013). The fourth national development plan emphasized domestication of raw materials for local production and promotion of employment prospects was drawn between 1981 and 1985. In 1986, there was a 2-year Structural Adjustment Programme (SAP) and 3-year rolling plan of 1990, 1991 and 1992. The subsequent development plan was Vision 2010 launched in 1997 which attempted to make Nigeria a developed nation by 2010 when

she commemorates her 50th independence anniversary. The National Economic and Empowerment Development Strategy (NEEDS) was another developmental plan followed based on initiatives of Vision 2010 (National Planning Commission, 2005) in 2003, which culminated to Vision 20: 2020.

Nigeria's Vision 20: 2020 was articulated during the administration of Gen. Olusegun Obasanjo (1997-2007) to make Nigeria one of the largest economies in the world by year 2020 by launching the nation on the path of sustained social and economic progress to accelerate the emergence of a truly prosperous and united Nigeria (FGN, 2009). Vision 20:2020, according to Olasina and Alade (2012), is an outcome of a research by the America Investment Bank which predicted that Nigeria will be in the league of 20 top economies based on the assessment of her abundant natural and human resources on the assumption that the resources will be efficiently managed. The vision statement is " By 2020, Nigeria will have a large, strong, diversified, sustainable and competitive economy that can effectively harness the talents and energies of its people and responsibly exploit its natural endowments to guarantee a high standard of living and quality of life of its citizens (National Planning Commission, 2009). Vision 20:2020 covered 29 themes identified as encompassing Nigeria's opportunities for growth in which Information and Communication Technology (ICT) was prominent.

According to NTWG on ICT (2009), the vision on ICT thematic group is to attain informatiion and knowledge-based economy and society that is technologically enabled through competitive ICT industry. The objectives include:

A) To make ICT an enabler to transform the socio-economic sectors of Nigeria.

b) To deploy ICT in government in government for transparency and accountability as well as to enhance efficiency, effectiveness and increase government capacity to deliver citizen centered services to attain national competitiveness.

c) To attain globally competitive local capacity with regard to human capital in all aspects of ICT (software, hardware, networks, card technologies, security/biometrics, web and digital content development etc)

d) To attain competitive local capacity in ICT infrastructure (backbone, hosting, data centers, internet exchange/gateway etc).

e) To develop the ICT industry for the production of software and hardware to global standards.

f) To pursue research and development (R & D) activities and to encourage innovation in ICT.

The attainment of the above laudable ICT objectives in education system especially at the tertiary level, is pertinent since its goals are to contribute to national development through high level manpower training; develop intellectual capability of individuals to understand and appreciate their local and external environments; acquire physical, intellectual, technical and professional skills which will enable individuals to be self-reliant and useful members of the society and promote national and international understanding and interaction among others (FRN, 2009). Ayodele, Obafemi and Ebong (2013) observed that

the fundamental concern in realizing Nigeria's Vision 20:2020 is the empowerment of the people through good education, which is the bedrock of any development.

Contributions of ICT to Tertiary Education

The impact of technological innovations is far reaching in every sphere of a nation's growth . Adu, Emunemu and Oshati (2014) asserted that the development of any nation depends on the advancement and application of science and technology. ICT is an integral component of science and technology which brings about rapid technological, social, political and economic transformation to pave way to network society. This is in line with the assertion of Nworgu (2006) that for a teacher, government or an economy to be relevant, it has to be ICT compliant. ICT refers to a diverse set of technological tools used in communication, dissemination, storage and mangement of information. Ololube, Ubogu and Ossai (2010) viewed ICT as advances in technologies that provide a rich global resource and collaborative environmnet for dissemination of information, communication of literacy materials, interactive discussions, research information and international exchange of ideas which are critical for advancing meaningful educational initiatives, training high skilled labour force and understanding issues related to economic development. In a developing country as Nigeria, ICT plays an eminent role in enhancing the quality of higher education and innovation. Based on this, Osakwe (2012) affirmed that ICT is a tool for promoting fundamental changes in teaching and learning methods thereby helping to overcome the barriers of time and place as technology introduces new choices and opportunities for students and teachers through endless research and learning on the internet.

According to Nwezeh (2010), ICT have introduced new methods of teaching and conducting research and serve as facilities for online learning, teaching and research collaboration in tertiary education. Furthermore, Hamilton-Ekele and Mbachu (2015) noted ICT as a necessary tool for impoving quality of teaching and learning in any tertiary institution. ICT has contributed to quality and quantity of teaching, learning and research in traditional and distant educational institutions (Yusuf, Afolabi & Loto, 2013). Noting the relevance of ICT in education,Wilson, Tete-Mensah and Boateng (2014) affirmed that ICTs are powerful tools that help to address educational problems, support difficult learning activities and enhance thinking skills. Nwosu and Ugbomo (2012) enumerated the benefits of ICTs in educatiion to include; promotion of active learning, collaborative learning, creative learning and evaluative learning. Furthermore, Mondal and Mete (2012) posited that the use of ICTs in higher education helps in developing course materials, delivering and sharing content, communicating between learners, teachers and the outside world; creating and delivery of presentation and lectures; academic research; administrative support and student enrollment. ICT improves the learning process as well as the organization and management of learning institutions. Tella (2007) asserted that ICTs increase teachers' interest in teaching, assist teachers in re-organising and restructuring of courses, increase teachers emphasis on individualized instruction, provide teachers with opportunity to experiment with emerging technologies thus providing multimedia presence in the classroom, and provide teachers with

Page 186-196 NAU Journal of Technology & Vocational Education Vol.1. No.1 2016. |Website: http://www.naujtved.com.ng |

prospects to collaborate with colleagues. Obilo (2015) avowed that ICT enables a teacher to deliver his/her lectures in such a way as to achieve the stated specific objectives of the lesson, covering cognitive, affective and psychomotor domains of learning without difficulty.

Nigeria's Status on ICT Development Index

The International Telecommunications Union (ITU) is a specialized agency of the United Nations charged with the responsibility of coordinating telecommunication operations and services throughout the world (Rouse, 2010). The Union designed a statistical tool that permits countries to scale their information societies globally and regionally. The ITU ICT Development Index captures the level of advancement of information and communication technologies in more than 160 countries worldwide and compares improvement made at five years intervals. The focal activity of the ITU ICT Development Index is to provide information on global telecommunications trends and developments. This paper uses the period between 2010 and 2015 of the Index to determine the status of Nigeria among other nation as presented below.

Economy	Rank 2015	IDI 2015	Rank 2010	IDI 2010	Economy	Rank 2015	IDI 2015	Rank 2010	IDI 2010
Korea (Rep.)	1	8.93	1	8.64	Suriname	85	4.99	100	3.39
Denmark	2	8.88	4	8.18	St. Lucia	86	4.98	70	4.39
Iceland	3	8.86	3	8.19	Seychelles	87	4.96	81	3.98
United Kingdom	4	8.75	10	7.62	South Africa	88	4.90	88	3.65
Sweden	5	8.67	2	8.43	Panama	89	4.87	79	4.07
Luxembourg	6	8.59	8	7.82	Ecuador	90	4.81	90	3.65
Switzerland	7	8.56	12	7.60	Iran (I.R.)	91	4.79	99	3.48
Netherlands	8	8.53	7	7.82	Jordan	92	4.75	84	3.82
Hong Kong, China	9	8.52	13	7.41	Tunisia	93	4.73	93	3.62
Norway	10	8.49	5	8.16	Albania	94	4.73	89	3.65
Japan	11	8.47	9	7.73	Mexico	95	4.68	86	3.70
Finland	12	8.36	6	7.96	Cape Verde	96	4.62	107	3.14
Australia	13	8.29	15	7.32	Kyrgyzstan	97	4.62	112	3.02
Germany	14	8.22	17	7.28	Philippines	98	4.57	105	3.16
United States	15	8.19	16	7.30	Morocco	99	4.47	96	3.55
New Zealand	16	8.14	19	7.17	Egypt	100	4.40	98	3.48
France	17	8.12	18	7.22	Fiji	101	4.33	102	3.28
Monaco	18	8.10	22	7.01	Viet Nam	102	4.28	94	3.61
Singapore	19	8.08	11	7.62	Dominican Rep.	103	4.26	101	3.38
Estonia	20	8.05	25	6.70	Peru	104	4.26	91	3.64
Belgium	21	7.88	24	6.76	Jamaica	105	4.23	95	3.60
Ireland	22	7.82	20	7.04	El Salvador	106	4.20	110	3.10
Canada	23	7.76	21	7.03	Bolivia	107	4.08	113	3.00
Macao, China	24	7.73	14	7.38	Indonesia	108	3.94	109	3.11
Austria	25	7.67	23	6.90	Ghana	109	3.90	130	1.98
Spain	26	7.66	30	6.53	Tonga	110	3.82	111	3.08
Bahrain	27	7.63	48	5.42	Botswana	111	3.82	117	2.86
Andorra	28	7.60	29	6.60	Paraguay	112	3.79	108	3.11
Barbados	29	7.57	38	6.04	Algeria	113	3.71	114	2.99
Malta	30	7.52	28	6.67	Guyana	114	3.65	103	3.24
Qatar	31	7.44	37	6.10	Sri Lanka	115	3.64	115	2.97
United Arab Emirates	32	7.32	49	5.38	Belize	116	3.56	104	3.17
Slovenia	33	7.23	27	6.69	Syria	117	3.48	106	3.14
Czech Republic	34	7.21	33	6.30	Namibia	118	3.41	120	2.63
Israel	35	7.19	26	6.69	Bhutan	119	3.35	128	2.02
Belarus	36	7.18	50	5.30	Honduras	120	3.33	116	2.94
Latvia	37	7.16	34	6.22	Guatemala	121	3.26	118	2.86
Italy	38	7.12	31	6.38	Samoa	122	3.11	121	2.43
Greece	39	7.09	35	6.20	Nicaragua	123	3.04	123	2.40
Lithuania	40	7.08	39	6.02	Kenya	124	3.02	126	2.09
Saudi Arabia	41	7.05	56	4.96	Vanuatu	125	2.93	124	2.19
Croatia	42	7.00	42	5.82	Sudan	126	2.93	127	2.05
Portugal	43	6.93	36	6.15	Zimbabwe	127	2.90	132	1.97
Poland	44	6.91	32	6.38	Lesotho	128	2.81	141	1.74
Russian Federation	45	6.91	46	5.57	Cuba	129	2.79	119	2.66
Kuwait	46	6.83	45	5.64	Cambodia	130	2.74	131	1.98
Slovakia	47	6.82	40	5.96	India	131	2.69	125	2.14
Hungary	48	6.82	41	5.92	Senegal	132	2.68	137	1.80
Uruguay	49	6.70	52	5.19	Gabon	133	2.68	122	2.41

The Republic of Korea tops the IDI between 2010 and 2015, with an ICT Development Index value which rose from 8.64 to 8.93. All ten economies which were in the top ten performers in 2010 were in the top twelve in 2015. The average IDI value for the top ten performers during the period rose by 0.62 points to 8.68. This growth was predominantly due to improvements in usage (the sub-index for which rose by 1.82 points) rather than in access (ITU, 2015). Mauritius leads in the African region, with a global rank of 72 and 73 in 2010 and 2015 respectively, the country's IDI increased from 4.31 to 5.41. Nigeria ranks 133rd in 2010 with an IDI of 1.96 and 134th in 2015 with an IDI of 2.61, resulting in an insignificant difference of 0.65. In 2015, Nigeria trails behind Gambia, Cote d'Ivoire, Angola, Congo, Mali, Equatorial Guinea, Cameroun, Uganda, Benin, Togo, Zambia, Rwanda, Liberia, Tanzania, Mozambique, Burkina Faso, Congo (Dem. Rep.), South Sudan, Guinea-Bissau, Malawi, Madagascar, Ethiopia, Eritrea, and Chad. In spite of the high penetration rate and coverage reach of mobile-cellular services in many countries like Nigeria, affordability level remains mostly unchanged within the five year period. An important element in monitoring ICT developments is to examine the cost of ICT services as high cost of ICT resources and service tariffs is the foremost barrier their utilization especially among poor people. The report show that mobile cellular services continues to fall as penetration is high all over the world; however, fixed broadband prices is still expensive in terms of affordability for developing countries like Nigeria.

Challenges to Utilization of ICT in Tertiary Institutions in Nigeria

ICT proffers enormous potentials in tertiary institutions to enhance social and

Bulgaria	50	6.52	47	5.45	Nigeria	134	2.61	133	1.96
Serbia	51	6.45	51	5.29	Gambia	135	2.60	129	1.99
Argentina	52	6.40	54	5.02	Nepal	136	2.59	140	1.75
Cyprus	53	6.37	44	5.75	Côte d'Ivoire	137	2.51	142	1.74
Oman	54	6.33	68	4.41	Lao P.D.R.	138	2.45	135	1.92
Chile	55	6.31	59	4.90	Solomon Islands	139	2.42	139	1.78
Lebanon	56	6.29	77	4.18	Angola	140	2.32	144	1.68
Costa Rica	57	6.20	80	4.07	Congo (Rep.)	141	2.27	136	1.83
Kazakhstan	58	6.20	62	4.81	Myanmar	142	2.27	150	1.58
Romania	59	6.11	55	4.99	Pakistan	143	2.24	138	1.79
TFYR Macedonia	60	6.07	57	4.96	Bangladesh	144	2.22	148	1.61
Brazil	61	6.03	73	4.29	Mali	145	2.22	155	1.46
Antigua & Barbuda	62	5.93	58	4.91	Equatorial Guinea	146	2.21	134	1.96
St. Kitts and Nevis	63	5.92	43	5.80	Cameroon	147	2.19	149	1.60
Malaysia	64	5.90	61	4.85	Djibouti	148	2.19	143	1.69
Montenegro	65	5.90	60	4.89	Uganda	149	2.14	151	1.57
Moldova	66	5.81	74	4.28	Mauritania	150	2.07	146	1.63
Azerbaijan	67	5.79	76	4.21	Benin	151	2.05	147	1.63
St. Vincent and the Grenadines	68	5.69	63	4.69	Togo	152	2.04	145	1.64
Turkey	69	5.58	67	4.56	Zambia	153	2.04	152	1.55
Trinidad & Tobago	70	5.57	65	4.58	Rwanda	154	2.04	154	1.47
Brunei Darussalam	71	5.53	53	5.05	Liberia	155	1.86	161	1.24
Venezuela	72	5.48	71	4.36	Afghanistan	156	1.83	156	1.37
Mauritius	73	5.41	72	4.31	Tanzania	157	1.82	153	1.54
Thailand	74	5.36	92	3.62	Mozambique	158	1.82	160	1.28
Colombia	75	5.32	83	3.91	Burkina Faso	159	1.77	164	1.13
Armenia	76	5.32	78	4.10	Congo (Dem. Rep.)	160	1.65	162	1.23
Bosnia and Herzegovina	77	5.28	75	4.28	South Sudan	161	1.63	-	-
Georgia	78	5.25	85	3.76	Guinea-Bissau	162	1.61	158	1.33
Ukraine	79	5.23	69	4.41	Malawi	163	1.61	159	1.33
Dominica	80	5.12	66	4.56	Madagascar	164	1.51	157	1.34
Maldives	81	5.08	82	3.92	Ethiopia	165	1.45	165	1.07
China	82	5.05	87	3.69	Eritrea	166	1.22	163	1.14
Grenada	83	5.05	64	4.67	Chad	167	1.17	166	0.88
Mongolia	84	5.00	97	3.52					

Source: ITU.

Page 186-196 NAU Journal of Technology & Vocational Education Vol.1. No.1 2016. |Website: http://www.naujtved.com.ng |

economic development of Nigerian educational sector. Nevertheless, its utilization is confronted with copious challenges such as:

1. **Erratic power supply:** Effective utilization of ICT depends essentially on constant power supply. Interruption and epileptic power supply is a significant setback to the use of ICT in teaching and learning in Nigerian tertiary institutions. Ololube, Eke, Uzorka, Ekpenyong and Ngboawayi (2009) observed that several cities and rural areas in Nigeria constantly have fluctuations in their supply of electricity which makes implementation of ICT in education most difficult.
2. **Teachers' lack of ICT knowledge and skills:** A high percentage of faculties in Nigerian institution lack the essential skills and competencies for utilization of ICTs in teaching, research and collaboration. Adewole and Fakorede (2013) affirmed that many teachers lack knowledge and skills to use computers and are not enthusiastic about the change and additional learning associated with bringing computers in their teaching programme. Oboli and Ibebuike (2015) noted that human skills and knowledge needed to fully integrate ICT into teaching and learning is lacking in Nigerian institutions as teachers lack the requisite training in the integration of ICT in classroom teaching. Eze and Eze (2013) further avowed that poor knowledge of the relevance of e-learning support for ICT use by teacher in tertiary institutions is a major constraint to ICT utilization in Nigerian educational system.
3. **Inadequate ICT facilities:** Provision of ICT facilities constitutes a key limitation to ICT utilization in Nigerian educational system. Where the facilities are available, they are rarely sufficient for the teeming number of students who utilize them. Akomolafe (2009) and Achimugu, Oluwagbemi and Oluwaranti, (2010) opined that available ICT in most tertiary institutions are grossly inadequate to effectively tap into the opportunities offered by ICT. Furthermore, Oyovwe-Tinuoye and Adogbeji (2013) observed that most tertiary institutions in Nigeria lack sufficient ICT facilities for learners and teachers to enhance quality education.
4. **Paucity of access to network:** Poor network access poses a clog in the wheel of internet use for many faculty and learners. Achimugu, et al (2010) averred that bandwidth subscription by most tertiary institutions in Nigeria is too small to support any meaningful activity during peak period. In addition, Oduma and Ile (2014) observed that there is little or no access to internet facilities in remote parts of Nigeria. Ohiwerei et al (2013) attributed poor access to network to high costs involved in network connection while Ogwu and Ogwu (2013) held that the challenge to accessing internet mainly through foreign Internet Service Providers (ISP) is due to unreliable local ISPs.
5. **Lack of trained ICT personnel:** There is dearth of skilled manpower for operation and maintenance of ICT gadgets in tertiary institutions in Nigeria. Achimugu, et al (2010) maintained that shortage of manpower makes choice of hardware by schools to be based solely on the processing and securing of large number of workstations, where support offered in most cases are commercial without much academic content. Oghenetega, Umeji and Obue (2014) posited that lack of information and experienced personnel to effect repairs when there is a breakdown as well as poor maintenance culture are hindrances to ICT utilization in tertiary institutions in the country. Moreover, Idowu and Esere (2013) noted that most tertiary institutions lack ICT experts that can support and manage internet connectivity and/or application of computing in teaching-learning process.
6. **Inadequate number of computers:** ICT utilization in tertiary institutions is plagued with inadequate number of computers for students use. Achimugu et al (2010 noted that computers are not enough for students use in most tertiary institutions. Adewole and Fakorede (2013) reported that though personal computers are available in most tertiary institutions, they are not readily accessible to students because of low PC to student ratio, which is averagely put at about 1:40. Ogwu and Ogwu (2013) attributed cost of acquiring and installing gadgets required for ICT as a reason for insufficiency in number of computers acquired for ICT use. Cost of computers in a country like Nigeria with battered economy and seriously devalued currency is enormous (Idowu & Esere, 2013). Engineering Network Team (2015) further stated poor affordance of basic technological communication gadgets as restrictions to integration of necessary online resources into higher education.
7. **Difficulty of integrating ICT in instruction:** Integration of ICT in educational instruction is the crux of ICT utilization in education. Oboli and Ibebuike (2015) remarked lack of relevant soft wares that can address issues peculiar to the Nigerian education setting. The authors further reported that available soft wares for teaching are obtained from the internet and are not produced with consideration to consideration to Nigerian socio-cultural perspective.
8. **Over-loading of teachers:** Lecturers are the main implementers of educational programme in tertiary institutions. Faculties teach more than a course and are faced with heavy load in a semester as well as in a session. There is usually short time to adequately and extensively cover the outlines and also draw up courses to teach with technology. Mndzebele (2013) reported that teachers in developing countries lack time to design, develop and incorporate technology into teaching and learning. Adeosun (2010) asserted that lack of time is an impediment to ICT integration in educational instruction. The author perceived lack of time in two ways: lack of time on the part of teachers to engage in training for ICT utilization as a form of professional development and lack of instructional time to effectively use ICT in teaching.

Implications of the ICT affordances and utilization challenges

Nigeria's vision 20-2020 is an innovative vision that should fast-track national economic and social development as well as elevate the country to one of the world's most viable economy. It is only four years from now to 2020 and Nigeria's economy is grappling to survive recession, while the nation is away from ICT development as a result of numerous challenges stated above. The implications of these challenges on the realization of Nigeria's Vision 20:2020 are summarized as follows:

1. Nigeria has a herculean task to perform in its bid to become one of the top 20 technologically driven economies of the world.
2. Vision 20:2020 attainment hangs on a balance.
3. Nigeria's chance of achieving this vision in the next four years is quite faint.
4. Considering that the country is in severe economic depression, there is no better time than this to revamp and revive its ICT sector.

Recommendations/Way forward

Development and operation of ICT involves huge financial outlay and commitment for the acquisition of necessary facilities and their maintenance. To achieve this, stakeholders at all level have to brace up to the challenges of ICT utilization in tertiary institutions. The following recommendations are made to bridge the wide gap:

1. Government at state and federal levels should provide basic infrastructural facilities such as electricity power supply, good road network, telecommunication facilities and computers among others in tertiary institutions to enhance ICT integration and adoption in higher education in order to ensure attainment of Vision 20:2020.
2. International organizations/agencies should help developing countries in ICT development by organizing seminars and symposia in line with the level of intended recipients.
3. Management of tertiary institutions should train lecturers and ICT personnel on development, design and creation of instructional packages which are attuned to the local environment as well as offer ICT-compliant courses that meet the basic requirements of native users.

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