

Research Article**STUDENTS' ACCEPTANCE AND USE OF ICT APPLICATIONS FOR E-LEARNING AMIDST COVID-19 PANDEMIC IN UNIVERSITIES IN DELTA STATE; IMPLICATIONS FOR COUNSELLING****1,* Iniabasi Faith Imafidon PhD², Peters Akpevweoghene Agamugoro PhD**¹Department of Educational Evaluation and Counselling Psychology, University of Benin, Edo State²Department of Counselling Services, Diocese of Warri, Delta State²Department of Counselling Services, Diocese of Warri, Delta State**Received 20th November 2022; Accepted 27th December 2022; Published online 30th January 2023**

Abstract

This study was conducted to investigate students' acceptance and use of Information and Communication Technology (ICT) applications for e-learning amidst the Covid-19 Pandemic in Admiralty University and Federal University of Petroleum Resources, Delta State. Two research questions were hypothesized and tested at a 0.05 level of significance. The survey research design was employed for the study and the population is 450 final-year undergraduate students from two out of the thirteen Universities in Delta State. The sample size is 80 students obtained using the multi-stage random sampling technique in three stages. The research instruments "Students' Acceptance of ICT Applications for E-Learning Scale" (SAIAES) and "Students' Use of ICT Applications for E-Learning Scale" (SUIAES) were adapted and revalidated by two experts in test and measurement. The Cronbach Alpha technique was used to ascertain the consistency of the test items, and the reliability coefficients of 0.72 and 0.83 were obtained. The data collected were analyzed using mean, standard deviation, and ANOVA. The findings showed that though students remarkably accepted the use of ICT applications for e-learning, the ICT applications were underused amidst the Covid-19 Pandemic for e-learning. Also, the findings revealed a significant difference between the schools mean scores of students' acceptance of ICT applications, and there was no significant difference in the utilization of the ICT applications. Based on the findings, the study recommended that the school authorities should organize workshops and seminars for students on the need and strategies for utilizing ICT applications for effective e-learning amidst the Covid-19 Pandemic.

Keywords: Acceptance, e-learning, e-research, ICT applications, Covid-19 Pandemic.

INTRODUCTION

Education is learning to live as a valuable, reasonable, and acceptable community member. The process by which a society consciously transmits its accumulated knowledge; skills and imparts character development, behaviour modification, and value orientation, especially among the nation's youths (Ohaka & Akpomi, 2018). To achieve this goal, the school was established as an agent of society to mould children's habits, interests and attitudes, and transmit societal norms, culture, values, and traditions from one generation to another (Aljawarneh, 2020). The school, as an institution, is an organized place of counselling, learning and teaching, inculcating discipline and shaping a student's learning behaviour. The outbreak of the Covid-19 virus in 2019 portrays a comprehensive global health and educational crisis with devastating effects. It posed a severe challenge to the smooth running of the educational system of over 180 countries, thereby leading to a discontinuity in their operation (McIntosh *et al.*, 2020). The educational system in most schools in Nigeria had a traditional form of educational arrangement with lecturers meeting with the students face-to-face during lessons in an exceptionally convenient classroom, hall, or office. Effective and standardized school structures like school blocks, classrooms, chairs, desks, and learning boards, among others, were available and effective learning was emphasized. The virus in Nigeria was declared a "global pandemic" on the eleventh day of March 2020 by World Health Organization, and its rapid spread disrupted this classical system of learning of over 1.6 million students;

hence, it had to be suspended for some time (March to August 2020) in most universities (Zaheer & Munir, 2020). The global spread of this new disease grew very fast from March to September 2020, with an increased number of infected patients that posed public health threat. People were affected in various unexpected ways, both personally and professionally. The quick response plan to the Pandemic included an early diagnosis of coronavirus, patients' isolation, monitoring of contacts (suspected and confirmed cases), public health quarantine, and total lockdown in strict adherence to the World Health Organization's protocol (Ezeugo *et al.*, 2020). This measure brought about loss of academic sessions, difficulties with homeschooling, poor/lack of technology for learning, poor skills and knowledge on the part of the students, teachers, and parents, and unequal/poor access to education opportunities, among others (Eze *et al.*, 2021). For Nigerian schools' educational activities to avoid total collapse, this unprecedented situation necessitated and compelled schools to opt for an alternative online teaching-learning, assessment, counselling, and research supervision in the present circumstances of the coronavirus pandemic and ravaging insecurity in Nigeria especially. Although information and communication technology had been in existence before now as learning was carried out through Mail, Google classroom, Imo, WhatsApp, Telegram, and zoom, among others, the advent of Covid-19 brought out its relevance and usage, and more schools are beginning to embrace its use in their teaching and learning system. The availability of ICT applications, the previous use of ICT, as well as the attitude of students towards digital forms of delivery plays a significant role in its success. E-learning refers to learning facilitated and supported through the utilization of information and communication technologies. Thus, e-learning includes using ICT tools (e.g., computers,

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internet) and the content created with technology (e.g., videos, animations) to support teaching and learning activities. It uses diverse ICT and electronic devices to generate educational materials, educate students, and administer organizational courses (Arinze *et al.*, 2020). E-learning is a formal learning system helped by electronic devices where computer technology and the internet are the main components for effectiveness and flexibility when considering location, time, and health issues (Aboagye *et al.*, 2020). ELAM (e-learning acceptance model) identifies the critical factors in acceptance of e-learning as measured by behavioural intention to use the device and actual usage as; i) performance expectancy, ii) effort yearning, iii) social expectancy, and iv) facilitating conditions. Information and Communication Technologies (ICTs) offers unique training and educational opportunities by improving teaching and learning, creativity and innovations for people and organization. Students can study online and graduate from universities worldwide where they do not reside (Zaheer & Munir, 2020). E-learning saves time, can easily be managed, and teachers and teaching materials can easily be accessed. It dramatically reduces stress from administrative efforts, physical attendance, preparation and lecture recording, and leaving classes. These students may become self-directed learners but learn asynchronously and simultaneously. Digital learning, computer-assisted teaching, interactive learning, internet-based learning, and web-based education are known as e-learning. Some students have realized its importance as a core element of their learning system. Hence, it enhances knowledge and skill effectiveness by granting access to essential data, increasing collaboration, strengthening learning and retaining relationships, and enhancing education quality (Arinze *et al.*, 2020).

Several studies have been carried out on e-learning, its acceptability, and its usage among students. Aboagye *et al.* (2020) carried out a study to examine students' preparedness to study online and their challenges in dealing with e-learning during the outbreak of Covid-19. It concluded that a combined approach that blends e-learning and the traditional method should be available for learners. Ezeugo *et al.* (2020) examined the acceptance and usage of ICT devices among 450 lecturers in public universities in Anambra state amidst covid-19. The finding revealed the wide acceptance of ICT devices by lecturers for research supervision. Ali *et al.* (2018) analyzed the effectiveness of e-learning for students at the university level, with 98% of them utilizing different e-learning devices. An expository analysis was applied to calculate the factors loading and take out the variables in the study. The result revealed that students agree that e-learning is easy to use, saves time, and is quite affordable. Agu and Odimegwu (2014) examined ten doctoral students of the Federal University of the South-Eastern part of Nigeria using the survey research design. The result revealed that face to face model was the most frequently and widely used; also, these students were more satisfied with the model.

Statement of the Problem

In the recent past, many issues have been raised on the use of ICT applications in the teaching and learning process worldwide, thereby compelling schools to invest in these devices and tools to enhance their input, output, and usage by learners. Despite the value of ICT applications in providing effective and efficient data, available literature shows that studies into the acceptance, use, and general support for ICT in

learning still need to be put up to the level of expectation. This challenge is more peculiar to developing countries, and Nigeria is no exception. The researchers observed a key concern of bridging the gap between students' traditional learning patterns, the new development of e-learning at school, and the knowledge and skills students need to join the information economy. This study, therefore, seeks to identify issues related to the acceptance and usage of ICT applications among students in universities in Delta State.

Objectives of the Study

The study examined the following:

- Students' acceptability of ICT applications for e-learning amidst the Covid-19 Pandemic in universities in Delta State
- Students' usage of ICT applications for e-learning amidst the Covid-19 Pandemic in universities in Delta State

Research Questions

The following research questions guided the study:

- What are the ICT applications accepted by students (ADUN and FUPRE) for e-learning amidst the Covid-19 Pandemic in universities in Delta State?
- To what extent do students (ADUN and FUPRE) use ICT applications for e-learning amidst the Covid-19 Pandemic in universities in Delta State?

Hypotheses:

The following hypotheses were formulated and tested at a 0.05 level of significance.

- Ho₁:** There is no significant difference between students' acceptance (ADUN and FUPRE) of ICT applications for e-learning amidst the Covid-19 Pandemic.
- Ho₂:** There is no significant difference between students' acceptance (ADUN and FUPRE) of ICT applications for e-learning amidst the Covid-19 Pandemic.

METHODOLOGY

The research design is the survey design. The study population is 450 final-year undergraduate students from two universities (Admiralty University of Nigeria, Ibusa, ADUN and Federal University of Petroleum Resources, Effurun, FUPRE) out of the thirteen universities in Delta State as of the 2020/2021 academic session. A sample size of eighty students, comprising 40 males and 40 females, was selected using the multi-stage sampling procedure in three stages. The first stage involved selecting two out of thirteen universities in Delta State using a purposive sampling technique (ICT - equipped schools). The second stage involved selecting four departments in each school through a simple balloting technique, and the last stage selected ten students from each department through a random sampling technique. Two questionnaires titled "Students' Acceptance of ICT Applications for E-Learning Scale amidst Covid-19" (SAIAES) and "Students' Use of ICT Applications for E-Learning Scale amidst Covid-19" (SUIAES), were adapted from Ezeugo *et al.* (2021) and used for the study. Two experts in test and measurement revalidated the instruments, and the reliability coefficients of 0.72 and 0.83 were obtained respectively, using the Cronbach Alpha technique. The two

ten-item questionnaires were structured on a four-point Likert type scale of Very High Acceptance (VHA), High Acceptance (HA), Low Acceptance (LA), Very Low Acceptance (VLA) for SAIAES and Very High Extent (VHE), High Extent (HE), Low Extent (LE), Very Low Extent (VLE) for SUAIES. The instruments had two sections, Section A contained information on the personal data of the respondents, while Section B contained items to elicit information on the acceptance and use of ICT applications, respectively. Eighty copies of the questionnaires were administered to the respondents with the help of the research assistants using on-the-spot delivery to prevent loss. Hence, they were retrieved and used for the study. Mean and standard deviation were used to answer the research questions, and the cut-off point for accepting the mean score was 2.50. The decision rule was that any weighted mean score of 2.50 and above was taken as a great acceptance/high extent, while weighted mean scores of below 2.50 were taken as a low acceptance/low extent. The ANOVA was used to test the hypotheses at a 0.05 level of significance.

RESULTS

Research Question One: What are the ICT applications accepted by (ADUN and FUPRE) students for e-learning amidst the Covid-19 Pandemic?

Table 1 shows the descriptive analysis of ICT applications acceptance by ADUN and FUPRE. The ICT applications that met the benchmark of 2.50 and are shown in the table above are Email, Telegram, WhatsApp, and Zoom. It revealed that ADUN students accepted 4 (Email, Telegram, WhatsApp, and Zoom) out of 10 ICT applications, while FUPRE students accepted 3 (Email, Telegram, and Zoom) out of the 10 ICT applications for e-learning amidst Covid-19. The test of significant differences in usage among the two institutions is revealed in hypothesis one.

Research Question Two: To what extent do (ADUN and FUPRE) students use ICT applications for e-learning amidst the Covid-19 Pandemic?

Data presented in Table 2 above revealed the descriptive analysis of the extent of usage of ICT applications by ADUN and FUPRE. The ICT applications that met the benchmark of 2.50 and are shown in the table above are Email, Telegram, Phone calls, WhatsApp, and Zoom. It revealed that five (Email, Telegram, Phone Calls, WhatsApp, and Zoom) out of ten ICT applications were highly used by students of ADUN, while 4 ICT applications (Email, Telegram, Phone Calls, WhatsApp, and Zoom) out of the 10 ICT applications were highly used by FUPRE students for e-learning amidst Covid-19. All others, including Facebook, Twitter, IMO, Instagram, and Viber, were seldom used. The test of significant difference in usage among the two institutions is revealed in hypothesis two.

Hypothesis one: There is no significant difference between Admiralty University and Petroleum Training Institute students' acceptance of ICT applications for e-learning amidst the Covid-19 Pandemic.

The result from table 3 shows the one-way analysis of variance of the significant difference between Admiralty University and Federal University of Petroleum Resources students' acceptance of ICT applications for E-learning amidst the Covid-19 Pandemic. With a $df = 79$, $F = 2.820$, and $Sig. = 0.97$ at $p < 0.05$ level of significance, there is a significant difference between the two institutions of higher learning. This is because the significant value of 0.097 is higher than the $p < 0.05$.

This implies that the null hypothesis which states that there is no significant difference between (Admiralty and Federal Petroleum Universities) students' acceptance of ICT applications for e-learning amidst the Covid-19 Pandemic is now rejected. This means a significant difference exists between Admiralty University and Federal University of Petroleum Resources students' acceptance of ICT applications for e-learning amidst the Covid-19 Pandemic. However, the two institutions' mean and standard deviation scores (ADUN = 22.60, 2.67 and FUPRE = 21.45, 3.41) show that ADUN accepted the use of ICT application tools more than FUPRE.

Table 1. Descriptive Analysis of ICT Applications Accepted by Admiralty University and Federal University of Petroleum Resources Students for E-Learning amidst Covid-19 Pandemic.

ICT Tools	Institution	N	Mean	Std. Deviation	Std. Error Mean	Remark
Email	ADUN	40	3.1000	1.15025	.18187	Accepted
	FUPRE	40	3.0250	1.04973	.16598	
Telegram	ADUN	40	3.1750	1.15220	.18218	Accepted
	FUPRE	40	3.2000	0.88289	.13960	
Phone Calls	ADUN	40	2.4750	1.17642	.18601	Rejected
	FUPRE	40	1.7250	1.01242	.16008	
Zoom	ADUN	40	3.2250	0.99968	.15806	Accepted
	FUPRE	40	3.1250	1.09046	.17242	
Facebook	ADUN	40	2.0750	1.14102	.18041	Rejected
	FUPRE	40	1.9000	1.08131	.17097	
Twitter	ADUN	40	2.4000	1.19400	.18879	Rejected
	FUPRE	40	2.4250	1.41217	.22328	
WhatsApp	ADUN	40	2.6250	1.16987	.18497	Accepted
	FUPRE	40	2.2750	1.32021	.20874	
IMO	ADUN	40	1.1500	0.53349	.08435	Rejected
	FUPRE	40	1.2000	0.56387	.08916	
Instagram	ADUN	40	1.3000	0.60764	.09608	Rejected
	FUPRE	40	1.5500	0.84580	.13373	
Viber	ADUN	40	1.0750	0.26675	.04218	Rejected
	FUPRE	40	1.0250	0.15811	.02500	

Table 2. Descriptive Analysis of Students of Admiralty University and Federal University of Petroleum Resources Use of ICT Applications for E-Learning amidst Covid-19 Pandemic

ICT Tools	Institution	N	Mean	Std. Deviation	Std. Error Mean	Remark
Email	ADUN	38	2.9737	0.99964	0.16216	High
	FUPRE	42	2.9762	1.09295	0.16865	
Telegram	ADUN	38	3.2105	1.01763	0.16508	High
	FUPRE	42	3.3333	0.90167	0.13913	
Phone Calls	ADUN	38	2.6579	1.14553	0.18583	High
	FUPRE	42	2.1667	1.05730	0.16315	
Zoom	ADUN	38	3.1316	1.11915	0.18155	High
	FUPRE	42	2.9286	1.23748	0.19095	
Facebook	ADUN	38	1.6579	0.96636	0.15676	Low
	FUPRE	42	1.5000	0.89033	0.13738	
Twitter	ADUN	38	2.1316	1.14304	0.18543	Low
	FUPRE	42	1.5000	0.99388	0.15336	
WhatsApp	ADUN	38	3.3158	0.70155	0.11381	High
	FUPRE	42	3.3333	0.97946	0.15113	
IMO	ADUN	38	1.1579	0.54655	0.08866	Low
	FUPRE	42	1.1905	0.55163	0.08512	
Instagram	ADUN	38	1.3158	0.70155	0.11381	Low
	FUPRE	42	1.5238	0.77264	0.11922	
Viber	ADUN	38	1.0789	0.27328	0.04433	Low
	FUPRE	42	1.0238	0.15430	0.02381	

Table 3. One-Way Analysis of Variance of Significant Difference between Admiralty University and Federal University of Petroleum Resources Students' Acceptance of ICT Applications for E-Learning amidst Covid-19 Pandemic

ANOVA					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	26.450	1	26.450		
Within Groups	731.500	78	9.378	2.820	.097
Total	757.950	79			

Means and Standard Deviation (ADUN=22.60, 2.67 and FUPRE=21.45, 3.41)

Hypothesis Two: There is no significant difference between (Admiralty University and Petroleum Training Institute) students' acceptance of ICT applications for e-learning amidst the Covid-19 Pandemic.

However, the two institutions' mean and standard deviation scores (ADUN=22.45, 2.67 and FUPRE=21.60, 3.24) show that ADUN used more ICT application tools than FUPRE.

Table 4. One-Way Analysis of Variance of Significant Difference between Admiralty University and Federal University of Petroleum Resources Students' Use of ICT Applications for E-Learning amidst Covid-19 Pandemic

ANOVA					
	Sum of Squares	df	Mean Square	f	Sig.
Between Groups	14.450	1	14.450		
Within Groups	687.500	78	8.814	1.639	.204
Total	701.950	79			

Means and Standard Deviation (ADUN=22.45, 2.67 and FUPRE=21.60, 3.24)

The data presented in table 4 above is the one-way analysis of variance of the significant difference between Admiralty University and Federal University of Petroleum Resources Students' use of ICT Applications for E-Learning amidst the Covid-19 Pandemic. The data are $df = 79$, $f = 1.639$, and $Sig. = 0.204$ at $p < 0.05$ level of significance. From the above values, the sig. value of 0.204 is higher than the $p < 0.05$. This means there is a significant difference between the two higher learning institutions using ICT applications for E-learning activities. This implies that the null hypothesis, which states that there is no significant difference between Admiralty University and Federal University of Petroleum Resources students in using ICT applications for e-learning amidst the Covid-19 Pandemic, is now rejected. This means a significant difference exists between Admiralty University and Federal University of Petroleum Resources students' use of ICT applications for e-learning amidst the Covid-19 Pandemic.

DISCUSSION

The study's findings showed the acceptance of ICT applications for e-learning amidst the Covid-19 Pandemic by both ADUN and FUPRE students. The students' acceptance of the ICT applications is quite applauding, indicating that they are globally trending digitally. In addition, it portrays the fact that schools are gradually becoming digital in their teaching-learning process. These students were compelled by the devastating effect of no physical contact with students and lecturers during the Covid-19 Pandemic to accept the use of ICT applications for learning in compliance with the World Health Organization triple protocol (lockdown, social distance, and isolation). The study agrees with the postulation of Ezeugo et al. (2021) that there was broad acceptance of ICT devices by lecturers for research supervision. The study also showed a significant difference between ADUN and FUPRE students' acceptance of ICT applications in favour of ADUN students. This is in contrast with earlier speculations that science students will have more affiliations to e-learning as ICT and science are related (Wood, 2021). The reason is that all learning institutions were affected by the COVID-19 Pandemic and had to look for the safest and possible ways of making their students learn effectively without missing out. The findings for research question two and hypothesis two revealed a significant difference between ADUN and FUPRE students' use of ICT applications for e-learning during the Covid-19 Pandemic. This may be due to the cost of purchasing bandwidths, unsteady power supply, poor facilities, lack of

skills, and general attitude. The study's findings for hypothesis two also revealed that ICT applications, to a large extent, are used by both ADUN and FUPRE for e-learning amidst the Covid-19 Pandemic. This may imply that students across disciplines are computer literate. Students' poor use of ICT applications for e-learning could be further traced to inadequate infrastructural facilities, high cost of devices, students' negative attitude, unsteady power supply, and lecturers' incompetence, among others. They may be used to the traditional face-to-face method and not be open to innovations, as they believe it is defective without physical contact with lecturers. This finding corroborates with Agu and Odimegwu (2014), who revealed that ICT was not used for teaching and learning in universities. Ali et al. (2018) disagree as it earlier revealed that students agree that e-learning is easy to use, saves time, and is quite affordable as they used Emails, WhatsApp, Online references, and Google in selected schools.

Conclusion

Based on the findings, students accepted using ICT applications for e-learning purposes in both institutions. Though FUPRE students were more disposed to using ICTs, the extent of the usage by both ADUN and FUPRE students was still relatively low. The global impact of ICT on education in the wake of Covid-19 has made it possible for students to have unrestricted access to information anytime and anywhere in the world, so students should cash in.

Recommendations

- The school authorities should organize conferences, workshops, and seminars for students and lecturers on the need and ways of employing ICT applications for e-learning.
- Government and private school owners should adequately provide the needed ICT devices and ensure ready internet access for an effective e-learning process to enable students and lecturers maximally benefit from the ongoing educational advancement.
- Government and power authorities should ensure continuous power supply to promote the effective use of ICT applications for e-learning.
- ICT competency should be included in the school curriculum at all levels.

Counseling Implications

- Counsellors should improve their ICT skills through seminars, workshops, and in-service training.
- Counsellors should encourage students to explore and use available ICT devices for educational development rather than for fraudulent practices.
- Counsellors should also introduce e-counselling into the schools' counselling services.
- Counsellors should sensitize fresh students during orientation programs on the importance of using ICT as an e-learning platform.

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