



Scan to know paper details and  
author's profile

# Lecturers' Acceptance and use of ICT for the Sustenance of Research Supervision Amidst Covid- 19 Pandemic

*Nneka Chinyere Ezeugo (Ph.D.), Ifeoma Clementina Metu (Ph.D.), Lydia Ijeoma Eleje (Ph.D), Njideka Gertrude Mbelede (Ph.D), Amuche Uju Ezinwa (Ph.D.), Ngozi Elizabeth Ezenwosu(Ph.D), Gbenga Akinfe, Nmesoma Ogochukwu Achebe & Christian Anachunam*

*Nnamdi Azikiwe University*

## ABSTRACT

This study was carried out to ascertain lecturers' acceptance and use of Information and Communication Technology ( ICT), for the sustenance of research supervision amidst Covid-19 pandemic in Anambra State. Two research questions gave direction to the study while two hypotheses were tested. Survey research design was utilized for the study. The sample for the study consisted of 450 lecturers obtained through accidental and stratified sampling techniques from two public Universities in Anambra state. Lecturers' Acceptance of ICT for Research Supervision amidst Covid-19 (LAICTRSC) and Lecturers' Use of ICT for Research Supervision amidst Covid-19 (LUICTRSC) were used as instruments for data collection after validation by three experts and reliability coefficients of 0.84 and 0.80 respectively, determined using Cronbach Alpha technique.

**Keywords:** supervision, e-research supervision, ict devices, covid-19.

**Classification:** DDC Code: 371.3078, LCC Code: LB1028.3

**Language:** English



London  
Journals Press

LJP Copyright ID: 573333  
Print ISSN: 2515-5784  
Online ISSN: 2515-5792

London Journal of Research in Humanities and Social Sciences

Volume 22 | Issue 4 | Compilation 1.0

© 2022 Nneka Chinyere Ezeugo (Ph.D.), Ifeoma Clementina Metu (Ph.D.), Lydia I.Eleje(Ph.D), Njideka Gertrude Mbelede (Ph.D) , Amuche Uju Ezinwa (Ph.D), Ngozi Elizabeth Ezenwosu(Ph.D), Gbenga Akinfe, Nmesoma Ogochukwu Achebe & Christian Anachunam. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncom-mercial 4.0 Unported License <http://creativecommons.org/licenses/by-nc/4.0/>, permitting all noncommercial use, distribution, and reproduction in any medium, provided the original work is properly cited.





# Lecturers' Acceptance and use of ICT for the Sustenance of Research Supervision Amidst Covid-19 Pandemic

Nneka Chinyere Ezeugo (Ph.D.)<sup>α</sup>, Ifeoma Clementina Metu (Ph.D.)<sup>σ</sup>,  
Lydia Ijeoma Eleje (Ph.D.)<sup>ρ</sup>, Njideka Gertrude Mbelede (Ph.D.)<sup>ω</sup>, Amuche Uju Ezinwa (Ph.D.)<sup>✳</sup>,  
Ngozi Elizabeth Ezenwosu(Ph.D.)<sup>§</sup>, Gbenga Akinfe<sup>x</sup>, Nmesoma Ogochukwu Achebe<sup>v</sup>  
& Christian Anachunam<sup>θ</sup>

## ABSTRACT

*This study was carried out to ascertain lecturers' acceptance and use of Information and Communication Technology ( ICT), for the sustenance of research supervision amidst Covid-19 pandemic in Anambra State. Two research questions gave direction to the study while two hypotheses were tested. Survey research design was utilized for the study. The sample for the study consisted of 450 lecturers obtained through accidental and stratified sampling techniques from two public Universities in Anambra state. Lecturers' Acceptance of ICT for Research Supervision amidst Covid-19 (LAICTRSC) and Lecturers' Use of ICT for Research Supervision amidst Covid-19 (LUICTRSC) were used as instruments for data collection after validation by three experts and reliability coefficients of 0.84 and 0.80 respectively, determined using Cronbach Alpha technique. Data were analysed using mean, standard deviation and t-test. The findings revealed that much as lecturers have accepted ICT for research supervision, ICT devices were generally used to a low extent for research supervision amidst Covid-19 pandemic. Additionally, the findings of the study showed that while a significant difference existed between the mean scores of arts/humanities and science lecturers' acceptance of ICT devices for the sustenance of research supervision in favour of the arts/humanities lecturers, no significant differences existed between them in terms of the utilization of the ICT devices. It was therefore recommended that university authorities should*

*organize seminars and workshop for lecturers on the need and strategies for utilizing ICT devices adequately for effective supervision amidst Covid-19 pandemic.*

*Keywords:* supervision, e-research supervision, ict devices, covid-19.

*Author α σ ρ ω ✳ § x v θ:* Department of Educational Foundations Nnamdi Azikiwe University, Awka.

## I. INTRODUCTION

The emergence of Corona virus (Covid-19) pandemic came with devastating effects which cannot be over-stressed. Its' effects cut across over 180 countries in the continents of Europe, Africa, Asia, North America, South America and Australia/Oceania (McIntosh, Hirsh & Bloom, 2020). Following the spread of the covid-19 pandemic around the world, the World Health Organization declared it a global pandemic on March 11, 2020. The emergence of the dreaded virus in no small measure, caused a disruption in the traditional activities of virtually all sectors, including educational activities. This disruption of educational activities manifested in governments efforts to shut down educational institutions at all levels as a precautionary measure towards curbing the spread of the virus. Such move by the government made the traditional face-to-face style of learning and assessment difficult. This was done in strict adherence to the World Health Organizations triple protocols of lock down, isolation and social distancing. Lockdown is one of the Covid-19 protocols adopted by government

to restrict movement with a view to preventing the spread of the virus. Full or partial lockdown was observed at different points by different countries to contain the spread of the virus. Social distancing entailed that people are either 1.5m or 2m away from each other to prevent possible spread of the virus. On the other hand, isolation is a Covid-19 protocol that ensures that people who are suspected to have contracted the virus do not mingle with others. Asif and Singh (2020) stated that it is one of the preventive measures for university libraries amidst Covid-19 pandemic. However, these protocols which were introduced abruptly came with severe economic and social consequences, which have presented unique challenges in the educational sector. One of the areas most affected by the pandemic was education which was halted or slowed dramatically by restrictive laws and the establishment of social distancing, (Hayat, A.A., Keshavarzi, M.H., Zare, S. *et al*, 2021). Donnelly, Patrinos, and Gresham (2021), stated that school closures due to COVID-19 introduced significant disruptions to education across Europe, giving rise to learning losses and increases in inequality. Nigeria is definitely not left out in the emanating challenges. In Nigeria, challenges encountered include : loss of academic session, poor learning, poor/unequal access to education opportunities, difficulties associated with homeschooling, poor/lack of technology for distance learning, urban-rural divides in resource distribution and access, poor knowledge/skills on the part of the teachers and parents among others (Eze , Sefotho , Onyishi , Eseadi; 2021) . It forced not just students but also teachers, school administrators, policy makers and service providers including the librarians to adapt and adopt technology as a viable and valuable option to ensure fulfillment of the educational needs of the stakeholders and in overcoming various hurdles in this pandemic time (Dadhe & Dubey, 2020).

The adherence to the protocols of Covid-19 as prescribed by the WHO meant that lecturers needed a behavioural and structural adjustment for the sustenance of some of their statutory obligations such as teaching, assessment and

research supervision. Research supervision is an integral part of any research exercise undertaken between the supervisor and the supervisee with the aim of achieving a successful completion of the research exercise. Zaheer and Munir (2020), described supervision as a social interaction between two people having the same goal, but possibly diverging views. Prior to the emergence of the Covid-19 pandemic, lecturers, principally used the traditional face to face model of research supervision to enhance supervisor-supervisee interaction in Anambra State. However, the effects of Covid-19 pandemic and an urgent bid to curtail its spread especially in tertiary institutions gave rise to the decision to consider the institutionalization of e- research supervision as a part of the innovative techniques of ensuring the sustenance of research supervision amidst the pandemic. This paper is therefore focused on Lecturers acceptance and use of Information and Communication Technology (ICT) for the sustenance of research supervision amidst Covid-19.

## II. LECTURERS' USE OF ICT FOR RESEARCH SUPERVISION AMIDST COVID-19 RESTRICTIONS

E-research supervision refers to the use of ICT devices for research supervision. E-research supervision can be seen as the art of stimulating, directing, improving, motivating and overseeing students' research writing with the use of ICT devices for successful supervisory process (Fasasi, Awodiji & Adewale, 2020). Going further, Fasasi, Awodiji and Adewale asserted that the ICT devices that can be adopted to enhance research supervision are e-mail, mobile phone, zoom as well as social media platforms (Facebook, Twitter, Whats App, IMO, Instagram, Viber; among others). According to Albar (2012), much as e-research supervision gives the lecturer (research supervisor) the opportunity of overseeing the supervisee at geographically distant areas, it necessitates the use of ICT. However, lecturers can only use ICT devices for research supervision if they have accepted them. In other words, an ICT device that has not been accepted by a lecturer

can hardly be used by the lecturer for research supervision.

This situation may be associated with the fact that not all lecturers (research supervisors) are technology-savvy because they are not digital natives like their research supervisees. Mettinen (2015) noted that much as ICT creates new possibilities for supervision, its introduction challenges the teachers' knowledge, skills, and attitudes. It is rather worrisome that only few lecturers appear to be confident with the use of technology. Many have become so attuned to the face to face model of supervision that they appear not to be receptive to the use of ICT for research supervision even amidst the threat of the global pandemic. The use of social media platforms such as WhatsApp, Instagram, Facebook among others is a means of achieving research supervision among students. This process of research supervision uses learning plans online to allow both the student and the supervisors to monitor the work being developed (Ayers, Kiley, Jones, McDermott & Hawkins, 2016). It is a strategy that, if used by lecturers, will, immeasurably help them in surmounting the difficulties encountered in using analogue means to monitor the progress of research work. However it may be possible that lecturers' willingness to accept and use ICT for research supervision is function of their academic disciplines. Lecturers have different areas of specializations which are streamlined under different academic disciplines like arts/humanities, natural sciences, applied sciences etc. Generally speaking, ICT is said to contribute to the provision of a good educational environment (Scientific world, 2020). Suduc, Bizoi, Gorghiu and Gorghiu (2011), posited that due to the ability "to stimulate and interactively explore and test experiments which would be too expensive or too dangerous in real settings", the use of ICT is indispensable in science education (p. 1076). In fact ICT and science are inseparable, with technology being an application of science (Wood, 2021). To that effect, it may be expected that science lecturers will have more inclination towards e-research supervision than arts/humanities lecturers. Nevertheless, for lecturers of arts/humanities, their acceptance or

use of ICT devices for research supervision would be based on the fact that their area of specialization is more theoretical than practical. Therefore using ICT would not be a daunting task for them. In comparison, actual research supervision for lecturers of science based courses should require a lot of experiments that ought to be carried out and supervised in the laboratory.

Some researchers have attempted to examine the acceptance and usage of ICT devices by lecturers. Oye, Aiahad and Ab.rahim (2010) assessed the awareness, adoption and acceptance of ICT innovation among 100 lecturers in higher education institutions in Jos Plateau state, Nigeria. 23-item questionnaire was used for data collection. The findings of the study revealed that there is awareness, acceptance and adoption of ICT innovation among lecturers. Ivwighrehweta and Oyeniran (2013) examined the level of usage and awareness of E-resources by 153 lecturers in Federal University, Otuoke and the Western Delta University, Oghara using survey research design. Questionnaire was employed for data collection. The findings of the study indicated that lecturers' usage of e-resources was high. Yunana (2011) explored the availability and extent of use of electronic resources and services in selected tertiary institutions in Kaduna state using survey research design. The findings of the study indicated that the following electronic services – E-mails, online references, electronic alerts were used by lecturers in the selected/ institutions. Agu and Odimegwu (2014) analyzed 310 'doctoral students' evaluations of research supervision models in a Federal University in South-Eastern part of Nigeria, using survey research design. A 35-item questionnaire was the instrument for data collection. Findings of this study revealed that face-to-face interactive model was not only the most frequently used but also the most widely used while the ICT-based model (interactive and non-interactive) were almost never used. The findings of this study further revealed that students operating within the face-to-face interactive model express more satisfaction with their dissertation experience than those in the non-interactive model. Aziz (2014) carried out a study on e-supervision investigating graduate

students' reactions using a qualitative approach in conducting the research using the online supervision. The findings were clear that the graduate students generally do welcome the use of the online component in a research methodology class. To them, it is not whether face-to-face or the online component but both. From the above review, it can be seen that there is an increased acceptance of ICT devices by lecturers in some areas of teaching and learning. However in the area of research supervision, the ICT-based form of research supervision is not yet popular. This study therefore is a further investigation to ascertain lecturer's acceptance and use of ICT in research supervision.

With the current global threat posed by Covid-19 pandemic, it is expected that lecturers will, as matter of urgency, accept and utilize ICT in line with global trend. Present challenges and technological trends place a demand for lecturers' acceptance of ICT for research supervision as should be evidenced in their modification of their traditional face-to-face method of research supervision. In the wake of Covid-19 lockdown, the Federal Government of Nigeria at a point, gave a directive that heads of tertiary institutions recommence their hitherto aborted academic sessions via online learning (ASUU-UI Publicity Committee, 2020). However, lecturers' acceptance and subsequent use of ICT for research supervision seem to be a matter of choice given the relative poor enforcement of the directive. In view of the foregoing, there is need to determine if lecturers have come to the acceptance and use of ICT for the sustenance of research supervision, which is the focus of the present study

### III. RESEARCH QUESTIONS

The following research questions guided this study:

- What are the ICT devices accepted by lecturers for the sustenance of research supervision amidst Covid-19 pandemic?
- To what extent do lecturers use ICT devices for the sustenance of research supervision amidst Covid-19 pandemic?

### Hypotheses:

The following hypotheses were tested at 0.05 level of significance.

- There is no significant difference between arts/humanities and science lecturers' acceptance of ICT devices for the sustenance of research supervision amidst Covid-19 pandemic.
- There is no significant difference between arts/humanities and science lecturers' use of ICT devices for the sustenance of research supervision amidst Covid-19 pandemic.

### IV. METHOD

Survey research design was adopted for the study. Data were collected from 450 lecturers in public universities (274 Arts/humanities and 176 Science-inclined lecturers) (Nnamdi Azikiwe University, Awka and Chukwuemeka Odumegwu Ojukwu University, Igbariam) in Anambra State using stratified sampling and accidental sampling techniques. Two questionnaires, Lecturers' Acceptance of ICT for Research Supervision amidst Covid-19 (LAICTRSC) and Lecturers' Use of ICT for Research Supervision amidst Covid-19 (LUICTRSC) were used for data collection. The instruments were validated by three experts, in Educational Foundations, Nnamdi Azikiwe University Awka and reliability coefficients of 0.84 and 0.80 respectively were determined using Cronbach Alpha. Both questionnaires consisted of 10 items each. The LAICTRSC was structured on a four-point rating scale of Very High Acceptance (VHA), High Acceptance (HA), Low Acceptance (LA) and Very Low Acceptance (VLA) while LUICTRSC was structured on a four point rating scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE) and Very Low Extent (VLE).

Mean and standard deviation were used to answer the research questions. The cut-off point for accepting mean score was 2.50. The decision rule was that any weighted mean score from 2.50 and above was taken as high acceptance/high extent, while weighted mean scores below 2.50 was taken as low acceptance/low extent. The t-test was

adopted to test the hypotheses at 0.05 level of significance.

## V. RESULTS

**Table 1:** ICT devices accepted by Arts/humanities and Science Lecturers for the sustenance of Research Supervision amidst Covid-19 Pandemic

The following ICT devices are used for Research Supervision	Art/Humanities			Science		
	Mean	SD	Remark	Mean	SD	Remark
1. Email	2.61	.58	Accepted	2.73	.63	Accepted
2. Microsoft Teams	1.95	.23	Not Accepted	1.83	.38	Not Accepted
3. Mobile Phones	3.08	.72	Accepted	3.15	.62	Accepted
4. Zoom	2.59	.69	Accepted	2.95	.71	Accepted
5. Facebook	2.47	.58	Not Accepted	2.76	.60	Accepted
6. Twitter	2.58	.62	Accepted	2.85	.68	Accepted
7. Whatsapp	2.71	.59	Accepted	3.40	.60	Accepted
8. IMO	1.81	.39	Not Accepted	1.77	.42	Not Accepted
9. Instagram	2.58	.56	Accepted	2.76	.59	Not Accepted
10. Viber	1.88	.32	Not Accepted	1.89	.31	Not Accepted

Table 1 shows that Art/humanities lecturers accepted six and failed to accept four of the 10 ICT devices for research supervision amid covid-19. The ones they accepted include: Email, Mobile Phones, Zoom, Twitter, Whatsapp and instagram.

On the other hand, the science lecturers accepted Email, Mobile phones, Zoom, Facebook, Twitter and Whatsapp for research supervision amid covid-19.

**Table 2:** Lecturers' Use of ICT for Research Supervision amidst Covid-19 Pandemic

I use the following ICT devices for Research Supervision	Art/Humanities			Science		
	Mean	SD	Remark	Mean	SD	Remark
1. Email	2.56	.53	High Extent	2.74	.62	High Extent
2. Microsoft Teams	1.84	.36	Low Extent	1.83	.38	Low Extent
3. Mobile Phones	3.27	.72	High Extent	2.75	.69	High Extent
4. Zoom	2.03	.75	Low Extent	1.78	.86	Low Extent
5. Facebook	2.47	.58	Low Extent	2.76	.60	High Extent
6. Twitter	2.44	.63	Low Extent	2.35	.75	Low Extent
7. Whatsapp	2.63	.54	High Extent	3.31	.63	High Extent
8. IMO	1.82	.38	Low Extent	1.84	.37	Low Extent
9. Instagram	2.20	.65	Low Extent	2.31	.70	Low Extent
10. Viber	1.85	.35	Low Extent	1.72	.45	Low Extent
Cluster Mean	2.31	.55	Low Extent	2.34	.61	Low Extent

Table 2 shows the cluster mean and standard deviation scores of Art /Humanities lecturers to be 2.31 and .55 while that of sciences was 2.34 and .61 This shows that on the average, they use ICT devices for Research Supervision amidst Covid-19 Pandemic to a low extent. The item by item analysis shows that Art/humanities lecturers use the following ICT devices for research supervision amid covid-19 to a high extent. These are: Email,

Mobile Phones and Whatsapp. The remaining items which include Microsoft Teams, Zoom, Facebook, Twitter, IMO, Instagram and Viber are used to a low extent. On the other hand, the mean ratings of science lecturers revealed that they use Email, Mobile Phones, Facebook, and Whatsapp to a high extent while Microsoft Teams, Zoom, Twitter, IMO, Instagram and Viber are used to a low extent.

**Table 3:** Test of Significance between Arts/Humanities and Science Lecturers' Acceptance of ICT Devices for the Sustenance of Research Supervision amidst Covid-19 Pandemic

Source of variation	N	Mean	SD	df	t-cal	P-value	Decision
Art/Humanities	276	2.42	.22	448	8.77	.000	Sig
Science	174	2.60	.20				

The results in table 3 shows that the mean score for Art/Humanities lecturers ( $M=2.42$ ,  $SD=.22$ ) was significantly less than that of science lecturers

( $M=2.60$ ,  $SD=.20$ );  $t(448) = 8.77$ ,  $p=.000$ . The null hypothesis of no significant difference between the two groups was therefore rejected.

**Table 4:** Test of Significance between Arts/Humanities and Science Lecturers' Use of ICT Devices for the Sustenance of Research Supervision amidst Covid-19 Pandemic

Source of variation	N	Mean	SD	df	t-cal	P-value	Decision
Art/Humanities	276	2.31	.19	448	1.41	.158	Not-Sig
Science	174	2.33	.20				

The results in table 4 shows that the mean score for Art/Humanities lecturers ( $M=2.31$ ,  $SD=.19$ ) was not significantly less than that of science lecturers ( $M=2.33$ ,  $SD=.20$ );  $t(448) = 1.41$ ,  $p=.158$ . The null hypothesis of no significant difference between the two groups was therefore not rejected.

## VI. DISCUSSION

### 6.1 Lecturers' Acceptance of ICT for Research Supervision amidst Covid-19 Pandemic

The findings of this study revealed the acceptance of the ICT devices for' research supervision amidst Covid-19 pandemic by both lecturers of arts/humanities and science departments. Lecturers' acceptance of ICT devices for the sustenance of research supervision is

understandable to the extent that they are fast becoming digital natives in line with the global trend. More so, it portends the fact that the university system is gradually titling towards the digitalization of research supervisory process. Evidently, the devastating effect of Covid-19 makes physical contact of lecturers and their supervisees difficult. In the light of the foregoing, lecturers are compelled by the prevailing situation to accept the use of ICT devices in compliance with the World Health Organization twin protocols of social distancing and isolation. The finding of the study is in tandem with the postulation of Oye, Aiahad and Abraham (2010) that there was wide acceptance of ICT innovation among lecturers.

The findings of the study further revealed that a significant difference existed between arts/humanities and science lecturers' acceptance of ICT for research supervision in favour of science lecturers. This finding agrees with the earlier expectation that science lecturers would have more inclinations towards e-research supervision due to the inseparable nature of ICT and science (Wood, 2021). Thus Science lecturers are more favourably disposed to technology. It disproved the expectation that arts/humanities lecturers would accept the use of ICT more, on the ground that they will find it easier due to the theoretical nature of most of their courses.

### *6.2 Lecturers' Use of ICT for Research Supervision amidst Covid-19 Pandemic*

The revelation of the findings of the study is that ICT devices to a low extent are used by both lecturers of arts/humanities and science for research supervision amidst Covid-19 pandemic. This could be traceable to the fact that some of the lecturers across disciplines are not technology savvy. Poor lecturers' use of ICT devices for research supervision could further be linked to the high cost of bandwidth, inadequate infrastructural facilities and unsteady power supply. In addition, it could be that lecturers do not possess the requisite ICT self-efficacy to use ICT devices for research supervision amidst Covid-19 pandemic. Going further, the negative attitude of lecturers towards the use of ICT could be at the core of the

poor use of ICT devices for research supervision. This is to the extent that lecturers have become so accustomed to the traditional face to face model of research supervision that they appear not to be open to ICT innovation. More so, they tend to consider the use of ICT devices for research supervision as defective as it reduces physical contact with supervisees for effective supervision. The finding of the current study is consistent with the findings of Agu and Odimegwu (2014) that ICT-based model (interactive and non-interactive) were almost never used for research supervision in universities. Ivwighreghweta and Oyeniran (2013) had earlier established that lecturers' usage of e-resources was high. Yunana (2011) also stated that the following electronic services – E-mails, online references, electronic alerts were used by lecturers in the selected tertiary institutions. These usage were however in other areas of teaching and learning and not research supervision.

The findings of the study further revealed that no significant difference existed between arts/humanities and science lecturers' use of ICT for research supervision. This is rather surprising given that science lecturers showed a higher level of acceptance and naturally have more inclinations to technology based on their subject areas. The situation may not be unconnected to the problems associated with the use of technology in developing countries such as cost of purchasing bandwidths, poor electricity supply, poor facilities, lack of skills, general apathy etc. These hinder the adoption of ICT in research supervision and calls for further research towards generating a lasting solution.

## VII. CONCLUSION AND RECOMMENDATIONS

Based on the foregoing, it can be concluded that lecturers accepted the use of ICT devices for research supervision purposes. The science lecturers were more favourably disposed to the use of ICT devices for research supervision. The extent of usage of the devices by both science and arts/humanities lecturers were however low.

It is thus recommended that the Government should make adequate provision of ICT devices so that lecturers can use them for research supervision. University authorities should organize seminars and workshop for lecturers on the need and ways of utilizing ICT devices for effective supervision, The lecturers should exude ICT self-efficacy for effective research supervision. More so, government in collaboration with the non-governmental organizations should continually ensure adequate power supply to promote the use of ICT devices for research supervision amidst the pandemic.

## REFERENCES

1. Agu, N. & Odimegwu, C. (2014). Doctoral supervision: Identification evaluation models. *Evaluation Research International*, 1 (1), 1-19.
2. Albar, A. M. (2012). An Electronic Supervision System Architecture in Education. *European Journal of Business and Management*, 4(8), 140-148.
3. Asif, M. & Singh, K.K. (2020). Trends, opportunities and scope of libraries during Covid-19 pandemic. *IP Indian Journal of Library Science and Technology*, 5 (1), 24-27.
4. ASUU-UI Publicity Committee (2020). *Academic Staff Union of the Universities (ASUU): The directive by the Minister of education that tertiary institutions should resume the session online*.
5. Ayers, N., Kiley, M., Jones, N., McDermott, M.L. & Hawkins, M. (2016). Using learning plans to support doctoral candidates. *Innovations in Education and Teaching. International Journal of Pharmacy Practice*, 24 (5), 319-325.
6. Aziz, M.S.A. (2014). E-supervision using blog: The graduate students' reaction. *Procedia Social and Behavioural Sciences*, 118 (1), 322-329.
7. Dadhe, P.P. & Dubey, M.N. (2020). Library services provided during COVID-19 pandemic: Content analysis of websites of premier technological institutions of India. *Library Philosophy and Practice (e-journal)*, 4445.
8. Donnelly,R;. Patrinos,H.A; Gresham,J (2021) The Impact of COVID-19 on Education– Recommendations and Opportunities for Ukraine.<https://www.worldbank.org/en/news/opinion/2021/04/02/the-impact-of-covid-19-on-education-recommendations-and-opportunities-for-ukraine>
9. Eze ,U. N; Sefotho , M .M; Onyishi ,C.N; Eseadi, C.( 2021) Impact of COVID-19 pandemic on Education in Nigeria: Implications for Policy and Practice of e-learning Implications for Policy and Practice of e-learning. *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/5651/>
10. Fasasi, Y. A., Awodiji, O. A. and Adewale, S. (2020). E-supervision of students' research writing in Nigerian open and distance educational institutions: Challenges and prospects. *International Journal of Distance Education and E-Learning*, 2 (1), 1-8.
11. Hayat, A.A., Keshavarzi, M.H., Zare, S.,Bazrafcan, L., Rezaee, R.,F.A.,Amini, M.,& Kojuri,J. (2021). Challenges and opportunities from the COVID-19 pandemic in medical education: a qualitative study. *BMC Med Educ* 21, 247 <https://doi.org/10.1186/s12909-021-02682-z>
12. Ivwighrehweta, O., Oyeniran, K. G (2013). Usage and awareness of e-resources by lecturers in Federal University, Otuoke and the Western Delta University, Oghara. *Journal of Library & Information Science*, 3 (4), 112-132.
13. McIntosh, K., Hirsh, M.S. & Bloom, A. (2020). Coronavirus disease 2019 (COVID-19). In M.S. Hirsh & A. Bloom, (Eds.), *Up-to-date*.
14. Mettiainen, S. (2015). Electronic assessment and feedback tool in Supervision of nursing students during clinical training. *The Electronic Journal of e-Learning*, 13(1), 42-56. Retrieved November 20, 2016, from [www.ejel.org](http://www.ejel.org).
15. Nworgu, B. G. (2015). *Educational research: Basic issues and methodology*. Ibadan, Nigeria: Wisdom Publishers Ltd.
16. Oye, N. D., Aiahad, N., Ab.rahim, N. (2010). Awareness, adoption and acceptance of ICT innovation in higher education institutions. *International Journal of Engineering Research and Applications*, 1 (4), 1393-1409.

17. Sa, M.J. & Serpa, S. (2020). The COVID-19 pandemic as an opportunity to foster the sustainable development of teaching in higher education. *Sustainability*, 12 (1), 2-16.
18. Yunana, T.G. (2011). *An assessment of availability, awareness and use of electronic resources and services in the libraries of the Kaduna State tertiary institutions*. Unpublished Masters Thesis, Department of Library and Information Science, Faculty of Education, Ahmadu Bello University Zaria.
19. Zaheer, M.& Munir, S. (2020). Research supervision in distance learning: Issues and challenges. *Asian Association of Open Universities Journal*, 15(1). <https://www.emerald.com/>

*This page is intentionally left blank*