INTERNATIONAL JOURNAL OF RESEARCH IN EDUCATION, SCIENCE AND TECHNOLOGY, VOL.5 NO.1. MARCH 2022, NEW YORK.

Clement Etti WILLIE, *Ph.D*; Oniko Ndoma NSOR & Kingdom Sunday MBOHO, *Ph.D*

EMPIRICAL SURVEY OF THE CHALLENGES OF USING E-LEARNING BY UNIVERSITY UNDERGRADUATES IN NIGERIA DURING COVID-19

Clement Etti WILLIE, *Ph.D*
Department of Sociology and Anthropology,
Evangel University, Akaeze, Ebonyi State, Nigeria;

Oniko Ndoma NSOR
Department of Public Administration
Obong University, Obong Ntak
Etim Ekpo L.G.A.

AND

Kingdom Sunday MBOHO, *Ph.D*
Department of Sociology and Anthropology,
Faculty of Social Sciences,
Akwa Ibom State University, Ikot Akpaden

ABSTRACT

This study explored the challenges of using e-learning by university undergraduates in Nigeria during COVID-19. The researchers adopted a survey research approach in Evangel University, Okpoto.The population of 1,800 was picked from the university admission register and a sample size of 300 was drawn using the Taro Yamene sample sizes determining formula. Data for this study was collected from both the primary and secondary sources. The study discovered that some universities have web page and others are in the trend of creating a web page, which is usually for advertisement of the universities but not for the e-leaning activities The questionnaire designed and distributed to the respondents was a major source of primary data. Secondary data was sourced from textbooks, journals, newspapers, encyclopedia, magazines, articles and other periodicals found in the libraries and the internet. The instrument titled "E-learning Challenges Questionnaire (ECQ)" was used for data collection. Face and contents validation of the instrument was carried out by one expert in test, measurement, and evaluation to ensure that the instrument was accurate for the study. Cronbach Alpha technique was used to determine the level of reliability of the instrument. In this case, the average reliability coefficient obtained was 0.84, and this was high enough to justify the use of the instrument. Data were presented on tables, frequencies and percentages. The study concluded that poor networks, lack of infrastructural facilities, high cost of computers, iPads, phones, and internet access are ranked the top challenges to e-learning in developing countries like Nigeria. The study recommended that the government should provide upgraded ICT amenities to enhance speed and flexibility on campus to run the universities' WIFI on campus to give students good access to the internet network.

KEYWORDS: E-Learning, Challenges, e-learning, during covid-19, University undergraduates and Nigeria

INTERNATIONAL JOURNAL OF RESEARCH IN EDUCATION, SCIENCE AND TECHNOLOGY, VOL.5 NO.1. MARCH 2022, NEW YORK.

Clement Etti WILLIE, *Ph.D*; Oniko Ndoma NSOR & Kingdom Sunday MBOHO, *Ph.D*

Introduction

The mode of teaching has been the traditional method, which consists of lecturers or teachers having physical meetings with students in a classroom building for the purposes of lectures, examinations, seminars, and project or thesis defense. Ifijeh et al. (2015) observed that very few Nigerian universities operate e-learning platforms, which merely allow for the upload and download of lecture notes, as well as the giving and submission of students' assignments. In the same vein, the methods of information provision by libraries in Nigerian universities have been traditional; they entail the acquisition and dissemination of information resources to members of the university community in furtherance of the attainment of institutional objectives. Information resources are organized and kept in different sections of the library building, with an emphasis on hard copies. Some of the libraries also provide access to electronic resources using IP addresses or remotely through login details like usernames and passwords. Reference and information literacy services are carried out mainly through traditional methods (face-to-face meetings).

However, these traditional methods employed by university and library systems in Nigeria have collapsed since students left their campuses on account of the COVID-19 pandemic. Due to the need to keep students engaged at home and complete their academic calendars, universities have therefore begun to adopt online teaching and learning strategies. Some universities are already thinking of adopting a hybrid teaching methodology, which involves a combination of traditional and online methods. Even Evangel University Akaeze was not left out of this arrangement. Hence, the need for this study to investigate compliance of most universities/students with e-learning during the COVID-19 pandemic lockdown by the lecturers in most private tertiary institutions in Nigeria vis-à-vis their socio-economic factors and limitations encountered.

Statement of Problem

Coronavirus, also known as COVID-19, affects the education system in the world. Schools, colleges, and universities were closed to control the spread of the virus. School closures bring difficulties for students, teachers, and parents. So, e-learning was a quick solution to continue the education system. However, poor networks, lack of infrastructural facilities, high cost of computers, iPads, phones, and internet access hinder distance learning in developing countries. The emergence of internet technology has brought profound growth in the e-learning culture of tertiary institutions in many countries. Unfortunately, most Nigerian schools are yet to fully embrace and implement this.

Objectives of the Study

The main objective of the study is to investigate the challenges of e-learning program in private universities in Nigeria, using Evangel University as a case study. Other specific objectives are:

1. To ascertain the challenges of E-learning by Students in Evangel University during covid-19.

2. To examine the challenges of using E-learning by Private Universities during covid-19.

Research Questions

1. What are the challenges of E-learning by Students in Evangel University during covid-19?

2. What are the challenges of using E-learning by Private Universities during covid-19?

Theoretical Review

Constructivists Theory of Learning

This study is anchored on the constructivist theory propounded by Lev Vygostsky in 1992. Learning theory describes how students receive, process, and retain knowledge during learning. Educators who embrace cognitive theory believe that the definition of learning as a change in behaviour is too narrow, and they study the learner rather than their environment—and in particular, the complexities of human memory. Constructivists see the learner as a function object (function) [native code] of knowledge. New learning is shaped by schemas that the learner brings to the learning process. Learning, according to Lev Vygotsky, is a collaborative process, and social interaction is essential for cognitive development. According to Vygotsky, students learn best when working collaboratively with those whose proficiency level is higher than their own, allowing them to complete tasks they are not yet able to do independently. Vygotsky identified these concepts as the more knowledgeable other and the Zone of Proximal Development. Constructivist classrooms are student-centered, with the teacher acting as the facilitator. Teachers in leadership schools begin the year by building high-trust relationships and dedicate time throughout the year to maintaining the social-emotional environment of their classrooms. They aim to incorporate student voice throughout their day, allowing students to take great ownership over their environment and learning. Teachers believe that everyone has genius and teach their students to acknowledge and utilise the strengths of their classmates, creating synergy. Leadership classrooms buzz with excitement, signalling purposeful student interaction.

As teachers aim to empower students, they use teaching strategies that require collaboration and higher-order thinking, acting as a guide on the side rather than a sage on the stage. Constructivism is based on the premise that we construct new ideas based on our own prior knowledge and experiences. Learning, therefore, is unique to the individual learner. Students adapt their models of understanding either by reflecting on prior theories or resolving misconceptions. Students need to have a prior base of knowledge for constructivist approaches to be effective. Students learn more when or where there is social interaction than when learning alone. The social environment contributes positively to student's cognitive development than learning

alone. Distance learning, or e-learning, in this aspect affects the students' social learning environment. This accounts for why most students develop negative attitudes towards distance learning. This theory implies that students learn quickly and understand fast when they are together rather than being in isolation. It also implies that the learning or social environment exerts an influence on learning.

Conceptual Review

Challenges of E-Learning Programme in Private Universities

Inadequate Funding: Any endeavor that involves the deployment of ICTs is capital intensive; libraries are not exempt from these costs. It has, however, been established that academic libraries in Nigeria are poorly funded. Daniel (2020) observed that lack of funds is the major reason for the underdevelopment of libraries in Nigeria. University libraries get their funding mainly from the 10% recurrent budgetary allocation of their parent institutions as stipulated by the government. This is barely enough to cover recurrent expenditure. Though information on specific estimates of Nigerian university and library budgets is not available to the public, (Okpara 2014) reported that an average Nigerian university gets an estimated annual income of N3.6 billion (about $7.2 million) from government allocations and internally generated revenue (from school fees and other sources). The university library is expected to get 10% of the estimated income, which will amount to about $720,000. However, (Alabi et al. 2013) observed that many libraries do not get up to 10% of their university budgets because much of the income is spent on other priority areas like staff salaries and allowances, administrative operational costs, research and capital projects like the building of hostels, classroom blocks, and others. They also noted that library budgets are never fully implemented due to a lack of funds. Consequently, most academic libraries spend a greater proportion of their income on book acquisitions, subscriptions to online databases, and journal and newspaper acquisitions, with nothing left to cater to other projects.

In the 2019 national budget, the Federal Government of Nigeria allocated about $1.2 billion for both capital and recurrent expenditure for all federal government owned institutions (secondary and tertiary) in the country (Ameh and Aluko 2019). This amount is not sufficient for the massive ICT infrastructural development required in higher institutions of learning and their libraries. Arising from the global economic meltdown and currency inflationary crisis, the government is not prepared to increase budgetary allocation to education any time soon.

Poor technological infrastructure: Nigerian library professionals are aware of the benefits of ICT and it is evident that they are positively disposed to introducing ICT to their traditional services. Library services can better support teaching and learning by leveraging the benefits of ICT. This awareness has prompted libraries to propose several ICT projects. However, technological infrastructural challenges seem to be the major barriers to the execution of such projects. It has been observed by Davis et al. (2019) that technological infrastructure that could facilitate projects in Nigeria and other developing countries has not received the required attention from

INTERNATIONAL JOURNAL OF RESEARCH IN EDUCATION, SCIENCE AND TECHNOLOGY, VOL.5 NO.1. MARCH 2022, NEW YORK.

Clement Etti WILLIE, *Ph.D*; Oniko Ndoma NSOR & Kingdom Sunday MBOHO, *Ph.D*

relevant authorities. Libraries are subdivisions of their parent bodies, and several of their projects depend on decisions from such bodies. Low attention to such infrastructures from the parent bodies makes libraries appear as though they have no capability to execute ICT projects.

It has been consistently shown in literature that technological infrastructure suffers from poor management, theft, low electricity supply, poor manpower engagement, and total neglect (Gillwal et al. 2018). Hardware and software needed to maintain constant support for educational activities by libraries in Nigerian institutions of learning may not be possible due to a meager budget. These technologies are constantly updated to higher versions to meet current demands, and if libraries do not enjoy financial support, it becomes practically impossible for libraries to keep up with new trends.

The gross inadequacy of technological infrastructure has stalled deployment of initiatives that could have better projected the services of librarians, leading to quality service delivery in support of virtual teaching and learning. Furthermore, libraries, which are generally non-profit-oriented, are perceived by parent bodies as not deserving maximum attention, hence the poor technological infrastructural support (Ikembe et al. 2013).

Lack of skilled personnel: Traditional methods of administering library services aimed at providing support for teaching, learning and research in higher institutions of learning have experienced tremendous change as a result of ICT. Libraries now operate beyond the walls of their buildings, tilting more towards the virtual environment (Thomson 2015). The need for librarians in Nigeria to improve their ICT skills with the urgency it deserves cannot therefore be overemphasized. No matter the level of sophistication of the ICT infrastructure deployment in the library, librarians must possess relevant ICT skills to be able to maximize their use in meeting the dynamic information needs of users and to contribute meaningfully to the emerging change in teaching methodologies. Literature has, however, shown that a number of librarians in Nigeria are low on the ICT skills needed to provide efficient library services in support of teaching and learning (Nkamebe et al. 2015). Unless librarians take up the challenge of acquiring the new skill sets necessary to operate in an environment of constant change, their future relevance may be in doubt.

Environmental/Economic Factors that hinder E-Learning Program

Ease of use: Ease of use in this context means the capacity of the students to master the e-learning facilities without undergoing additional training. Drawing on the analysis, the finding revealed that most students in private universities were eager to use the e-learning facilities introduced by the universities because these facilities are used in teaching and learning by teachers in delivering lectures with little or no technical complexities during learning (Eze et al., 2018). Because of how friendly the facilities are, it was revealed by students that they feel relaxed using the facilities both within and outside the study areas.

INTERNATIONAL JOURNAL OF RESEARCH IN EDUCATION, SCIENCE AND TECHNOLOGY, VOL.5 NO.1. MARCH 2022, NEW YORK.

Clement Etti WILLIE, *Ph.D*; Oniko Ndoma NSOR & Kingdom Sunday MBOHO, *Ph.D*

Speed/network: Speed is defined as the capacity of the e-learning facilities to produce or deliver the required results envisaged by students seamlessly and fast. Most of the interviewed participants were of the view that if the e-learning facilities helped them download materials as quickly as possible, receive lectures online, and submit the assignments swiftly on the platform without any form of interruption or delay, such would trigger the usage at all times. Poor network conditions in the country were the major hindrance to the smooth usage of e-learning during the pandemic.

Accessibility: Accessibility reveals the extent to which e-learning facilities are made available to students. It was widely perceived by the participants that if the facilities were not restricted to some areas but extended within and outside the campus, they would be constantly used. In line with the findings of Sezgin (2016), Aboderin and Kumuyi (2013), and Anene et al. (2014), the ability to continuously access the progress of students' tests or continuous assessment results on e-learning platforms is important because it aids the usage by students. Due to poor or no network coverage and the country's epileptic power supply during the lockdown, most students in rural areas find it difficult to access e-learning.

Service delivery: Service delivery in this context is the extent to which the facilities (e.g., internet and intranet) aid the use of e-learning and are provided regularly. The analysis revealed that although the university, to a large extent, has these e-learning facilities, poor internet and intranet connectivity frustrate most students in using these facilities.

Training support: Training support in this context has to do with an institution's ability to engage teachers and students with the e-learning facilities to ensure that they master the usage and application over time. However, observations showed that both students and teachers were not adequately trained or developed in terms of E-learning applications. This greatly affects the use of e-learning facilities.

Attitudes of the users: Attitude, in this context, refers to the behavior of teachers and students when using the e-learning facilities. It is a key factor that shows how students and lecturers embrace e-learning programmes. Observations revealed that some lecturers, especially the older ones, find it difficult to use e-learning facilities. Even the younger ones are lazy to prepare power points and upload the lecture materials on the platforms so that students can make use of the facilities to access the materials. Thus, a lecturer's attitudes toward the use of e-learning facilities greatly affect the usage by the students.

Experience: From the analysis, it was revealed that most students in the university, particularly the inexperienced ones that had not used e-learning facilities during the initial stage of the admission process, were greatly affected when they started lectures at the university. While some were of the view that during the computer-based test for new intakes, they spent 3 hours because they were not familiar with the facilities and, secondly, the facilities were not working, others believed that lecturers were not using them and that affected the way they perceived the facilities.

INTERNATIONAL JOURNAL OF RESEARCH IN EDUCATION, SCIENCE AND TECHNOLOGY, VOL.5 NO.1. MARCH 2022, NEW YORK.

Clement Etti WILLIE, *Ph.D*; Oniko Ndoma NSOR & Kingdom Sunday MBOHO, *Ph.D*

Skills development: Skill development is the capacity at which e-learning facilities assist students to acquire new skills and improve their learning capacity (see Prause, 2019; Okundaye et al., 2019). Many students, particularly those at the 300 and 400 level, during their interviews mentioned that the e-learning facilities have helped them acquire skills such as reading skills, creative skills, learning skills, communication skills, and presentation skills via these facilities.

Prospects/Benefits of E-Learning

E-Learning has completely transformed the way in which learning is imparted to students. Unlike traditional chalk and board method of teaching, eLearning makes learning simpler, easier, and more effective. Here are 9 features of eLearning that make it advantageous to students.

The Most Important Benefits of E-Learning for Students

Today's learners want relevant, mobile, self-paced, and personalized content. This need is fulfilled with the online mode of learning; here, students can learn at their own comfort and requirement. Let's have an analytical look at the advantages of online learning.

1. Learning Accommodates Everyone's Needs: The online method of learning is best suited for everyone. This digital revolution has led to remarkable changes in how the content is accessed, consumed, discussed, and shared. Online educational courses can be taken up by office goers and housewives too, at the time that suits them. Depending on their availability and comfort, many people choose to learn at weekends or evenings.

2. Lectures can be taken any number of times: Unlike classroom teaching, with online learning you can access the content an unlimited number of times. This is especially required at the time of revision when preparing for an exam. In traditional form of learning, if you cannot attend the lecture, then you have to prepare for that topic on your own; in eLearning, you can attend the lectures whenever you want with ease.

3. Offers Access to Updated Content: A prime benefit of learning online is that it makes sure that you are in synchronization with modern learners. This enables the learner to access updated content whenever they want it.

4. Quick Delivery of Lessons: eLearning is a way to provide quick delivery of lessons. As compared to traditional classroom teaching method, this mode has relatively quick delivery cycles. This indicates that the time required to learn is reduced to 25%-60% of what is required in traditional learning. There are some of the reasons why the learning time is reduced by eLearning:

    • Lessons starts quickly and also wrapped up in a single learning session. This enables training programs to easily roll out within a few weeks, or sometime even days.

INTERNATIONAL JOURNAL OF RESEARCH IN EDUCATION, SCIENCE AND TECHNOLOGY, VOL.5 NO.1. MARCH 2022, NEW YORK.

Clement Etti WILLIE, *Ph.D*; Oniko Ndoma NSOR & Kingdom Sunday MBOHO, *Ph.D*

- Learners can define their own speed of learning instead of following the speed of the whole group.

- Saves time as a student does not need to travel to the training venue. You can learn at the comfort of your own place.

- Students can choose to study specific and relevant areas of the learning material without focusing on each and every area. For example, they can skip certain areas they do not want to learn.

5. Scalability: eLearning helps in creating and communicating new training, policies, concepts, and ideas. Whether it is for formal education or entertainment, eLearning is very quick way of learning.

6. Consistency: eLearning enables educators to get a higher degree of coverage to communicate the message in a consistent way for their target audience. This ensures that all learners receive the same type of training with this learning mode.

7. Reduced Costs: eLearning is cost effective as compared to traditional forms of learning. The reason for this price reduction is because learning through this mode happens quickly and easily. A lot of training time is reduced with respect to trainers, travel, course materials, and accommodation. This cost effectiveness also helps in enhancing the profitability of an organization. Also, when you are studying at your own place, you are relieved from paying for travel expenses (e.g. accommodation) when training happens in another city/state and/or external learning materials.

Method

The study adopted a survey research approach. The study was conducted in Evangel University Okpoto. The population of 1,800 was picked from the university admission register and a sample size of 300 was drawn using the Taro Yamene sample sizes determine formular. Data for this study was collected from both the primary and secondary sources. The questionnaire designed and distributed to the respondents was a major source of primary data. Secondary data on the other hand, were sourced from textbooks, journals, newspapers, encyclopedia, magazines, articles and other periodicals in the libraries and the internet. The instrument titled "E-learning Challenges Questionnaire (ECQ)" was used for data collection. Face and contents validation of the instrument was carried out by one expert in test, measurement and evaluation to ensure that the instrument was accurate for the study. Cronbach Alpha technique was used to determine the level of reliability of the instrument. In this case the average reliability coefficient obtained was 0.84 and this was high enough to justify the use of the instrument. Data were presented in frequencies and percentage frequencies.

Clement Etti WILLIE, *Ph.D*; Oniko Ndoma NSOR & Kingdom Sunday MBOHO, *Ph.D*

Thematic Analysis

Table 1: Challenges of E-learning by Students in Evangel University

Variables	A	SA	D	SD	U	Total	Percentage
Buying of Data	3	5	3	4	2	17	5.67
High cost of computer and phones	15	25	5	6	5	56	18.67
Unstable network	25	30	5	4	4	68	22.67
Lack of training/experience	20	43	10	7	3	84	27.67
Lack of infrastructure	20	35	10	10	1	76	25.33
Total						**300**	**100**

Source: *Field Survey,2021*

Table 1 consists of data relating to the challenges face by students in using E-Learning Application packages. A careful analysis of data shows that out of the 300 respondents nine (17) representing 5.67% accepted lack of money to buy data during the lockdown since their parents no longer give them money during the lockdown. High cost of computer and phone stood at 56 represents (18.67%), these students complained of expensive cost of computer and phones during the lockdown, while (68) respondents, representing 22.67% complaint of unstable network and poor environment which stood at 68(17.14%) respectively are students who lives in the remote areas of the country where electricity is unstable. According to Table 4.1: Eighty-three (83) respondents representing 27.67% out of the 300 respondents indicated that lack of training is the major hindrance to the smooth operation of E-learning. Lack of infrastructure and epileptics power supply ranked second accounting for 76(25.23%) out of a total of 300 respondents.

Table 2: Challenges of Using E-learning by Private Universities

Variables	A	SA	D	SD	U	Total	Percentage
Unstable Economic Conditions	10	25	5	5	4	49	16.33
High cost of Living by Parents	8	10	5	3	2	28	9.33
Lack of Preparation	15	35	3	9	1	63	22.00
Poverty by Parents	20	50	15	4	1	90	30.00
Poor Network in Remote Areas	10	25	25	5	5	70	23.33
Total						**300**	**100**

Source: *Field Survey, 2021*

From Table 2, the challenges of private universities in operating E- learning program was observed, and one of such problems which respondent scored at 49 representing 16.33% was unstable economic conditions in the country. The prolong lockdown in the country has really affected the educational sector of the economy. Also, in that same vein 63 representing (22.00%) of the respondents accepted that most universities were not prepared. The high cost of living experienced by parents during the lockdown account for 28 (9.33%) while 90(30.00%) traced the poverty level of parents in the country ninety (70) respondents representing (23.33%) attributed poor network in the remote areas.

INTERNATIONAL JOURNAL OF RESEARCH IN EDUCATION, SCIENCE AND TECHNOLOGY, VOL.5 NO.1. MARCH 2022, NEW YORK.

Clement Etti WILLIE, *Ph.D*; Oniko Ndoma NSOR & Kingdom Sunday MBOHO, *Ph.D*

Discussion

The objective of the study was to examine the problems and prospects of E-learning during Covid-19 lockdown. The study also examines the rate of compliance by students and the challenges faced by students in the use of E-learning applications. It was observed among others that inexperience in the part of the students really affects full participation of students in E-learning. Also, most private universities in the country lack the facilities needed to run E-learning programmes. It was observed that students were taken unawares by most universities. Other empirical findings were explored as followings. Their findings revealed that a major challenge in the use of ICT is poor and inadequate infrastructure. It was revealed by Nigerian students that the university lacks the fund to build adequate e-learning library domain. As such students do not partake in online seminars, online examination, and discussion with lecturers due to limited bandwidth (Eze et al., 2018). This had resulted in the repeated strikes by the Academic Staff Union of Universities in Nigeria (ASUU) in a bid to force the government to correct abnormalities and increase the annual budget for the education sector (Eze et al., 2018).

Further, Chiaha et al. (2013) on the other hand investigated the e-learning facilities students have access to in public institutions, the degree at which students access the facilities and the factors that hamper students from gaining access to e-learning facilities. The outcome of the study shows that over 41% of the students can access e-learning facilities. The findings revealed that tools available for e-learning are limited and the few available are not satisfactorily utilized. The researchers recommend that government should organize training and retraining of teachers on how to use the facilities and in turn teachers should regularly use it with the students during teaching and research activities. This finding was consistent with the work of (Aboderin, 2015).

Conclusion

Some universities have web pages, and others are in the trend of creating web pages, which is usually for advertisement of the universities but not for the e-learning activities. Furthermore, the findings also reveal that lecturers and students have also been using e-mail and the Internet for personal business. The study concludes that poor networks, lack of infrastructural facilities, high cost of computers, iPads, phones, and internet access are ranked the top challenges to e-learning in developing countries like Nigeria.

Recommendations

1. Government should provide upgraded ICT amenities to enhance speed and flexibility on campus to run the universities' WIFI on campus to give students good access to the internet network.

2. The school managements of private institutions should see it as a matter of importance to have well-equipped laboratories for effective use by both the students and workers.

INTERNATIONAL JOURNAL OF RESEARCH IN EDUCATION, SCIENCE AND TECHNOLOGY, VOL.5 NO.1. MARCH 2022, NEW YORK.

Clement Etti WILLIE, *Ph.D*; Oniko Ndoma NSOR & Kingdom Sunday MBOHO, *Ph.D*

REFERENCES

Alabi, A., Ojebode, M. and Yusuf, A. (2013) Budgeting systems in universities in southwest, Nigeria. Makere. *Journal of Higher Education*. 4(2):15–26.

Ameh, J. and Aluko, O. (2019). *The Punch, 2019 budget*: Education gets N620.5bn, against UNESCO's advice. Retrieved from: https://punchng.com/2019-budget-education-gets-n620-5bn-against-unescos-advice/

Daniel J. (2020). *Lack of funds hampers library development in Nigeria*. Premium Times, Anuary 18, p. 1.

Davies I. E. E., Nwankwo C. O., Olofinnade O. M. and Michaels, T. A. (2019). 1st International conference on sustainable infrastructural development. IOP conf. series: Materials science and engineering 640. IOP Publishing; 2019. *Insight review on impact of infrastructural development in driving the SDGs in developing nations*: A case study of Nigeria. P. 012112.

Eze S.C., Chinedu-Eze V.C., Bello A.O. (2018) The utilization of e-learning facilities in the educational delivery system of Nigeria: A study of M-University. *International Journal of Educational Technology in Higher Education*, 15:34.

Gillwald A., Odufuwa F. and Mothobi O. (2018). The state of ICT in Nigeria. *Research ICT Africa*, 3(5), 1–118.

Ifijeh G., Osinulu I., Esse U. and Adewole-Odeshi E. and Fagbohun M. (2015). Assessing E-learning tools in an academic environment: A study of availability and use among undergraduate students in a Nigerian university. *International Journal of Progressive Education*, 11(2), 76–87.

Nkamnebe E.C., Okeke I., Udem C.K. & Nkamnebe C.B. (2015). Extent of information and communication technology skills possessed by librarians in university libraries in Anambra state, Nigeria. *Journal of Information & Knowledge Management,* 5(9):22–31.