

Exploring the Use of ICT Tools by Postgraduate Students at Dr. Nnamdi Azikiwe Library, University of Nigeria, Nsukka

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Abstract - The study explores the use of ICT tools by postgraduate students at Dr. Nnamdi Azikiwe Library, University of Nigeria Nsukka. Four objectives and four research questions guided the study. The Diffusion of Innovations Theory (DIT), developed by Everett Rogers in 1962, was applied. A descriptive research design was employed in the study. The research population consisted of 507 enrolled postgraduate students at Dr. Nnamdi Azikiwe Library during the 2022-2023 academic year. A random sampling procedure was used to select 50% of the total population, resulting in a sample size of 254. Data were collected using a standardized questionnaire called the ICT Tools and Utility Questionnaire (ICTTUQ). Research questions one, two, and four were analyzed using the mean, while research question three was addressed using frequency and percentage. Among other findings, the results revealed that postgraduate students faced challenges when using the library's ICT resources, including inadequate network access and power outages. It was recommended that library management address the power supply issue by providing functional alternative power sources and other necessary infrastructure, as reliable electricity is crucial for delivering effective library services.

Keywords: ICT Tools, Postgraduate Students, Diffusion of Innovations Theory (DIT), Library Resources, Infrastructure Challenges

I. INTRODUCTION

Information and communication technology (ICT) is among the greatest inventions ever made by humans. It has radically altered how people perform their jobs in libraries and other institutions around the world. The inclusion of ICT in every area of the library has the potential to significantly advance its development. Research and academic success may benefit from its utilization in the library (Adekannbi & Makinde, 2020). Due to the enormous impact ICT has had on libraries, its importance cannot be overstated. ICT offers efficient methods for carrying out information-related tasks, such as user-friendliness, and information accuracy and precision. ICT use fosters diversity and creates the foundation for continuous, inventive learning in academic settings, as claimed by Ezeani and Ekere (2010). It rethinks existing library capabilities and searches for new uses by utilizing ICT effectively. As a result of academic institutions' adoption of ICT, print resources like books, journals, newspapers, and

other library materials are now computerized. The virtual library was also created, allowing users to access a wealth of material from anywhere in the world with just a click of a computer (Olise, 2010).

The service delivery activities of academic libraries have seen significant modifications since the 21st century, when ICT was introduced. Qutab *et al.*, (2014) state that ICT consists of peripheral devices that are programmed for convenient information exchange and includes interconnected hardware and software. Accordingly, ICT is the general term that refers to all communication equipment, such as satellite systems, computers, networks, hardware, software, radios, televisions, and cell phones (Asiamah, 2011).

Around the world, academic libraries are increasingly shifting from the conventional approach to information provision to ICT-based services that help users access a variety of information without wasting their valuable time, as well as assist learning and research. This shift suggests that academic libraries' use of ICT has significantly lessened the difficulties and burdens that patrons face when searching for information. In addition to helping academic libraries fulfill their missions and goals, the adoption and utilization of ICT will also help universities and countries as a whole realize their goals and visions. According to Adedeji (2010), ICT has proven to be a useful instrument for achieving advancements in science, technology, education, society, and the economy.

II. PROBLEM STATEMENT

Initially, academic libraries handled their services manually, which took up users' time. In this sense, the integration of ICT into the services provided by academic libraries has paved the way for further advancements in library operations. ICT's explosive expansion and development have complicated user needs and demands, forcing library staff to acquire the necessary skills to provide patrons with prompt, efficient services. Without a doubt, computer expertise and its use will revitalize the services that libraries offer to their users. To improve research and educational

activities in the library, the university administration and library management have pooled their resources and made significant investments in the purchase and acquisition of ICT infrastructure.

Unfortunately, the author's initial findings have shown that postgraduate students' use of these resources falls short of expectations. In light of this, the study aims to investigate postgraduate students' utilization of ICT tools.

III. OBJECTIVES OF THE STUDY

1. To identify whether postgraduate students are aware of ICT facilities.
2. To determine whether postgraduate students have adequate ICT skills.
3. To assess how frequently postgraduate students, utilize ICT resources.
4. To identify the challenges faced by postgraduate students in using ICT facilities in the library.

IV. RESEARCH QUESTIONS

1. Are postgraduate students aware of ICT facilities?
2. Do postgraduate students have adequate ICT skills?
3. How frequently do postgraduate students utilize ICT resources?
4. What challenges do postgraduate students encounter when utilizing the library's ICT resources?

V. THEORETICAL FRAMEWORK

The study utilized Everett Rogers' Diffusion of Innovations Theory (DIT), which he introduced in 1962. The theory describes how contemporary technology and other innovations move from introduction to broad adoption across cultures and social structures. It aims to clarify the process and motivations behind the adoption of new concepts and methods. The theory explains how quickly new knowledge and technologies proliferate within a particular population or society. According to the theory, innovations should be widely implemented in order to foster progress and sustainability in society.

Since ICT has fundamentally transformed every aspect of human endeavors, including libraries, the Diffusion of Innovations Theory is relevant to the current study. For the library to grow and remain sustainable, postgraduate students must widely embrace ICT. Several ICT tools are now available that are relevant to library activities. Therefore, there is an urgent need for postgraduates to adopt and use these tools in order to benefit from the evolving library.

VI. LITERATURE REVIEW

ICT offers a proactive setting, and its use in libraries can be seen as an effective tool for creating, accessing, storing, transmitting, and manipulating a variety of audio-visual

materials. ICT refers to electronic tools that facilitate the recording, storing, processing, transmitting, and displaying of data. According to Echem *et al.*, (2024), ICT comprises electronic tools that facilitate the collection, processing, storing, retrieving, and sharing of information for individual, corporate, and national purposes. It impacts how libraries provide their services and makes them readily available to patrons. According to Oladokun *et al.*, (2023), unless libraries begin utilizing modern ICT tools to enhance the delivery of information and services, they may become outdated in the twenty-first century. Given how quickly ICT has developed since the mid-20th century, its integration underscores the global importance of libraries (Adedeji, 2010).

The arrival of ICT has altered many library operations, including the automation of formerly manual methods of information collection, processing, and distribution. The new environment in which library employees now work requires them to develop ICT skills that will enable them to take on new responsibilities. ICT has significantly improved the management of libraries and information resources. Today, ICT use has substantially enhanced library services and information access. According to Omosor (2014), ICT has redefined library administration and services, providing new meanings and conceptions. Libraries, particularly academic libraries, now have more opportunities to improve their resource management systems due to ICT. Technology that enables information access through telecommunications is referred to as ICT. It can also be understood as any technological infrastructure used to collect, process, store, and distribute information. ICT is the process of storing, retrieving, and transmitting information through the use of computers.

The technologies that allow us to gather, store, manipulate, retrieve, send, and receive data are known as ICT facilities. These technologies include devices, micrographics, facsimile transmission, telecommunications, and microelectronics. ICT has had a vital impact on library operations, such as the coordination of information processing, storage, and distribution through automation. As mentioned, ICT resources are now being extensively incorporated into library operations and practices in Nigerian university libraries. According to Oyedokun *et al.*, (2018), this trend requires librarians to take on new roles and develop competencies and skills relevant to managing and processing information in the modern knowledge society, driven by users' demand for remote access to information. Libraries are using ICT tools to better manage their spaces and fulfill the information needs of users more effectively.

ICT components refer to the systems, equipment, and instruments used by individuals, groups, institutions, or countries to improve or alter traditional practices. According to this study, users utilize ICT resources to expedite library use. To fully utilize library services, users must develop the necessary and sufficient ICT skills. One of

the main factors motivating users to access a specific library's information is their awareness of its resources. A study on student satisfaction and user awareness at the Engineering College Libraries in Jaipur, Rajasthan, conducted by Saini *et al.*, (2014), showed that most students (58%) were aware of and satisfied with the library's ICT services. However, 8% of respondents expressed complete satisfaction with the availability of databases, while 62% were dissatisfied with the features of the online database, and others expressed only partial satisfaction with the online public access catalogue (OPAC). Ajuwon (2013) also studied health science students' knowledge of and use of ICT at the University College Hospital in Ibadan. The results revealed that students' inability to use computers led to poor database usage due to a lack of awareness, limited computer access, insufficient training, and the high cost of providing electronic resources. According to Ahmed and Sheikh (2020), both library personnel and patrons must acquire new ICT skills.

VII. METHODOLOGY

A design based on descriptive data was used in the study. The study population consisted of 507 enrolled postgraduate students from the Dr. Nnamdi Azikiwe Library at the University of Nigeria Nsukka during the 2023-2024 academic year. A 50% sample of the total population was selected using a simple random sampling procedure, yielding a sample size of 254. Of the 254 questionnaires distributed to postgraduate students, 231 were returned, resulting in a 91% response rate.

A standardized questionnaire, the ICT Tools and Utility Questionnaire (ICTTUQ), was used to collect the data. The researchers employed a Google Form to gather data for the study. Research questions one, two, and four were answered using the mean, while research question three was answered using frequency and percentage. Items below the Criterion Mean were excluded, while those with a Criterion Mean of 2.50 or higher were accepted.

VIII. RESULTS AND DISCUSSION

TABLE I THE RESPONDENTS' BIO-DATA

Variables	Frequency	Percentage (%)
Sex		
Male	129	56
Female	102	44
Age		
20-30	67	29
31-50	121	52
51 and Above	43	19
Program		
PGD	43	19
M.A/MSc	110	47
Ph.D	78	34

Of these respondents, 102 (44%) were female, and 129 (56%) were male, as shown in Table I. This indicates that there were more men than women among the respondents. Furthermore, the findings revealed that 121 (52%) were between the ages of 31 and 50, 67 (29%) were between the ages of 20 and 30, and 43 (19%) were 51 years of age or older.

This suggests that the majority of respondents were in the 31-50 age range. In addition, the data indicated that 43 (19%) were Postgraduate Diploma (PGD) candidates, 110 (47%) were pursuing master's degrees, and 78 (34%) were Ph.D. students. This suggests that master's students made up the majority.

TABLE II MEAN SCORES OF POSTGRADUATE STUDENTS' AWARENESS OF ICT FACILITIES

Sl. No.	Item	\bar{x}	Remark
1	Computers	2.96	Agree
2	OPAC	2.78	Agree
3	Wireless access points	2.76	Agree
4	Scanners	2.87	Agree
5	Institutional repository	2.51	Agree
6	Electronic resources	2.93	Agree
7	Online databases	2.71	Agree
8	Barcode readers	2.54	Agree
9	Printers	2.40	Agree
	Grand Mean (\bar{x})	2.71	Agree

Table II shows the ICT facilities that postgraduate students are aware of. The respondents indicated that they are aware of the following ICT facilities: computers ($M = 2.96$), OPAC ($M = 2.78$), wireless access points ($M = 2.76$), scanners ($M = 2.87$), institutional repository ($M = 2.51$), electronic resources ($M = 2.93$), online databases ($M = 2.71$), barcode readers ($M = 2.54$), and printers ($M = 2.40$). This suggests that postgraduate students are aware of ICT facilities such as computers, OPAC, wireless access points, scanners, institutional repositories, electronic resources, online databases, barcode readers, and printers.

The results of this investigation are consistent with Whong (2016), who found that certain ICT facilities exist in Nigerian libraries, including computers, photocopiers, scanners, printers, and internet facilities. Ajuwon (2013) mentioned that a library must be equipped with essential ICT facilities to function effectively in the 21st century. This suggests that awareness is crucial to utility because users can only use the facilities they are aware of. Whong (2016) further affirms that awareness enhances utility. One of the main factors that motivates users to access the information that a specific library offers is user awareness of its facilities.

TABLE III MEAN SCORES OF POSTGRADUATE STUDENTS ICT SKILLS

Sl. No.	Item	\bar{x}	Remark
10	Internet search skill	2.98	Agree
11	Spread sheet skill	2.58	Agree
12	Online book selection/ acquisition skill	2.41	Disagree
13	Word processing (Microsoft word) skill	2.80	Agree
14	Electronic presentation (Power point) skill	2.65	Agree
15	Uploading/downloading of document	2.71	Agree
	Grand Mean (\bar{x})	2.68	Agree

Table III presents the types of ICT skills possessed by postgraduate students. The respondents indicated that they possess the following ICT skills: internet search skills (M = 2.58), word processing (Microsoft Word) skills (M = 2.70), electronic presentation (PowerPoint) skills (M = 2.65), uploading/downloading documents (M = 2.65), and spreadsheet skills (M = 2.58). Additionally, the respondents disagreed with one item, as shown in the table: online book selection/acquisition skills (M = 2.41). This suggests that postgraduate students possess ICT skills such as internet search skills, word processing (Microsoft Word) skills, electronic presentation (PowerPoint) skills, and spreadsheet skills. The results of this investigation are consistent with Ajuwon (2013), who stated that students are expected to possess ICT skills such as web development, word processing, spreadsheets, and electronic presentation. This finding is also in agreement with Asiamah (2010), who noted that most students and researchers have basic skills in ICT applications, including word processing (Microsoft Word), electronic presentation, and internet search. Qutab *et al.*, (2014) opine that ICT skills are essential and must be possessed by researchers. The scholars further affirmed that researchers who possess ICT skills are more effective in modern research. To make full use of library services, users must develop the requisite ICT skills needed for research.

TABLE IV FREQUENCY AND PERCENTAGE ON HOW FREQUENTLY ICT FACILITIES ARE USED

Sl. No.	Frequency of Use of ICT Facilities	Frequency (%)
16	Daily	89 (35%)
	Weekly	109 (43%)
	Monthly	56 (22%)
	Total	254 (100)

Table IV shows the frequency with which postgraduate students use ICT facilities. From the table, out of a total of 214 respondents, 109 (43%) indicated that they use ICT facilities weekly, followed by 89 (35%) who reported using the ICT facilities daily, and 56 (22%) who use them monthly. The majority of those surveyed (109, or 43%) used ICT facilities on a weekly basis, according to the results of the frequency of usage survey. The results of the current

study are consistent with those of Olise (2010), who conducted a related study on ICT utilization and found that many of the respondents used ICT resources on a weekly basis. However, the findings are not supported by Anyira's (2011) study on the usage of ICT resources in Nigerian private universities. In contrast to the results of the current survey, Anyira's findings indicate that about 100 (41.7%) of the 240 respondents reported that the ICT facilities were only slightly accessible to them.

TABLE V MEAN SCORES OF THE CHALLENGES FACED BY POSTGRADUATE STUDENTS IN CAUSE OF USING ICT FACILITIES

Sl. No.	Item	\bar{x}	Remark
17	Poor network connectivity	2.98	Agree
18	Lack of subscription	2.58	Disagree
19	Power outage	2.41	Agree
20	Lack of proper technological skill	2.80	Disagree
21	Lack of ICT facilities	2.65	Disagree
	Grand Mean (\bar{x})	2.68	Agree

Table V presents the challenges faced by postgraduate students in the use of ICT facilities in the library. The respondents indicated that they face challenges such as poor network connectivity (2.96) and power outages (2.81). Additionally, the respondents disagreed with several items as shown in the table: lack of subscription (2.42), lack of proper technological skills (2.33), and lack of ICT facilities (2.16). This suggests that postgraduate students face challenges such as poor network connectivity and power outages in the use of ICT facilities in the library.

The results of the current study support those of Whong (2016), who found that library users face challenges that require serious attention for the proper functioning of the library. He further mentioned issues such as slow network connectivity, power outages, and privacy concerns. This is also consistent with Anyira (2011), who identified inadequate network connectivity as one of the issues influencing the library's operations.

IX. CONCLUSION AND RECOMMENDATIONS

The paper examined ICT tools and their utility for postgraduate students in the Dr. Nnamdi Azikiwe Library at the University of Nigeria Nsukka. ICT is used in libraries to perform library tasks more efficiently. The findings revealed that postgraduate students face challenges such as poor network connectivity and power outages when using ICT facilities in the library. The significance of ICT in libraries cannot be overstated, as every department and area of the library has undergone changes and transformations. ICT has improved operations in academic libraries. It could be argued that ICT has fundamentally changed library operations, and in order for postgraduate students to benefit fully from the library, they must embrace this trend.

The study's conclusions led to the following recommendations.

1. Since providing and using power is necessary for effective library services, the library administration should address the power supply issue by ensuring functional alternative power sources and other essential infrastructure.
2. Postgraduate students should urgently develop the habit of acquiring more ICT skills, whether or not they are instructed to do so.
3. The library should intensify its efforts to raise awareness among all postgraduate students through workshops, seminars, user education, and library orientations.

REFERENCES

- [1] Adedeji, O. A. (2010). *The development of modern information and communications technology in Ibadan*. Creative Educational Publications Ltd.
- [2] Adekannbi, J. O., & Makinde, A. O. (2020). Use of information communication technology for teaching by N-Power Teach beneficiaries of public primary and secondary schools in Nigeria. *Asian Journal of Information Science and Technology*, 10(1), 16-25. <https://doi.org/10.51983/ajist-2020.10.1.301>
- [3] Ahmed, S., & Sheikh, A. (2020). Information and communication technology skills among library and information science professionals: A predictor of enhanced library services. *Journal of Librarianship and Information Science*, 53(3). <https://doi.org/10.1177/0961000620962162>
- [4] Ajuwon, G. A. (2013). Awareness and use of ICT by health science students at the University College Hospital, Ibadan. *BMC Medical Informatics and Decision Making*, 3(10), 72-87.
- [5] Anyira, I. E. (2011). Internet services in Nigerian private universities: A case study. *Library Philosophy and Practice* (e-journal). <https://digitalcommons.unl.edu/libphilprac/7627>
- [6] Asiamah, S. (2011). Application of information communication and technology: A comparative analysis of male and female academics in Africa. *Library Philosophy and Practice* (e-journal). <https://digitalcommons.unl.edu/libphilprac/7352>
- [7] Echem, M. O., Udo-Anyanwu, A. J., & Ujoununna, J. C. (2024). Adoption of collaborative technologies in library and information science teaching: A study of tertiary institutions in Rivers and Imo States, Nigeria. *Asian Journal of Information Science and Technology*, 14(2), 11-19. <https://doi.org/10.70112/ajist-2024.14.2.4248>
- [8] Ezeani, C. N., & Ekere, J. N. (2010). ICT use by academic librarians in Nigeria: Implications for the library and information science curriculum. *Global Review of Library and Information Science*, 5, 39-50.
- [9] Oladokun, B. D., Owolabi, A. K., Aboyade, M. A., Wiche, H. I., & Aboyade, W. A. (2023). Emergence of robotic technologies: Implications for Nigerian academic libraries. *Library Hi Tech News*, 40(6), 15-18. <https://doi.org/10.1108/LHTN-02-2023-0031>
- [10] Olise, F. P. (2010). Information and communication technologies and sustainable development in Africa: Mainstreaming the Millennium Development Goals (MDGs) into Nigeria's development agenda. *Journal of Social Science*, 24(3), 155-167.
- [11] Omosor, U. A. (2014). Effect of technology on librarians in academic libraries in Nigeria. *Journal of Information and Knowledge Management*, 5(2), 203-212.
- [12] Oyedokun, T. T., Oyewumi, F. A., Akanbi, M. L., & Laaro, D. M. (2018). Assessment of ICT competencies of library staff in selected universities in Kwara State, Nigeria. *Library Philosophy and Practice* (e-journal). <https://digitalcommons.unl.edu/libphilprac/1797>
- [13] Qutab, S., Bhatti, R., & Ullah, F. S. (2014). Adoption of ICTs for library operations and services: A comparison of public and private university libraries of Pakistan. *Library Philosophy and Practice* (e-journal). <http://digitalcommons.unl.edu/libphilprac/1106>
- [14] Saini, P. K., Bhakar, R., & Singh, B. (2014). User awareness and satisfaction of engineering college libraries: A case study of engineering college libraries of Jaipur, Rajasthan. *International Journal of Emerging Research in Management and Technology*, 3(9), 16-26. http://www.ermt.net/docs/papers/Volume_3/9_December_2018/V3N9-136.pdf
- [15] Whong, F. M. (2016). Academic librarians' ICT competency and its effect on the management of information resources in selected federal Nigerian academic libraries. *Journal of Applied Information Science and Technology*, 9(1), 209-218.