Role Of Information And Communication Technology (ICT) In Delivery Of Open And Distance Education In Nigeria: A Theoretical Perceptive

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ABSTRACT
The study examined the role of information and communication technology (ICT) in the delivery of open and distance education in Nigeria. Literatures were reviewed and there was collaborative and synonymous knowledge on the role of information and communication technology in the delivery of open and distance education in Nigeria which cannot be undermined. As a result of ICT, open and distance education relies on information available to make decisions. The application of new technologies in the distance education context provides an appropriate starting point for delineating the knowledge base required of expert teachers in today’s global society. ICT improves the quality of the student learning experiences and make education and training opportunities available to a broader spectrum of the population in developing countries. The study looked at application of technology, concept of information and communication technology in open and distance education, Roles of ICT in the delivery of open and distance education, roles of ICT for administrative service delivery, appropriate technology based media, challenges in the use of ICT and strategies in delivery of open and distance education, conclusion were drawn and suggestions made for ODL development in Nigeria.

Keywords: ICT, delivery and open distance learning.

INTRODUCTION
Messages are information; the portals through which they are sent and received are basically the tools that enhance management of open and distance education (ODE) in Nigeria. Invariably, information and communication technology (ICT) is a significant way to manage ODE since it involves “work and study” from anywhere. Some scholars are of the opinion that with the importance of information in human society, it should be recognized as a factor of production alongside other economic factors such as land, labour, capital and entrepreneur. This argument gained momentum amongst social scientists because of the roles information and communication technology play in accessibility and delivery of open and distance education.

As a result of ICT, open and distance education relies on information available to make decisions. Consequently, because of the craving for reliable and timely information, as a guide to actions, information is truly vital to production. However, accessibility to timely and reliable information is not very easy. This is perhaps because of the complexity of the society which makes some scholars liken it to a market, where every partaker is driven by rational interest. The actions of each of these partakers are decisions made based on the information they could individually access. Accordingly, Cookey (2008) remarked that education requires decentralized decision and information. To reduce the difficulty in accessing timely and reliable information, interaction is
necessary. The society therefore, bubbles with information. Being mortals characterized with reasoning, we interact within the environment. It is within the context of this interaction that communication is conceptualized. It is for this reason that communication is defined as the activity or process of expressing ideas and feelings or of giving people information (Hornby, 2000).

Information and communication technology are therefore, related terms that have more relevance among the living and are gaining more prominence today due to technology. Technology as a human art has elevated information and communication to enviable heights. It has in union with them, reduced the size of the globe to that of a village called the global village. With the integration of technology, the modern world has been engulfed in what could be termed an info-communication revolution. This has given birth to Information Technology (IT) and Information and Communication Technology (ICT). These concepts, being both related to the computer, has made this age so popular that it is called the computer age.

As products of the modern age, Information Technology (IT) and information and communication technology (ICT) are similar concepts. Some writers use them interchangeably.

**Purpose of the Study**

The purpose of the study is to determine the Role of Information and Communication Technology (ICT) in Delivery of Open and Distance Education in Nigeria: A Theoretical Perspective. Specifically, the study intended

1. To find out the application of technology in delivery of open and distance education in Nigeria
2. To determine the role ICT plays in the delivery of Open and Distance Education in Nigeria
3. To determine the challenges in delivery of Open and Distance Education Using ICT in Nigeria

**Concept of Information and Communication Technology**

Information and Communication Technology (ICT) is a modem concept that has attracted enormous attention globally. It has been defined by different people in different ways. Wikipedia, the internet free encyclopedia defined it as a diverse set of technological tools and resources used to communicate, create, disseminate, store and manage information. They include computers, internet, broadcasting technologies like radio, television, telephone etc. According to Achuonye (2017), ICT is a means of accessing or receiving, storing, transferring processing and sending ideas, perceptions and information through computers and telecommunication facilities. It is a convergence of computer networking and telecommunication.

Ezekiel (2016) defined it as all activities that are facilitated by electronic means, the capturing, storage, processing, transmission and display of information. It is sometimes seen as a tool or a means of educational goals achievement. Izuagba and Obioha (2016) defined information and communication technology as the use of computer communications network and other information and communication technology facilities to manage information. This agrees with Wikipedia’s definition, that views it as a diverse set of tools and resources.

He further stated that information and communication technology as tools and means used to achieve goals. He said ICT embodies all tools and means used in communicating electronically. It is thus, an umbrella term that includes any communication device or application, encompassing radio, television, cellular phones, computer and network, hardware and software, satellite system etc, as well as the various services and applications associated with them such as videoconferencing and distance learning.

Uzoamaka and Williams (2016) defined Information Technology (IT) as the application of computers and telecommunication equipments to store, retrieve, transmit and manipulate data. According to them, the term is synonymous with computers and computer networks and other information distribution technology such as the internet. In the internet free encyclopedia, Information and Communication Technology (ICT) is defined as a diverse set of technological tools and resources used to communicate, create, disseminate, store and manage information. It is a convergence of computer and telecommunication (Achuonye, 2007).

With a wide range of tools and resources, information and communication technology (ICT), has made organizational efficiency possible at high levels. Some of the resources of ICT used in organizations are: Management Information Systems, Decision Support Systems (DSS), Executive Information Systems (EIS), Marketing Information System (MIS), Office Automation Systems.
Invariably, systems in organizations are automated using electronic devices that work with arithmetic and logical precision which have made robotics and cybernetics modern concepts used to serve humans. In the internet free encyclopedia, robotics is an interdisciplinary branch of engineering and science that includes mechanical engineering, electrical engineering and computer science. Cybernetics is a trans-disciplinary approach to exploring regulatory systems, their structures, constraints and possibilities. Cybernetics is the scientific study of the control and communication in animal and the machine. In other words, it is a study of control and communication between human beings and machines. In all these break-through, it is agreed that research development has been the direct initiator and for this reason, they cannot be isolated from open and distance education.

Open and distance education produces reformed human capital that enhances societal development. It also produces a stock of specialized knowledge through research projects. This forms the reservoir which knowledge thirsty individuals could draw from to strengthen their own investigations. ICT in open and distance education is therefore the silent initiator of technological breakthrough. The process of education cannot function without communication. Open and distance education, being the process of transferring worthwhile values to learners, for the development and preservation of the society, implants the culture and values of the society into the learner through the use of ICT. Aminigo (2007:1) said that education is ‘a process whereby one generation passes on to the next its knowledge and wisdom’. Without communication, the state of education would be better imagined than experienced.

As an embodiment of both teaching and learning, open and distance education use pedagogical skills to transfer knowledge to learners. It elevates the reasoning level of the learners, sharpens their learning skills and enables them to acquire more knowledge through ego-autodidactic, which is also called “self-automatic learning”. To achieve specific goals in the society, schools are organized as a kind of micro society saddled with the responsibility of using programmes to shape its human subjects. This creative activity is necessary to enable the society develop. This is why Aminigo (2017) described education as society’s reproductive system.

As a concept, reproduction is a process that has stages. Since human development has stages, human understanding is subject to variables like age and cognitive development. Thus, as society’s reproductive system, school education is organized in stages. These are early childhood, primary education, secondary education and tertiary education. At each of these stages, there is a systematic arrangement of a curriculum, aimed at achieving the outcomes which are needed for the realization of society’s goals. These goals are called national goals. Drawn from these, are specific objectives set for learners at the school level.

Education is the basic need of every human being and today’s technology has a big part in every sphere of life. In fact, education is the most important investment by countries, societies, families and individuals for the future. A communication network has become an essential tool in today’s educational environment than ever before. Today’s society is said to have entered into the age of a new social revolution, i.e. ‘information revolution’. 21st century has witnessed the explosion of information technologies. By digital revolution, technologies in computers, audiovisual devices, and communications are integrated into a powerful technology-information technology. The global era is characterized by rapid advances in technology and expansion of knowledge. Basically technology is nothing but a tool used in implementing our ideas and methodology in education.

**Concept of Open and Distance Education**

Due to advancement in communication technology a variety of audio-visual media—radio, television broadcast, video cassettes, video compact disc, video text, CD, computer and other innovative techniques are used for effective transmission of knowledge to the learners at a distance and open learning system. Open and distance learning is the second chance for those who are not able to continue their studies due to certain reason. Distance education on demand has been a way of reaching students who are unable to attend a traditional classroom base course. Due to increasing pressure in higher education, distance education is a reality in the present world. By definition, distance education denotes an educational experience where the teacher and the learner are not face-to-face.
during the teaching and learning process. The word “distance” in itself denotes separation or isolation and hence the criterion of being isolated is a “given” in distance education.

Distance education is planned learning that normally occurs in a different place from teaching necessitating special techniques of course design. Instructions and special method of communication by electronic and other media through special organization and administrative arrangements (Moore & Kearsley, 2016). Open and distance learning is defined by the Commonwealth of learning as a way of providing learning opportunities that is characterized by the separation of teacher and learner in time, or place or both time and place; learning that is certified in some way by an institution or agency; the use of variety of media including print and electronic; two way communications that allow learners and tutors to interact; the possibility of occasional face to face meetings; and a specialized division of labor in the production and delivery of course.

Moore (2017) definition of distance education as the separation between learner and teacher such that the communication between the two is necessary in the educational transition is transmitted through print, broadcasting, telecommunications media correspondence institution through the mail, audio and video recording, computers and various combinations and variations of these. Distance education is the delivery of learning or training to those who are separated mostly by time and space from those who are teaching and learning. The teaching is done with a variety of “mediating process” used to transmit content, to provide tuition and to conduct assessment or measure outcomes.

Nipper (2011) suggested that distance learning is moving into its “third generation”. Referring to correspondence education as the” first generation” model of distance learning and multimedia distance education as the “second generation” model. In these models little or no student-student and student-teacher interaction occurs. Third generation of distance education, also known as interactive, multimedia distance education, places an emphasis on communication and learning as a social process typically through the addition of interactive media such as computer mediated communications, audio graphics or video conferencing. This third generation of distance education is based on the use of information technologies (Pelton, 2011).

Taylor (2015) has further developed Nipper’s ideas. With the combination of interactive multimedia (IMM) access to WWW resources, and asynchronous computer conferencing being designated as the “fourth generation” or “Flexible Learning “model. The emerging fourth generation of distance education, the Flexible Learning Model, promises to combine the benefits of high quality interactive multimedia (IMM) with access to an increasingly extensive range of teaching- learning resources and enhanced interactivity through computer medicated communication (CMC) offered by connection to the Internet. One of the strengths of the Multi- Media Model of distance education is that it has concentrated efforts on improving the quality of the student’s individual interaction with learning materials. As Bates (2015) has highlighted that Social interaction between learners and teachers needs to be balanced with the individual student’s interaction with teaching-learning resources including computer assisted learning program.

Application of Technology in Delivery of Open and Distance Education

The application of new technologies in the distance education context provides an appropriate starting point for delineating the knowledge base required of expert teachers in today’s global society. Teaching the distance learners requires different skills to prepare relevant learning materials to facilitate the construction of knowledge and learning. The effective integration of ICT into the educational system is a complex, multifaceted process that involves not just technology, indeed given enough initial capital, getting the technology is the easiest part but also curriculum and pedagogy, institutional readiness, teacher competencies and long term financing, among others.

Every country is searching for ways of using modern technology for educational purposes and development. Open and distance education providers in both developed and developing countries need developmental strategies and have been quick to realize the potential applications of information and communication technology. It is well documented in published literatures and on Internet sites on a worldwide basis, that ICT is increasingly playing important role in education and training. Furthermore, it has been demonstrated that the use of ICT can improve the quality of the student learning experiences and make education and training opportunities available to a broader spectrum of the population in developing countries. At present educators are excited by the success of information technologies and want to implant them into instruction. They extol information
technologies as the solution to break the barriers of time and space and fulfill the dream of lifelong education.

Roles of ICT in Delivery of Open and Distance Education

ICT are potentially powerful tools for extending educational opportunities, formal and non-formal. ICT also facilitate access to experts, resource persons, researcher, professionals, mentors, business leader, and peers- all over the world. For developing countries ICT have the potential for increasing access to and improving the relevance and quality of education. ICTs stand for information and communication technologies as defined, for the purpose of this paper, as a “diverse set of technological tools and resources used to communicate, and to create, disseminate, store and manage information.” These technologies include computers, the internet, broadcasting technologies (radio, television) and telephony (Victoria, 2012). This may include all types of learning technologies such as print, audio, video and the computer. The use of computers in open and distance education has provided new pedagogical strategies in distance learning as well as giving more autonomy to the distance learners.

Technology has become a part of our life on campus, at home, and in the office. The modern technologies used in open and distance learning are telephone tutoring, teleconferencing, audio graphics, video conferencing, computer conferencing drill and practice, fiber optics, teletext, and videotext, multimedia and hypermedia, e-books, the “Internet”, the World Wide Web (WWW), or the “Information Super Highway” on-line database, on line discussion, call-in course- on demand, satellite, talk-back TV etc. All of these technologies should have a place in the knowledge base of expert teachers. A potentially useful framework for organizing such a knowledge base is provided by the emergence of different generations of distance education (Taylor, 2015).

In the concept of new technology, distance learning provides multimedia-based education content to the student utilizing standard data networking, protocols and infrastructure. The main advantages of using technologies in distance education are cost effectiveness, independence of time and place, quality of education access resulting from the mass production of course materials, teaching a lot of students simultaneously, and finding a lot of educational resources. Haddad and Draxler (2012) identified at least five levels of technology use in education: presentation, demonstration, drill and practice, interaction, and collaboration. Each of the different ICT, print, audio/video cassettes, radio and TV broadcasts, computers or the Internet may be used for presentation and demonstration, the most basic of the five levels.

Except for video technologies, drill and practice may likewise be performed using the whole range of technologies. On the other hand, networked computers and the Internet are the ICTs that, enable interactive and collaborative learning best; their full potential as educational tools will remain unrealized if they are used merely for presentation or demonstration. The objectives of using technology must be very clear. Technology is nothing but an enabling tool and it is the deconstruction of the course into its core experiences and its communication to the student regardless of its delivery mechanism that is crucial (Coble, 2016). The technology which can be integrated into the distance education system will consider the following factors: Accessibility, Cost effectiveness, Human acceptance and Pedagogical suitability.

Emerging technologies have thus far afforded the development of a new generation of distance education using voice mail, e-mail, teleconferencing and computer-based integrated telecommunications and multimedia technology. It is hoped that these new educational technologies will enrich the distance interaction between teacher and student and the production of highly interactive self-paced learning packages used in the distance learning environment. This will be greatly beneficial to the distance learners who carry out their learning anytime and anywhere. In a globalized economy such as we have today, education is faced with great challenges some of these are the multiple changes which occur almost simultaneously and swiftly. To grapple with these, there is the need to improve educational techniques with the application of modern technological equipments. Information and communication technology being a peculiar concept in the modern world is a source of innovations in our ever changing world. As such, its inclusion in education is necessary. Barikor (2013) stated that globalization changes in education call for other ways of managing schools. So that graduates would be digitally compliant to participate in a wider society. In agreement with this, Izuagba and Obioha (2016), stressed that the present Nigerian school system deserve a paradigm change for the better. Such a change implies a shift from the traditional methods
in education to the contemporary methods were ICT is properly utilized. Again another reason for the utilization of ICT in education came as a result of the problem of poor information management in schools. In line with this, Agabi (2012) remarked that poor statistical data base and information management has been one of the problems inhibiting effective school management. Thus ICT, being a diverse set of technological tools and resources used to create, manage, disseminate and store information would serve education well when properly utilized. The roles of ICT in open and distance education has many benefits. Some of these are as follows:

- ICT leads to improved students learning in open and distance education. Banerjee, Cole, Duffio and Linden (2007) in their findings in India noted that computer assisted learning (CAL) was used by Prathan in Vadadara, in India and it contributed to greater students learning in open and distance education.
- ICT is an effective tool used to teach a very large student population. In a country such as ours, where the highest population in Africa resides, educational awareness of the populace leads to a boom in the students supply to open and distance education. Achuonye (2007) noted that use of information technology is emphasized in open and distance education.
- ICT has extended the classroom beyond bricks in school premises to viral class rooms and computer network. This could be seen as an aspect of classrooms without walls. Thus ICT has expanded the matrix of learning beyond the four walls of a classroom especially in open and distance education.
- ICT is efficient when used as a tool for knowledge transfer. Comparing the extent of learning that takes place between students that are taught using Computer Assisted Learning (CAL) and those taught using targeted tutoring in Vadodora, India, Banerjee, Cole Duffio and Lindin (2007) remarked that results from both improved overtime but, computer assisted learning was cheaper when comparing the cost of transferring knowledge to a larger student population. This is because of its ability to enhance learning among a large heterogeneous population of learners in open and distance education. Open and distance education beauty is evidenced in the following areas;
  a.) Access to more information by learners and teachers.
  b.) Access to more learners through online learning (distant education)
  c.) Shift in teachers’ role from sole provider of information to facilitator of learning.
  d.) Virtual laboratory, virtual field trip etc, to enhance practical skill acquisition in non-risk environment
  e.) Individualized instruction at the learner’s pace
  f.) Multi-channel learning to enhance active participation of learners.

The benefits mentioned above are more usefulness of ICT in open and distance education. In addition to these, Ezeada and Iheakwoaba (2012) remarked that the importance of ICT cannot be over emphasized because of the following reasons and usefulness;

1) It is a paradigm shift from traditional emphasis on classroom teaching, hence introducing a variety in teaching and learning, allowing the learner to work at his pace.
2) It encourages teamwork and cooperation among teachers and students. Through video conferencing, online classrooms etc.
3) It helps the administrator to systematically organize information by setting up data base about facts and figures using spread sheet.
4) It widens the communication channels between teachers and students, thereby providing opportunity for discussion on abstract concepts.
5) It improves the overall productivity of open and distance education through the use of all conceivable digital media in managing and processing information.
6) It is valuable in enhancing knowledge construction and problem solving since it can be adapted to virtually all aspects of services in line with global standards in open and distance education.

Administrative Service Delivery in open and Distance Education
Open and distance education being a service industry, deals with the formation of the human capital. A service delivery framework is the structure that guides the delivery for services. It is within the context of this service delivery framework that services of the school are delivered. For analytical
convenience, it would be better to take a look at what service delivery is in open and distance education before outlining ways of applying information and communication technology to service delivery.

**Effective Service Delivery in Open and distance Education**

Service delivery in open and distance education is an activity offered by a service provider to customers. Cambridge business English dictionary defined it as an act of providing service to customers. Considering education, service delivery flows through formal institutions called school. Asodike (2014) said a school is an administrative unit established to transfer worthwhile knowledge to learners. Education is thus, the service provided by the school. As a service provided by the school, education is carried out at three levels in the society. These are early childhood primary education, secondary education and tertiary education. Open and distance education provide higher educational services. This service is defined by a framework called service delivery framework. The internet free encyclopedia, Wikipedia, noted that service delivery is an activity offered within a service delivery framework to recipients.

A service delivery framework is a set of principles, standards, policies and constraints used to guide the designs, development, deployment, operation and retirement of services delivered by a service provider with a view to offering a consistent service experience to a specific user in a specific educational context. The service providers’ capabilities are arranged within the context of the service delivery framework. Wikipedia, identified the categories of service delivery framework in open and distance education as follows:

1. A general reference model
2. A more refined reference model

A general reference model is a type of service delivery framework developed to be broadly applicable to a particular industry, for example, the oil and gas industry or the education industry. A more refined reference model is a type of service delivery that specifically applies to a particular service provider or a particular market. For example, open and distance education service. In open and distance education, being a more refined reference model of service delivery framework, is offered in the open and distance education in components. Each of these components are systems of service delivery rendered to enable the school achieve its fundamental objectives in the society. Izuagba and Obioha (2016) noted that open and distance education provides services basically to care for the school personnel which include staff personnel, students’ personnel, school community. They outlined the various services delivered in open and distance education as follows:

1. School personnel administration: This is divided into:
   a) Staff personnel
   b) Student personnel Administration

2. School record administration: this is divided into
   a) Statutory records
   b) Non statutory records
3. School discipline administration
4. School community relationship
5. School demographic statistics.

The above outlined services delivered in open and distance education was silent about schools academic services. According to an online dictionary (dictionary.com), academic activities could be defined as the scholarly activities of a school, such as classroom studies and research projects. In emphasizing academics, Ebong (2006) identified academic index as a means of measuring educational output. School services therefore, include academic services. Edem (2007) confirmed the importance of school academic services by calling it the technical unit of the school system. According to him, schools service delivery in open and distance education are made through three levels, of service delivery. These are: Community level of service delivery, Managerial level of service delivery and Technical level of service delivery.

At the community level of service delivery, the political leadership and entire society at large are involved. At the managerial level of service delivery, the administrator being the chief executive of
the school system works with other administrative and non-teaching staff to ensure smooth running of the school. At the technical level, it comprises of the heads of departments and subject teachers. Edem was not vocal about student personnel but, it is implied as a subset of the school system at the technical level. This is because the job done at the technical level is basically for the student personnel’s betterment.

Izuagba and Obioha (2016) identified some ways of using information and communication technology facilities to enhance open and distance education service delivery as follows:

1. **Record Keeping:** Information and communication technology facilities could be used to keep academic, management and school personnel and community records. This enables the school to build on previous achievements and easily identify its strengths, weaknesses, opportunities and threats.

2. **Admission and Students Selection Process:** Information and communication technology helps in enhancing the admission and process of students’ selection in line with available school facilities and teaching personnel in open and distance education. Registered students are easily assigned to classrooms according to their abilities. It leads to objectivity in the admission and registration process of students.

3. **Enforcement of Discipline:** Information and communication technology helps in keeping track with negative behaviours of pupils. It helps school authorities to see at a glance, the students’ background information and previous behaviour. By so doing, the school administration quickly decides the line of actions to be taken as a form of disciplinary measure.

4. **Enhancement of School Community Relations:** Information and communication technology could be used to coordinate and record details of school community relations. It enables school administrators to identify gray areas, where they need to exploit for the advantage of the school.

5. **Demographic Data Management:** Information and communication technology could be used to manage demographic data on staff and student personnel and other clients of education efficiently.

6. **School Financial Analysis:** Information and communication technology tools help in school financial analysis of educational input and output so as to avoid unnecessary projection errors.

Added to the above, Ezekiel (2016) remarked that information and communication technology could be used to direct all administrative and academic activities through the intranet resource. Through the internet, information and communication technology could be used to give a more enriched teaching and learning experience. With information and communication technology, learners could benefit from blended learning. According to the internet free encyclopedia, blended learning is an educational program that combines online digital media with the normal classroom methods. Face- to - face classroom methods are combined with computer mediated activities regarding content and delivery. Through the use of customized internet course where this is suitable for our culture and society, information and communication technology could enhance the level of pupils academic achievement in open and distance education.

Esharenana and Emperor (2015) remarked in a report of 7th March, that other ways of using information and communication technology to enhance service delivery in schools are as follows:

1. **Enhancement of Skills:** Information and communication technology could be used to accelerate, enrich and deepen skills in open and distance education.

2. **Boost Creativity:** ICT is used to boost creativity in students. This is because it does not stigmatize those who fail. Everyone could use it always. It even helps those who fail to improve at their own pace through self learning.

3. **Collaborative Tools:** According to Uzoamaka and Williams (2016) software or hardware systems are collaborative tools. They serve as a base for sharing data and information both within and outside the school system. This facilitates actions within and outside the school which in the end lead to enhanced service delivery.

4. **School Financial Analysis:** Izuagba and Obioha (2016) noted that school financial analysis is enhanced using information and communications technology.

5. **Process of Bata Analysis:** According to Uzoamaka and Williams (2016) data mining or the
process of analyzing empirical data allows for the extrapolation of information. The results are then used in forecasting and defining trends in education. This is very important at the schools’ managerial level of service delivery and it is made possible using information and communication technology.

6) **Query Tools:** The design of the information and communication technology service of the school could use management information systems that have effective query tools. Uzoamaka and William (2016) noted that query tools make users to find information needed to perform any specific function easily. This enables users to be able to render smart services at the managerial level of school service delivery.

**Challenges in Delivery of Open and Distance Education using ICT**

There are some factors hindering utilization of information and communication technology from enhancing service delivery in the open and distance education. Izuagba and Obioha (2016) identified some of these factors as follows:

1) Data problems
2) Power supply problems
3) Government support
4) Human factors

**Data Problems:** Data problems arise when data is either inadequate or falsified. Izuagba and Obioha (2016) noted that demographic and educational data needed in designing a management information system for schools is lacking. Agabi (2012) also remarked that sometimes these data are falsified. Consequently, the computer is fed with information that is inaccurate. These make use of ICT in open and distance education fail to achieve desired results.

**Power Supply:** Power supply is essential for a successful information and communication technology system to function in the open and distance education. However, Izuagba and Obioha (2016) noted that epileptic power supply is an impediment to effective use of information and communication technology in open and distance education. Since ICT is electronic, it depends on power supply.

**Government Support:** Izuagba and Obioha (2016) noted that governments’ incorporation of information and communication technology into schools’ services should be backed by adequate provision of the facilities needed for effective teaching and learning. Teachers and other school staff should be trained and retrained also on how to use information and communication technology. Uzoamaka and Williams (2016) also remarked that changing political context affects support given by the government to the school, for the operation of information and communication technology in schools. However, when government support wanes due to political interest of those in power towards a new direction away from education, open and distance education suffer. This is a common phenomenon in Nigeria.

**Human Factor:** When teachers are not skilled in the use of ICT, there is a problem. Famery (2014) noted that even when teachers are trained with the required ICT skills, their beliefs about ICT still affects the extent to which they use it in service delivery in the school. The feeling that ICT might displace some people, thus causing redundancy cripples successful ICT application in education.

Added to the above, Uzoamaka and Williams (2016) identified other impediments to the effective utilization of information and communication technology to enhance open and distance education’s service delivery. These are:

Cost, Design, Maintenance, Constant system breakdown, Privacy, Technical skill, Lack of job security, Dominant culture, School administrators, Blocks to feedback, Inadequacy of technological facilities, Resistance, Lack of motivation between school staff personnel and Lack of technical support. All the above could be grouped under human factors and technical factors.

**Strategies for delivery of Open and Distance Education**

Strategies for the effective utilization of information and communication technologies in open and distance education could be viewed from two dimensions. These are identified by Edem (2007) as follows:

1. Managerial Dimension
2. Technical dimension

The administrator of the open and distance education is the chief executive of the school. At the managerial level, information and communication technology strategic plan could be used in enhancing its functions. These functions are identified by Edem (2007) as follows: Effectively
mediate between the school and its environment and ensure the smooth running of the school to carry out those functions with ICT, Brighttalk (2016) outlined some strategies as follows:

1) Design an outcomes framework for information and communications technology in open and distance education. This outcomes framework should specify expected outcomes for students, staff, parents and the government. It must be simple and easy to be understood by all concerned.

2) Link the outcomes framework with a well-designed school improvement plan.

3) Specify areas where improvement is most needed.

4) Identify areas where there is need to spend your budgeted fund.

At the managerial level, information and communication technology is used for administration, at the classroom level, it is used for instruction. Edem (2007) called the classroom system, the technical level of the school. At the technical level of the school, instructors are the leaders. Thus, the use of information and communication technology at this level is done generally in two ways. A World Bank (2017) identified these ways as follows:

1) To support existing traditional pedagogical practices in open and distance education

2) To enable more learner centric constructivist learning.

Role learning, lecture based learning and other teacher centric learning are some examples of traditional pedagogical practices. Whizz (2014) outlined certain strategies for the effective utilization of information and communication technology in open and distance education as follows:

• Promote 21st century educators
• Keep best practice guidelines for ICT materials
• Create a virtuous circle based around ICT and innovative teaching
• Use ICT to link home and school effectively
• Encourage positive association with computers

**Promote 21st Century Educators**

Through capacity building and teachers professionalism, teachers could be upgraded to match with the required level for 21st century educators. Whizz (2014) noted that 21st Century educators are knowledgeable enough to fully integrate quality learning activities into information and communication technology enthusiastically. The effect of this is the maximization of these impacts on experience of the learners.

**Keep Best Practice Guidelines for ICT Materials**

There should be technical personnel to assist in keeping both the hardware and software in a proper way. Though information and communication technology is a good administrative tool, it should be effectively utilized by integrating it into learning (Whizz, 2014). The guidelines needed for ICT in the classroom should be kept for future use.

**Use of ICT as Innovative Teaching Technique in Open and Distance Education**

Instructors are encouraged to use more innovative methods in open and distance education. Whizz (2014) noted that teachers who are more inclined towards innovative methods use information and communication technology better. Thus, when instructors are constrained to using innovative methods, they resort to ICT.

**Use of ICT to Link Home and School Effectively**

Ezekiel (2016) remarked that open and distance education could maximally utilize information and communication technology by using the internet and intranet. In this case, the internal affairs of the school could be managed by the intranet. The internet could be used as a window for interacting with the external society and as a means of gathering information from around the world. Information could be given to parents and received from them by the school, through emails and Whatsapp. Whizz (2014) recommended increased communication between parents and teachers so as to increase transparency. He noted that this could also boost students’ motivation and raise academic standards.

**CONCLUSION**

Education is the elementary right of human being for the development of a person both professionally and personally. With the emergence of technology especially in the field of open and distance education have open a new horizon for distance learners. Application of technology in education is not the ultimate goal; instead, we should use it to pursue quality. Information and communication technologies (ICT) are potentially powerful enabling tools for educational change and reform. Rapid
advances in information and communication technology pose new opportunities as well as challenges for every society. In the education sector, ICT has enormous potential to help countries address issues of access to learning, quality of the teaching-learning process and management of education systems. In order to ensure quality of education, the distance education institutions must be careful about the use of proper technologies and media.

RECOMMENDATIONS
Sites that propagate negative information, such as pornography, hate doctrines etc should be identified. Such sites should he secured and disciplinary measures spelt out to users. Other use of ICT materials outside the purpose of open and distance education should also be prohibited. Positive association of learners with computers should be encouraged as a learning platform. Information and communication technology should be used to open a new world of fun, interactivity and motivation in the positive sense. Using ICT for school purposes is using it in the positive sense.

REFERENCES