# Adoption and Use of E-learning in Nigerian Higher Institutions for Sustainable Socio-Economic Development

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## Abstract

*E-learning has received considerable attention from educators and researchers, but its adoption and use in Nigerian higher education institutions are not encouraging. Several studies have reported a variety of barriers that affect the successful implementation of e-learning, such as non-existing operational policies, financial constraints, poor internet connectivity, and resistance. This paper undertook an in-depth review of the literature concerning the benefits of e-learning and barriers affecting successful e-learning implementation for sustainable socio-economic development. The paper highlighted that in Nigerian higher education institutions, the lack of a conceptual framework that takes into account factors that could aid in the proper implementation of e-learning has hampered the successful adoption and use of e-learning. The study concluded that recent developments and government awareness of the importance and relevance of ICT in the educational sector in Nigeria have opened opportunities to adopt e-learning to deliver distance education in order to educate the majority of its uneducated or less educated people. The paper recommended that capacity-building activities, active partnerships, and investment in human and infrastructural facilities remain central to harnessing and exploiting e-learning for socio-economic development in Nigeria.*

**Keyword:** E-learning, Higher Institutions, Nigeria, Socio-Economic Development, Sustainable Development,

## Introduction

The rapid development in ICT had greatly influenced teaching and learning in higher institutions of learning. The pervasive presence of technology in everyday life has driven higher expectations among learners for digital approaches to learning and teaching; however, teachers fail to recognize and respond to this drive at their peril (Greener & Wakefield, 2015). In recent times, universities worldwide are gradually investing more in myriad forms of technologies in an attempt to create a novel teaching and learning environment that provides effective ways of delivering education and training through the web (Mason & Rani, 2004). Modern achievements in the field of computer and communication technologies have offered tremendous opportunities for learning by electronic means (Greener & Wakefield, 2015).

E-learning has become a new paradigm and a new philosophy in education with a mission to serve as a development platform for the present-day society based on knowledge. Robert and Piper (2009) considered defining adopters of e-learning as ‘‘those that leverage the various Internet and web technologies to create, enable, deliver, and/or facilitate lifelong learning’’ for sustainable socio-economic development. Recognizing the importance of e-learning in socio-economic development has resulted in various initiatives and interventions both at the local and international levels in order to exploit the potentialities embedded in e-learning. For instance, the African

Development Bank Group (AFDB) provided a grant of $15.6 million to African Virtual University (AVU) to build e-learning centres and train content developers at 31 partner institutions in Africa (Adkins, 2013).

Despite the benefits e-learning can offer, the adoption of e-learning in Higher Institution of Learning (HIL) faces a number of challenges (Nagunwa & Lwoga 2012) as higher education institutions in many countries in Africa including Nigeria are investing a huge chunk of their meagre resources in these teaching and learning technologies without an understanding of the factors that could influence their optimum adoption and hence a justification of the investment (Kariwo, 2007). While there seems to be ample research on the use and adoption of eLearning in developed countries, very little seems to have been documented in Nigeria with regards to a framework for successful adoption and use of e-learning for enhanced socio-economic development.

The central objective of this paper is to come up with a framework that enumerates the cogent conditions, factors and issues that could hinder e-learning adoption in Nigerian Higher Institution of Learning. It was envisioned that the paper will include the negative conditions and influences affecting proper implementation, adoption and use of e-Learning, and how they can be identified, curtailed or tackled.

**Conceptual Clarity of E-learning**

E-learning, as a concept, lacks a precise definition. However, several scholars have offered various definitions in different contexts and situations. However, the available literature highlights terminologies such as connectivity, ICT infrastructure, the flexibility of access and online content delivery. E-Learning, short for electronic learning, and sometimes referred to as online learning, is the use of electronic devices (usually ICTs) to impart, enable or deliver instructional contents of experience that can be automated. Another definition of e-learning was proposed by Sangrà, Vlachopoulos & Cabrer (2012): "E-learning is an approach to teaching and learning, representing all or part of the educational model applied, that is based on the use of electronic media and devices as tools for improving access to training, communication and interaction and that facilitates the adoption of new ways of understanding and developing learning."

In another related definition, Moll, et al. (2007) defined e-Learning as 'flexible learning using ICT resources, tools and applications, focusing on accessing information, interaction among

teachers, learners, and the online environment collaborative learning, and production of materials, resources and learning experiences.

Generally, E-learning is seen as either learning via the Internet or any other electronic means or gadgets. E-learning can be modelled to suit the individual learner's interest either online or offline. It can also target a group of learners in real-time or asynchronous. Alternatively, e-learning can also be set up in group-based synchronous or asynchronous mode. As postulated by Romiszowski (2004), synchronous group-based e-learning refers to situations where groups of learners are working together in real-time via an intranet or the internet. Romiszowski further indicated that group-based e-learning asynchronously is a situation where groups of learners are working over an Intranet or the internet where exchanges among participants occur with a time delay (i.e., not in real-time). In the context of an individualized self-paced e-learning situation, the learner accesses learning resources such as a database or course content online via an intranet or the internet (Romiszowski, 2004).

**Sustainable Socio-Economic Development**

As a matter of fact, socio-economic development is a compound word with three different important words. These include society, economy and development. It is relevant to define what socio-economic development connotes, but before this is done, it is important to define what economic development denotes (Babalola, 2015). According to Sen (1983), economic development is a policy intervention endowed with the aims of ensuring the economic and social well-being of people, economic growth is a phenomenon of market productivity and rises in Gross Domestic Product (GDP).

Development is, therefore, of the people, for the people and by the people which focuses on social change aimed at improving the standard and quality of life of the people especially that of the underprivileged and vulnerable majority of the population (Ilechukwu & Njoku, 2014). Development is a social condition within a nation, wherein the wants of its people are fulfilled through the sustainable and rational use of resources (natural) and systems. The utilization of these natural resources is technology-dependent, which respects the cultural features of the populace of that particular country (Shah, Attiq and Rehman, 2017). Being the key enabler to enhance social skills and economic development, closer scrutiny indicates 'Education' to be the key component

of development since it affords people with skills that are necessary for social development and their own personal development (Dervis, 2009).

**E-Learning and Socio-economic Development**

Education is the process by which every society attempts to preserve, transmit and upgrade the accumulated knowledge, values, attitudes and skills in its cultural heritage in order to foster continually the wellbeing of mankind and society. Thus, education is the pivot of social stability, social change, social progress, national transformation and development, human development, and sustainable development. Since finance is the facilitator of development and mankind is the animator and beneficiary of development, it follows that mankind (men and women, boys and girls) is the fulcrum of development (Ilechukwu & Njoku, 2014). With the rapid growth of Information and Communication Technologies (ICT), online learning has been amalgamated into the traditional educational structure. The idea of a learning society becomes really popular in the last few decades. There are many debates about how learning society should work and can be accomplished.

In this regard, E-learning is the new face of global education which the National Universities Commission should adapt to and optimize in the universities for sustainable development. Thus, e-learning is to enhance and support higher education for economic growth, human development and environmental conservation which are the three pillars of sustainable development. This means that clean technologies should be used to produce ICTs and electronic wastes need to be recycled to avoid environmental pollution and degradation (Ilechukwu & Njoku, 2014).

Appropriate use of e-learning in Nigerian higher education is essential for achieving sustainable socio-economic development as globalization has brought about a more competitive environment. With this development, offering e-learning, organizations can reduce the cost of training, increase the availability of training, and offer new possibilities to integrate various types of learning contents (Chiu & Wang, 2008). One of the claims of ICT professionals is that e-learning can provide a much better education for people from developing countries (Hvorecký et al., 2005).On the other hand, e-learning can be extremely beneficial to employees, especially by providing courses to employees on-demand, anytime and anywhere tailoring learning courses

based on learners' needs (Ely, Sitzmann, & Falkiewicz, 2009), and being compatible with the learners' preferred learning styles.

As part of the recent repositioning taking place in Nigerian Higher Education through the deployment of e-learning, more emphasis needs to be put on strengthening teachers and students' capacity to harness the potentialities and Innovation for their socio-economic development. Consequently, enhanced links with Universities across the African scientific community and beyond can help in building robust infrastructure, content delivery build consensus on emerging science, technology and innovation issues from the continent's vantage point for socio-economic development.

**E-learning Adoption and use in Higher Institutions in Nigerian**

Everett Rogers, one of the greatest minds behind the adoption of innovation research indicates that "getting a new idea adopted, even when it has obvious advantages, is difficult." (Rogers, 2003). Adoption has been defined by Rogers (2003) as "the process through which an individual or other decision-making unit passes from first knowledge of an innovation to forming an attitude toward the innovation, to a decision to adopt or reject the implementation of the new idea, and to confirmation of this decision." There is some discord among researchers about the working definition of adoption.

Like any other innovation and Technology adoption, e-learning uptake in higher institutions of learning will involve a lot of processes and possibly challenges at various stages of adoption. According to Straub (2009), technology adoption is "a developmental process that is complex and inherently social, and individuals construct distinctive but flexible perceptions of technology that influence their adoption decisions" as challenges are bound to occur at different phases.

Kanwal and Rehman (2017), indicated that learners in developing countries may have a very low adoption and the acceptance rate of e-learning as compared to developed nations. Paradoxically, e-learning in Nigeria tertiary institutions has recently continued to grow at an unprecedented rate but with a lot of challenges. The advances in communication and computer technologies have culminated in the supplementation of the traditional educational delivery system. These new technologies allow for more flexibility in learning and a wider reach for education in many countries worldwide (Salawudeen, 2010).

For the last three decades, the National Universities Commission has worked to lay the foundation for e-learning through investment in ICT infrastructure, management information systems, e-mail access and library information services. Still, many institutions find it difficult to conceptualize and implement these initiatives locally. Despite all the hindrances/threat faced by e-learning in Nigeria institutions, some public institutions, such as the National Open University of Nigeria, Ahmadu Bello University Zaria, the Federal School of Survey, Oyo, the University of Ibadan and Obafemi Awolowo University (OAU) Ile-Ife, among others, have e-learning facilities and have some courses accredited by the National Universities Commission. For example, in 2018, the National Universities Commission (NUC) announced the implementation of an additional e-learning program in four Nigerian public universities namely; University Uyo, National Open University of Nigeria; Usmanu Danfodiyo University, Sokoto and University of Maiduguri. This recent development is a private-public partnership between the National Universities Commission (NUC), the E-learning Group of Park Associates and four federal Universities. Their objective is to provide students with new opportunities to access university education in Nigeria anywhere anytime (NUC, 2018).

Besides public universities, some private universities, such as the American University of Nigeria (AUN), Covenant University (CU), Afe Babalola University, etc., participated in e-learning. These private universities appear to be better off than public universities, as most of them have 24-hour internet connectivity on campuses, but the population of lecturers and students is few compared to public universities. For instance, at AUN, each student receives a laptop with the cost factor in the fee structure. This will not, of course, be accessible to many students (Ajegbelen, 2016).

On the other hand, colleges of education and polytechnic in Nigeria have nothing to write about when it comes to the adoption of e-learning. Olayiwola and Alimi (2015) conducted a study on the readiness of colleges of education in southwestern Nigeria to adopt e-learning. The results of the study showed that there were insufficient facilities for the use of mixed learning in colleges of education where the teachers owned both desktops and laptops. The desktops in most institutions were insufficient for the students. Similarly, the lack of Internet connectivity and low server bandwidth in these schools made it difficult for students and their teachers to use the Internet. This scenario is no different with many educational institutions in Nigeria. Besides,

persuading faculty to use these programs – or e-learning initiatives, in general, remains a challenge for many institutions.

**Benefits of e-learning**

The adoption of E-learning in education, especially for higher educational institutions has several benefits, and given its several advantages and benefits, e-learning is considered among the best methods of education. Several studies and authors have provided benefits and advantages derived from the adoption of e-learning technologies into schools (Algahtani, 2011). However, some of these benefits are highlighted as follows;

**Flexibility**

The greatest benefit e-learning offers a student is increased flexibility, both in course offerings and in access to course resources (Bichsel, 2013). E-learning initiatives help meet students' demands for increased flexibility, an enhanced learning experience, and decreased time to degree. According to Smedley (2010), the adoption of e-learning provides the institutions as well as their students or learners the much-needed flexibility of time and place of delivery or receipt of lectures and course contents (Nwabufo, Umoru & Olukotun, 2012). Similarly, the ease of adaptation and customization ensures that the learning content is well suited to an individual's learning style and preferences, hence increasing its impact and reach. Additionally, instructors of the highest calibre can share their knowledge across borders, allowing students to attend courses across physical, political, and economic boundaries.

**Efficiency and effectiveness**

An effective e-learning system enables a student to determine and process his/her learning style, content, aim, current knowledge and individual skills (Yucel, 2006). Effectiveness and efficiency can also be realized in terms of costs and speed of delivery at relatively cheaper costs. It is presumed that there would be low investments in travel, physical infrastructure, resource management and the development of learning materials (Aczel, Peake, & Hardy, 2008). In the same vein, Arkorful & Abaidoo (2014) maintained that e-learning is cost-effective in the sense that there is no need for the students or learners to travel. It is also cost-effective in the sense that it offers opportunities for learning for a maximum number of learners with no need for many buildings. Students do not have to pay expenses for transportation or accommodation because the

forums, created within the e-learning system, provide students with a discussion environment where problems are solved cooperatively in chat rooms (Yucel, 2006).

**Improved and Revitalized Teaching**

Essential e-learning is about improving the quality of learning using interactive computers, online communications and information systems in ways that other teaching methods cannot match. Unsurprisingly, e-learning increases retention and improve outcomes by using personalized online guidance and support to allow learners to take greater responsibility for their own learning at the pace and level appropriate to them (Zheng & Ferris, 2008). E-learning initiatives nearly always involve periodic course redesign which could raise standards and improve attainment by using self-paced, individualized and interactive materials to improve individual support to learners as they move up the system. Instructors often must undergo training before teaching online courses, and improved pedagogy results when new techniques are introduced and there is a concerted effort to specify learning objectives or outcomes. Because academic leaders and faculty have concerns about quality, online education is often more open to scrutiny. Therefore, instructors and course designers spend more time developing a structured, high-quality experience for students, often using standards such as Quality Matters (Benton & Pallett, 2013).

**Enhanced Learning Experience and Collaboration**

E-learning is important for education because it can improve the quality of the learning experience, and extend the reach of every lecturer and tutor. In the same vein, E-learning increases opportunities for collaboration among students. Additionally, e-learning provides additional academic benefits that include increased access to knowledge through online resources, ease of revision of course materials, the ability of students to connect with experts around the world, a more active role for learners in setting the pace of their learning, more flexibility for both instructors and students, and scalability of courses from small to large numbers of students simultaneously (Lam 2008).

**Reduction of cost**

The primary driver for most e-learning decisions involves an overall reduction of cost, including reduced instructor costs, travel expenses, room rentals, lodging and meals. The amount

of time spent away from work for classroom training can be significant and should be factored in the overall learning time compared to e-learning (Zheng & Ferris, 2008).

**Challenges of Adopting E-learning**

E-learning is being confronted on daily basis with a lot of challenges especially in developing countries including Nigeria due to its dynamic, technology-driven and requires a lot of investment; financial, personnel, infrastructure and stakeholders support. However, these challenges are as follows:

**Electricity Power Supply and related infrastructure**

One of the most nagging problems that affect the successful implementation of e-learning are the related issues of unreliability, unavailability and cost of power. Power remains one of the most expensive costs manufacturing firms have to bear in Africa, accounting for over 50% of the production costs in some countries (Eifert, Gelb, & Ramachandran 2008). In addition to the cost of the power supply, erratic and epileptic power supply has remained a big challenge towards the implementation of e-learning. As far as global education and e-learning are concerned, the provision of an uninterrupted electrical power supply is a major hallmark toward successful e-learning implementation (Umeasiegbu & Esomonu, 2014). Besides, Nigeria has also depended on expatriates in energy generation that is highly costly (Umeasiegbu & Esomonu, 2014).

**Poor Internet Connectivity**

The availability, quality, quantity and cost of bandwidth in Africa is still prohibitive and beyond the reach of many Higher Education Institutions and individuals. According to a recent study, “an average university in Africa has no more bandwidth than the amount found in a residential connection in Europe or the United States” (Umeasiegbu & Esomonu, 2014). However, bandwidth in Africa is always strained; costs on average 50 times more than a typical US university pays per Kbps12/month; and is of low quality without firm commitments of policy from the internet providers of guaranteed uptimes (Hawkins, 2007). In addition, the lack of skills and policies at the institutions with regard to bandwidth management does not ensure that the bandwidth is effectively used (Steiner, Tirivayi, Jensen & Gakio 2004).

**Insufficient Funds for Purchasing, Maintaining and Upgrading ICT Infrastructure**

There is a lack of enough finance to facilitate e-learning technology and infrastructures because all of these issues need financial support to implement and maintain (Dalton & Gren 2015). In line with the observation of Mtebe and Raisamo (2011), it is evident from these studies that there are still huge infrastructural problems that need to be addressed if these institutions are to achieve e-learning. Meanwhile, the lingering economic turbulence in Nigeria coupled with the high cost of electronic teaching facilities/devices, cost of developing e-content etc. has greatly hampered the implementation of e-learning in Nigerian Higher institutions of learning as many schools, colleges and even universities cannot and have not made conscious efforts to purchase, maintain and upgrade ICT devices due to shortage of funds (Umeasiegbu & Esomonu, 2014).

**Technological Skills on e-learning and E-content Development**

Lack of e-learning knowledge to most education stakeholders was reported by Mtebe and Raisamo (2011). Lack of computer knowledge to some teachers was claimed to slow down e-learning uptake in the studied institutions as most academic staff lacks relevant technical skills on e-learning and e-content development by the teaching staff in most public universities. Converting print-based materials to electronic format by most of the teachers was a challenge. There is some indication that users of e-learning, particularly teachers did not want to show their weaknesses in ICT skills, which led to another problem, that is, resistance to change. This is exacerbated by inadequate or lack of training in e-learning skills among the majority of the teaching staff.

**Lack of Interest and Commitment among the Teaching Staff to Use e-learning**

Lack of interest and commitment among the teaching staff to use e-learning is another challenge inhibiting the proper implementation of e-learning in most developing countries. For example, a study conducted in Kenya by Tarus, Gichoya & Muumbo (2015) found out that the lack of interest and commitment among the majority of the teaching staff to use e-learning in teaching in public universities has greatly hampered proper e-learning implementation. Meanwhile, for teaching staff to successfully use e-learning technology in their classes, they need to have a positive attitude to the use of technology.

**Amount of Time Required to Develop e-learning Content**

Perhaps, the most frequently cited problem of e-learning was the amount of time required to develop and maintain an e-learning course, additional time is needed by the teacher to

communicate with the students via the internet, mailing system or via education course forum that relates to the course. Students, on the other hand, need adequate time to search relevant information, gather data in a well orderly manner; balancing the time is a real problem facing the students (Fredrick, 2015). Besides, developing e-learning content is an arduous and herculean task requiring much time. The inability of academics to create appropriate e-learning curriculum content for their respective modules, therefore, renders the university initiatives to embrace e-learning futile, as students cannot benefit from non-interactive curriculum content (Tarus, 2011).

**Lack of Operational e-learning Policies**

It has also been indicated that most countries in Africa have conservative and restrictive policies that most of the time serve as a hindrance to the use of eLearning or to the adoption of technologies that promote e-learning (Yieke, 2005). Lack of clear cut policy instruction affects the proper implementation of e-learning. Awidi (2008) pointed out that for any university to achieve successful implementation of an e-learning programme, the universities must have clearly defined strategic plans that spell out e-learning policies and implementation strategies. Lack of ICT/e-learning policy is a common problem in many universities in Africa including Nigeria (Tarus, Gichoya & Muumbo, 2015).

**Way forward**

Issues relating to the adoption and use of e-learning are concerns that are not easily tackled overnight as many of the problems and challenges are sensitive not only technologically but also socially, economically and culturally. In other words, they have personal, environmental and psychosocial dimensionality. In order to ensure successful adoption and use of e-learning in higher institutions of learning in Nigeria emphasis should be geared toward:

- Upgrading the computer literacy of academic staff to use new information technologies in the educational process as part of learning support;
- Designing and monitoring proper implementation e-learning policies, infrastructural facilities development of as well as the educational environment at all levels of the education process in higher education institutions;
- Encouraging and forming support structures for academic staff in the form of communities of practice where they could share ideas and experiences for developing e-learning curriculum content;

- Allocating more funds to public institutions to revitalize and upgrade standards in line with global best practices;
- Adopt key regulatory measures to promote affordable, wide-ranging access to a full range of broadband ICT services, including wireless broadband, technology and services authorization practices that allocate spectrum to multiple users;
- Encouraging capacity building activities by promoting awareness of the importance of harnessing and exploiting e-learning and related technologies in Nigerian Higher Institution of learning for socio-economic development is highly critical. Global partnership; training and re-training to leverage resources and expertise to build Nigeria's Information Society are highly needed.

**Conclusion**

It is clear that the concept of e-learning is considered very attractive as a new learning paradigm that will have a positive effect on the development of education in developing countries especially, Nigeria which has a large population of over 150 million and relatively few numbers higher institutions. In Nigeria, the recent developments and awareness of the government on ICT have opened an opportunity to adopt e-learning to deliver distance education for educating the mass of its uneducated or less educated peoples. However, despite the recent development witnessed and as well the potentialities of e-learning little effort are put in place to implement it and the few ones that were implemented are grappling with a lot of challenges such as; absence of good policies, poor electricity supply, the high cost of bandwidth e.t.c. Meanwhile, the survival of tertiary educational institutions in the 21st century will increasingly rely on various forms of the electronic delivery system and communication facilities available in markets that are required to make education to be more flexible. E-learning is now widely used in most developed countries to promote distance education and life-long learning in an effective way. Therefore, for e-learning to be realizable in Nigeria, capacity-building activities, active partnership and investment in both manpower and infrastructural facilities remain central toward harnessing and exploiting the benefits of e-learning for socio-economic development in Nigeria**.**

## References

Aczel, C. J., Peake, S. R., & Hardy, P. (2008). Designing capacity-building in e-learning expertise: Challenges and strategies, *Computers & Education, 50*, 499–510.

Adkins, S.S. (2013). The Africa Market for Self-paced eLearning Products and Services: 2011-2016 Forecast and Analysis.

Ajegbelen, A. J. (2016). The use of ICT to enhance university education in Nigeria. International Journal of Education, Learning and Development, 4(5), 1-11.

Algahtani, A.F. (2011). *Evaluating the Effectiveness of the E-learning Experience in Some Universities in Saudi Arabia from Male Students' Perceptions*, Doctoral thesis, Durham University

Arkorful, V., & Abaidoo, N. (2014). The role of e-learning, the advantages and disadvantages of its adoption in Higher Education, *International Journal of Education and Research* Vol. 2 No. 12

Awidi, T. (2008). Developing an e-learning strategy for public universities in Ghana, EDUCAUSE Quarterly Magazine, Vol. 31, 2.

Babalola (2015). Basic education for Nigerian Socio-economic Development: an Exposition of Philippines' Barrio School approach *Review of Public Administration and Management Vol. 3, No. 7,*

Benton, S. L. and Pallett, W. H. (2013). "Class Size Matters," *Inside Higher Ed*, Retrieved January 29, 2018, http://www.insidehighered.com/views/2013/01/29/essay-importance-class-size-higher-education.

Bichsel, J. (2013). The State of E-Learning in Higher Education: An Eye toward Growth and Increased Access (Research Report), Louisville, CO: EDUCAUSE Center for Analysis and Research, June, available from http://www.educause.edu/ecar.

Chiu, C., & Wang, E. T. G. (2008). Understanding web-based learning continuance intention: The role of subjective task value, *Information & Management,* 45(3), 194-201.

Dalton, K. and Gren, I. (2015). Barriers and strategies on adoption of e-learning in Tanzanian higher learning institutions: Lessons for adopters, *International Journal of Education and Development using Information and Communication Technology (IJEDICT),* 2015, Vol. 11, Issue 2, pp. 126-137

Dervis, K. (2009). *Capacity Development: Empowering People and Institutions: United Nations Development Programme Annual Report (2008).* DIANE Publishing. Development. *Learned publishing,* 16 (1) 34-46.

Eifert, B., Gelb, A., & Ramachandran, V. (In Press). The Cost of Doing Business in Africa: Evidence from Enterprise Survey Data, *World Development, xx* (xx), XX-XX.

Ely, K., Sitzmann, T., & Falkiewicz, C. (2009). The influence of goal orientation dimensions on time to train in a self-paced training environment, *Learning and Individual Differences*, 19(1), 146-150.

Greener, S. L. & Wakefield, C. (2015). Developing confidence in the use of digital tools in teaching University of Brighton, Brighton, UK

Hawkins, R. (2007). The persistent bandwidth divide in Africa: Findings for the African Tertiary Institution Connectivity study and lessons for developing knowledge infrastructure and networks in Africa. In *Integrating Science & Technology into Development Policies: An International Perspective* (pp. 91-99). OECD Publishing.

Hvorecký, J., Manažmentu, V. S, Cesta, P. (2005). Can E-learning break the Digital Divide, European J. Open, Distance E-Learning. RetrievedApril 10, 2018, from http://www.eurodl.org/.

Ilechukwu, L. C. & Njoku, C. C. (2014) Optimizing E-Learning in Nigerian Universities for Sustainable Development *Journal of Information Engineering and Applications* Vol.4, No.10, 2014

Kariwo, M. T. (2007). Widening Access in Higher Education in Zimbabwe. *Higher Education Policy, 20 (1),* 45-59

Lam, S. Y. W. (2008). Blended e-learning Model for Geomatics Curriculum: Design, Implementation and Evaluation, Proceedings of FIG Commission 2 Workshop, Sharing Good Practices: E-learning in Surveying, Geo-information Sciences and Land Administration, 11–13 June 2008, Enschede, Netherlands.

Moll, I., Adam, F., Backhouse, J., & Mhlang, E. (2007). Status Report on ICTs and Higher Education in South Africa, retrieved on 15 January, 2019 from http://www.judybackhouse.com/pdfs/saide_status_of_elearning_in_sa.pdf.

Mtebe, J.S. & Raisamo, R., 2014. Investigating perceived barriers to the use of Open Educational Resources in higher education in Tanzania. International Review of Research in Open and Distance Learning, 15(2), 43–65.

Nagunwa, T., & Lwoga, E.T. (2012). Developing eLearning Technologies to Implement Competency Based Medical Education: Experiences from Muhimbili University of Health and Allied Sciences. *International journal of education and development using information and communication technology, 8*, 7-21.

Nwabufo, B. N., Umoru, T. A. and Olukotun, J. O. (2012). The Challenges of E-Learning in Tertiary Institutions in Nigeria

Olayiwola, I.O., & Alimi, K.M. (2015). Preparedness of Colleges of Education in Southwestern Nigeria for the Adoption of Blended Learning.

Robert, P. & Piper, J. (2009). About e-learning. Retrieved from http://peoplesoft-lc.hosted.learnframe.com/aboutelearning/page2.asp accessed on 12 February 2018

Rogers, E. M. (2003). *Diffusion of Innovations* (5th ed.). New York: Free Press.

Romiszowski, A. (2004). How's the e-Learning baby? Factors leading to success or failure of an educational technology innovation, *Educational Technology*, 44(1), 5-27.

Salawudeen, O.S. (2010). E-learning technology. The Nigerian experience. Abuja: Roger printing and Publishing limited.

Sangrà, A., Vlachopoulos, D., & Cabrer, N. (2012). Building an inclusive definition of e-learning: An approach to the conceptual framework, The International Review of Research in Open and Distributed Learning, 13(2), 145-159.

Sen, A. (1983). Development which may now? *Economic Journal,* 93(379) PP745-762

Shah, H. J., Attiq, S.andRehman, S.(2017) Role of E-Learning in National Development *Journal `of Managerial Sciences* Vol. 147 XI Number 1

Smedley, J.K. (2010). Modelling the impact of knowledge management using technology, OR Insight (2010) 23, 233–250.

Steiner, R., Tirivayi, N., Jensen, M., & Gakio, K. (2004). Africa Tertiary Institution Connectivity Survey Retrieved September 13, 2019 from http://www.worldbank.org/afr/teia/pdfs /ATICS_ 2004_Report.pdf

Straub, E.T. (2009). Understanding Technology Adoption: Theory and Future Directions for Informal Learning. *Review of Educational Research, 79*, 625 - 649.

Tarus, J. (2011). Adoption of e-learning to support teaching and learning in Moi University. Thesis presented in partial fulfillment of the requirements for the degree of Master of Philosophy (Information Technology), Moi University.

Tarus, J. K., Gichoya, D. & Muumbo, A. (2015). Challenges of Implementing E-Learning in Kenya: A Case of Kenyan Public Universities *International Review of Research in Open Distributed Learning* Volume 16

Yieke, F. A. (2005). Towards Alternatives in Higher Education: The Benefits and Challenges of ELearning in Africa. *CODESRIA Bulletin* (3/4), 73-75.