



USAGE OF INFORMATION COMMUNICATION TECHNOLOGIES (ICT) FOR PUBLIC UNIVERSITY CARDINAL PROGRAMME IN NIGERIA: PROBLEMS AND SOLUTION

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Abstract

Information communication technologies are very important to the sustainable development of higher institutions especially the university education. In public universities in Nigeria it has been observed by researchers that that information communication technologies have not been fully integrated in the various programme of the public universities especially the teaching, researching and community service programme. The paper discusses the challenges militating against effective usage of information communication technologies for the implementation of the cardinal programme of public universities in Nigeria. Qualitative and qualitative data were used in the paper. The paper identified inadequate funding of ICT, shortage of ICT facilities, high cost of ICT, unstable internet service, poor implementation of ICT policies, unstable electricity, poor ICT literacy among academic, non-academic and students and poor maintenance culture among Universities Staff as challenges militating against effective usage of information communication technologies for the implementation of the cardinal programme of public universities in Nigeria. The paper recommended among other things that the government should increase the funding of public universities in Nigeria to enable them develop the ICT facilities in the institutions across the country.

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1.0 Introduction

Public universities are universities owned by the government. Public universities are universities established to provide post-secondary schools for Nigerian. Public universities are universities established by act of parliament to serve the interest of the general public. Public universities deal with the provision of teaching, research and communities services (Ogunode, 2020). The objectives of the universities in Nigerian Higher education, including professional education has the following aims: the acquisition, development and inculcation of the proper value orientation for the survival of the individual and societies; the development of the intellectual capacities of individuals to understand and appreciate environment; the acquisition of both physical and intellectual skills which will enable individuals to develop into useful members of the community; the acquisition of an overview of the local and external environments (FGN, 2013).

The federal government of Nigeria established the National universities commission to oversee the external administration and supervision of all universities in Nigeria. The administration of public universities in Nigeria takes two dimensions: the external administration and internal administration (Ogunode, Olatunde-Aiyedun & Akin-Ibidiran, 2021). The external administration is done through the federal ministries and other regulatory agencies in the country. The external administration handles planning, policy formulation, programme accreditation, supervision, funding and quality control of the universities. The internal administration headed by the school administrators and other principal managers within the universities. The function of internal administration is to ensure implementation of policies, coordinate, supervise and organize the human and materials resources of the universities to accomplish the objectives of the universities (Ogunode, Adegboyega & Olatunde-Aiyedun, 2020).

The realization of the higher institutions goals and programme depends on the availability of human and materials resources. The material resources include information communication technologies. These technologies since its integration into the school administration and management have help to transform the entire educational system (Ogunode, Okwelogu, Yahaya, & Olatunde-Aiyedun 2021; Ogunode, Okwelogu, Olatunde-Aiyedun, 2021; Bashar & Umar, 2019).

2.0 Literature Review

2.1 Concept of Information Communication Technology (ICT)

ICT refers to the art and applied sciences that deal with data and information. It encompasses all (equipment including computational machinery - computers, hardware, software, firmware etc., tools, methods, practices, processes, procedures, concepts, principles and the sciences) that come into play in the conduct of the information activities: acquisition, representation, processing, presentation, security, interchange, transfer, management, organization, storage and retrieval of data and information (Federal Republic of Nigeria, 2019) while Okwelogu, Mohammed and Ogunode (2021) defined Information communication technologies as technological resources made up of hard ware and software that deals with data and information management for the purpose of improving effectiveness and efficiency data distribution, collation and organization. (Ogunode, Okwelogu, Olatunde-Aiyedun, 2021) cited (Patrick. & Brenda. 2018) who opines that that information and Communication Technology (ICT) is an umbrella term that includes any communication device or application encompassing radio, television, mobile phones, computer hardware and software, internet, satellite systems and so on as well as the various services and applications associated with them such as video conferencing and distance learning. It is the use of scientific devices in providing information faster and better. It involves the use of the computer software and other communication services together with their associated documentation. ICT brought about the use of internet. Vijayakumar and Vijayan (2011) viewed ICT as the application of computers and technologies for acquisition, organization, storage, retrieval, and dissemination of information. Information and communication technology according to Uwabueze and Ozioko (2011) is a set of tools that help a person work with information and perform tasks related to the information process. Also, Murray (2011) pointed out that ICT is an extended term for information technology (IT) that include the integration of telecommunication devices such as telephone line, wireless signals, computer hardware and software which encompasses storage device and audiovisual systems that ensure access, storage and dissemination of

information. Chrisita and Shoko (2010) defined information and communication technology (ICT) in a library context to mean the application of various technologies such as a computer, retro-graphics, audio-visuals, and other electronic devices for storage, reproduction, and dissemination of information in a library environment. The place of Information Communication Technology (ICT) in the school administration cannot be underestimated. Information Communication Technology (ICT) are essential for the realization of the educational institutions objective and programme. Gurari (2009) observed that ICT is combination of computer hardware, software and telecommunication devices such as telephone system, modem, router, optic cables, satellite communication system etc. The World Bank (2007) defined that Information Communication Technology (ICT) as the use of hardware, software, networks, and media for the collection, storage, processing, transmission, and presentation of information (voice, data, text, images) as well as related services. Information and communication technology (ICT) as defined by the United Nation Educational Scientific and Cultural Organization (UNESCO, 2005) is the combination of all the computers, telecommunication and media technologies. They are also electronic technologies used for accessing, processing, gathering, manipulating and presenting or communicating information in the education system. From the above, information and communication technology can be viewed as technological devices that enable storage, passing, disseminating, processing, and gathering, manipulating and presenting information in an organized form.

Information Communication Technology (ICT) is applicable to all the aspects of education (Ogunode, Hammadu, Ahmed & Ojo, (2021). Information and communication technology (ICT) aids in the actualization of school programme. Information communication technology is used in the higher institutions for the effective implementation of higher education goals and programme. Higher education goals according to Ogunode (2020) included teaching programme, research programme and community service programme. This higher education programme can easily be implemented with the use of information communication technologies.

Information and communication technology (ICT) aids the implementation of teaching programme, research programme and community service programme (Ogunode, Iyabode, & Olatunde-Aiyedun, 2022). The teaching programme of the higher institutions as described by Ogunode and Ndayebom (2022) is the first programme of the institutions and it is very important for the development of human resources. The teaching programme involves the delivering of lectures and many other academic services in the institutions. ICT is use for the implementation of the teaching programme through e-teaching and online education. The academic staff according use information and Communication Technology (ICT) for e-teaching, preparation of lecture notes, e-assignment for students, e-examination, e-lecture note and carry out personal research (Ajemba, Ahmed, Ogunode & Olatunde-Aiyedun, 2021; Ogunode, Hammadu, Ahmed & Ojo, 2021). Lecturers also used information and Communication Technology (ICT) for e-conference meeting. The nonacademic staff used information and Communication Technology (ICT) to carry out non-academic service like storage of students and staff information, sending and receiving memo, and student payment. Olatunde-Aiyedun, Olamoyegun and Ogunode (2022) opined that Information and Communication Technology (ICT) is one of the technological resources that is serving as a teaching aid for the teachers and is transforming the teaching process in way that making teaching simple and interesting. Information and Communication Technology (ICT) is one of the resources available for teachers for the implementation of school curriculum. It is the faster teaching aid for delivering teaching programme in the schools.

Research programme of the higher institutions is defined by (Ogunode, Jegede, Adah, Audu, Ajape 2020) as the second cardinal goal of the higher institutions. This programme comprises all activities involving carrying out research and investigations within and out the institutions. ICT is also deployed in the research programme in the areas of collection, collation, analysis and interpretation of data. ICT aids dissemination of research results.

Community service programme is the third programme of the higher institutions according to (Ogunode 2020; Ogunode & Audu 2022). Community service programme implies all service carried out by higher institutions with the aims of improving the quality of lives in the community. ICT is use in the

implementation of community service in the areas of communication to the communities members the result of finding. ICT is used to collect information on the needs of the communities. (Ogunode, Hammadu, Ahmed, & Ojo, 2021) submitted that researchers and lecturers also used information and Communication Technology (ICT) for e-conference meeting. The non-academic staff used information and Communication Technology (ICT) to carry out non-academic service like storage of students and staff information, sending and receiving memo, student payment etc.

The higher institutions also have the students programme. The students; programme include all programmes meant to improve the welfare of the students and their learning programme. The students used information and Communication Technology (ICT) to support their learning programme. (Ogunode, Okwelogu, Olatunde-Aiyedun, 2021) observed that information and Communication Technology (ICT) is used by all human resource in the educational institutions. The students used information and Communication Technology (ICT) to support their learning programme. Information and Communication Technology (ICT) helps students to carry out research, writes examination, check their result, submit assignments, register their courses online. (Ogunode,et'al 2021a and Joshi) and (Chugh 2009) observed that stated that information and communication technology has immense potential to motivate and engage students in learning. Innovations in technology can be used in enhancing existing teaching and learning tools in the classroom in order to facilitate the development of computer-related competencies in business education. Technology allow students to have control over their learning environment and to act as self-directed learning's promoting more active learning. (Obi 2018) concludes that ICT is not just the ICT devices but also the primary and secondary options required to improve effective and meaningful interaction between lecturer and students of higher institutions. It has the power to make students enjoy things that they would normally find time-consuming and difficult because it involves practical teaching and student-centered and not teachers talking and writing on the chalkboard and student copying from the chalkboard into their notebook without engaging in practical teaching which makes learning boring. Okwelogu, Mohammed and Ogunode (2021) submitted that Information and Communication Technology (ICT) is a learners aided resources making learning interesting for students. Information and Communication Technology (ICT) is a technological learning resource that is blocking many barriers to learning programme. With information and Communication Technology (ICT), students can explore the world of information to improve their learning. It provides the opportunity for fast learning, easy learning and flexible learning. Information and Communication Technology (ICT) deployment in the school administration gurantee effective of the school in term of effective and efficient academic service delivering. Ogunode, Hammadu, Ahmed and Ojo (2021) further stated that ICT is applicable to all field in education and ICT support both the students, teachers and nonteaching staff to deliver their services very fast.

2.2 Challenges Preventing Public Universities in Nigeria from Using Information Communication Technology

There are many challenges preventing public university in Nigeria from using ICT for their programme. Some of the challenges include; inadequate funding of ICT, shortage of ICT ,facilities high cost of ICT, unstable internet service, poor implementation of ICT policies, unstable electricity, poor ICT literacy among academic, non-academic and students and poor maintenance culture among universities staff.

1. Inadequate Funding of ICT

Inadequate funding is a problem affecting effective deployment of ICT facilities for universities administration in Nigeria public universities (Ogunode, Babayo,Jegede & Musa 2021;Ogunode, Manu, Lawan, & Christopher, 2021). Ahaotu & Ogunode (2020) submits that inadequate funding is one of the greatest problems facing the administrators of higher institutions in Nigeria. Higher institutions administrators do not have access to adequate funding for effective running and administration of the institutions under their care. Government funding of higher education in the country have been inadequate for decades. The funding of education is shared among different levels of government and supplemented by funds from other sources such as business, community organizations and levies charged. The revenue collected through fees constitutes an insignificant proportion of the revenue of the institution. Fund

allocation has not been much during the last decade. The poor funding of higher educational system in the country has rendered the higher education system incapacitated (Olamoyegun, Olatunde-Aiyedun & Ogunode, 2022). The higher education system has not had the financial resources necessary to maintain educational quality in the midst of significant enrolment explosion. Due to poor funding of the universities, many universities cannot afford to provide adequate ICT's facilities in their schools. There is also a major challenge which is funding, and this issue opposes the procurement and utilization of ICT in Nigeria universities education. Ogunode, Adamu & Ajape (2021) and (Ogunode, Abubakar, Abashi, Ireogbu & Longdet, 2021) observed that the funding fund of ICT programme in the Nigerian public universities is responsible for poor development of ICT programme. Many offices and departments in the universities in Nigeria do not have an adequate computer system and laptops enough for the academic staff, non-academic staff and students to carry out their work due to poor funding of ICT programme in the public universities.

2. Shortage of ICT Facilities

Shortage of ICT facilities in public universities is also preventing effective ICT usage for the university management. (Bashar, et al., 2019; Bonnie & Lucky Tijani, 2020; Ogunode, Garba, & Ajape 2021) submitted that many academic staff in the Nigerian public higher institutions are not provided with ICT facilities to carry out their functions. On the part of the non-academic staff, (Ogunode, Babayo, Jegede & Musa (2021) observed that non-academic staff also faces the challenges of inadequate ICT facilities. They lamented that many offices are not having adequate ICT facilities like computer set and laptop. (Ogunode, et al. 2021) observed that the problem of inadequate ICT facilities in many public tertiary institutions across the country is hindering the students from using ICT to carry out their academic work in the various institutions. (Ogunode, et al. 2021) cited (Ibegwam (2004) noted that students of the College of Medicine, University of Lagos, lack basic office gadgets and technologies like computer, printers, faxing machines, photocopiers, binders, and projectors not even to talk of internet in most of the institutions particularly Colleges of Education. The dearth of these rudimentary facilities contribute to the challenges facing placement of ICT in Nigeria tertiary institutions, as no institutions can function effectively in this modern trend of ICT without these facilities. Generally, (Adeyemi and Mary 2013) submitted that Nigerian higher institutions lack the necessary infrastructural facilities to benefit from ICT. Most of the ICT infrastructures such as internet, telefax, e-mail are dependent on NITEL (Nigerian Telecommunications Limited), NIPOST (Nigerian Postal Agency) and PHCN (Power Holding Corporation of Nigeria) services. These services are epileptic in delivery and attract unbearably high bills. Ogunode, Olatunde-Aiyedun and Mcbrown (2022) identified the factors responsible for inadequate information communication technology(s) in the Nigerian public universities. To include: inadequate funding, poor implementation of ICT policies, corruption, poor maintenance culture, poor forecasting, lack of data and high cost of ICT facilities. The effects of inadequate information communication technology(s) in the Nigerian public universities include poor implementation of teaching programme, research programme, learning programme and slowing down of school administration.

3. High Cost of ICT

The high cost of ICT facilities in Nigeria due to inflation and unstable naira is affecting the deployment of ICT for university administration. Ogunode, et al. (2021) lamented that the high cost of ICT facilities is another major problems hindering the Nigerian public tertiary institutions from using ICT fully in their various institutions especially for teaching and learning. Ohiwerei, Azih and Okoli, (2013) submitted that Desktop and Lap-top are still very expensive in Nigeria such that more than 85% of business education students are unable to acquire one for their academic utilization. It is unfortunate to note that government agencies, non-governmental agencies (NGO) corporate organizations and individuals have not in any way been able to assist business education students by donations. There are still large percentages of business education students who are still unable to purchase computers for use. Currently new computers are as from ₦150,000.00 upwards. The high cost of internet data and electronic services, is basically the element of ICT usage and value and is one of the challenges of installing ICT in Nigerian tertiary institution (Tongia & Subrahmanian, 2006). Ogunode, Babayo, Jegede and Musa (2021) observed that the high cost of ICT

facilities is responsible for limited ICT facilities in many higher institutions across the country. Due to poor funding, many higher institutions cannot afford to buy large quantities of ICT facilities for office use. Much non-academic staff too cannot afford to buy new ICT facilities for personal use. The high cost of ICT facilities is one of the major factors preventing the Non-teaching staff from using ICT constantly to carry out official responsibilities.

4. Unstable Internet Service

The poor internet service in the country is also preventing effective application of ICT in the public universities in Nigeria. Ogunode, et al. (2021) claimed that unstable internet services are a very big challenge to the use of ICT for the Nigerian students, academic staff and non-academic staff at higher institutions. The internet service in the country is not strong and stable to support effective browsing on facilities. Many students cannot submit their assignments, carry out research online or even check their results due to poor internet services within the campuses. Ohiwerei, et al. (2013) pointed out that some of the Nigerian universities are not able to connect to the world wide web, even if the universities are connected, department of business education where students are to be taught information and communication technology are not connected due to the high costs involved in the connection while Adavbiele (2016) also discovered in their study that there is a gap between the university teachers and students and ICT usage in classrooms and many university lecturers and students have to go to commercial cyber cafés in town before they have access to a computer that is internet connected, teachers are faced with some challenges and barriers of availability of facilities which prevent them to employ ICT in the classroom. Babatunde and Paschal (2016) observed that in Nigeria, the high cost of internet data and fast tariff set by internet providers, mostly international companies doing business in the country with the main interest of making profits is among the challenges of ICT deployment. Although the government is supposed to regulate the internet distribution cost and tariff speed of these internet providers, most often the agencies in charge of such regulations are more interested in tax and the welfare of their organisation that they overlook the value of services the companies they regulate offer to the people. This is seriously affecting the deployment of ICT in Nigerian universities, as most universities in Nigeria are autonomous (i.e. they manage their own funds) especially state owned universities.

5. Poor Implementation of ICT Policies

The poor implementation of ICT policy in the public universities across the country is hindering the full deployment of ICT for use in the public universities in Nigeria. (Ogunode, et al. (2021) stated that the National policy on ICT states that government shall provide adequate ICT facilities in all educational institutions to support teaching and learning. The objectives of this policy is to ensure that ICT facilities are provided for both teachers and students in their respective institutions (Federal Ministry of Education 2004). Ogunode, et al. (2021); (Adavbiele 2016) and (Okhiria 2007) also noted that the National Universities Commission (NUC) of Nigeria has prescribed that there should be at least one computer to every four students and one PC to every two lecturers below the grade of lecturer I, one PC per senior lecturer and one notebook per reader/ professor. NUC has gone further to establish e-learning platforms fitted with twenty smart boards in twelve Federal universities for the promotion of the use of ICT in teaching and learning. Majority of the Nigerian universities have not achieved this recommended system ratio for their faculties, though some have made giant or notable strides in campus wide area networking and e-learning course deliveries. The poor implementation of these ICT policies is among the factor prevent Nigerian tertiary institutions students not having access to adequate ICT facilities to support their learning programme (Okwelogu, Mohammed & Ogunode 2021). Adeosun, (2010) carried out a study that showed that lack of ICT resources and poor infrastructure prevents full implementation of ICT in Nigerian tertiary institutions. The poor implementation of ICT policies in the Nigerian tertiary institutions is preventing many students from using ICT effectively for their students. (Okwelogu, Mohammed & Ogunode 2021) submitted that inadequate funding, fall in national revenue, insecurity, corruption, inadequate ICT Expertise, shortage of infrastructural facilities, political instability and policies instability are the problems hindering effective implementation of National Policy on Information Communication Technology in Nigeria.

6. Unstable Electricity

Unstable electricity in the country is affecting the deployment of ICT for university administration. (Ogunode, et al., 2021) asserted that another problem preventing Nigerian public tertiary institutions students from using ICT to support their studies effectively is the problem of unstable electricity supply. Babatunde, et al. (2016) submitted that in Nigeria, the biggest challenge to the growth and development of most industries is poor electricity supply. This is a huge setback to the progress of Nigeria, as it is difficult to boast of one full day without electricity interruption not to talk of a week or one Month. Meanwhile, most countries of the world are beginning to celebrate 100 years and still counting of no electricity interruption. Ohiwerei, et al. (2013) opined that Nigeria being a developing nation cannot boast of twenty four hours electricity supply to its citizens. The institutions are directly connected to Power Holdings Company of Nigeria, yet no electricity of power is supplied to the institutions. It is on a sad note that some of the faculties and departments of the institutions cannot afford a generating set such that can power the entire computer for teaching and learning. Consequently, both the teachers and students are handicapped and may not be able to offer the computer lesson. Ogunode, et al. (2021) cited in Adavbiele (2016) identified that lack of consistent and affordable electricity supply discourages the use of ICT in the University in Nigeria.

7. Poor ICT Literacy

Poor ICT skills and knowledge among the universities stakeholders is affecting the use of ICT in the public universities in Nigeria. Ogunode, et al. (2021) submitted that student, academic and non-academic poor ICT literacy is another problem preventing many public tertiary institutions personnel from using ICT to carry out their respective responsibilities. Ogunode (2020) did a study and discovered that the challenges preventing students of educational administration and planning from using ICT for learning includes poor computer literacy of the lecturers, unstable power supply, lack of personal laptop or computer system, unstable ICT Network services, High cost of ICT services and poor infrastructural facilities of ICT in higher institutions (Ogunode, Eyiolorunse-Aiyedun & Olatunde-Aiyedun, 2021). Also, Mutula (2010) did a study and discovered that fresh students from secondary schools who got admission into the University of Botswana were largely information illiterate and this created challenges to the university in terms of offering effective academic programmes. Airen (2011) did a study on ICT literacy of the undergraduates and found that students in Faculty of Social Sciences were found to have poor skills in the use of computer and the Internet (with more than 33%), when the average was computed for very poor and poor ICT knowledge, while over 34% of the respondents in Faculty of Arts were found to have poor skills in the use of the telephone. The result also showed that six factors identified as constraints to ICT literacy of the undergraduates were: namely: Inaccessibility to ICT, Inadequate ICT, lack of skills to use these facilities, irregular power supply, limited duration for the use of ICT and frequent computer breakdown. Out of these six factors, three were found to be major given that more than 50% of the respondents identified them as constraints: irregular power supply (67.4%), inadequate ICT (54.3%) and limited duration of the use of the available ICT (54.2%).

8. Poor Maintenance Culture among Universities Staff

Dada, & Atobauka, Ogunode (2021) concluded that poor maintenance culture among users of ICTs in the universities is also responsible for why many universities don't use ICTs effectively school administration. Many ICTs facilities have been damaged and spoiled due to poor maintenance habit of users within the public universities. Dada, Atobauka & Ogunode (2021) cited Emmanuel, Umoh & Emmanuel (2014) cited Oketunji (2000) who discovered a positive relationship between prior experience with ICTs, attitude, anxiety and poor maintenance cultures of computer laboratories and Academic Performance of students, lacks of well-equipped computer laboratories, epileptic nature of power supplied. Due to poor maintenance culture of the staff and operators of ICT facilities virus find their ways into the computer system, Computer virus is a destructive programme that is cable of destroying both programme and document files in the computer system (Olatunde-Aiyedun, 2021). Students corrupt the computer system in the laboratories with this virus. Dada, et al. (2021); Emmanuel, Umoh & Emmanuel (2014) and Vikas (2008) pointed out that there are thousands of virus variations, most fall into one of the following six general categories, each of which affect

the computer system differently; Book sector virus, file virus, macro virus, multipartite virus, polymorphic virus and stealth virus. Also worm and Trojan Horse like a virus, is a program that harms the computer and destroys data stored in it. Poor Maintenance Cultures. Every computer system as a sequence of booting (starting) and shutting down (putting off).

Way Forward

To address these problems preventing Nigerian tertiary students from using ICT for their studies. This paper recommends the following: education program, provision of ICT facilities, subsidize the cost of ICT facilities, implement the ICT policies on education, capacity development for students and provision of constant electricity and internet services:

1. To fully develop ICT in the public universities, the government should increase the funding of ICT education in all the public tertiary institutions in Nigeria.
2. The government should provide adequate ICT facilities to all the public universities to enable the institutions to deploy ICT facilities for teaching, researching and community services programme.
3. The government should subsidize ICT facilities for all public universities. This will aid full deployment of ICT for school programmer.
4. The national policy on information and communication technology in all tertiary institutions should be well implemented beyond mere policy statement.
5. Capacity development programs should be provided for students, academic staff and non –academic staff of all public universities to improve their capacity on ICT usage in the universities.
6. The government should ensure that all public universities are provided with constant power supply and internet services.

Conclusion

This paper looked at the challenges militating against effective usage of information communication technologies for the implementation of the cardinal programme of public universities in Nigeria. The paper identified inadequate funding of ICT, shortage of ICT facilities, high cost of ICT, unstable internet service, poor implementation of ICT policies, unstable electricity, poor ICT literacy among academic, non-academic and students and poor maintenance culture among universities staff as challenges militating against effective usage of information communication technologies for the implementation of the cardinal programme of public universities in Nigeria. To solve these problems, this paper recommended the following: the government should increase the funding of public universities, provision of ICT facilities, subsidize the cost of ICT facilities, implement the ICT policies, capacity development for students, academic and non-academic staffs and provision of constant electricity and internet services in all public universities across the country.

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