

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AS A TOOL FOR EFFECTIVE ADMINISTRATION OF HIGHER INSTITUTIONS

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Abstract

The technology ecosystem in Nigeria is ephemeral and Nigeria is old enough to embrace trending technologies with greater speed, to boost economic productivity, but actually the reverse is the case, as shown in the finding of researches conducted by scholars on the subject matter, bringing us to look for ways of motivating a change of attitude towards technology. This study aims at motivating administrators of higher institutions to accept their place as critical facilitators of change with technology trends. This paper studied ICTs and Management of Higher Institutions, the Usage of ICT in School Administration, Selected Areas of Relevance in Use of ICTs for School Administration, particularly discussing three key areas of use in, namely: Record Keeping, Planning/Scheduling, and Communication Process. It thus recommends: provision of computers in all units of the university; periodic computer training to all staff; and general staff promotion based on ICT compliance, as ways of overcoming the challenges limiting adoption of ICT, which include but are not limited to: Delayed access to basic ICT equipment, low internet connectivity, lack of computers, inadequacy in use of audio visual materials and equipment including films, slides transparencies, projectors, globes, charts, maps, bulletin boards, as well as information retrieval system etc.

Education in general stands tall in the development of nations and the tertiary level of education in particular plays a significant role in the development of any nation. In the light of this, it is generally accepted that a good higher education system is the bedrock for overall prosperity of any nation and it is also true that technology simplifies systems that embrace it. Same simplicity is what we expect of our educational system in Nigeria, but the reverse is the case here, as we see growth resulting in new challenges of complexity; we see staff overworking themselves to meet the demands of students. It brings about operational inefficiency affecting the administrators too.

These operational inefficiencies represent a gap needing to be filled by leveraging technology, as such the adoption of ICT would be mandatory since Information and Communication Technology (ICT) has many core aspects that are useful in helping education managers and professionals solve practical problems faster, because there are several ways ICTs can be applied to education institution, presenting a proactive challenge for administrators of tertiary institution to integrate ICT, following the path suggested by Byron (2017) that, “models or governance approaches are a key tool to assess and address the use of ICT and investment, aligning them with the objectives of the University.” In this study, the researcher x-rayed the current practice of the administration in development of ICT at the software level, and foreseeable changes with the effective software application integration.

Educational technology has already been developed in different categories and many schools have already taken advantage of them by going digital. Hence, rather than trying to group technology for tertiary institution administration into new areas, this research picks and chooses from what is currently working in digital schools and applies them to the administrators, as some suggested tools for effective administration of tertiary institutions.

Education has suffered some deficiencies due to the improper storage of information of the institution. This is obvious in the system where Information and Communication Technologies are not taken seriously. Staff and students data in some institutions have been mistaken and sometimes cannot be retrieved as a result of the lack or inadequate preservation of information. It is therefore imperative for this study to show how the absence or inadequacy of Information and Communication Technologies creates a vacuum in the effective administration of higher institution in Nigeria.

It is significant to note that information and communication technologies have both the problem and solution to the operational inefficiency introduced by complexity surrounding the higher institutions, due to its foundation in the education development of the nation. According to Zainally

(2008), information and communication technology provides several facilities and possibilities for educational administrators to do their tasks. This author here intends to demonstrate the fact that Information and communication technologies have improved the nature of higher institution, allowing information or document to be transferred, stored, retrieved and processed by almost all who work, study or interact with the institutions.

Information and communication technology (ICT) is seen as a modern day techno-management tool that has benefited higher institutions in global world. In some countries like Spain and India, universities have been changing fast due to the development of new information and communication technologies (ICT). Information and communication is essentially used in administration to support and boost the business strategies. This has increased efficiency and effectiveness on the administration of higher institution.

Literature Review

The Concept of ICT

ICT: In a comprehensive definition given by Kanos (2013), the word ICT can be summed up in the following definition as an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning.

For the purpose of this paper, ICT is an acronym for Information and Communication Technology implies the use of computer hardware and software applications both on web and mobile versions that are always being updated to meet the growing needs of a diverse, dynamic and expanding user group for adaptability. Computer systems are versatile and feature nano, micro, macro, small, medium and large operational components as electronic elements of technology usability, connectivity, dependability / reliability and sustainability. As Achimugu (2009) averred, "While ICT is certainly important and can contribute to obtaining our educational goals, inappropriate use of it can also do more harm than good." Users have to engage with the systems as developed not as desired, for proper usage, hence need to study a user guide, and understand all aspects of the devices built to make them operable and functional to meet the user's needs and even fancies.

ICTs cannot function effectively without proper usage, and without knowledge of how to use them, ICTs remain irrelevant to all who need/have them. Information and communication have broad open-ended dynamics that ICTs have been developed to bring into measurable scales, and so there are specific ICT devices, gadgets and tools for specific information management and communication processes/aspects; so huge market researches/ information technology industry updates are essential for effective adoption of ICT in complex systems like higher institutions.

The ongoing advancement in technology means there is no end to learning about technologies and ICT is one of them. For this reason, a system of research and studies is required in any system that seeks to stay up-to-date with the trends in ICT usage that would make it more relevant and competitive in and around its given community, and same applies to higher institutions. For ICT integration at higher institutions, its administrators need ICT trend updates.

Adoption of ICT in Higher Institutions

The challenges that hindered the adoption of ICT initiatives in the Information Age for administrators of Higher Institutions in Nigeria are, in their own rights, the same limitations we find hindering the progress of other sectors of the economy and dragging the Nigerian society in general far-backward. "Universities, especially those of developing countries, its main difficulty in managing ICT is the lack of strategic planning and meaningful guide to this process" (Byron, 2017), and this difficulty is clearly visible when comparing the state of things in Nigeria, where it seems nothing really works for lack of a system of doing things with technology, with the State of things in progressive minded global economies, where everyone desires to live and work because things are seen to work within the system already put in place and moving on the fast and furious wheels of technology.

The difference sought for in Nigeria has already been couched in the words of learned thought-leaders even in the field of education. Ololube (2011) presented a guide on education and society that employs an interactive approach to discussing these mutually related concepts, and adds

to the existing literature on education effectiveness and the need for improvements in education to ensure broader societal development. This would help in overcoming the difficulty associated with lack of strategic planning and meaningful guide (Byron, 2017).

This research isn't simply intended to show but to recommend several effective, new approaches to administration with the Integration of ICT in administration, so that higher institutions in Nigeria will be made more tech-oriented, powered, efficient and interactive between the public, students and other higher institutions. In the light of an interactive approach, this research abrogates interactivity in higher Institutions that is based on ICT, and a technology plan for higher institution administration that is based on interactivity between administrators and tech development communities and corporations. The outcome envisaged from this interactivity is improvement of structures and infrastructure that would not only be raised to global standards but equally house technologies, particularly ICTs, that make digital learning a reality in Nigeria.

ICT and Management of Higher Education

ICT is an innovation acknowledged by society and schools need to aptly respond to it. The educational system faces a lot of challenges which can be dealt with in new ways and more effectively when ICT is embraced. This research places ICT within the bracket of School Facilities / Material resources, because they meet the definition of educational facilities which Castaldi (in Olorube, 2011) defined as those things of education which enable a skillful teacher to achieve a level of instructional effectiveness that far exceeds what is possible when they are not provided.

This definition shapes our perspective here, seeing that knowledge can be communicated without ICT but communicated much faster, easier and better with the integration of ICT. Learning, teaching and managing individual needs can be adapted with the opportunities ICT provides students and teachers. With ICT, educational institutions can better demonstrate how well they play the crucial role of both learning environment and generation plant for knowledge nurturing and transfer. As such ICT is included among educational facilities, in support of what Castaldi (in Olorube, 2011)) further defined as educational facilities, saying that, whatever materials and / or services that helps to facilitate teaching and learning rightly fall under the term school plan or educational facilities.

ICT as an essential asset is not only vital for teaching and learning but moreover for the use of education management. With ICT the functions of the school system can be more effectively improved, especially in various tasks by administrators of schools. The purpose of this work is thus to develop a technology plan for administration of higher institutions. This plan would include substituting even instructional materials with their ICT alternatives. Despite the challenges involved in doing this, there is still a strong need for having the plan set and ready for implementation, especially informed by knowledge of the wide range relevance of ICT application and usage in school administration.

The Usage of ICT in School Administration

The success of Nigerian education depends on its ability to identify and respond to technological changes in order to elevate teaching and learning process. This brings us to a point of taking an important step in advancement to point out areas of applying ICT in Nigerian education, and so, in this section, this research discusses the use of ICT in school administration in general and higher institution administration in particular. Generally, ICT use in administration of education institutions has been divided into 3 groups of administration, namely: Student Administration; Staff Administration; and General Administration.

Group 1: For staff administration. ICT could be used by students, for application for admission, registration / enrollment, access available time table / class schedule electronically, maintaining students attendance, communicating students' academic details to their parents / guardians, notifying students about hostel accommodation, and notifying those concerned about transportation.

Group 2: For staff administration. ICT could be used for recruiting and allotting staff work in the institution, automating staff attendance and managing their leave in the institution, performing appraisal, communicating with staff, circulating information about official matters, and managing electronic sales.

Group 3: For General Administration. ICT could be used for scheduling / allocating halls for examinations, disseminating information in the institution, applying for university examination, processing and displaying results of students, and facility for electronic payment of fees by students.

Selected Areas of Relevance in Use of ICTS for School Administration

Knowledge of the relevance of using ICTs for school management will help administrators to make proper planning. This research shall select and describe in concrete terms detailing three core areas of ICT usage in school administration that administrators of Nigerian higher institutions should take note of, when planning their administrative needs and academic programmes.

In a study carried out by Agbo, Mumuni, and Williams (2017), it was demonstrated that, “technologies of different types such as the multimedia have always been applied in education to aid learning thereby solving educational challenges, both in classroom and distant learning environment. Some of the ICT facilities that have been found useful in the field of education are the followings: word processor, internet, computer, radio, phones, video, CD ROMS, Audio tapes, E-mail, power point, virtual websites, etc. all these facilities have been useful in influencing learning greatly. The use of all these technologies gave rise to popular e-learning which is now used in teaching and learning”. To further demonstrate this usefulness of ICT in this discussion we shall narrowly discuss three core areas of their relevance to educational institution, namely: 1. ICT Usage in Record Keeping, 2. ICT Usage in Planning/Scheduling, and 3. ICT usage in Communication Processes.

1. ICT Usage in Record Keeping

Keeping records is integral in administrative duties, considering records such as official transcripts or copies of proceedings of actions, as well as events and all other matters which the school administrator keeps, but if there are better ways of keeping records, ICTs provide the best of them. If the school would keep its history intact, its records must first be kept in safest ways possible, and this alone mounts a serious pressure on schools to employ digital solutions to safe record keeping.

Without record keeping in schools, it would be difficult to:

- (a) Maintain the progressive story telling of the school’s history,
- (b) Facilitate administrative and management continuity in the school,
- (c) Promote and support guidance and counselling services effectiveness provided for students in the domains of their social and academic career,
- (d) Ensure the information needed on ex-students, employed staff members, are provided for admission or placement,
- (e) Enable information supply to parents and guidance for the effective monitoring of the progress of the students in schooling or performance,
- (f) Make available data needed for planning and decision making by school heads, ministries of education and related educational authorities,
- (g) Make it possible to objectively assess the state of teaching and learning in a school, including staff and student performance by supervisors and inspectors, and in this regard, “teachers must have access and the required competencies to integrate ICT in their teaching” (Ibrahim, 2015),
- (h) Update the school community, general public employers as well as educational and social science researchers with relevant information for the advancement of knowledge,
- (i) Make it easy for information to be collected by heads of school, on pupils, students and staff for decision making by higher authorities, the law courts, security agencies and other related government agencies when occasion demands,
- (j) Provide productivity tools such as timetable for coordinating school work and activities, and store data for reference purpose to serve the interest of school head, staff and students alike.

In a situation where “teachers are still lagging behind in the trend of changes in the country and the rest of the world” (Ibriahim, 2015), ICT has unavoidably evolved into a necessity for teaching and learning.

ICTs can help in reducing the complexity of keeping records and effectively simplify the tasks of compiling data and information into and from important school records such as admission and withdrawal register, attendance register, log book, visitors book, staff and students’ personal files, cumulative record folder, students’ report sheet/card, lesson notes/plan, scheme and record of work book, staff time book and movement book, transfer and leaving certificate, library records, including

stock register, issue register etc., for example a Library management software can be used to automate most of the routine function of the library.

Another important record which ICT can be deployed to reduce complexities involved in its keeping is cash register, and here accounting software will make for precision and accuracy of data input, as well as speed of information output and analysis.

If ICT is considered and applied to record keeping in all its aspects, then its potential is immense to achieve objectives such as: i) administrative efficiency with the aid of computers, digital libraries, email, internet and so on, ii) availability of information ensuring accuracy and adequacy of records, iii) Easy retrieval of information making stored information easily accessible and disseminated for national planning, financial budgeting, and iv) effective implementation of education programs and policies.

Moreover, with ICT in record keeping, there will be a smooth process of collecting, storing, retrieving, using, transmitting, manipulating and disseminating information to enrich communication, decision-making and solving problems within the school system.

ICT Usage in Planning/Scheduling

Planning is an important administrative function without which administrators will seldom succeed or be effective and productive at the same time. and if the planning could be done more smoothly and accurately, in less time, with scheduling aids, especially with preparation of a) school / academic calendar, b) teaching / lecturing time table, c) examination time table and 4) staff meetings across all departments and faculties, then ICT is a must-have for administrators. Since it is no longer news that “ICT in education has the potential to be influential in bringing about changes in ways of teaching and learning” (Oshadare, Ige & Lawal, 2015),

Putting scheduling distance learning into perspective here, the students are not physically present, and so the tool to be used here is a webinar, and there are competing webinar hosting products out there. They all integrate e-learning features, but beginning with solving the problem of scheduling using a simple opt-in form user interface integrated with an event scheduling software to allow participants to register for a future e-class and attend with their webinar tracking links. This shows ICT scheduling power at play in –learning environments. Thus, the use of e-learning through Information and Communication Technology in educational process especially in adult learning cannot be overlooked. It is the best and easiest way of communicating between the instructors and their individual students across distances. (Oshadare, Ige & Lawal, 2015).

With the availability of e-mailing schedules at a prompt, reminders of scheduled activities could be sent to all recipients at a single click, if their correct e-mail addresses are first collected and stored in an e-mail retrieval system. This is ICT at work. Thus, there is no reason for not making use of ICTs for scheduling administrative functions either.

ICT Usage in Communication Processes

If scheduling has been taken into account as record keeping has, then it is necessary to also consider communication media, since ICT involve communication at top speed. At the very basic level this access to computer and internet facility in the school is not optional for administrators to taken into account. It is so basic that without it the school is just unnecessarily backward today. This fact has been proven within the context of counselling in higher institution, as studies conducted “are unanimous in their findings that the application of ICT in counselling is low. This means that the prevailing status of ICT-facilitated counselling in Nigeria is abysmally poor and very low” (Eyo, 2015).

It has been acknowledge in the National Policy on Education that, “education is the most important instrument for change; any fundamental change in the intellectual or social outlook of any society has to be preceded by an educational revolution” (Eyo, 2015). If the society is going to change to effective ICT usage for communication, it would have to begin from the educational institutions particularly at the tertiary level. This would begin to steer worry to see that administrators of higher institutions are themselves ill-disposed to effective usage of ICTs in education at the apex level of education. How can administrators of Higher Education Institutions (HEIs) stay updated about technology without having access to computer and internet, and how will they communicate

their decisions better today without guaranteeing same access to students and other staff of the institution?

To effect the kind of communication desirable at this level of education, institutions' administrators need to know how to use simple ICT tools and technologies for interconnectivity, such as: a) e-mail, b) website (c) forum (d) blog (e) Online survey tools (f) Virtual Learning Environments (VLE), (g) video media (h) audio media. (i) Image media (j) Social Networks. (k) Online Groups and Forums (l) SMS and Instant Messaging and (m) mobile applications for the institution.

Mobile applications, for example has become a norm for businesses, and also for many schools in several parts of the world, hence is equally expected in every higher institutions where information and knowledge need to be enhanced for their effective management, for "information remains the major pivot to economic development and achievement of development agenda worldwide" (Akpan-Atata, Akwang, & Eyene, 2015).

To build this sort of ICT, administrators will need to have an objective in mind, taking lead from schools that have this in place already, as some build apps that help them give learning modules while others solve problems of connecting their school with community, so each admin should think of building a mobile app that solves a real problem for them as administrators in communicating effectively with others.

This foregoing is consistent with these researchers' findings about ICT that, "with the shift from anecdotal to empirical evidence of its full development impact, a more balanced perspective has emerged, in which ICT is no longer seen as an end in itself but rather as a critical enabler in the development process" (Akpan-Atata, Akwang, & Eyene, 2015). As such, we challenge any administrator who is development biased to reflect on the benefits of ICT in the discussion so far, as intended to prop them into looking for gaps to fill up with this innovation of bringing ICT into full use in their managed institutions and in order to achieve that, they should begin making their technology plan by employing an interactive approach of involving and engaging with technology development agencies and firms in a problem-solving dialogues with an objective to bring about the development of tools for effective higher institution administration in Nigeria, as they compete to take the lead in ICT adoptions.

The Challenges of ICT Usage in the Administration of Higher Institutions

Challenges of ICT usage from the periphery of Teaching and Learning may include problems such as "inadequate quantities of available materials either in finished or raw form and the high cost of production" (Ololube, 2011). Toeing the same line of thought, Ihedioha (2017) affirmed that, "Mounting programmes of technology teacher education without adequate planning, provision of facilities, equipment and materials is a waste of resources and such should not be attempted." In addendum, Agbo, Mumuni, & Williams (2017) also affirmed that, "Although teachers are often seen as motivators in effective use of technology in school, unfortunately in many African countries, lack of trained teachers and low level of teachers' ICT skills have been identified as major impediments to effective use of ICT in teaching and learning", Other striking challenges are the following:

1. Epileptic nature of the electricity system in Nigeria. There is lack of power supply in this country and it affects the usability of the ICT for effective administration of the schools.
2. Computer illiteracy among the staff. A lot of university staff are not ICT compliant and cannot do much even when these facilities are provided for them to work with.
3. Poor maintenance culture. The maintenance of ICT equipment is a problem in higher institutions, as some computers are packed up without servicing and proper maintenance.

Overcoming the Challenges of ICT Use in Higher Institutions

Emphasis on ICT has shifted from anachronistic analogue monotype computer hardware to assistive dynamic computer application software for installation and use in an inclusive technology community, which the higher institutions are supposed to be a part of, among developing countries for which the assistive ICT tools are designed, and Nigeria is no exception. Even though the technology ecosystem in Nigeria is still young and budding, Nigeria has come of age to be able to fully embrace technology and its trends with greater speed, in order to boost her economic productivity, and the higher education institution in Nigeria has pivotal roles to play in encouraging this competitive level and attitude of acceptance of technological advancements in Nigeria.

In the light of the foregoing, the challenges of ICT adoption in higher institution administration can be overcome by the following:

- School managers should source for alternative power supply such as installation of solar panels and inverters on all units where ICT systems are in use for internally controlled energy sustainability, etc., rather than being hindered by conventional energy insecurity.
- Open the door of engagement between technology development communities and the higher institution communities through creation of conference events that will foster continuous interaction for the former community to inspire the latter and the latter to benefit from the innovative ideas of the former, with resolutions tailored to the latter's needs of technology in all aspects of administration, teaching and learning experience.
- Partnership with technology development experts, teams, agencies and firms to design and host capacity building workshops and build fitted ICTs for higher institutions' usage.
- Set up an ICT compliance monitoring and evaluation team / committee for the institution, to address local ICT gaps and challenges that will require team commitment.

Conclusion

This paper has presented ways higher institution administrators, as facilitators of change, could embrace the innovations of technology with adoption of ICT for effective management of higher institution. Since higher institutions have pivotal roles to play in driving change, this paper has encouraged a competitive level and attitude of accepting technological advancements by higher institution administrators in Nigeria. This study covered three fundamental areas for ICT usage, namely: record keeping, planning/scheduling, and communication. The three core areas of ICT relevance in school administration discussed thus far need to be properly understood, not only by administrators of higher institutions but, also by administrators of technology teacher programmes as well as technology teachers whose role would be to transmit Information and communication technology development skills and knowledge to their trainees as beneficiaries of technology teacher programmes, so that a future of indigenous ICT development could be envisaged for Nigeria. Administrators that take advantage of the uses of ICT for record keeping, planning/scheduling and communication process, and develop a technology plan for their institution will become more effective in their management of higher institutions in Nigeria in General and Rivers State in particular.

Finally, to deal with the problems associated with poor use of ICT in higher institutions in Nigeria, there is proven need for adequate supervision on use of ICT to meet the Federal government standard stated in ICT policy of Nigeria; there is need for procurement strategies for ICT adoption and staff and student training on how ICT facilities should be used; there is equally need for innovation in tertiary institutions with use of ICT which should be encouraged by administrators or authorities, alongside employment of more modes of ICT supported instructions for easy functional academic work; there is continuous need for availability of strong bandwidth and power supply in higher institutions as primary conditions for ICT usage; and there is need for recruitment of ICT skilled staff and retraining of old staff to acquire these skills, by making capacity building programs for staff a regular event in tertiary institutions, and providing on-sit support staff to attend to staff and students using ICT facilities. With all these needs met, there will be effective administration of higher institutions in Nigeria.

Recommendation

In order to fulfill the goal set by the Federal Government in the National Policy on Education, to equip teachers with information and knowledge "ICT has to be greatly adopted" (Agbo, Mumuni, & Williams, 2017). For the purpose of fostering this adoption, the following recommendations are important for consideration:

1. Higher Institutions should make available computers in each unit of the University for Easy Flow of information within and outside the university.
2. There should be periodic meaningful computer training of all staff of the higher institutions.
3. The promotion of both teaching and non-teaching staff should be based on ICT compliance.

4. Set up an ICT management, compliance, monitoring and evaluation and consulting team in every higher institution. The team should spearhead the use and maintenance of ICT in the institution, starting by assessing the deficit of ICT competence among administrators, staff and students, assess the challenges they face and take proactive steps to assist them by making the right provision for orientation & training programmes while fixing the gaps with the provision of the proper ICTs needed, and staying close to check, evaluate and ensure their effective usage, and keep servicing/maintenance officers on ground to fix issues relating to malfunction or replacement of worn-out components, tools and devices.

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