Adoption of Information and Communication Technology: a Strategy For Promoting Lecturers' Effectiveness in Nigerian Universities

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Abstract

Information Communication and Technology has become a global requirement to replace the traditional teaching methods with a technology-based teaching tools and facilities at all levels of education. It is on this premise that this study examined adoption of ICT as a strategy for promoting lecturers' effectiveness in Nigerian universities. To this end, the concept of information and communication technology with relevant theories and models were examined. Concept of lecturers' effectiveness, usefulness of ICT and their challenges were critically examined. The challenges include inadequate power supply and poor funding. The study concludes that the importance of ICT in Nigerian universities cannot be underestimated, hence the need for integration of ICT for effectiveness of lecturers. The study suggests that adequate ICT facilities should be provided for lecturers to be efficient and effective in terms of teaching, research and community development.
Keywords: *ICT models and theories, lecturers' effectiveness; nigerian universities*

INTRODUCTION

The speedy developments in information and communication technologies (ICTs) in recent years have resulted in significant changes in the way the world operates and communicates. This in turn has had an impact on educational and training needs, both in terms of the content and the delivery of educational and training services. The adventure and advancement of new technologies (ICT) has challenged the traditional method and process of teaching and learning and have also change the way education is managed to a more flexible, friendly and simplified form. ICT has turned from being a technology of communication and information alone, but to a curriculum creation and delivery system for educators and learners (Maphalala & Adigun, 2021). Information and Communication Technology (ICT) has become so pervasive and vital in today's world that it is impossible to envision life in the 21st century without technology. Szymkowiak, Melović, Dabić, Jeganathan and Kundi (2021) maintained that no institution can reach its educational goals in today's world without the use of technology. One of the prominent reasons adduced to the frequent use of ICTs in the classroom has been to better prepare the current generation of students for a workplace where ICTs, particularly computers, the internet and related technologies, are becoming more and more ubiquitous. Technological literacy is seen as representing a competitive edge in an increasingly globalizing job market (Cox, 2021).

For university teachers to carry out their job efficiently and effectively especially in this age of knowledge-based technology and globalization, the use of information and communication technology (ICT) becomes imperative. Interestingly, universities all over the world are rapidly incorporating information and communication technology (ICT) into all facets of teaching, research and management. Li and Wang (2021) posited that teachers who succeed in making use of ICT in their work processes do not only contribute to improved learning outcomes in their students, but also benefit personally from enhanced work productivity. University lecturers have various tasks to accomplish and these range from teaching, research and publications, marking of tests and examinations, supervising students' research activities, supporting students

through advisory roles, attending conferences, providing community services etc. In order for them to be effective and efficient, they need to acquire an appreciable level of ICT competence (Chandio, 2021) wherein this is necessary in order to meet up with the demands of their job. In Europe for instance, overwhelming majority of teachers use ICT to plan lessons more effectively and more efficiently. With the use of ICT, teachers have also been able to communicate and collaborate with other teachers and this enhances their job performance.

The integration of ICT in classroom is getting more important as it help students in enhancing their collaborative learning skills as well as developing transversal skills that stimulates social skills, problem solving, self-reliance, responsibility and the capacity for reflection and initiative (Dāvidsone, et. al 2021). These elements are core values that students need to achieve in an active teaching and learning environment. ICT tends to expand access to education. Through ICT, learning can occur anytime and anywhere. Online course materials, for example, can be accessible 24 hours a day, seven days a week. Teleconferencing classrooms allow both learner and teacher to interact simultaneously with ease and convenience. Based on ICT, learning and teaching no longer depend exclusively on printed materials. Multiple resources are abundant on the Internet, and knowledge can be acquired through video clips, audio sounds, visual presentation and so on. Oyelana, Olson and Caine (2022) maintained that current research has indicated that ICT assists in transforming a teaching environment into a learner-centered one. Learners are authorized by educators to make decisions, plans, and so forth since learners are actively involved in the learning processes in ICT classrooms (Morais, Ferreira & Veloso, 2021). ICT therefore provides both learners and instructors with more educational affordances and possibilities.

RESULTS AND DISCUSSION

1. Concept of Information and Communication Technology in Education

Information and Communication Technology (ICT) in education has been continuously linked to higher efficiency, higher productivity, and higher educational outcomes, including quality of cognitive, creative and innovative thinking (Wallet, 2020). ICT aids in acquiring, processing and disseminating knowledge. It offers increasing possibilities for codification of knowledge about teaching activities through being able to deliver learning cognitive activities anywhere, anytime (Ukata & Onuekwa, 2020). Education is known to have successfully affected by ICTs, which have affected teaching, learning and research beyond doubt. ICTs according to Isizoh, Ugwuanyi, Nwoye and Okeke (2021) have the potential to accelerate, enrich, and deepen skills, to motivate and engage students, to help relate school experience to work practices, create economic viability for tomorrow's workers, as well as strengthening teaching and helping schools change.

Basic education in this rapidly changing world is essential for an individual to be able to access and apply information. Such ability must include the knowledge and effective use of ICT skills. The ability to access and use information is no longer a luxury, but a necessity for development. Unfortunately, many developing countries, especially in Africa, are still low in ICT application and use (Ejiroghene, 2021). Information and communication technologies can be understood as a tool or technique for extending human capacity. In this sense, ICTs extend our human capability to perceive, understand and communicate. The portable phone enables us to communicate from wherever we are, to others, who are thousands of kilometres away; television permits us to see what is happening on the other side of the globe, almost as it happens; and the Web supports instant access to, and exchange of, information, opinions and shared interests (Ashraf, Khwaja, Qadir, Avallone & Yuen, 2021).

Rajendran and Saad (2021) maintained that ICTs are increasingly deployed in formal education as tools to extend the learner's capacity to perceive, understand and communicate, as seen in the increase in online learning programs and the use of the computer as a learning support tool in the classroom. Although, universities were certainly leaders in engineering the internet and interoperable computer systems to connect researchers for e-mail and data exchange, the use of ICTs for education and training has lagged behind other

sectors in society. The use of ICT in education and training has only begun when access to ICT services and higher bandwidths become more available to learners (Goh & Blake, 2021). The danger is that we ascribe to new technologies the characteristics of previous media and accompanying educational practices without development and reflection on new and better ways to support and evaluate learning outcomes. To the best use, these technologies in education, new pedagogies and learning assessment methods may, and probably will be required. Educators, therefore, are continuing to develop new applications and online resources to support learning objectives in all disciplines. The field of environment and sustainable development education is no exception (Miranda, et. al, 2021).

The use of technology in course instruction is an inevitable transition in higher education. However, infusion of educational technology on college and university campuses for faculty and student use does not always result in its successful integration into either instruction or the campus, nor does it mean that the quality of education has improved (Clausen, Borthwick & Rutledge, 2021). According to Tomczyk, *et. al* (2021) who stated that for the majority of university teachers, it seems that there are still many barriers to moving away from a sole reliance on traditional teaching approaches and moving towards integrating various technologies into their teaching. They also argued that for many universities, the internet revolution arrived on campus faster than anticipated. Technologies on campus such as; campus computer centres, personal computers and the internet have generated interest; there has also been resistance and opposition to their use in the area of teaching by faculty (Safi, Thiessen & Schmailzl, 2018). In the opinion of Papanastasiou, Drigas, Skianis, Lytras and Papanastasiou (2019) who argued that technology has to "maintain and strengthen the quality of its educational for instruction to increase or improve their ability to educate using technology". This demands an understanding of the manner in which 'technology is diffused and what kind of adaptation is needed' and, therefore, an understanding of "the context of technology and education in the larger culture". This calls for research on teaching and the use of technology that is "reflective, grounded and open" considering the views of faculty, staff and others (Scherer, Siddiq & Tondeur, 2019).

2. ICT Models and Theories

This section dwells on review of several theories and models on ICT which can be used to explain the concept of lecturers' effectiveness in the Nigerian tertiary institutions. The theories and models include Unified Theory of Acceptance and Use of Technology (UTAUT), Theory of Reasoned Actions (TRA), Theory-Organisation Environment Framework, Technology Acceptance Model (TAM) and Information and Model of the IT Implementation Process among others.
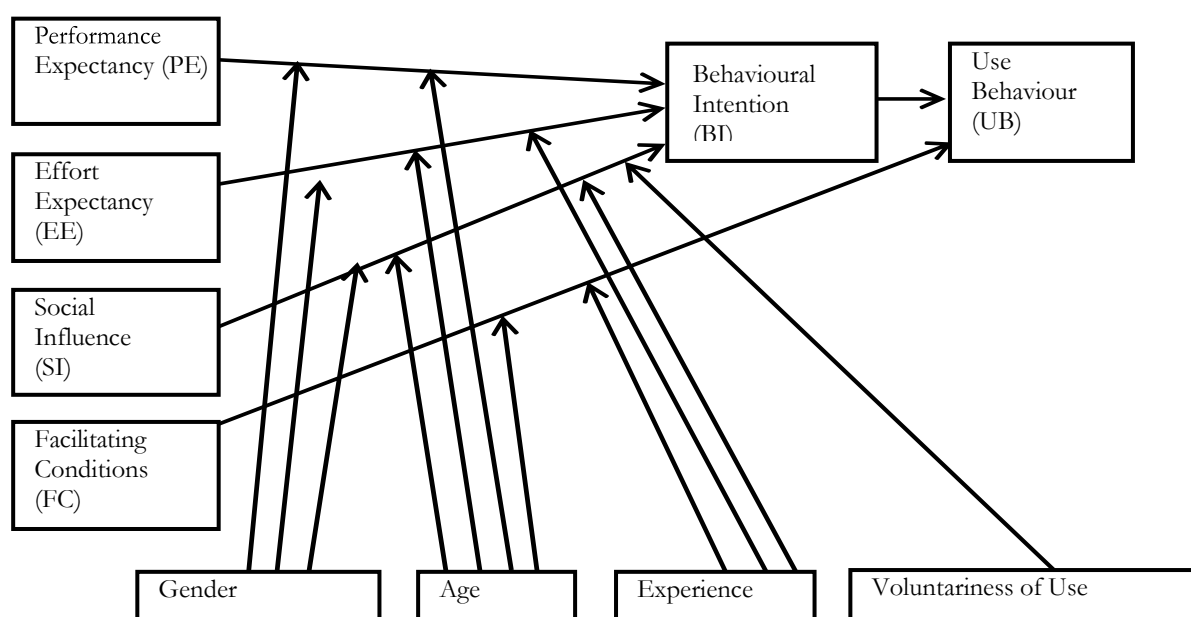

Figure 1: The model UTAUT by Venkatesh, Morris, Davis and Davis

a. Unified Theory of Acceptance and Use of Technology (UTAUT)

Venkatesh, Moris, Davis and Davis (2003) developed the Unified Theory of Acceptance and Use of Technology (UTAUT). The UTAUT has use behaviour (UB) as the main variable, which Venkatesh et al. defined as the degree to which a person accepts and uses a new technology. UB is a function of behavioural intention (BI) and facilitating conditions (FC). BI is a measure of the strength of one's intention to perform a specific behaviour (Davis et al., 1989), while FC is the degree to which an individual believes that organisational and technical infrastructure required for the support of the technology exists (Venkatesh et al., 2003).

BI is in turn, determined by performance expectancy (PE), effort expectancy (EE) and social influence (SI). Venkatesh et al. defined PE as the degree to which an individual believes that using the technology will help him or her to attain gains in job performance; EE as the degree of ease associated with the use of the technology; and SI as the degree to which an individual perceives that important others believe that he or she should use the technology. This is diagrammatically explained below;

b. Theory of Reasoned Action (TRA)

This theory was developed by Ajzen and Fishbein in the year (1980). The TRA model has actual behaviour (AB) as its main variable. Ajzen and Fishbein defined AB as an individual's observable response in a given situation with respect to a given target. AB is postulated to be determined by behavioural intention (BI), which Ajzen and Fishbein defined as the cognitive representation of an individual's readiness to perform intended behaviour. TRA theorises that BI in turn, is jointly determined by the individual's attitude toward the behaviour (ATB) in question and the pertinent subjective norm (SN). According to Ajzen and Fishbein, ATB is the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question, while SN is the perceived social pressure to perform or not to perform the behaviour.
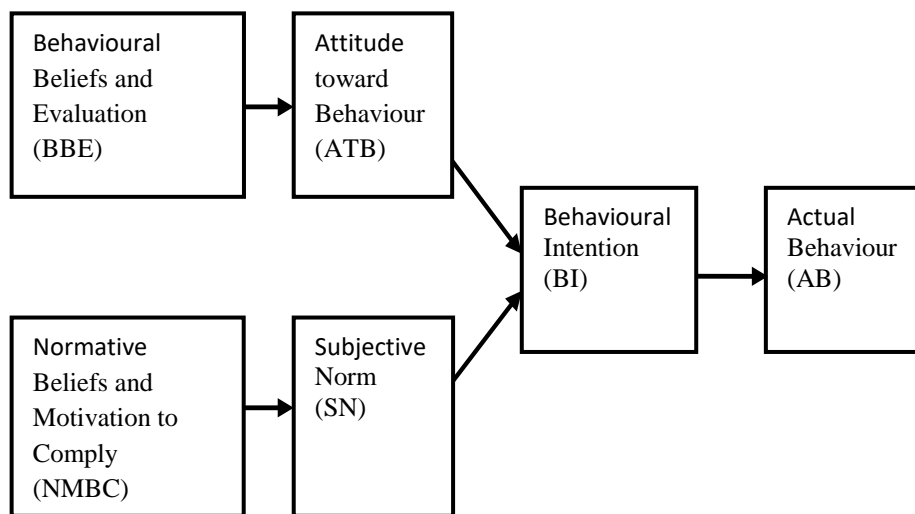
Figure 2: The Theory of Reasoned Action
Source: Ajzen and Fishbein (1980)

ATB is influenced by behavioural beliefs and evaluation (BBE). Behavioural beliefs (BB) are the individual subjective probability that performing the target behaviour will result in consequences, and evaluation (E) is a rating of the desirability of the outcome (Ajzen & Fishbein, 1980). Ajzen and Fishbein asserted that individuals are rational decision makers who constantly calculate and evaluate the relevant behavioural beliefs (BB) in the process of determining their ATB. TRA theorises that SN is influenced by normative beliefs and motivation to comply (NBMC). Normative beliefs (NB) are the likelihood that important individuals or group approve or disapprove of performing a given behaviour, and motivation to comply (MC) is the extent to which the individual wants to comply with the wishes of the referent other (Ajzen, 1991).

c.　Theory-Organisation Environment Framework

Tornatzky and Fleischer (1990) developed the Technology-Organisation-Environment (TOE) framework. The TOE framework theorises that technological adoption decision making, the main variable, is influenced by three principal contexts namely; the technological, organizational and environmental. Tornatzky and Fleischer (1990) defined the technological context as the internal and external technologies that are relevant to the organisation and according to them, may include both equipment as well as processes. Tornatzky and Fleischer observed that adoption of an innovation depends on the pool of technologies inside and outside an organisation as well as the perceived characteristics (e.g. relative advantage, compatibility, complex, triability, and observability) of the innovation. The organizational context are the characteristics and resources of the organization such as managerial support, organisational culture and size, communication processes, and the amount of slack resources an organisation has (Tornatzky & Fleischer, 1990).
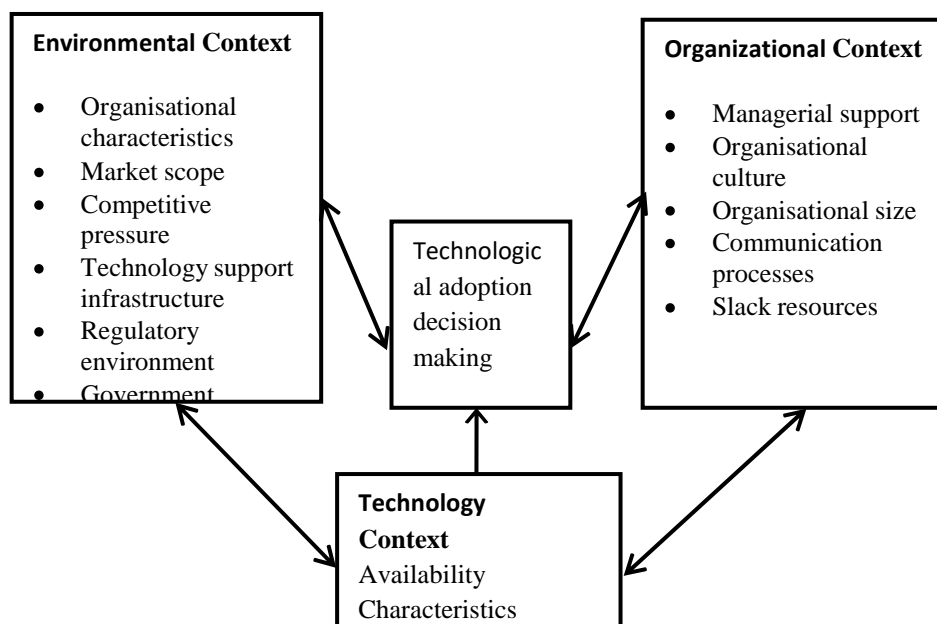

Figure 3: Technology-Organisation-Environment (TOE) framework
Source: Tornatzky & Fleischer (1990)

d.　Technology Acceptance Model

The Technological Acceptance Model (TAM) developed by Davis (1989), has actual system use (ASU) as the main variable. Davis defined ASU as an individual's observable usage of a particular system (e.g. technology). The model suggests that ASU is a direct function of behavioural intention to use (BIU) a technology, which Davis defined as the degree to which a person has formulated conscious plans to perform or not to perform some specific future behaviour. BIU is in turn, a function of attitude toward using (ATU) and perceived usefulness (PU). ATU is an individual's positive or negative feeling about performing the target behaviour (Davis, Bagozzi & Warshaw, 1989), while PU is the degree to which a person believes that using a particular system would enhance his or her job performance (Davis, 1989). PU is influenced by perceived ease of use (PEU), which Davis defined as the degree to which a person believes that using a particular technology would be free from effort. It was furtherly suggested that ATU is determined jointly by PU and PEU.

TAM theorises that in turn, each of PU and PEU is influenced by external variables (e.g. system characteristics, development process, and training). However, other explanatory variables notwithstanding, the proponents of TAM (e.g. Davis, 1989) posit that PU and PEU are the two fundamental determinants of ASU. They argue that if users find a technology useful (i.e. having PU) and easy to use (i.e. having PEU), then they develop a positive attitude toward using (ATU) this technology. All these will eventually lead to the behavioural intention to use (BIU) the technology and finally the actual use of the technology (ASU).
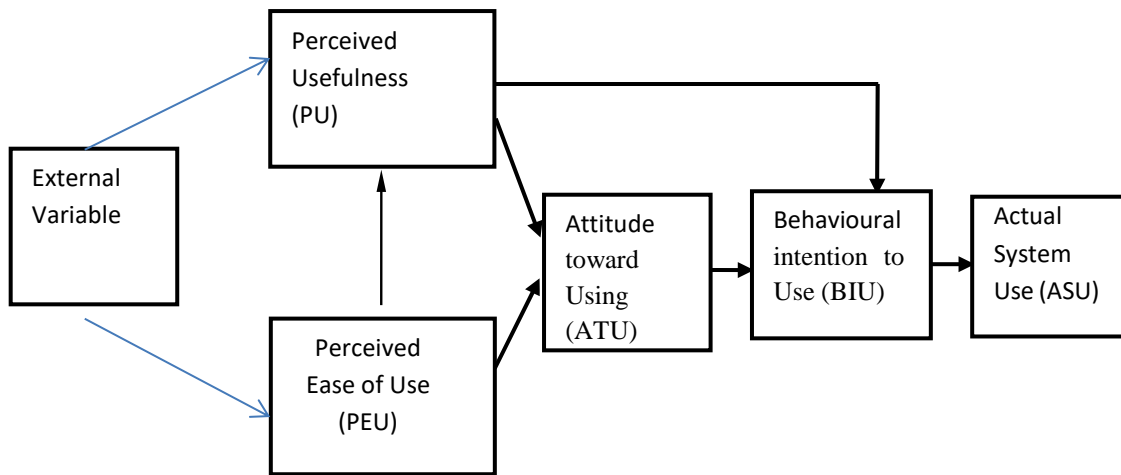
Figure 4: The Technology Acceptance Model (TAM) *Source*: Davis et al. (1989)

e.   Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) as shown in Figure 4, was developed by Ajzen (1991), and has actual behaviour (AB) as the main variable. Ajzen defined AB as an individual's observable response in a given situation with respect to a given target. TPB theorises that AB is predicted by both behavioural intention (BI) and perceived behavioural control (PBC). Ajzen defined BI as an indication of a person's readiness to perform a given behaviour and PBC as the perceived ease or difficulty of performing the behaviour. BI is in turn, determined by the attitude toward the behaviour (ATB) in question, the pertinent subjective norm (SN) and PBC. TPB theorises that ATB is influenced by behavioural beliefs and outcome evaluations (BBOE). SN is influenced by normative beliefs and motivation to comply (NBMC).
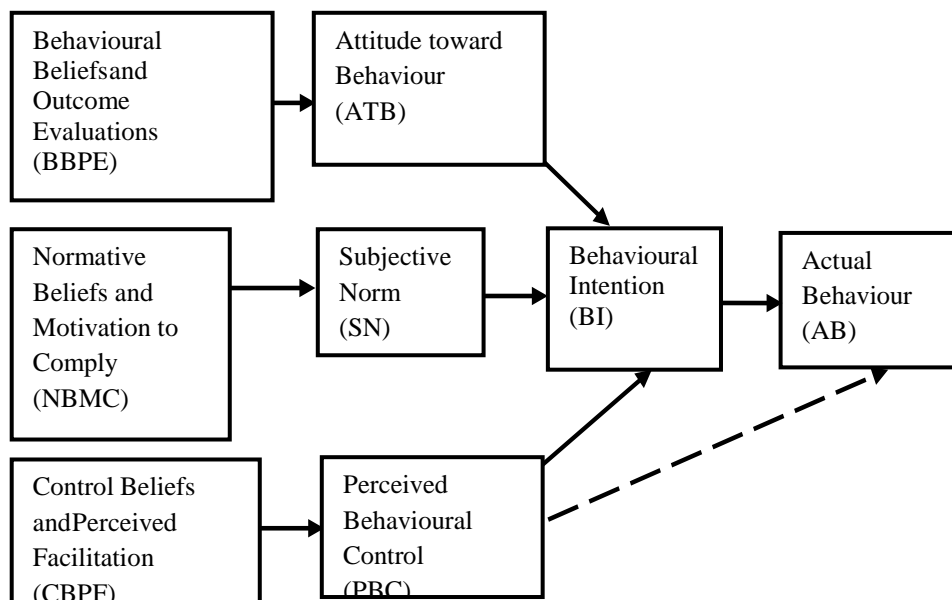

Figure 5: The Theory of Planned Behaviour (TPB) *Source*: Ajzen (1991).

Further, TPB model posits that PBC is determined by control beliefs and perceived facilitation (CBPF). Ajzen (1991) defined control beliefs (CB) as a perception of the availability of skills, resources and opportunities; and perceived facilitation (PF) as the individual's assessment of the importance of those resources to the achievement of outcomes. Ajzen (1991) observed that TPB extended TRA by incorporating PBC as a set of factors that affect BI and AB.

3.   Trends of the Development of ICTs for Teaching and Learning in Nigerian Universities

Information and Communications Technologies (ICTs) in the recent time have become the most basic building block of modern industrial society in a very short time. Mastering information technology and understanding basic skills and concepts of ICT are now highly regarded by many countries (Kundu & Bej, 2021). ICT has been increasing at an amazing rate in instruction among teachers. ICTs, in the opinion of Stehle and Peters-Burton (2019) are transforming schools and classrooms by bringing in new curricula based on real world problems, providing scaffolds and tools to enhance learning, giving students and teachers more opportunities for feedback and reflection, and building local and global communities that include students, teachers, parents, practicing scientists, and other interested parties. Similarly, Dlamini and Mbatha (2018) posited that the roles ICTs play in the educational system can be pedagogical, cultural, social, professional and administrative.

ICT is widely accepted in most of the Nigeria educational system as it serves as a transformational tool that has promoted the shift to a learner–centred environment. In the same vein, it has helped to increase access to and improve the relevance and the quality of education with a view to facilitating the acquisition and absorption of knowledge, improving policy formulation and execution and widening the range of opportunity for business and the poor (Das, 2019). Further still, with the internet and world wide web, a wealth of learning materials in almost every subject and in a variety of media can now be accessed from anywhere at any time of the day by an unlimited number of people. ICTs are powerful enabling tools for educational change and reform. When used appropriately, according to Kundu (2021) it help expand access to education, strengthen the relevance of education to the workplace, and raise educational quality by creating an active process connected to real life. Caserta, Tomaiuolo and Guido (2021) asserted that ICT is paving the way for a new pedagogical approach where students are expected to play more active role than before. ICT has made an impact on the quality and quantity of teaching, learning and research in the tradition and/or distance education institutions using it (He, Yang, Xu, Ping, Li, Sun & Zhang, 2021). The introduction of ICT usage, integration and diffusion has initiated a new age in educational methodologies, thus it has radically changed traditional method of information delivery and usage patterns in the domain as well as offering contemporary learning experience for both instructors and students (Tondeur, Petko, Christensen, Drossel, Starkey, Knezek & Schmidt-Crawford, 2021).

Furthermore, Lim, Ra, Chin and Wang (2020) stressed that e-examination is a welcome innovation in the Nigeria educational system due to several pitfalls in the conventional examination in the form of examination malpractices, delay and/or non-release of examination results especially where there are large classes or public examinations for candidates. As a way of curbing examination irregularities, Umar and Wilson (2019) highlighted some institutions that have adopted e-examination for assessing their candidates through intranet medium. Among such are Joint Admissions Matriculation Board (JAMB), West African Examinations Council (WAEC), National Business and Technical Examinations Board (NABTEB), National Examinations Council (NECO), National Teachers' Institute (NTI) and Teachers' Registration Council of Nigeria (TRCN), Tertiary institutions such as Polytechnics, Monotechnics, Colleges of Educations and Universities. For screening of candidates, most tertiary institutions in Nigeria now use e-examinations in the Post Unified Tertiary and Matriculation Examination (Post-UTME) and even for conduct of examinations.

To attest to this assertion, Eleje, Esomonu and Ufearo (2019) confirmed that most tertiary institutions in Nigeria now adopt e-application, e-admission and e-registration; it has equally become a field of study in Colleges of Education, Polytechnics, Monotechnics and Universities. Both science and technology of the course have become areas of specialisation to many students at undergraduate, graduate and post-graduate levels.

4.   Lecturers' Effectiveness

Teaching is said to be effective when the teacher acts in ways that are favourable in developing skills, understanding, work habits and desirable attitudes in the students. The attributes favourable for such actions are "sympathetic attitude towards his students, a thorough knowledge of his subject matter, confidence in his

own ability to teach, a co-operative spirit with co-workers and a constant interest in expanding his knowledge and that of his students" (Kao, 2020).

Teaching effectiveness appears over-worked because it has to do with the outcomes of learning – whether or not learning has taken place through observable change in the behaviour of learners. In the university system, it attracts a greater attention because of the main aim of practical application of knowledge and skills acquired. This is associated with "creative teaching of students (Osakpa, Okonkwo & Ejiogu, 2018) as better learners based on "causal analysis of success and failure", evaluation practices peculiar to technical, teacher preparation as a means of achieving quality education, maintenance of quality and effectiveness in Vocational Technical education, improving the teaching effectiveness of vocational teachers through training and practice, effective classroom management and effective teaching. The import from these researchers is that effective teaching requires a large repertoire of skills and ability to put these skills to use in different teaching and training situations.

Osakpa et. al (2018) believed that effective teachers improvise as no one approach or method suffices in all teaching/training-learning situations at all times and everywhere. This is because the students have different temperaments, backgrounds, levels of intellectual abilities as well as institutional variables. Therefore, the task of teaching effectively is herculean. Levitt, Morrill, Collins and Rizo (2021) took a holistic view of effective teaching by putting researches on philosophical, sociological, psychological, scientific, counselling and a host of other perspectives of teaching. This was done to nurture effective teachers at all levels of education in the country. This is the main goal of teacher preparation for nation building. What is more: all other variables are dependent on teacher preparation and effective teaching.

Similarly, comprehensive critiques of effective teaching research undertaken in Bulgaria by Adebisi and Oyeleke (2018) and in the UK by Uygur, *et. al* (2019) support the existence of some consensus. Although, some of these studies focus on school teaching, their findings both inform and have resonance with the developing body of knowledge relating specifically to teaching in schools. Three broad dimensions of effective teaching. The first is teaching effects, a concept which embraces both teaching skills and teaching behaviours, e.g. management of time, promoting independent working, establishing clear routines, and being well organized (Walan, 2020). The second relates to the acquisition of effective teaching models and describes particular types of learning environments that a teacher establishes in his/her classroom. The third dimension is teacher artistry, which "emphasizes the personal responsibility for creating the conditions for effective learning undertaken by the teacher. While effective learning can take place in the absence of effective teaching, optimum results will occur when there is a good match of the two" (Rapanta, Botturi, Goodyear, Guàrdia & Koole, 2020).

5. Adoption of ICT in Education: A Strategy for Promoting Lecturers' Effectiveness in Nigerian Universities

The field of education has certainly been affected by the penetrating influence of ICT worldwide. The adoption of ICT has made impact on the quality and quantity of teaching, learning and research in the institutions using it (Dambo & Uranta, 2018). According to Oke and Fernandes (2020), the introduction of ICT usage, integration and diffusion has initiated a new age in educational methodologies, thus has radically changed traditional method of information delivery and usage patterns in the domain as well as offering contemporary learning experience for both instructors and learners. ICT has the potential to accelerate, enrich and deepen skills, motivate and engage students in learning; helps to relate school experiences to work places, helps to create economic viability for tomorrow's workers, contribute to radical changes in school, strengthens teaching, and provides opportunities for connection between the school and the world (Ashford, Caza & Reid, 2018).

Universities all over the world are rapidly incorporating information and communication technology (ICT) into all facets of teaching, research and management. Teachers who succeed in making use of ICT in their work processes do not only contribute to improved learning outcomes in their students, but also benefit personally from enhanced work productivity (Aldholay, Abdullah, Ramayah, Isaac & Mutahar, 2018).

University lecturers have various tasks to accomplish and these range from teaching, research and publications, marking of tests and examinations, supervising students' research activities, supporting students through advisory roles, attending conferences, providing community services etc. In other for them to be effective and efficient, they need to acquire an appreciable level of ICT competence. This is necessary in order to meet up with the demands of their job. Overwhelming majority of teachers in Europe use ICT to plan lessons more effectively and more efficiently (Oriji & Anikpo, 2019). With the use of ICT, teachers have also been able to communicate and collaborate with other teachers and this enhances their job performance. Furthermore, Brownell, Benedict, Leko, Peyton, Pua and Richards-Tutor (2019) reports that ICT can be used to enhance teaching effectiveness, prepare lesson plan, collect and analyze students' achievement. Thus, curriculum contents could be enriched through search in the internet. ICT therefore improve the quality of researches and publications in our universities through the use of information and quality materials from the internet and can also facilitate record-keeping by teachers. Thus, the importance of ICT in enhancing university lecturers' job efficacy cannot be overemphasized.

In the view of Hariharasudan and Kot (2018), they discovered in their study that the use of ICT improves efficiency in educational process and effects changes in teaching methodology, assessment of learning, student tracking, communication and evaluation. Thus, the use of ICT by university teachers reduces workload. In support of this finding Walsh, Koppula, Antao, Bethune, Cameron, Cavett and Dove (2018) reported that ICT is being increasingly used by teachers in their day-to-day work leading to increased efficiency in planning and preparation of work. Similarly, ICT programs like web-based and computer-based analysis of written works save the time the teacher spend in marking students' scripts. Thus, in this era of information and communication technology, institutions should start investing in modern educational technologies which will provide innovative learning environment where both teachers and students could move beyond the limits of school building for information, interaction and enrichment. This is what job efficiency of university lecturers is all about. According to Casillas Martín, Cabezas and García-Peñalvo (2020), ICT equips teachers with new innovations in education and in teaching and research. In a study conducted by Conroy, Sutherland, Algina, Ladwig, Werch, Martinez and Gyure (2019), it was found that on the average, teachers feel that ICT have helped them to increase their classroom efficiency. They also discovered in their study that teachers' perception of their increased job efficiency was associated with the level of ICT competence possessed by the teachers. This finding suggests that ICT is effective in providing educational delivery to students.

The utilization of ICT in the classroom facilitates effective teaching, reinforces lecturers' ability to cater for learners with diverse learning needs, fosters learners' active involvement and participation in the instructional process, and promotes good grasp of lesson contents. This helps them (lecturers) transfer their ideas, feelings, and thoughts to learners, which in turn, contributes to the good academic performance of both students and educational institutions (Jaiswal, 2020). In this 21st century, there is a growing concern in educational institutions regarding the use of ICTs to promote teaching and inculcate good skills in the learners. People are now able to interact with others across the globe without distance and time constraints due to the growth of ICT. Today, information is freely sourced and received at the speed of light. Access to modern and 'state of the art' libraries are now possible through the internet where quality, current and reliable research information can be obtained (Hong, Wang, Luo & Zhang, 2020). ICT has been reported to increase lecturers' activeness in the delivery of quality and productive teaching in the classroom. Thus, lecturers with a high level of ICT competence are more effective than those with moderate and low levels of ICT competence respectively, in areas such as communication, research/publication, record-keeping/management and classroom instruction (Amhag, Hellström & Stigmar, 2019). This implies that the level of ICT skills possessed by lecturers significantly enhanced their service delivery and job efficiency.

6. Challenges Militating against Effective Use of ICT in Nigerian Universities

Despite the important role and obvious need for the integration of ICTs in teaching and learning, many factors constitute constraints to its effective use among lecturers in the Nigerian Universities. Such

factors include epileptic supply of electricity throughout the country, limited and inadequate ICT facilities (Okwelle & Ojutule, 2018). Other factors according to include lack of technically experienced lecturers, inadequate course content and lack of access to ICTs in trainee teachers' field experience (Bassey, Owan & Agunwa, 2019).

Ajah and Chigozie-Okwum (2019) identified three key challenges faced by the lecturers in the use of ICT tools to be, poor usage skill/ unfamiliar with the tool, lack of ICT infrastructure such as high speed internet, computers, and smartphone ban in class, other factors include security concern, lack of indigenous app that factor peoples culture and environment, issue of distraction from main task, students unfamiliarity with the tools and fear of overloading the module. Lack of hardware and software infrastructure is one factor hindering the general use of appropriate tools in class. Security concerns of the teachers as well as a general student smartphone ban in class are relevant issues as well. The various constraints to ICT utilisation as a change agent for higher education in Nigeria are discussed as follows:

1) **Inadequate Computer Trained and Certificates Teachers:** The absence of trained teachers in computer to teach practical aspects of computer skills militate against proper utilization of ICT in Nigerian higher institutions. Large number of lecturers is computer illiterates; and such lecturers would find it extremely difficult to deliver the appropriate education and training required by the information age of the 21st century for their students.

2) **Funding:** The overall educational system in the country is underfunded. Therefore, available funds are used to solve more urgent and important needs of the institutions. Low level of funding has resulted into inadequate ICT facilities in schools. This situation has been a major constraint to making Nigerian educational institutions ICT compliance.

3) **Irregular Power Supply:** Power supply all over the country is epileptic. If electricity supply is not stable and constant, it is difficult to keep ICT equipment and facilities such as computers and their accessories functioning properly. This problem also denies the rural dwellers the benefit of using ICT.

4) **Cost of Equipment:** The cost of equipment in a country like Nigeria with a battered economy is very high. Apart from the basic computers, other cost associated with peripherals such as printers, monitors, papers, modem, extra disk drives, and other software are beyond the reach of most higher institutions in Nigeria. Also most of these institutions cannot avoid the exorbitant internet connection fees.

5) **Lack of Relevant Software:** Teaching with ICT facilities is a onerous task without up-to-date equipment and supplementary materials. According to Salomon (1989), there are clear indications from many countries that the supply of relevant and appropriate software is a major obstacle obstructing wider application of the computer.

CONCLUSION

Unequivocally, lecturers are critical to every education system and by extension to national development. As a matter of fact, the quality and relevance of the kind of education provided to any people determines how prepared they are to face the challenges of this current century, because no nation can rise above the quality of its education; Hence, the competences of our teachers have direct bearing on the learners and consequently the whole society. Teaching and learning in most schools in Nigeria is still dependent on traditional methods, which are incapable of meeting the needs of the present day learner. Old methods of teaching are still in use for classroom instructional processes in primary and secondary schools (Basic education level) in Nigeria. The basic education curriculum is being implemented by teachers who do not possess the prerequisite teaching qualifications or even the basic ICT skills to operate in the classroom. Therefore, there is the need to re-organize our teacher education programme to be tailored towards production of ICT literate teachers that will work with new information and communication technology tools/devices to surmount current classroom challenges in education for effective teaching in the basic education level.

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