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Information and Communication Technology as a Veritable Tool for Administrators in University: From Teaching Perspectives to Challenge in Education

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A B S T R A C T

Information and communication technology (ICT) plays a critical role in improving educational quality. Because of its strengths in facilitating administration operations such as data storage, knowledge management, and decision-making, ICT solutions for administration and management are currently popular in universities. Here, to support teaching and learning processes as well as to achieve the veritable tools for administrators in private universities, the purpose of this study was to gain a better understanding of how ICT applications are used, the tools used by the school administrator, and the efficacy of ICT applications for administrative and managerial tasks at universities. It is obvious that lack of commitment by Administrators; lack of ICT strategy; lack of competent staff to manage the ICTs and low skill level of the administrators led to the reasons for poor use of the ICTs in Universities. Other reasons that added to the underuse of the ICTs are insufficient budget and irregular power supply. This paper presents a survey of the literature on ICT applications and their efficacy in university administration functions. The findings provided insight into how administrators might improve and expand their use of ICT in daily administrative duties to make their work more efficient and effective. Finally, recommendations for university administrations to improve their ICT understanding and practice will be explored.

A R T I C L E   I N F O

1. INTRODUCTION

The non-academic side of institutions is managed by university administrators. Although some university administrators also work as lecturers, they do not have the same responsibilities as faculty members. They may be in charge of activities such as admissions, construction, safety, and residence life, all of which are crucial to the university's smooth administration. University administrators oversee the university's day-to-day operations, such as supervising personnel in the school's offices, drafting budgets, and serving as a liaison with students' parents. A university administrator may also collaborate on initiatives with students. The term "Information and communication technologies" (ICTs) refers to a broad range of technological tools and resources that are used to communicate, create, disseminate, store, and manage data (Perron *et al*., 2010; Kuzior & Lobanova, 2020; Ghasemi & Hashemi, 2011). Telecommunication technologies (telephony, cable, satellite, TV and radio, computer-mediated conferencing, video conferencing), as well as digital technologies (computers, information networks (internet, World Wide Web, intranets, and extranets), and software applications), are all examples of rapidly evolving ICTs (Ayyagari, 2018; Mahmoud & Auter, 2009). Any administrator's primary goal is to provide high-quality service, including access to relevant material, computers, information networks, and software applications. These technologies enable administrators to offer a wide range of information services to their patrons.

All of the functions and services that administrators used to give manually can now be provided through ICTs, which are more efficient and speedier. According to Ashari *et al*. (2014) and Houghton *et al*. (2014), some of the opportunities given by ICTs to Administrators are Data organization for usage, increasing capacity, Information management systems, Electronic libraries, and Document delivery and resource sharing. Administrators are institutions dedicated to serving the information needs of students, lecturers, researchers, and other members of the academic community. Their objective is to provide a high-workforce to function and provide timely information to lecturers, researchers, and students with quality information service, and knowledge products (both print and electronic) to the local academic community. "Administrators are a cost-effective information service and distributor of knowledge goods to a resident community of academics," writes Wolpert (1999). Administrators of Institutions appear to have recognized the critical role information and communication technologies (ICTs) play in their job performance and have made them available to them. Educational institutions are anticipated to play a critical role in knowledge development and learning environments in the present information age. In this case, information and communication technology (ICT) becomes the most important tool for making this process easier. Because employing ICT in education has become one of the most effective components in school improvement (Tosun & Baris 2011; Altrichter & Kemethofer, 2015), not only for teaching and learning but also for administrative purposes, its integration in education is unavoidable and cannot be avoided. Therefore, the Control and verification of systems, as well as the process of organizing and managing resources of all types insufficient quality and quantity to ensure that such objectives are met, are referred to as administration and management (Nagbøl, 2021). Many countries, including Malaysia, have developed ICT strategies and policies for the administration and management of their educational systems (Mikre, 2011). The reason for this is that the national government is prioritizing inventions to realize the technology strategy (Shiffman, 2007). The study examines the many elements that impact administrators' decisions, as well as the reasons why some ICT applications are adopted and others are abandoned (Singh & Muniandi, 2012).

2. METHOD

Data were obtained from literature, including articles from journals and internet sources. The obtained data were then analyzed and compared to the real condition in private universities in Nigeria.

3. RESULTS AND DISCUSSION
3.1. The Concept of Information and Communication Technology (ICT)

ICT first appeared in the mid-1980s and was defined as "All kinds of electronic structures used for dissemination of telecommunications and mediated communications", with examples containing personal computers, video games, cell phones, internet, electronic payment systems, and computer, etc. ICT is made of computer and communication technology. Computer technology is the device for keeping and processing information in digital form while communication technology helps us to transfer and disseminate digital information. Additionally, ICT means a variety of scientific presentations in the process and communication of information. The word ICT is a combination of two words information, communication & technology. Information means knowledge and technology means the use of computers & communication. The term ICT can also be defined as "the combination of calculating, interacting the information processing technologies and their applications" Thus, ICT means a combination of computer presentations and communication technology for gathering, processing, storing, and publishing Information. ICT has also been seen as a collective term deliberating on the technologies used for collecting, storing, editing, and communicating information in various formats. ICT means the use of computer-based technology and the Internet to make information and communication services available to a wide range of users (Nagbøl, 2021).

The term ICT includes any communication method or application, encompassing, radio, TV, cellular phones, computers and network, hardware and software, satellite systems, and so on, as well as the various services and application associated with them. Information and communication technology (ICT) is a diverse set of technological tools and resources used to communicate and create, disseminate, store and manage information. However, Information and communication technologies (ICTs) are often associated with the most sophisticated and expensive computer-based technologies. ICTs are information-handling tools- a varied set of goods, applications, and services that are used to produce, store, process, distribute and exchange information. ICT is a diverse collection of scientific procedures that are geared towards achieving set objectives and resources which are made use of to communicate. They make use of generating, distributing, collect & administer information. According to UNESCO "ICT is a scientific, technological and engineering discipline and management techniques used in handling information and application and association with social, economic and cultural matters". ICT is a technology that supports activities involving information. Such activities include gathering, processing, storing, and presenting data. Increasingly these activities also involve collaboration and communication. Information and Communication Technologies can be split into three components namely the technology part; information that the technology helps to deliver; and a communication process that the technology facilitates and serves as a medium for the information.

3.2. Adoption of ICT in Teaching and Learning

ICT is being utilized in every part of life. Due to the increasing importance of the computer; students -the future citizens cannot afford to keep themselves aloof from this potential

medium. In education, the use of ICT has become imperative to improve efficiency and effectiveness at all levels and in both formal and non-formal settings. Education even at the school stage has to provide computer instruction. Profound technical knowledge and a positive attitude towards this technology are the essential fundamentals for the successful citizens of the coming years.

3.3. ICT Models and Theories

A lot of theories have been propounded on online learning to identify its concept, process, and usefulness in society see **Figure 1**. The theories discussed in this study include:
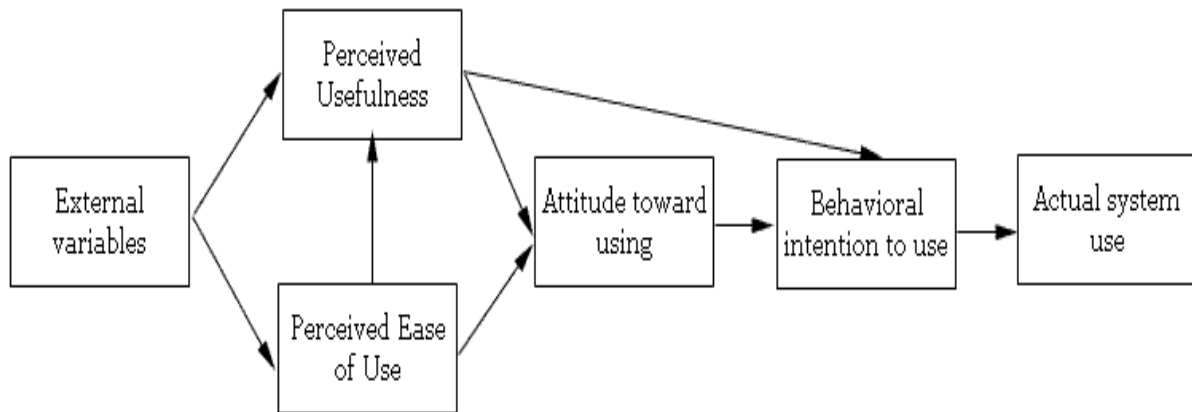

Figure 1. Technology Acceptance Model 2(TAM) (1986).

(i) TAM model (Technology Acceptance Model). Based on the theory of reasoned action, developed the Technology Acceptance Model which deals more specifically with the prediction of the acceptability of an information system. The purpose of this model is to predict the acceptability of a tool and to identify the modifications which must be brought to the system to make it acceptable to users (Davis, 1993). This model suggests that the acceptability of an information system is determined by two main factors; Perceived Usefulness and Perceived Ease of Use.

(ii) Perceived Usefulness. Perceived usefulness is defined as the degree to which a person believes that the use of a system will improve his performance. Perceived ease of use refers to the degree to which a person believes that the use of a system will be effortless. Several factorial analyses demonstrated that perceived usefulness and perceived ease of use can be considered two different dimensions. As demonstrated in the theory of Reasoned Action, the Technology Acceptance Model postulates that the use of an information system is determined by behavioral intention, but on the other hand, the behavioral intention is determined by the person's attitude towards the use of the system and also by his perception of its utility. According to Davis, the attitude of an individual is not the only factor that determines his use of a system but is also based on the impact it may have on his performance. Therefore, even if an employee does not welcome an information system, the probability that he will use it is high if he perceives that the system will improve his performance at work. Besides, the Technology Acceptance Model hypothesizes a direct link between perceived usefulness and perceived ease of use. With two systems offering the same features, a user will find more useful the one that he finds easier to use.

(iii)   Perceived ease of use. According to Davis, (1993) perceived ease of use also influences in a significant way the attitude of an individual through two main mechanisms: self-efficacy and instrumentality. Self-efficacy is a concept developed.

3.4. Trends of Development in ICT
3.4.1. Administrator in teaching and learning

Integrating ICTs into teaching and learning has enormous promise for Nigerian educational institutions and provides administrators with a new technique of learning assessment. Teachers' contributions to the integration of ICT in education, particularly in learning assessment, are undoubtedly critical. Educational reform initiative should focus on educators' knowledge and skills in using ICT for classroom assessment. The use of ICT in learning assessment refers to evaluating a student's educational program or learning using ICT resources. That is, learning assessments are administered, scored, and reported electronically (e-examination or e-feedback). In Nigeria's educational system, the introduction of electronic assessment of student's learning is a good development regardless of class size with a good virtual learning environment (VLE); the teacher and the learner will be able to get feedback. With the help of ICT, the administrators' role in the classroom is evolving from that of a font of knowledge to that of an instructional manager, guiding students through individualized learning pathways, identifying relevant learning resources, promoting collaborative learning opportunities, and providing insight and support both during formal class time and outside of the designated 40-minute instruction period. The human factor—the teacher—is critical to the success of this ICT trend in the classroom. The teacher's willingness to modify their teaching methods and how they connect with both knowledge and pupils Ayyagari,(2018).

3.4.2. Administrators in universities

Administrators in higher education University administrators oversee the university's day-to-day operations, such as supervising personnel in the school's offices, drafting budgets, and serving as a liaison with students' parents. A university administrator may also collaborate on initiatives with students.

3.4.3. Prospects of ICT among administrators in universities

ICT refers to all of the devices that deal with the processing of data to improve communication. In education, communication occurs between instructors, students, managers, and administrative workers, necessitating the storage of a large amount of data to be retrieved as needed and disseminated or transferred in the desired format. In the instructional process, hardware and software such as the OHP, television, radio, computers, and related software are employed. However, today's ICT is primarily concerned with the use of computer technology to process data. In this sense, the following are some of the benefits of ICT in education:

(i)   Information can be acquired in a matter of seconds by connecting to the internet and browsing through Web pages

(ii)   Easy access to current data: The needed information can be simply obtained when sitting at home or in any other comfortable location. This aids learners in learning the most recent information. Instructors can also stay up to date on the latest teaching-learning practices and technologies.

(iii) Connecting geographically scattered regions: Thanks to technological advancements, education is no longer limited to the four walls of educational institutions. Students from all over the world can collaborate and learn together using online and offline resources.

As a result, the learning experience would be enhanced. Such collaborative learning has the potential to develop: Students' ability to think in a variety of ways, Global perspectives, Acculturation, and respect for the diverse essence of human life and learning facilitation.

(iv) ICT has aided in the change of emphasis from teaching to learning. ICT facilitates students' exploration of knowledge to learn topics through self-study. Administrators can assist students by ensuring that they are heading in the appropriate direction for optimal learning. Self-learning methodologies that are being used with the use of ICT include situational learning, programmed learning, and various online learning courses.

(v) ICT can help students meet their unique demands based on their abilities and interests. Considering the requirements of each student in a crowded classroom has always been a problem for the instructor.

(vi) A broader range of communication channels: Different modes of communication are being incorporated into the teaching-learning process as a result of the introduction of ICT. Some of the resources that can be employed at educational institutions include offline learning, online learning, and blended learning. Individualized learning methodologies and collaborative learning can improve the quality of the group and individual learning. In real-life society. This ensures that knowledge is applicable. Students will have more possibilities to learn.

(vii) The use of modern ICT in education has allowed many students to choose the course of their choosing. They can choose from a variety of online courses based on their aptitude and interests. Students can assess their progress using a variety of quizzes and ready-to-use online examinations. This will ensure that the job market's employment requirements are met, reducing the problem of unemployment. It can also offer society more efficient and effective citizens in response to changing requirements.

3.5. Purposes of ICT

To achieve the veritable tools for administrators in private universities in Kwara state, the following is the purpose to guide this study:

(i) To gain a better understanding of how ICT applications are used in the administration and management of universities.

(ii) To gain knowledge about ICT application tools used by school administration and management.

(iii) To determine the efficacy of ICT applications for administrative and managerial tasks at universities.

3.6. Adoption of ICT in Teaching and Learning

ICT applications have been used in education administration and management to support sustainable development in recent years. A software-based tool or application is a computer program that performs a valuable task for education, such as word processing, desktop publishing, database management, presentation creation, or e-mail (Higgins & Pockard, 2004). Administration heads, administration teachers, and administration employees are the three primary administration groups that use ICT in their varied activities and actions in their daily administration and management jobs at universities.

3.7. Heads of Administration

Established a department of administration. They should have a fundamental understanding of how to use ICT in day-to-day university operations. When computer

technology is used for administrative and management tasks, administrators serve as role models. As instructional leaders, administrators support the integration of computers in teaching and learning in lectures (Singh & Muniandi, 2012), while as transformational leaders, they stimulate innovation, and open-mindeness, and facilitate conditions and events that foster technology adoption.

Administrators typically use PowerPoint presentations to deliver instructions and deliver in-house training in a more engaging manner. Administrators also use ICT to produce announcements, reports, letters for meetings, student registration, and staff hiring. Administrators also use ICT apps to make decisions, store information, and use web applications successfully. Instructional leaders influence the success or failure of lectures in instrumental technology both directly and indirectly. These executives also play a key role in integrating technology into administrative tasks. Administrators play a critical role in creating successful learning environments, and they should enable their employees to use technology to their advantage.

3.8. Teachers Administrative

They are instructors who, in addition to teaching, also have administrative responsibilities. HODs at the departmental level and Deans at the faculty level are the front-line administration teachers. Curriculum heads, students' affairs heads, and co-curriculum heads are the three categories of administration teachers. The curriculum head teachers are in charge of keeping track of all of the pupils' records. Teachers working under this curriculum head must keep all records of their students in a specific format. The administration teachers keep computer files that contain the cumulative data of the students. For hardcopy documentation, formative and summative evolution can be printed off from the software application. ICT applications are utilized to produce timetables, course outlines, presentation slides, and student management reports. Teachers in administration can create online examinations and issue online assignments that can be assessed instantly, thereby saving time. They employ ICT applications to create websites and online portals for students to access the assignments.

3.9. Administrative Staffs

Administrative workers can also use ICT tools to help them complete their daily tasks more quickly and accurately. Administrative personnel utilizes a variety of technologies to manage financial tasks, maintain communication, preserve records, process documents, and collect data. By utilizing ICT applications, they may better manage these obligations. Furthermore, employing ICT applications would assist them in archiving school financial papers such as pay stubs, audit reports, non-salary grants, student evaluation reports, and total student records for future reference.

3.10. Challenges of ICT in Education

Several challenges in ICT for education are the following:
(i) **ICT infrastructure.** In most developing countries, ICT Infrastructure is also commonly an inadequate resource in universities. With restricted resources, it is often difficult for universities to provide sufficient access so administrators can use ICT in their offices. Education studies suggest that no single strategy will work for all universities with limited resources. Instead, each university developed unique strategies to provide meaningful learning activities using ICT tools, whether it was teachers using ICT-based teaching aids or administrators' ICT use. Although some universities have computer labs, there are still

too many administrators to give consistent and frequent ICT access during the school day. Thus, universities need to work on strategies to make facilities available to both students and teachers during school hours.

(ii) **Experimentation, adaptation, and critical reflection.** Research literature's viewpoint offers a thought-provoking insight into the importance of experimentation for ICT integration and education reform. Findings reveal the role a culture of experimentation plays in a school-wide change and its relationship to leadership, pedagogical goals, and professional development. Educators usually exhibit a willingness to experiment and take on the challenges of trying to do new things. If professional development provides teachers access to information about new tools and practices, there will be a willingness to experiment with novel ideas, and openness to reflect on the successes and failures, to create positive changes. In the universities, the culture of experimentation is promoted by the leadership and is in line with each university's pedagogical goals.

(iii) **Time management .** Much like a physical resource , time is a scarce resource that universities must manage carefully . Time with ICT implementation has to be viewed in two dimensions : (1) the Administrator 's operational development and planning time, and (2) students ' time in the classroom or learning activity . Each university should develop its strategies for training administrators and implementing the use of ICT depending on the particularities of the larger system.

(iv) **Financing and sustainability .** Costs and sustainability are ongoing challenges for all universities when attempting when to bring in new, complex resources such as ICT. These universities tempt to do two things to manage the sustainability of their ICT activities : First , they try to obtain resources from as many sources as possible , and second, they try to control the costs related to ICT activities. All of the successful schools utilize multiple strategies to obtain funds or ICT resources.

Lastly, for university administrators technology revolution is a big issue because of their limited literacy in ICT knowledge and capability, administrators do not employ ICT applications.

4. CONCLUSION

ICTs have made it possible for learning assessments to take place anywhere, whether at home, office, or online distance learning. In this paper, concepts of ICT were discussed, trends in ICT and education, adoption of ICT in teaching, ICT theory, as well as challenges of ICT in education by the administrators, and its prospects among administrators. Giving priority to ICT assessment by all educational institutions will help to alleviate the issues that the Nigerian educational assessment system faces. The following recommendations are derived from the findings of the study:

(i) The administrators in private Universities should be responsible for the adequate fund for the acquisition of suitable ICTs.

(ii) Management must ensure that adequate training in the use of ICTs is given to Administrators.

(iii) The management of Universities must put an ICT strategy in place.

(iv) There should be a standby generator to ensure the continuity of work in the case of a power outage.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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