



## Assessing postgraduate students' utilization of information and communication technology in public universities in South-East Zone of Nigeria

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### Abstract

There is need for postgraduate students of state and federal universities to often use ICT to support coursework, assignments, learning, and other academic purposes in Nigeria. This study assessed postgraduate students' utilization of Information and Communication Technology (ICT) in public universities in South-East zone of Nigeria. Three research questions were answered and three hypotheses were tested. The study adopted a descriptive survey research design. The population consisted of 17,651 postgraduate students across the ten public universities (five state universities and five federal universities) for 2023/2024 approved by National University Commission (NUC) to run postgraduate study programmes in South East except Federal University of Technology, Owerri (FUTO) that does not offer education courses. A sample of 2,896 postgraduate students from both state and federal universities in southeastern zone of the country was selected using Taro Yamnen sample estimation formula. Extent of postgraduate students' utilization of information and communication technology for academic purposes in public universities questionnaires (EPGSUICTFAPQ) was used for data collection. These instruments were validated by three experts and tested for reliability. Cronbach alpha was used to establish the reliability of the EPGSUICTFAPQ which yielded reliability indices of were 0.890, 0.940 and 0.849 for the five clusters respectively. Mean and standard deviation was used to answer the research questions while t-test of independence was used to test the null hypotheses at 0.05 level of significance using Statistical Package for Social Sciences (SPSS) version 26. The findings of the study revealed among others that postgraduate students from state and public universities utilize various forms of computer for academic purposes in public universities in South East. Also, there was a significant relationship between salary and teachers' job performance. The study recommended among others that public (state and federal) universities in Nigeria should ensure that they provide adequate and functional ICT devices such as CCTV, computer systems for PG students for academic purposes.

**Keywords:** Information and communication technology (ICT), public universities, academic purposes, south-east nigeria

### Introduction

Education is a powerful element in the development of every nation. It is the foundation upon which a nation builds its economic growth, social prosperity and political stability. Oyediji (2015) <sup>[18]</sup>, defined education as the process of acquiring skills, relevant knowledge, habits and inculcating cultural values for surviving in the changing world. While Javis in Alemu (2018) <sup>[3]</sup> sees education as an organized and sustained instruction designed to communicate a combination of knowledge, skills, and understanding valuable for all the activities of life. Education thus consists of all that are involved in shaping the development of an individual. The main purpose of education is to educate individuals in the values and morals of the society and prepare them for usefulness to the society. Knowledge acquired through education helps to shape an individual's attitudes, actions and achievements. It also helps individuals to understand and appreciate the nature and dynamics of the environment which they live in and thereby enabled them to interact effectively and as well influence the prevailing conditions around them. Education also serves as a weapon of change as it launches nations into global limelight of development. A developed educational system, no matter the form it takes, is a pre-condition for the developmental uplifting of a nation (Omoraka, Bello and Mohammed, 2014) <sup>[16]</sup>. For a developed educational system to thrive in this dispensation, information and communication technology has to be embedded into it.

Information and communication technology (ICT) refers to the use of wide range of technologies such as computers, mobile telephones, satellite, world wide web, among others in collection, storage, retrieval and transfer of information for human use (Elujekwute, Habib and Ogundipe, 2021) <sup>[9]</sup>. It involves the development, maintenance and use of computer software, systems and networks. ICTs tend to expand access to education and are used in creating enabling environment that facilitates learning at anytime and anywhere. It is an essential instrument that engineers the development of any nation and creates revolutionary impact on how people see and live in the world of today. Information and communication technologies (ICTs) can also be seen as the design and implementation of computer networks for data processing and communication. It has played vital roles in transforming the educational system. ICT has served as transformational tools that have promoted the shift in the Nigeria educational system from teacher centered to a learner centered. It has assisted in improving the quality of education and training by increasing learners' motivation and engagement, as well as facilitating the acquisition of basic skills. According to the Federal Republic of Nigeria (FRN) (2019) <sup>[10]</sup>, the objectives of information and communication technologies (ICT) in Education are to facilitate the teaching and learning processes, to promote problem-solving, critical thinking and innovative skills, to promote life-long learning and advance knowledge, to enhance the various teaching/learning

strategies required to meet the needs of the population, to foster research and development, to support effective and efficient education administration. Furthermore is to enhance universal access to information, to widen access to education and the range of instructional options and opportunities for any-where, any-time, any-pace and any-path learning, to promote commercialization of ICTs in Education and to develop and support technical infrastructure that maximizes digital creativity, sharing and innovation.

ICT use in universities in this study compasses the use of various forms of computers, electronic multimedia, and Whatsapp messenger by postgraduate students. Computer use is one of the growing trends in the educational sector as it serves various purposes ranging from administrative, examinations, project work among others. With the use of computer, administration in the university are made easier, complex task are handle efficiently with ease. On the other hand, it is used in conduct of examination. Examination as part of the learning process is the means through which learners are evaluated to ascertain the level to which the learning objectives have been acquired. Before now in Nigeria there has been a growing concern about the conduct, authenticity and reliability of examinations especially during the process of selecting qualified prospective candidates into Nigerian universities with the use of traditional paper and pencil mode of examination (Burns, 2018) <sup>[6]</sup>. With the invention of computer and its integration into the educational system, efforts were made to shift from traditional paper and pencil mode to computer based test using computers. There are numerous benefits of the use of computer based test especially at the post graduate level of university education. With the use of computer based test, examinations are conducted in a more serene environment, communication and distraction among candidates are reduced and there is an easy and fast response to questions as well as close monitoring of candidates by invigilators. Busayo in Duru and Okoye (2020) <sup>[7]</sup> outlines the following as the benefits of the use of computer based test in the education to create digital records of student growth and development which can easily be passed along from one level to another; to enhance greater flexibility with respect to location and timing of examinations; to improved reliability as electronic marking is much more reliable than manual marking; to encourage impartial assessment as computerized marking does not 'know' the students and so neither favours nor witch-hunts any candidate; to enhance storage efficiency were tens of thousands of answer scripts can be stored on a portable hard disk of a server compared to the physical space required for paper scripts; to enhanced question styles which incorporate interactivity and multimedia; to ensure question banks and randomization of questions and response orders to reduce cheating; to facilitate immediate feedback to the examinee; to improved test security due to electronic transmission and encryption and to saves time and manpower for test administration.

Another component of ICT in this study is the use of electronic multimedia. Reisman in Oshinaike and Adekunmisi (2012) <sup>[12]</sup> defined electronic multimedia as a ray of computer-driven interactive communication system, which create, store, transmit and retrieve, textual, graphic and auditory networks of information. Different types of electronic multimedia used in education include, public address systems, projectors, videos and audiotapes among

others. Projector is a technological tool use in conjunction with a laptop or desktop computer to project the computer screen image to a screen or wall. Projectors are extremely useful and effective teaching tools that facilitate a range of learning opportunities when connected to a desktop computer in whole class teaching scenarios. The use of a projector during seminar presentations helps to facilitate easy understanding and comprehension. Public address system (PAS) on the other hand is a tool that helps in voice amplification during lectures and presentations that involves crowd. The use of electronic multimedia resources help to facilitate access to all human knowledge, anytime, and anywhere in a friendly, multi-modal, efficient and effective way. Multimedia technology also add new dimension to learning experiences. Through its use, concepts are made easier to present and comprehend because words are complimented with images and animations. Agbetuyi and Oluwatayo (2012) <sup>[1]</sup> observed that the use of electronic multimedia such as videos, television and multimedia computer software helps to provide challenging and authentic content that engages the students to be more involved during the learning process. Learners retain more when a variety of senses are engaged in impacting knowledge; and the intensity of the experience aids retention and recall by engaging social, emotional and intellectual senses (Ogunbote and Adesoye in Oshinaike and Adekunmisi, 2012) <sup>[12]</sup>.

Whatsapp Messenger application is another information and communication technology tool that is relevant in the administration and learning process in the university system. Whatsapp Messenger is a smart phone and web-based instant message application that allows users to exchange information using a variety of media including text, image, video, and audio messages (Gasaymeh, 2017) <sup>[11]</sup>. It is a relative new tool that is fast and convenient for individual to individual communication as well as group communication. Unlike other previous social media technological tools that have been implemented to support academic activities, Whatsapp has some additional unique features that help to enhance understanding of teachers and students. For instance, Whatsapp group platform offers a unique interactive enabling group environment which lecturers and students can maximize for lectures and information dissemination purposes. Through Whatapp use, problems and doubts of students can be solved without having to go to the institution or wait for them to answer the phone. For instance administrative issues such as registration schedules, Locating a teacher, justifying absences, locating certain services of the institution, scheduling of class and exams etc can be attended to through the use of Whatsapp and this brings great benefits to the educational institution.

Digitalization has creates the need for any institution that wishes to perform optimally at the postgraduate school level to key into the digital environment through information and communication technology. This made the universities in the South East Nigeria to integrate the use of information and communication technology. In the South East, there are five federal universities and five state universities in the South East. The federal universities are: University of Nigeria Nssuka, Federal Universities of technology Owerri, Nnamdi Azikwe University Awka, Micheal Opara University of Agriculture Umudike and Alex Ekwueme Federal University Ndufu Alike. While the state own universities are: Imo state University Owerri, Enugu State

University Enugu, Abia State University Uturu, Dim Odimegwu Ojukwu University Igbaram and Ebonyi State University Abakiliki. The benefits of the use of information and communication technologies in these institutions more especially at the postgraduate school level cannot be over emphasized. Their use will greatly enhance teaching, learning, research and other scholarly activities through improved communication and access to information. It will help to ensure socio-economic development, global competitiveness and self-reliance of postgraduates students. Thus graduates at all levels of postgraduate education ought to possess the required ICTs competency skill in order to make effective use of them in their academic pursuit at this level. The academic and non academic staff as well are not to be left out, they ought to equip themselves with basic and advance information communication technological skills to enable them enhance effective administration and teaching with the use of these information and communication technologies tool at the postgraduate level of education.

The 21st century academic environment is largely influenced by Information and Communication Technology (ICT). ICT tools such as computers, internet resources, online databases, e-libraries, and learning management systems have become integral in higher education. For postgraduate students, ICT is particularly critical for research, data analysis, collaboration, and accessing scholarly resources. In Nigerian public universities, the integration of ICT into academic programs is intended to enhance research output and global competitiveness. However, the extent to which postgraduate students utilize ICT facilities remains a subject of concern. In the South-East zone, where infrastructural challenges and varying levels of digital literacy exist, it is necessary to assess how postgraduate students are actually making use of ICT in their academic pursuits.

### **Statement of the Problem**

The role of Information and Communication Technology (ICT) in higher education cannot be overemphasized, especially in postgraduate studies where advanced research, knowledge sharing, and global collaboration are required. ICT tools such as e-libraries, statistical software, online databases, and learning management systems have the potential to enhance the quality of research and academic productivity. In Nigeria, public universities have adopted various ICT initiatives to support teaching, learning, and research. However, there are concerns about whether postgraduate students are actually utilizing these facilities effectively. Despite the huge investments by government and university authorities in ICT infrastructure, anecdotal evidence suggests that many postgraduate students in public universities still rely heavily on traditional methods of learning and research. Factors such as inadequate ICT skills, poor internet connectivity, erratic power supply, and limited access to ICT resources may hinder effective utilization. Moreover, there appears to be a gap between the availability of ICT facilities and their actual usage by postgraduate students in the South-East zone of Nigeria.

If postgraduate students, who are expected to conduct advanced research and contribute to national development, underutilize ICT, their academic productivity, global competitiveness, and innovative capacity will be negatively affected. This situation raises critical questions: To what extent do postgraduate students in public universities in

South-East Nigeria utilize ICT? For what purposes are ICT resources applied? What challenges limit their use? Without clear answers to these questions, efforts to strengthen ICT adoption in postgraduate education may not achieve the desired results. Therefore, this study seeks to assess postgraduate students' utilization of ICT in public universities in South-East Nigeria with a view to identifying the extent of usage, the areas of application, and the challenges encountered.

### **Research Questions**

The following research questions guided the study:

1. To what extent do postgraduate students' utilize various forms of computers for academic purposes in public universities in South East?
2. To what extent do postgraduate students' explore the use of electronic multimedia in public universities in South East?
3. To what extent do postgraduate students' implore the use of Whatsapp Messenger in dissemination of information in public universities in South East?

### **Hypotheses**

The following null hypotheses were tested at 0.05 level of significance:

1. There is no significant difference in the mean ratings of postgraduate students' of state and federal universities on the use of various forms of computers for academic purposes in public universities in South East.
2. There is no significant difference in the mean ratings of postgraduate students' of state and federal universities on the use of electronic multimedia in public universities in South East.
3. There is no significant difference in the mean ratings of postgraduate students' of state and federal universities on the use of Whatsapp Messenger in dissemination of information in public universities in South East.

### **Materials and Method**

The study adopted a descriptive survey research design. The population consisted of 17,651 postgraduate students across the ten public universities (five state universities and five federal universities) for 2023/2024 approved by National University Commission (NUC) to run postgraduate study programmes in South East except Federal University of Technology, Owerri (FUTO) that does not offer education courses. A sample of 2,896 postgraduate students from both state and federal universities in southeastern zone of the country was selected using Taro Yahmen sample estimation formula. Extent of postgraduate students' utilization of information and communication technology for academic purposes in public universities questionnaires (EPGSUICTFAPQ) was used for data collection. These instruments were validated by three experts and tested for reliability. Cronbach alpha was used to establish the reliability of the EPGSUICTFAPQ which yielded reliability indices of were 0.890, 0.940 and 0.849 for the five clusters respectively. Mean and standard deviation was used to answer the research questions while t-test of independence was used to test the null hypotheses at 0.05 level of significance using Statistical Package for Social Sciences (SPSS) version 26.

**Results**

**Research Question 1:** To what extent do postgraduate students’ utilize various forms of computers for academic purposes in public universities in South East?

**Table 1:** Postgraduate Students’ Utilization of Various Forms of Computers for Academic Purposes in Public Universities in South East (N = 2,896)

S/N	Use of computers for academic Purposes to what extent are :	Mean	SD	Remarks
1	desktop computers used for computer based test in your university	2.80	0.81	High extent
2	laptop computers used for computer based test in your university	3.05	0.69	High extent
3	palmtop computers used for computer based test in your university	3.10	0.71	High extent
4	notebook computers used for computer based test in your university	2.84	0.79	High extent
5	tablet computers used for computer based test in your institution	3.12	0.73	High extent
6	android systems used for computer based test in your universities	2.88	0.68	High extent
7	pocket computers used for computer based test in your institution	2.63	0.63	High extent
8	campus-servers used for computer based test in your institution	3.34	0.48	High extent
Grand Total		2.97	0.69	High Extent

As depicted in Table 1, the respondents (postgraduate students) agreed that they utilize all the eight listed various forms of computer for academic purposes in public universities in South East to a high extent as shown on items 1, 2, 3, 4, 5, 6, 7, and 8 with mean scores of 2.80, 3.05, 3.10, 2.84, 3.12, 2.88, 2.63, and 3.34 respectively, and standard deviations of 0.81, 0.69, 0.71, 0.79, 0.73, 0.68, 0.63, and 0.48 respectively, with the grand mean of 2.97 and standard deviation of 0.69. The mean ratings for the items which ranged from 2.63 to 3.34 were all above the cut off mean of

2.50. The respondents’ standard deviation fell between 0.48 and 0.81 which shows that the respondents were homogeneous in their responses on the aspects of utilization of various forms of computers for academic purposes in public universities in South East in Nigeria.

**Hypothesis 1:** There is no significant difference in the mean ratings of postgraduate students’ of state and federal universities on the use of various forms of computers for academic purposes in public universities in South East.

**Table 2:** Independent t-test Analysis of the Mean Rating of Respondents on the Significant Difference between State and Federal Universities on the Use of Various Forms of Computers for Academic Purposes in Public Universities in South East (N = 2,896)

Factor	University Type	N	Mean	SD	t	Df	P-value	Decision
Computers	State	1,579	44.27	6.44	.65	2,894	.066	Not Sig
	Federal	1,317	43.19	7.46				

Data presented in Table 2 shows the difference between state and federal universities on the use of various forms of computers for academic purposes in public universities in South East. The result of the t-test analysis from Table 2 shows that the t-value is .65 and the P-value is .066. Since the P-value is greater than .005 level of significance at df of 2 and 2,894, (t-value (2,894) = 0.65, p>0.05). It shows that there is no significance difference between the responses of

state and federal universities on the use of various forms of computers for academic purposes in public universities in South East. The null hypothesis is therefore accepted.

**Research Question 2:** To what extent do postgraduate students’ explore the use of electronic multimedia in public universities in South East?

**Table 3:** Postgraduate Students’ Utilization of Electronic Multimedia in Public Universities in South East (N = 2,896)

S/N	Multimedia to what extent are:	Mean	SD	Decision
9	Projectors used for lecture presentation in your institution.	3.39	.83	High extent
10	Public address systems (PAS) used in lecture halls.	3.07	1.03	High extent
11	E-Whiteboards used during defence presentation.	3.06	.96	High extent
12	Projectors used for projecting presentations during seminar.	3.22	.95	High extent
13	Voice equalizers used during presentation to aid voice amplification.	2.45	.72	Low extent
14	Computer power point applications used to organize presentations during defence.	3.48	.65	High extent
15	E-reader board used in board rooms during workshop	2.68	.97	High extent
16	Digital spreadsheets used in recording laboratory experiments.	3.51	.62	Very high extent
Grand Mean		3.11	0.84	High Extent

As shown in Table 3, the postgraduate students indicated that they use seven out of eight electronic multimedia tools for academic purposes in public universities in the South East region of Nigeria to a high extent. This is seen on items 9, 10, 11, 12, 14, 15, and 16 with mean scores of 3.39, 3.07, 3.06, 3.22, 3.48, 2.68, and 3.51 respectively, and standard deviations of 0.83, 1.03, 0.96, 0.95, 0.65, 0.97, and 0.62 respectively with an overall average (grand mean) of 3.11 and a standard deviation of 0.84. The mean scores for the seven items ranged from 2.68 to 3.51, all exceeding the

benchmark mean of 2.50. However, the respondents noted that voice equalizers, which are typically used during presentations to enhance voice amplification, are not commonly utilized for academic purposes in these universities, as reflected by a mean score of 2.45 item 13. The standard deviation for all responses ranged from 0.62 to 1.03, indicating a high level of agreement and consistency among the respondents regarding the use of electronic multimedia in their academic activities in public universities in southeast in Nigeria.

**Hypothesis 2:** There is no significant difference in the mean ratings of postgraduate students' of state and federal

universities on the use of electronic multimedia for academic purposes in public universities in South East.

**Table 4:** Independent t-test Analysis of the Mean Rating of Respondents on the Significant Difference between State and Federal Universities on the Use of Electronic Multimedia for Academic Purposes in Public Universities in South East (N = 2,896)

Factor	University Type	N	Mean	SD	t	df	P-value	Decision
Electronic Multimedia	State	1,579	36.12	5.31	2.32	2,894	.21	Not Sig
	Federal	1,317	28.30	6.72				

The data in Table 4 highlights the difference between state and federal universities regarding the use of electronic multimedia for academic purposes in public universities across the South East region. The t-test analysis reveals a t-value of 2.32 and a P-value of 0.21. Since the P-value is greater than the 0.05 level of significance at degrees of freedom 2 and 2,894 ( $t(2,894) = 0.21, p > 0.05$ ), it indicates that there is no statistically significant difference in the

responses of postgraduate students from state and federal universities concerning the use of electronic multimedia for academic purposes. As a result, the null hypothesis is upheld.

**Research Question 3:** To what extent do postgraduate students' explore the use of Whatsapp Messenger in public universities in South East?

**Table 5:** Postgraduate Students' Utilization of Whatsapp Messenger in Public Universities in South East (N = 2,896)

S/N	Whatsapp to what extent are:	Mean	SD	Decision
17	whatsapp group platform used as an avenue for relating vital information to postgraduate students in your institution	3.39	.72	High extent
18	Whatsapp Messenger reliable in communication, such as scheduling of lectures and meeting with colleagues.	3.20	.67	High extent
19	Whatsapp Messenger used to share lecture materials for classes between postgraduate students and their lecturers.	3.35	.82	High extent
20	Class Whatsapp group platform used effectively beyond social communications for academic discussions.	3.26	.73	High extent
21	Whatsapp Messenger used to communicate effectively about your research project with your supervisor.	3.40	.67	Low extent
22	Whatsapp used by PG student to minimize the risk of travelling for academic purpose during 'sit-at-home/ public holidays.	2.66	.71	High extent
23	Whatsapp Messenger used to save cost of travelling as PG student.	2.75	.74	High extent
24	PG student using WhatAapp group platforms for meeting serves as alternative to physical meetings.	3.21	.69	High extent
	Grand Mean	3.15	0.72	High Extent

As presented in Table 5, the postgraduate students agreed that they make extensive use of Whatsapp Messenger for academic purposes in public universities across the South East region of Nigeria as shown on items 17, 18, 19, 20, 21, 22, 23, and 24 with mean scores of 3.39, 3.20, 3.35, 3.26, 3.40, 2.66, 2.75, and 3.21 respectively, and standard deviations of 0.72, 0.67, 0.82, 0.73, 0.67, 0.71, 0.74, and 0.69 respectively. This is reflected in a grand mean of 3.15 and a standard deviation of 0.72. The mean scores for each item ranged from 2.66 to 3.40, all surpassing the cutoff point of 2.50. Additionally, the standard deviation values, which ranged from 0.67 to 0.82, indicate a high level of consistency and agreement among the respondents regarding the use of Whatsapp Messenger for academic activities in these institutions.

### Discussion of the Findings

Findings from research question one in Table 1 revealed that the postgraduate students from state and public universities agreed that to a high extent they utilize all the listed various forms of computer for academic purposes in public universities in South East. This could be as a result of government intervention in the provision of various forms of computers in the state and federal universities. This is in line with the findings of Baghdad (2018) [5] who carried out a study on computer based test; a digital substitution for the Iraqi postgraduate students and found out that postgraduate candidates test scores were not distinctive in the computer

based test and in the paper based test. This means that postgraduate students make use of various forms of computers for academic purposes. The work of Ebimgbo, Igwe and Okafor (2021) [8] agreed to the result of the current study. Their current study revealed that undergraduate students make use of different forms of computers which have helped to reduce stress, missing scripts, and examination malpractices, among others. In addition, findings from hypothesis 1 in Table 2 showed that there was no significant difference in the mean ratings of postgraduate students' of state and federal universities on the use of various forms of computers for academic purposes in public universities in South East. The findings of the study connotes to the result of Ebimgbo, Igwe and Okafor (2021) [8] who also found out that there was no significant difference between the responses of undergraduate students of university of Nigeria, Nsukka, Enugu State.

Result from research question two in Table 3 indicated that postgraduate students use electronic multimedia tools for academic purposes in public universities in the South East region of Nigeria to a high extent. This is in consonance with the finding of Awogbami, Opele and Chibueze (2020) [4] who carried out a study on lecturers' use of multimedia resources for knowledge transfer: a study of Adeleke University Ede, Osun State and found out a high extent of knowledge transfer among lecturers with the use of multimedia resources. This is also in agreement to the findings of Isabella and Ibitoroko (2016) [12] and Adeyanju

(2020). The result also disagreed with the findings of Nwangwu (2018) <sup>[14]</sup> and Obiamalu, Ogungbeni and Obuezie (2021) <sup>[15]</sup> who conducted a study on utilization of electronic multimedia technologies by faculty lecturers in instruction delivery in universities in Enugu and Anambra States, Nigeria and found out that faculty lecturers utilize electronic multimedia hardware and software/elements at a low extent in instruction delivery. This could be as a result of inadequate multimedia facilities, poor funding, lack of multimedia design and presentation skills, shortage of electricity supply, lack or irregular training of lecturers on multimedia design and use in instruction delivery. Furthermore, findings from hypothesis 2 in Table 4 showed that there was no significant difference in the mean ratings of postgraduate students' of state and federal universities on the use of electronic multimedia for academic purposes in public universities in South East. This is in agreement with the findings of Awogbami, Opele and Chibueze (2020) <sup>[4]</sup> who revealed no significant difference on the lecturers use of electronic multimedia in Adeleke University, Ede, Osun State. The findings also disagreed with the submission of Nwangwu (2018) <sup>[14]</sup> and Obiamalu, Ogungbeni and Obuezie (2021) <sup>[15]</sup> who revealed a significant statistical difference between the responses of faculty lecturers in universities in Anambra and Enugu states and Michael Okpara University of Agriculture, Umudike (MOUUAU). Findings presented in presented in Table 5 revealed that, the postgraduate students agreed that they make extensive use of Whatsapp Messenger for academic purposes in public universities across the South East region of Nigeria. This could be because the main academic purpose for which postgraduate students uses Whatsapp was for learning, personal research/development, personal growth/assignment, among others. The findings connotes to the result of Kutu and Kutu (2022) <sup>[13]</sup> who carried out a study on the use of social media (Whatsapp, Facebook, and others) for academic purposes by postgraduate information studies students: a case of University of KwaZulu- Natal South Africa and found out that majority of the respondents (94%) indicated that they used social media for academic purposes, and the most used social media for such purposes was Whatsapp and Zoom, mentioned by 83% and 79% of the respondents, respectively. The researchers also revealed that Whatsapp was the most frequently used social media, among others. This is also in line with the findings of Yunusa and Aishatu (2022) <sup>[19]</sup> who revealed that students are already familiar with and are using the different Whatsapp features for different purposes, thus making its acceptance and integration as a support tool for learning a seamless process. More so, result from hypothesis three in table 6 revealed that there was no significant difference in the mean ratings of postgraduate students' of state and federal universities on the use of Whatsapp messenger in dissemination of information in public universities in South East. This connotes to the findings of Yunusa and Aishatu (2022) <sup>[19]</sup> who revealed a non-statistical significant difference in the responses of students on the use of Whatsapp instant messenger for academic purposes in Kaduna State.

### Conclusion

Based on the findings of the study, it was concluded that postgraduate students from both state and federal universities in the southeastern part of Nigeria agreed to a

high extent that they utilize various forms of computer for academic purposes. They also agreed that to a high extent they utilize electronic multimedia and Whatsapp Messenger for academic purposes such as learning, personal research/development, personal growth/assignment, among others. In addition, it was concluded that there was no significant difference in the mean ratings of postgraduate students' of state and federal universities on the use of various forms of computer, Whatsapp Messenger and electronic multimedia for academic purposes in public universities in South East.

### Recommendations

The following recommendations are made in the light of the findings in this study:

- a. Public (state and federal) universities in Nigeria should ensure that they provide adequate and functional ICT devices and computer systems for PG students for academic purposes.
- b. Federal and state universities should invest in modern ICT facilities including high-speed internet, digital libraries, zoom, electronic multimedia, multimedia classrooms, and research software tools.
- c. Information and Communication Technology (ICT) literacy programs should be institutionalized for postgraduate students to improve proficiency in academic tools such as statistical software, e-journals, and reference management systems.

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