Challenges of Information Communication Technology and Nigerian Public Universities Administration: The Way Forward

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ABSTRACT: In this age of rapid technological advancement, the Information and Communication Technology is the primary factor in determining the level of success that may be achieved in the delivery of high-quality higher education. However, in Nigeria, there exist issues that prevent the efficient implementation of information and communications technology for university administration. In this article, the obstacles that limit a successful deployment of information and communications technology for university administration in public universities in Nigeria are discussed. This study takes a painstaking look at the difficulties associated with Information and Communication Technology in the administration of Nigerian public universities. The article made use of various secondary sources of information. The print and internet publications served as the primary sources for the secondary data. According to the findings of the study, the use of Information and Communication Technologies (ICTs) for administrative purposes in Nigerian universities faces a number of challenges. These challenges include inadequate ICT program funding, deficient ICT infrastructure, poor computer literacy of administrative staff, unreliable power sources, sluggish internet services, poor ICT policy implementation, high maintenance costs for ICT facilities, and ineffective maintenance practices among university staff. The following recommendations have been made in order to ensure efficient use of information and communications technologies (ICTs) by university administrations: adequate funding of ICT programs, adequate ICT facilities in all offices, training and retraining programs for administrative staff and teaching staff, implementation of all ICT policies in universities, subsidizing the cost of ICT facilities staff and educational institutions, inculcating a good culture of ICT maintenance, ensuring a stable power supply, and ensuring securing secure wireless networks.

Keywords: Challenges, ICT, Universities, Administration

1.0 Introduction

The development of information and communication technology (ICT) is making formerly inefficient aspects of human life far more effective. Individuals, organisations, and governments from all over the world are making the most of this chance to revolutionize the activities of a variety of different sectors through the creation of new talents. It has been determined that information and communication technology is a significant contributor to efficient service delivery in the public sector, which includes the Nigerian public Universities. Offices have taken on a new appearance as a direct result of advancements in information and communication technology (ICT), which has also given business settings a different feel. This is especially obvious in the realm of office management and administration (Agomuo, 2005). According to the author, information and communication tools, equipment, and facilities improve the way in which messages are stored, recalled, shared, and sent for the objectives of information and communication. According to Agomuo (2005), electronic systems are now accessible for the performance of numerous operations that were previously performed manually in offices. Agomuo noted that these functions were formerly performed by hand. Because of this, the tasks that need to be completed in the office can be carried out with increased efficacy and productivity. The outputs that can be produced by modern digital machinery and electronic equipment are now faster, neater, more accurate, and more reliable. The majority of the duties performed by office managers and their assistants are now dependent on the utilization of information and communication technology (ICT), which increases the effectiveness of organizations.

According to Ogunode (2020), public universities are institutions of higher education that are owned by the state. The provision of Nigerians with access to post-secondary education led to the establishment of public universities in the country. Universities that are considered to be public were initially founded by an act of parliament in order to better serve the needs of the general population. Teaching, conducting research, and providing service to local communities are the primary focuses of public institutions. Tertiary education, which includes universities, is referred to as "tertiary education" in Nigeria.

The goals of tertiary education, which includes universities, shall be to: Contribute to national development through high level manpower training; provide accessible and affordable quality learning opportunities in formal and informal education in response to the needs and interests of all Nigerians; provide high quality career counseling and lifelong learning programs that prepare students with the knowledge and skills for self-reliance and the world of work; reduce the rate of unemployment among graduates of tertiary education institutions; and improve the quality of life for Nigerians (NPE, 2013). However, Ogunode (2020) is of the opinion that efficient administration and careful planning are the two most important factors in determining whether or not institutions achieve their aims and objectives. The improvement of university administration is essential to the expansion of higher education in Nigeria.

The educational system in Nigeria has been outfitted with Information and Communication Technology (ICT) thanks to the efforts of the government of Nigeria. As a result, policies regarding information and communication technology (ICT) were able to be incorporated into the national policy of education. ICTs have been included into the educational system in Nigeria as a result of national policies on education that acknowledge the significant role that ICTs play in the modern world. The policies stated that the government will provide the necessary infrastructure and training for the incorporation of information and communications technologies (ICTs) into all educational institutions. This will allow for the full implementation of information and communications technology education as well as its integration into all educational systems.

The efficiency of the school administration is one of the most important factors in determining whether or not the objectives for basic education and the related ICT policies will be met. Because they are the administrative power behind the planning and formulation of policies for the smooth implementation of the program at the school level, the school administration is essential to the success of any educational policies because they are the key to the success of any educational policies. The administration of schools is responsible for organizing the numerous educational resources in order to achieve the goals that have been established for the institution. In today's world, information and communication technology facilities are among the most important educational tools that school administrators need to have in order to properly implement the school's program, particularly when it comes to the computer program that is offered in schools. The management of information and communication technology (ICT) resources at educational institutions presents a significant number of issues. This study explores the difficulties that the administration of Nigerian public universities faces in terms of Information and Communication Technology infrastructural facilities.

2.0 REVIEW OF RELATED LITERATURE

2.1 Conceptual Framework
Information Communication Technology (ICT)
Information and communication technology, according to Uwabueze and Ozioko (2011), is a set of tools that facilitates working with information and carrying out tasks associated with the information process. According to the United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2013), ICT may support equitable access to education, high-quality learning and instruction, professional development for teachers, and effective management, governance, and administration. ICT, according to Patrick and Brenda (2018), is not only essential to the growth of the educational system but also to primary and secondary alternatives for enhancing meaningful and productive interactions between secondary school students and teachers. Because it involves practical teaching and is student-centered rather than teachers talking and writing on the chalkboard and students copying those things into their notebooks without engaging in practical teaching, which makes learning boring, it has the power to make students enjoy tasks that they would typically find time-consuming and difficult. ICT is a teaching technology that enhances secondary school students' educational experiences and supports teachers' efforts. The efficient teaching and learning processes made possible by the use of ICT in public secondary schools will help students develop the skills they need to contribute to the social and economic development of the country.

Information and communication technologies (ICTs) are once again defined by Adebayo (2013) as the technology that facilitates activities involving the creation, storage, manipulation, and communication of information using microelectronic and telecommunications tools like laptops, computers, computer networks, Internet digital printers, and mobile technology that are used by the administrator to record, store, process, retrieve, and transmit information (Kokt & Koelane, 2013). According to Deebom and Zite (2016), ICT and IT (Information Technology) are frequently used interchangeably. The key distinction is that information technology (IT) refers to an entire industry that uses computers, networking, software, and frequently equipment to manage information, whereas information communication technology (ICT) covers all forms of communication, including telephone, mobile phones, etc.

University Administration
Application of university resources to achieve academic goals is known as university management. University administration is the organized use of resources within the university system to plan, coordinate, and carry out university programs in order to achieve university objectives. The process of organizing the diverse human and material resources of the university and utilising them effectively and efficiently to realize the objectives of the university is known as university administration.

The following are some of the goals of university administration: achieving the goals of the university, organizing the human and material resources for the realization of the goals of the university, supervising the university's human resources, ensuring program and plan implementation, ensuring effective coordination of all the university's resources, and ensuring instructional resources are adequately provided for instruction in the universities (Ogunode & Jegede 2020). However, the administration of educational institutions frequently makes use of various forms of information and communication technology. Students, as well as members of

the academic and non-academic staff, employ information and communication technologies to support the academic and learning programs. There are numerous different ways in which information and communication technologies can make the administration of educational institutions more efficient.

2.2 Theoretical Framework

According to Olaitan, Ali, Eyoh, and Sowande (2000), a theory can be seen as a postulation that calls for additional explanation in order to make sense. According to the definition provided by Osuala (2005), a theory is an endeavor to synthesize and integrate empirical evidence in order to achieve maximum clarification and unity. According to Okorie (2001), a theory is a description of an apparent relationship or underlying principles of some observed occurrences, which have been validated to some degree. In the meanwhile, this definition of a theory can be found here. Before a hypothesis can be considered to have a scientific basis, according to Artherson (2003), it must first be possible to put the hypothesis to the test. The Socio-Technical Theory of Organization and the Diffusion of Innovation Theory are the three theories that serve as the foundation for the theoretical framework of this body of work.

1. Socio-Technical Theory of Organisation

Trist and Bramforth developed the socio-technical theory of organization in 1951. According to the notion, the workplace is a socio-technical system rather than just being a technical or social system. According to the theory, the ability of the social system to meet the technical or technological demands placed on it by the technological system (machines, tools, and equipment) will determine how effectively the entire production system functions. The idea also contends that a change in one of an organization's social or technical systems will need equal adjustments in the other. According to the theory, management's main responsibilities have to do with the entire system of its technological and social surroundings, rather than just with the interest in rules and controls.

The socio-technical theory is pertinent to this study because information and communication technologies need local government secretaries to learn new skills in order to manage the local government effectively. Additionally, the efficiency of local government administration will now depend on how well the secretaries (social system) and ICT resources (technical system) can work together in terms of day-to-day operations.

2. Information/Innovation Diffusion Theory

Rogers introduced the transmission of information and innovation theory in 1962. This theory clarifies how new ideas are presented to and embraced by distinct societies. The notion states that any invention should be disclosed to the public, and that the public should be ready to accept and implement the innovation. According to the notion, an innovation is an idea, practice, or endeavor that a person, a group, or a society perceives as novel. Innovation is the primary subject of innovation theory. According to the theory, innovations are changes that take place in a person or a social system as a result of the acceptance or rejection of new procedures, processes, or techniques.

The current study is related to the diffusion innovation theory in that employees, especially secretaries, should embrace and accept the innovation in offices as a result of innovation driven by information and communication technology (ICT) by obtaining the necessary skills for the job. Today's office environment has changed as a result of innovation, and employees of local governments, particularly the secretaries, should use this opportunity by learning the new skills required by the transformation.

2.3 Empirical Literature

The difficulties inhibiting the successful use of ICT for university administration at Nigeria's public universities are examined by Dada, Ishaya, and Ogunode (2021). This study made use of previously collected data, sometimes known as secondary data. The print and internet publications served as the primary sources for the secondary data. According to the findings of the study, some of the obstacles that stand in the way of Nigerian universities making use of information and communication technologies (ICTs) for administrative purposes are as follows: inadequate funding of information and communication technology programs; inadequate information and communication technology facilities; poor computer literacy of administrative staff; unstable power supply; unstable internet services; poor implementation of information and communication technology policies; high cost of maintaining information and communication technology facilities; and poor maintenance culture among university staff. In a similar vein, Jegede, Ebio, and Iroegbu (2019) investigate the obstacles that limit efficient administration of information and communication technology facilities in Nigerian basic schools. Inadequate funding of information and communications technology (ICT) programs, inadequate information and communications technology (ICT) infrastructural facilities, a shortage of information and communications technology (ICT) manpower, unstable power supply, high cost of ICT facilities and poor network services, and inadequate implementation of ICT policies in basic schools were identified in the paper. In the same line, Ogunode, Okwelogu, and Olatunde-Aiyedun (2021) investigate the difficulties and obstacles associated with the deployment of ICT facilities by Public higher institutions in Nigeria during the Covid-19 conference. Inadequate funding, inadequate ICT facilities, high cost of internet services, unstable internet services, unstable electricity, poor computer literacy of academic staff, poor computer literacy of students, and poor

implementation of ICT policies are the challenges and problems of deploying ICT facilities by Public higher institutions during Covid-19 in Nigeria. Inadequate funding also contributed to inadequate ICT facilities.

2.4 ICT Deployment Challenges for University Administration

Information and communication technologies are now widely used throughout the university system. The efficient use of information and communication technologies for university administration in Nigeria is hampered by a number of issues. These issues include: Inadequate ICT Program Funding, Deficient ICT Infrastructure, Poor Computer Literacy of Administrative Staff, Unreliable Power Source, Sluggish Internet Services, Poor ICT policy implementation, High Maintenance Costs for ICT Facilities and Ineffective Maintenance Practices among University Staff;
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1. **Inadequate ICT Program Funding**

Ineffective deployment of ICT infrastructure for university administration in Nigeria's public universities is hampered by a lack of funds. According to Ahaotu and Ogunode (2020), one of the biggest issues facing Nigeria's higher education administrators is a lack of financing. Administrators of higher education institutions lack access to enough resources for the efficient operation and management of the institutions under their charge. For many years, the country's higher education system has received little government funding. The cost of education is split among the various tiers of government, with additional financing coming from businesses, charitable groups, and levies. A minor amount of the institution's earnings is made up of fees that are collected. Over the past ten years, there hasn't been much funding allocated. The country's higher education system is dysfunctional because of the inadequate money it receives. Despite a substantial enrolment expansion, the higher education system has not had the financial resources needed to maintain educational quality. Many institutions are unable to afford to provide suitable ICT facilities in their classrooms due to inadequate funding for higher education. Another significant issue is finance, which works against the purchase and application of ICT in Nigerian universities. Ogunode, Adamu and Ajape (2021), Ogunode, Abubakar, Abashi, Ireogbu, and Longdet (2021) noted that the ICT program's financial fund in Nigeria's public universities is to blame for the program's subpar progress.

2. **Deficient ICT Infrastructure**

Another issue hindering the efficient use of information and communication technology for the administration of universities in Nigeria is inadequate ICT infrastructure. Insufficient ICT resources, such as computers, printers, fax machines, photocopiers, binders, and projectors, are present in many public universities in Nigeria. ICT facilities are used for document typing, email sending and receiving, and information storing. Ade (2013) attested to this issue, and Oyedokun, Oyewumi, Akanbi, and Laaro (2018) came to the regrettable conclusion that many institutions in Nigeria lack basic ICT facilities, such as computer systems, laptops, printers, etc., for their administrative employees to perform official duties. Few public higher education institutions in the nation, according to Adavbiele (2016), are able to provide for the ICT needs of both their staff and students. Adavbiele (2016) conducted research and discovered issues that prevent ICT from being adopted and used in universities, including: limited access to ICT facilities at my university; Lack of a personal computer and access to some necessary software prevents me from using ICT for my research. a bad reception issue (which is compounded by the downloading and uploading of files), ICT use at my university is discouraged by a lack of reliable and economical electrical supply. ICT use is discouraged by health issues related to computer use, such as eye strain and heat exposure. My university's inability to cover the startup and ongoing costs of creating both the internet and an intranet, My ability to employ ICT is hampered by resource problems like class size, student and teacher preparation for new forms of learning and teaching and for the use of associated technologies, as well as pedagogical problems like the need to redesign courses for various delivery methods.

3. **Poor Computer Literacy of Administrative Staff**

Another issue hindering effective ICT use for administrative tasks in Nigerian colleges is low computer literacy. In Nigerian universities, a large portion of non-teaching personnel, lecturers, and students lack computer literacy. The degree to which administrative employees, lecturers, and students utilised ICT resources to support teaching, learning, and administrative tasks was affected by the high percentage of computer illiteracy in the university system. The computer proficiency of professional librarians at Nigerian universities was examined by Adomi and Anie (2006). Their research revealed that librarians lacked a basic understanding of computers. In comparison to their counterparts in the West, where ITC usage and integration have existed for decades, more than 80% of respondents showed worse academic accomplishment (among both professors and students). The reasons for this are not difficult to comprehend. The pronounced gaps are caused by a persistent dearth of ICT instructional materials, inefficient policy implementation, and a lack of other resources (infrastructure) to support teaching and learning. ICT technological ignorance was one of the issues Oyedokun, Oyewumi, Akanbi, and Laaro (2018) highlighted as barriers to ICT skill acquisition in colleges.

4. Unreliable Power Source

A significant obstacle to the efficient use of ICT for university administration in Nigeria is unstable power supply. Nigeria faces a power dilemma as a developing nation. The Nigerian government is unable to guarantee a twenty-four-hour uninterrupted electricity supply throughout the nation. Currently, the nation's total electricity production is less than 10,000 megawatts. The issue of an unreliable power supply is hurting all educational institutions, but universities in particular because of the need for a consistent power source for the numerous programs they offer. Electricity is required for doing research, delivering instruction in the classroom, and running the daily operations of the schools. The ability of ICT facilities to operate continuously without interruption depends on steady electricity; when power is unstable, ICT facilities operate less effectively. According to Krubu and Osawaru (2011), there are a number of things that prevent ICT from having a positive impact on university libraries in Nigeria, including poor search abilities, unstable power supplies, pricey software and hardware, and the high cost of generator fuel.

5. Sluggish Internet Services

Another issue preventing universities' internal administrations from effectively using ICT resources is unstable internet services. In many Nigerian states, the quality of the internet is extremely bad. Many towns and cities still lack complete internet coverage, which has an impact on how many colleges run their internal operations. As non-teaching employees at one of Nigeria's institutions, we frequently have to put off formal work because of subpar internet connectivity. Due to slow internet connections, official documents intended to be sent online to other colleges could not be sent that day. Low levels of connectivity are one of the explanations given by Jagboro (2003), Umoh and Emmanuel (2014) for the low level of ICT usage in the institution. (Emmanuel, Umoh & Emmanuel 2014; Obasanjo 2012) have also noted that Nigerian schools must deal with the network system's epileptic nature when it comes to student browsing and research work. Adavbiele (2016) found that there is a disconnect between university lecturers and students' use of ICT in the classroom and that many university lecturers and students must travel to a town's for-profit cyber café before they have access to a computer that is linked to the internet.

6. Poor ICT policy implementation

The low use of ICT for university administration in Nigerian public universities is caused by the country's inadequate execution of ICT policy (Ogunode, Okwelogu, & Olatunde-Aiyedun, 2021; Olatunde Aiyedun, Ogunode & Eyiolorunse Aiyedun 2021). In Nigeria, the National Universities Commission (NUC) has mandated that there should be at least one computer for every four students, one PC for every two lecturers with a grade below lecturer I, one PC for each senior lecturer, and one notebook for each reader or professor, according to Adavbiele (2016), who cited Okhiria (2007). In order to promote the use of ICT in teaching and learning, NUC has gone a step further and established e-learning platforms equipped with twenty smart boards in twelve Federal universities. While some Nigerian universities have made enormous or remarkable progress in campus wide area networking and the delivery of e-learning courses, the majority have not reached this required system ratio for their faculties. The development of ICT at universities is being hampered by the ineffective execution of these policies. A study by Adeosun (2010) revealed that inadequate infrastructure and a lack of ICT resources prohibit Nigerian higher institutions from fully using ICT. ICT policies in Nigerian tertiary institutions are being poorly implemented, which is hindering many students from using ICT successfully for their students.

7. High Maintenance Costs for ICT Facilities

The expensive expense of maintaining ICT infrastructure forces many school administrators to restrict the amount of time students have access to the internet in a university setting. This move restricts student and academic access to the use of computers for educational purposes. According to Kupoluyi (2015) and Bolaniran and Ademola (2004), the difficulties of high bandwidth costs and effective ICT use, awareness and mindset, a lack of top-level commitment for the progress in ICT integration, the implementation of a systematic method, a lack of technical support, inadequate knowledge, gender, age of the teacher, a lack of motivation, a lack of technical skills, and the inability of many Nigerian teachers to The high cost of computer equipment was noted by Olatunde-Aiyedun, Eyiolorunse-Aiyedun, and Ogunode (2021), Oyedokun, Oyewumi, Akanbi, and Laaro (2018), and Emmanuel, Umoh and Emmanuel (2014). The exchange rate of dollars, euros, pounds, and Nigerian naira (NGP) hinders schools in Nigeria that have a low turn-over in school fee payments and PTA contributions for the purchase and supply of computer systems. For their computer lab, some private schools use the higher purchase **method (hp) to buy computers.**

1. Ineffective Maintenance Practices among University Staff

Another reason why many universities don't use ICTs efficiently for school administration is due to a ineffective maintenance culture among ICT users. Because users at public universities have ineffective maintenance habits, many ICT facilities have been ruined and damaged. According to Emmanuel, Umoh, and Emmanuel (2014), who cited Oketunji (2000), there is a correlation between students' academic performance and their prior exposure to ICTs, their attitude toward them, their level of anxiety, the maintenance culture of their computer labs, the availability of well-equipped computer labs, and the epileptic nature of the power they receive. Computer viruses are harmful programs that are capable of erasing both program and document files in the computer system because of the personnel and operators of ICT facilities' inadequate maintenance culture. The lab computers are infected by students' use of

this virus. Numerous virus variants exist, most of which fall into one of the following six broad categories and each of which affects the computer system differently, according to Emmanuel, Umoh and Emmanuel (2014) and Vikas (2008). These categories are: book sector virus, file virus, macro virus, multipartite virus, polymorphic virus, and stealth virus. Like a virus, a worm or Trojan horse is a program that corrupts data on a computer and does it harm. Every computer system goes through a process of booting up and shutting down (putting off). The operating system and even the hard drive, which is the main storage device in a computer system, may become corrupted if the computer operator fails to follow the right procedure (Emmanuel, Umoh & Emmanuel, 2014). ICT usage restrictions in the university system have been the subject of various publications and studies.

3.1 Way Forward

The following recommendations were made in order to ensure efficient use of information and communications technologies (ICTs) by university administrations: adequate funding of ICT program; adequate ICT facilities in all offices; training and retraining program for administrative Staff and teaching Staff; implementation of all ICT policies in the universities; subsidizing the cost of ICT facilities staff and educational institutions; inculcating a good culture of ICT maintenance; ensuring stable power supply; and ensuring s.

1. The amount of money that the government spends on higher education should be increased. This will make it possible for school administrators to purchase additional information and communication technology facilities for use in offices. The existence of suitable information and communication technology facilities in the offices of the universities would assist in the efficient administration of the schools.
2. An increased number of information and communications technology (ICT) infrastructure facilities should be made available at all public universities. The efficient operation of university administration will benefit from this.
3. The National Universities Commission and the school administration should work together to develop a program to ensure that all teaching and non-teaching personnel in Nigerian universities participate in a computer training and retraining program. This will aid in the efficient use of information and communication technology for administrative purposes.
4. The government should put all information and communications technology policies into effect, including the provision, training, and oversight of information and communications technology facilities in all universities. As a result, both teaching and non-teaching employees will be better able to utilize ICT for administrative activities as a result of this change.
5. The cost of information and communications technology (ICT) facilities should be subsidized by the government for educational institutions, particularly universities. Because of this, universities will be forced to invest in additional information and communication technology infrastructure, which they will then employ for administrative objectives.
6. The government ought to hire information and communications technology (ICT) professionals to maintain or format and install up-to-date antivirus software to check for computer viruses. Examples of such software include Norton antivirus, McAfee, and Smart Cop.
7. The government should provide financial help to the energy firms in order to enable them to increase the level of service that they deliver to the customers in order to meet their expectations. This will assist in maintaining a consistent supply of electricity throughout the nation as a whole as well as at our various educational institutions.
8. The government ought to support internet companies by providing them with access to lending facilities, which would enable the companies to improve the infrastructure facilities. This will contribute to the improvement of internet services across the country, with a special focus on those offered by institutions.

3.2 Conclusion

This study covered the interaction between Nigerian public university administration and information and communication technology. The study found that there was insufficient funding for the ICT program, insufficient ICT facilities, poor computer literacy among administrative staff, unstable power and internet services, poor implementation of ICT policies, high maintenance costs for ICT facilities, and a lackluster maintenance culture among university staff. It also found that there was no training or retraining program for administrative staff or teaching staff, and that there was insufficient funding for the ICT program.

Conflict of Interest Statement

The authors declare no conflicts of interests.

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