



# **Assessment of Information Literacy Indicators in Relation to Postgraduate Students' Research Productivity in Public Universities in Akwa Ibom State, Nigeria**

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## **Authors' contributions**

*This work was carried out in collaboration between both authors. Author EAE designed the study, wrote the protocol, performed the statistical analysis, and wrote the first draft of the manuscript. Author NEA proofread the manuscript and managed the analyses of the study. Both the authors managed the literature searches and approved the final manuscript. Both authors read and approved the final manuscript.*

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## **ABSTRACT**

The study assessed information literacy indicators in relations to postgraduate students' research productivity in public universities in Akwa Ibom State, Nigeria. The study adopted a correlational research design, with four (4) specific objectives and null hypotheses. The population of the study

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consisted of one hundred and thirty-seven (137) postgraduate students, comprising 89 Masters and forty-eight (48) PhD students from Akwa Ibom State University and University of Uyo, respectively. The total enumeration sampling technique was used for the study since population was quite manageable. A two (2) sets of self-developed questionnaire, validated with reliability indices of 0.80 and 0.78 for the independent and dependent variables, using Cronbach's Alpha formula was used for the data collection. The data collection process yielded a response rate of 91% from 125 respondents who completed and returned the questionnaire. The data collected were analysed using inferential statistical tool of Pearson Product Moment Correlation Coefficient (PPMC) to answer the research questions, while linear regression statistic was used to test the corresponding hypotheses at 0.05 level of significance. The study revealed that there was a strong positive significant association between the ability to recognize information needs, ability to locate information resources, and ability to understand ethical issues of information by postgraduate students relating to research productivity in public universities studied. It also showed that the ability to evaluate information sources by postgraduate students had a weak association with research productivity in public universities studied. The study recommended, among other measures that postgraduate students should improve their interest in the acquisition of information literacy skills. Furthermore, management of public universities should provide adequate infrastructural facilities such as power supply and Internet connection in order to facilitate acquisition of information literacy skills by postgraduate students for enhanced research productivity.

*Keywords: Information literacy indicators; postgraduate students; research productivity; public universities.*

## 1. INTRODUCTION

Public universities are educational institutions that are funded and operated by government. They are saddled with the responsibilities of enhancing teaching, learning, and research in order to produce trained, skilled and knowledgeable manpower for sustainable quality development. To achieve these objectives, public universities are duty bound to train students, including postgraduate students in information literacy skills and competencies to enable them effectively participate in research activities. "Information literacy skills constitute essential and powerful competencies for successful dealing in the information-driven environment such as universities. Information literacy skills could be defined as a set of integrated abilities and competencies that encompass the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning" [1].

To Chukwu et al. [2], "information literacy refers to the ability to understand when and why information is needed, where to find it, and how to interpret, use, and communicate it ethically". Udoh and Okafor [3] "also conceived information literacy skills as a set of interconnected and interrelated skills for effective functioning in the present information saturated society. It serves

as the sum of all competencies, aptitude and capabilities needed for efficient and effective use of information and information tools. It enhances critical and analytical thinking, as well as helps in making balanced judgment about how to find, use and share information. Information literacy skills are very critical skill sets that must be possessed by postgraduate students as advanced learners, researchers and scholars. Possessing effective information literacy skills help postgraduate student to maximize their contributions to knowledge through improved research productivity".

However, research productivity are vital means or media through which current information or research findings on topical issues are disseminated to serve as pillars for the creation of new knowledge and powerful tool for decision-making. Okiki [4] "defined research productivity as intellectual outputs published as chapters in books, co-authored textbooks, patent and certified invention, monographs, occasional papers, articles in learned journals, technical reports, scientific peer-reviewed bulletin, conference papers, patents and working papers". Rashid, as cited in [5] "also conceived research productivity as an academic work that has been conducted or researched upon and published in journals, textbooks, book chapters, monographs, articles, technical reports, bulletin, conference papers, working papers, short communication papers, patents and standards". "It represents

the ability of a researcher to use his intelligence, knowledge and research skills to collect, modify and critically analyze information and come out with authentic results that are capable of helping in the advancement of knowledge” [6].

Research productivity of postgraduate students represents essential contribution for the furtherance of knowledge. It could be used for major decision making like ranking of public universities, as well as recognition, award and promotion of postgraduate students. It is however, dependent on a number of factors, including the level of information literacy skills of the postgraduate students. This is because information literate postgraduate students are capable of interpreting and making informed judgments on why, where, when, how and the purpose of obtaining and using information in the course of research activities for enhanced research productivity. It is necessary because information literacy skills practically embolden and/or empower postgraduate students to develop informed views and engage fully in quality research work for quality contributions to knowledge. Therefore, based on the above background, this study assessed information literacy indicators in relations to postgraduate students’ research productivity in public universities in Akwa Ibom State, Nigeria.

### 1.1 Statement of the Problem

Research productivity plays a fundamental role in determining the contributions of postgraduate students to knowledge in the public university system. As a matter of fact, the essence of research productivity by postgraduate students cannot be overemphasized, especially since research is the underpinning philosophy of postgraduate studies. Research productivity enhances the prestige, recognition and overall ranking of universities across the globe. It also serves as the yardstick for promotion, academic recognition and increase in the salary of academics, including postgraduate students in universities. However, despite the obvious benefits of research productivity, it is not certain whether postgraduate students possess requisite information literacy skills and effectively harness same in accessing, locating, retrieving, evaluating and ethically using available information for improved research productivity. In reality, observations revealed cases of most postgraduate students displaying inadequacies in information literacy skills which manifests in insignificant contributions to research activities in

public universities. These researchers also observed through painstaking perusal of available literature, that though there are some studies that investigated the relationship between information literacy skills and research productivity in universities, none of the studies deconstructed and investigated the various information literacy indicators in relation to postgraduate students’ research productivity in public universities in Akwa Ibom State, Nigeria. Thus, based on the above backdrop, this study was conducted to fill the gap.

### 1.2 Objectives of the Study

This study examines information literacy indicators and postgraduate students’ research productivity in public universities in Akwa Ibom State, Nigeria. The specific objectives are:

- i. To determine the association between the ability to recognize information needs by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.
- ii. To ascertain the association between the ability to locate information resources by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.
- iii. To examine the association between the ability to evaluate of information sources by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.
- iv. To investigate the association between the ability to understand ethical issues of information by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.

### 1.3 Hypotheses

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

**H<sub>01</sub>:** There is no significant association between the ability to recognize information needs by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.

**H<sub>02</sub>:** There is no significant association between the ability to locate information resources by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.

**H<sub>03</sub>:** There is no significant association exists between the ability to evaluate of information sources by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.

**H<sub>04</sub>:** There is no significant association between the ability to understand ethical issues of information by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.

## 2. LITERATURE REVIEW

The concepts of information literacy skills and research productivity are critical research areas with serious scholarly attention across the world. However, in this present study, some fundamental concepts and constructs, including relevant empirical studies are reviewed below:

### 2.1 Conceptual Clarification

#### 2.1.1 Information literacy skills

“Information literacy skills are the sum of all the skills needed for efficient, effective, critical and productive use of information and information tools” [3,7]. This set of integrative skills, according to the Association of College and Research Libraries (ACRL) [1] refer to the abilities and competencies that encompass the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning. Information literacy skills entail the ability to identify information needs, find information, evaluate information sources, organize, use, and communicate information in all its various formats, most notably in situations requiring decision making, problem solving, or the acquisition of knowledge [2,8,9].

According to the Society of College, National and University Libraries (SCONUL) Model, as cited in Udoh and Okafor [3], information literacy skills is evident in the ability through which information and data are created, handled and to appreciate the role of information literacy skills in research. It holds that developing an information literate person or researcher is a continuing and holistic process with simultaneous activities that include the ability to identify, access, plan, gather, evaluate, manage and present information. Information literacy skills are quite essential for

postgraduate students in all areas of academic activities and social interactions. It enables postgraduate students develop critical thinking and independent lifelong learning skills, as well as effective writing in the intellectual world. This holds that information literate postgraduate students possess the ability to gather, manage, use, evaluate, synthesis and create new information and data in an effectively ethical manner. These set of interrelated skills emboldens postgraduate students’ writing, data collection and data analysis skills, while ensuring impactful research productivity for the expansion of knowledge for development.

#### 2.1.2 Research productivity

“Research is the process of creating new knowledge and expanding existing knowledge for enhanced development of nations, societies and organizations. According to Akwang and Chimah [10], research is defined as an inquiry to the unknown, a scientific approach to solving problems and an empirical investigation into issues that have educational and informational implications. Research productivity otherwise known as research output is the documentation of an investigation into a phenomenon, which resulted in the generation of new knowledge in the form of a book, book chapter, journal article, or conference proceeding” [11]. Similarly, [4].as well as Rashid as cited in Nwosu et al. [5], opined that research productivity are the publications in textbooks, chapters in books, co-authored textbooks, patent and certified invention, monographs, occasional papers, articles in learned journals, technical reports, scientific peer-reviewed bulletin, conference papers, patents and working papers.

Research productivity enhances the process of sharing current research findings and relevant educational, economic, political and socio-cultural information for personal, organizational, societal and national decision growth. It also serves as the media of communicating innovations and trends with other information consumers within the information profession and across the spectrum of knowledge. It influences postgraduate students’ career development as well as personal and professional development. Research productivity of postgraduate students depends on a number of interconnected factors including information literacy skills, which are intertwined competencies for information identification as well as knowledgeable, effective and ethical use of information.

### **2.1.3 Ability to recognize information needs**

“Ability to recognize information needs is a vital indicator and the first step of the information literacy lifecycle. This is even as literature abounds that information literacy skills begin with the recognition of information needs” [2,3,12,13]. The ability to effectively determine a need for information is knowing when and why a particular information is needed [14] which the authors called the “Puzzle”. Obasi and Ibegwam [14] “observed that the recognition of an information need is a fundamental ability in information literacy skills. This corroborates the position of CILIP [12], which opined that the ability to effectively determine an information need is knowing when information is needed, the type, extent, and nature of information needed”. Armstrong et al., as cited in Shukla [15], “remarked that the ability to recognize information needs implies understanding why information is needed, what, how much information is needed; the available formats of information in various geographical and virtual locations, as well as any associated constraints such as time, currency and access of information”.

Akwang [6] “also notes that the ability to recognize information needs is predicated on the premise that early knowledge of the role of information, scope, and nature of information needed are fundamental requirements for achieving success in any responsibility such as research activities. It involves the ability to articulate a question and develop a focus for the research. It is very vital in achieving research productivity as postgraduate students especially in the present information-rich environment”.

### **2.1.4 Ability to locate information resources**

Possessing the ability to locate information resources by postgraduate students is both an information literacy skill and research skill. It is a vital component of information literacy skills, which means the ability to formulate search strategies that take into consideration different sources of information [12,16,8]. This ability is akin to information search and retrieval skills. It is a set of skills or capabilities to find information by defining, formulating or constructing the right queries such that only the relevant information is located as result of a particular query. To locate information resources effectively involves the ability to construct strategies or techniques that bring out the most relevant information from

multiple sources of both print and non-print information by postgraduate students. It also entails developing information search plans for finding relevant information from an information system or organization [16],

Ability to locate information resources is a conscious effort or approach or decision making to solve a problem or achieve an objective. It involves the identification of relevant information sources, whether bibliographic or full text databases or the internet. [17], remarked that a strategy for locating information resources is an organized structure of key terms used to search a database. It includes the selection of location or search terms or developing location profiles, and modifying profiles by iterative location strategies for possible retrieval of required information sources. It may involve developing a search string as a combination of keywords, truncation symbols and Boolean operators, which must be entered into the search box of the library system, online database or internet search engines. It may also include the use of Boolean operators, phrase searching, proximity search, fuzzy search, stemming, truncation searches, and Wildcard searches as search strategies [18]. It is a necessary competence for developing accurate research background, formulating research problems and answering research questions through effective literature review in support of the entire research lifecycles by postgraduate students. It is also a crucial skill for postgraduate students in gathering relevant information for research activities, finding solutions to complex problems, communication, teamwork and good collaboration for the purpose of achieving enhanced research productivity.

### **2.1.5 Ability to evaluate information sources**

Another indicator of information literacy is the ability to evaluate information sources. This ability reflects a great extent of competence for enhanced research productivity by postgraduate students in public universities. According to Chartered Institute of Library and Information Practitioners [12], evaluating information sources aimed at authenticating the credibility and integrity of information sources. The ability to evaluate information sources is necessary in research due to the fact that the integrity of information sources can be tampered with and once that is done, it affects the entire use and users of the information in the research process. Underscoring the importance of information integrity, Bourgeois et al. [17], defined integrity of

information sources as the assurance that the information sources being accessed are not altered or changed from what they truly represent.

Possessing the ability to evaluate information sources ensures that the information used in the research process is not corrupted, altered or modified by any unauthorized person. It means that information is kept complete, accurate, consistent, and safe throughout its entire lifecycle [19]. It facilitates quality research activities in all the processes for enhanced research results. It also ensures effective communication of research to the scholarly community. It is also fundamental in ensuring quality research productivity as it enables postgraduate students to determine the reliability and accuracy of information sources for their research. Evaluating information sources guides decision-making process in both personal and professional lives, as well as helps in dealing with information that is available around the clock in the Internet, library holdings, and Google chat sessions.

#### **2.1.6 Ability to understand ethical issues of information**

Understanding ethical issues in information is a vital information literacy competence that facilitates quality research productivity. Ethical issues in information otherwise referred to as legal issues emphasize the ability to use information in a way that respect the rights and privileges of authors. [19] “defined ethical or legal use of information as the act of applying information use ethics by a user to satisfy an information need or in the creation of further information or knowledge for dissemination or communication to others”. Similarly, the University of New Orleans [20], “argued that understanding legal and ethical issues in information is the ability to recognize intellectual property concept, ability to defend it, incorporate other works and understand free access to and express information”. “It is also the ability to demonstrate awareness of issues relating to ethics, data protection, copyright, plagiarism and other intellectual issues” [5].

The ability to understand ethical issues of information by postgraduate students helps in adhering to copyright laws, comply with the detects of fair use of information, abide by intellectual property right, right to access information, and avoid plagiarism. It also helps postgraduate students to ethically and

responsibly exhibit skills that facilitate utilization of digital information sources, support lifelong learning as well as enhanced capability of creating digital information for quality research productivity.

## **2.2 Review of Empirical Studies**

In addition to the conceptual clarification, relevant empirical studies were also reviewed to provide a solid base for this study. Nwankwo [21] “investigated the relationship between information literacy skills and use of library resources by postgraduate Library and Information Science students in Anambra State, Nigeria. The study revealed that the postgraduate students possessed moderate information literacy skills, with a positive relationship between information literacy skills and the use of library resources. It concluded that information literacy skills by LIS postgraduate students helped in maximizing the use of library resources. The study recommended that students should make efforts to improve their information literacy skills through programmes like seminars, workshops, user education and tutorials organized by library or other research institutes while curriculum planners should entrench information literacy programme in university programmes”.

Oseghale [22] “examined the level of digital information literacy (DIL) skills and use of electronic resources by humanities graduate students at Kenneth Dike Library, University of Ibadan, Nigeria. The study revealed that humanities graduate students at the University of Ibadan possessed high level of digital information literacy skills in respect of digital devices usage, web-based tasks, information finding and evaluation, but low in the utilization of electronic resources. It identified inadequate knowledge of available e-resources, irregular internet access, inadequate training on e-resources utilization, etc., as the main challenges encountered by graduate students in the use of e-resources. The study recommended that active steps such as regular training on digital information literacy skills should be taken to increase e-resources awareness and use in the university”.

Victor-Aigbodion [23] “conducted a study on the assessment of information literacy skills of postgraduate education students in Nigeria. The study revealed that students in postgraduate education demonstrated moderate information literacy skills. The study also showed that there

were no significant differences in information literacy skills levels among postgraduate education students across the institutions. It revealed that master's and PhD students showed significant differences in information literacy skills, with PhD students demonstrating more information literacy skills than master's students. It concluded that information literacy skills play a significant role in postgraduate students' academic development and research ability. The study recommended that university management should organize workshops for postgraduate education students from time to time to enhance their information literacy skills”.

Fajonyomi et al. [24] “examined the influence of information literacy skills on the use of library resources by postgraduate students at the University of Ilorin Library. The study revealed that information literacy skills had a positive and significant influence on use of library resources by postgraduate students in University of Ilorin. It concluded that information literacy skills influenced the use of library resources by postgraduate students. It recommended that the university should reinforce the awareness of library resources with relevant information for frequent use of library resources”.

In a related study, Sakhawat et al. [9], “examined the impact of information literacy skills of librarians on research productivity of faculty members of University of Agriculture, Faisalabad. The study revealed that LIS professionals and faculty members have moderate levels of information literacy skills, which can be improved through training courses and seminars. It identified unreliable power supply, lack of involvement of library organizations in conducting training sessions on the acquisition of information literacy and research skills, lack of funding to conduct seminars and trainings, lack of proficiency in the use of internet and relevant databases, and work burden as factors that create hurdles to faculty members and professional librarians in improving their information literacy skills and research productivity in the university. The study recommended that universities should provide adequate funds and encouraging atmosphere for collaboration, effective trainings sessions and workshops on information literacy skills and new searching techniques for faculty members and librarians in order to improve their information literacy skills for enhanced research productivity”.

Obasi and Ibegwam [14] “also conducted a survey on the recognition of information need indicators and graduate students' research practices in university libraries of South East Nigeria. The study found that the individual recognition of information needs indicators such as the nature of information need, and scope of information need have significant influence on graduate students' research practices in the university libraries. It showed a significant combined influence of information need indicators on the graduate students' research practices. It recommended that librarians should collaborate with faculty members by sensitizing them on the need to engage students in regular information problem-solving tasks so that the students will be adequately trained on recognizing and defining their information need in their learning and research tasks and to do that early in the research process”.

Olakunle and Olanrewaju [25] “investigated the relationship between information literacy skills and research productivity of researchers in Nigeria, with the mediating role of socio-economic factors. The study revealed that there was a relationship between information literacy skills and research productivity ( $r=0.56$ ,  $p<0.05$ ). It also showed that socio-economic factors such as monthly salary, academic status, age, highest educational qualification, work experience and employment nature have mediating effects on the relationship between information literacy skills and research productivity. The study recommended that management of the research institutes should put more effort in increasing the level of information literacy skills, taking into consideration the socio-economic factors as identified”.

Furthermore, Ikenwe and Anaehobi [19] “investigated the skill to apply legal and ethical issues of information as correlate of utilization of digital library resources by academics in federal universities in South-south Nigeria. The study revealed a low positive correlation between academics' skill to apply ethical and legal issues of information and utilization of digital library resources. It recommended that university management and the management of university libraries should collaborate to effectively educating academic staff on issues of legal and ethical use and access to information for the enhancement of quality of research in the public universities”.

Omehia and Okwu [26] “examined that knowledge of information resource formats and the satisfaction of postgraduate students in library usage in federal universities in South-South Nigeria. The study showed that the postgraduate students possess inadequate knowledge of accessing and utilization of information resources formats in the university library. It also indicated that postgraduate students possessed the ability to search for printed materials on card catalogues, shelves and other archives, as well as the ability to search for electronic material using OPAC, Boolean search, web search, etc. Based on the findings, the study recommended that library orientation programmes should be organized for postgraduate students in order to enable them achieve effective utilization of the library to facilitate their efficiency in research works”.

Igbokwe et al. [27] “equally investigated the determinants of the quality of research outputs by librarians in selected university libraries in South East Nigeria. The study revealed that the librarians’ research skills, editors’ level of editorial competency and mentor mentee relationships of librarians are determining factors in relation to the quality of research outputs by librarians. It showed that inability to adopt appropriate research methods leads to poor quality research, while possessing the right research skills lead to producing quality research by librarians. The study also revealed that lack of appropriate research knowledge and poor information search and retrieval skills are inhibitors to the production of quality research outputs in public university libraries. It recommended that library associations and heads of university libraries should organize seminars or workshops on research methods in order to help librarians acquire the necessary skills required for enhanced quality of research outputs in universities”.

In similar vein, Nwosu et al. [5] “examined the relationship between information literacy skills and research output of academic staff in Nnamdi Azikiwe University Awka, Nigeria. The study discovered that the level of information literacy skills possessed by the academic staff was moderate. It indicated a significant positive relationship in the level of information literacy skills possessed by the academic staff and their research output in the university, as the academic staff are moderately skilled in their ability to locate, access, use and evaluate information wherever it is stored and preserved

in printed or electronic media; and have the skills to navigate different sources of information on web and research institutions to access information needed; as well as have the skills to evaluate information and communicate it in an ethical and logical manner to the information seekers and users. The study recommended that the academic staff should avail themselves of the available information technology training and workshops so as to enhance their information literacy skills, while the university management should sponsor information literacy training and workshops in order to enable them acquire information literacy skills and emerging research skills for improved research output in the university”.

However, in all the literature available, reachable and reviewed by the researchers above, no study was conducted on the assessment of information literacy indicators in relations to postgraduate students’ research productivity in public universities in Akwa Ibom State, Nigeria. Therefore, this study was conducted to fill the observed gap in knowledge.

### **3. METHODOLOGY**

The study adopted a correlation research design. The population consisted of one hundred and thirty-seven (137) postgraduate students. This comprises 59 postgraduate students from the Faculties of Education, Engineering, and Physical Sciences, Akwa Ibom State University (AKSU) and 78 postgraduate students from the Faculties of Management Sciences, Pharmacy and Social Sciences, University of Uyo (UNIUYO) for the 2022/2023 academic session. The population covered 39 Master’s degree and 20 PhD students from AKSU and 46 Master’s degree and 32 PhD students from UNIUYO. The total enumeration sampling technique was adopted for the study since the study population was manageable. The instrument for data collection was a self-developed questionnaire, designed to correlate the independent and dependent variables. The instrument was validated by three (3) research experts, two from Library and Information Science discipline, from the Akwa Ibom State University Library, and one from Test and Measurement discipline from the Department of Science Education, Akwa Ibom State University. The instrument was also pre-tested for reliability on 20 postgraduate students from University of Calabar (UNICAL), Cross River State, Nigeria, and their responses were analysed using Cronbach Alpha formula, which



yielded 0.80 and 0.78 for the independent and dependent variables, respectively. Copies of the questionnaire were distributed to the 137 respondents, and the process yielded a response rate of 91% from 125 respondents who completed and returned the questionnaire with valid information. The data collected were analysed using Pearson Product Moment Correlation (PPMC) coefficient to answer the research questions, while the linear regression statistic was used to test the null hypotheses at 0.05 level of significance. The decision rule held that reject the null hypotheses ( $H_0$ ) if the p-value is less than 0.05, or otherwise accept. This implied that when the p-value is greater than the 0.05 level of significance, the null hypothesis ( $H_0$ ) was accepted, and when it was less than the level of significance, the null hypothesis ( $H_0$ ) was rejected.

#### 4. RESULTS

**RQ 1:** What association exists between the ability to recognize information needs by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria?

From the data on Table 1, there was a very low extent of association between the ability to recognize information needs by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria, as indicated by the correlation coefficient ( $r = 0.061$ ) which is positive and falls within the coefficient limit of  $\pm 0.00 - 0.20$ . The coefficient of determination ( $r^2 = 0.004$ ) reveals that 0.4% of the variance observed in research productivity in public universities accounted for by ability to recognize information needs by postgraduate students in public universities in Akwa Ibom State, Nigeria. This implies that the ability to recognize information needs by postgraduate students has a very low association with the research productivity in public universities in Akwa Ibom State, Nigeria.

**Hypothesis 1:** There is no significant association between the ability to recognize information needs by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.

The data in Table 1 below revealed a p-value 0.002 which is less than Alpha value of 0.05. Since the p-value 0.002 is less than alpha value

of 0.05, the null hypothesis of no significant association between the ability to recognize information needs by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria, was rejected. Thus, there is a strong positive significant association between the ability to recognize information needs by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.

**RQ 2:** What association exists between the ability to locate information resources by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria?

Data on Table 2 reveals a very low extent of association between the ability to locate information resources by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria, as indicated by the correlation coefficient ( $r = -0.087$ ) which is positive and falls within the coefficient limit of  $\pm 0.00 - 0.20$ . The coefficient of determination ( $r^2 = 0.008$ ) reveals that 0.8% of the variance observed in research productivity in public universities accounted for by the ability to locate information resources by postgraduate students in public universities in Akwa Ibom State, Nigeria. This implies that the ability to locate information resources by postgraduate students has a very low association with the research productivity in public universities in Akwa Ibom State, Nigeria.

**Hypothesis 2:** There is no significant association between the ability to locate information resources by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.

Data in Table 2 below indicated a p-value 0.001 which is less than Alpha value of 0.05. Since the p-value 0.001 is less than Alpha value of 0.05, the null hypothesis of no significant association between the ability to locate information resources by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria, was rejected. Therefore, there is a strong positive significant association between the ability to locate information resources by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.

**Table 1. PPMC coefficient between the ability to recognize information needs by postgraduate students and research productivity**

|        |                                      | ARINPS | RPPU  | P-value | Sig. |
|--------|--------------------------------------|--------|-------|---------|------|
| ARINPS | Pearson's Correlation Sig. (2tailed) | 1      | 0.061 | 0.002   | 0.05 |
|        | N                                    | 125    | 125   |         |      |
| RPPU   | Pearson's Correlation Sig. (2tailed) | 0.061  | 1     |         |      |
|        | R <sup>2</sup>                       | 0.004  |       |         |      |
|        | N                                    | 125    | 125   |         |      |

*ARINPS = Ability to Recognize Information Needs by Postgraduate Students*

*RPPU = Research Productivity in Public Universities*

*N = No. of Observations*

*R = Correlation Coefficient*

*R<sup>2</sup> = Coefficient of Determination*

**Table 2. PPMC coefficient between the ability to locate information resources by postgraduate students and research productivity**

|        |                                      | ALIRPS | RPPU  | P-value | Sig. |
|--------|--------------------------------------|--------|-------|---------|------|
| ALIRPS | Pearson's Correlation Sig. (2tailed) | 1      | 0.087 | 0.001   | 0.05 |
|        | N                                    | 125    | 125   |         |      |
| RPPU   | Pearson's Correlation Sig. (2tailed) | 0.087  | 1     |         |      |
|        | R <sup>2</sup>                       | 0.008  |       |         |      |
|        | N                                    | 125    | 125   |         |      |

*ALIRPS = Ability to Locate Information Resources by Postgraduate Students*

*RPPU = Research Productivity in Public Universities*

*N = No. of Observations*

*R = Correlation Coefficient*

*R<sup>2</sup> = Coefficient of Determination*

**Table 3. PPMC coefficient between the ability to evaluate of information sources by postgraduate students and research productivity**

|        |                                      | AEISPS | RPPU  | P-value | Sig. |
|--------|--------------------------------------|--------|-------|---------|------|
| AEISPS | Pearson's Correlation Sig. (2tailed) | 1      | 0.167 | 0.672   | 0.05 |
|        | N                                    | 125    | 125   |         |      |
| RPPU   | Pearson's Correlation Sig. (2tailed) | 0.167  | 1     |         |      |
|        | R <sup>2</sup>                       | 0.028  |       |         |      |
|        | N                                    | 125    | 125   |         |      |

*AEISPS = Ability to Evaluate of Information Sources by Postgraduate Students*

*RPPU = Research Productivity in Public Universities*

*N = No. of Observations*

*R = Correlation Coefficient*

*R<sup>2</sup> = Coefficient of Determination*

**RQ3:** What association exists between the ability to evaluate of information sources by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria?

The data on Table 3 above reveals a low extent of association between the ability to evaluate information sources by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria, as indicated by the correlation coefficient ( $r = 0.167$ ) which is positive and falls within the

coefficient limit of  $\pm 0.00 - 0.20$ . The coefficient of determination ( $r^2 = 0.028$ ) reveals that 28% of the variance observed in research productivity in public universities accounted for by the ability to evaluate information sources by postgraduate students in public universities in Akwa Ibom State, Nigeria. This implies that the ability to evaluate information sources by postgraduate students has a low degree of association with the research productivity in public universities in Akwa Ibom State, Nigeria.

**Hypothesis 3:** There is no significant association between the ability to evaluate information sources by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.

Data in Table 3 above indicated a p-value of 0.672 which is greater than alpha value of 0.05. Since the p-value of 0.672 is greater than alpha value of 0.05, the null hypothesis of a no significant association between the ability to evaluate information sources by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria, was accepted. Thus, there is a weak significant association between the ability to evaluate information sources by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.

**RQ 4:** What association exists between the ability to understand ethical issues of information by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria?

Data on Table 4 shows a low degree of association between the ability to understand ethical issues of information by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria, as indicated by the correlation coefficient ( $r = 0.213$ ) which is positive and falls within the coefficient limit of  $\pm 0.20 - 0.40$ . The coefficient of determination ( $r^2 = 0.045$ ) reveals that 45% of the variance observed in research productivity in public universities accounted for by the ability to understand ethical issues of information by postgraduate students in public universities in Akwa Ibom State, Nigeria. This implies that the ability to understand ethical issues of information

by postgraduate students has a low degree of association with research productivity in public universities in Akwa Ibom State, Nigeria.

**Hypothesis 4:** There is no significant association between the ability to understand ethical issues of information by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.

Data in Table 4 showed a p-value of 0.004 which is less than Alpha value of 0.05. Since the p-value of 0.004 is less than alpha value of 0.05, the null hypothesis of a no significant association between the ability to understand ethical issues of information by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria, was rejected and the alternative accepted. Therefore, there is a strong positive significant association between the ability to understand ethical issues of information by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria.

## 5. DISCUSSION

### 5.1 Ability to Recognize Information Needs by Postgraduate Students has a Strong Positive Association with Research Productivity in Public Universities in Akwa Ibom State, Nigeria

The finding on the association between the ability to recognize information needs by postgraduate students and research productivity in public universities revealed that a strong positive significant association between the ability to recognize information needs by postgraduate

**Table 4. PPMC coefficient between the ability to understand ethical issues of information by postgraduate students and research productivity**

|         |                                      | AUEIIPS | RPPU  | P-value | Sig. |
|---------|--------------------------------------|---------|-------|---------|------|
| AUEIIPS | Pearson's Correlation Sig. (2tailed) | 1       | 0.213 | 0.004   | 0.05 |
|         | N                                    | 125     | 125   |         |      |
| RPPU    | Pearson's Correlation Sig. (2tailed) | 0.213   | 1     |         |      |
|         | R <sup>2</sup>                       | 0.045   |       |         |      |
|         | N                                    | 125     | 125   |         |      |

*AUEIIPS = Ability to Understand Ethical Issues of Information by Postgraduate Students*

*RPPU = Research Productivity in Public Universities*

*N = No. of Observations*

*R = Correlation Coefficient*

*R<sup>2</sup> = Coefficient of Determination*

students and research productivity in public universities in Akwa Ibom State, Nigeria. This implies that postgraduate student skills and competencies in recognizing information needs has positive implications on their research activities and overall research productivity, which could enhance the expansion of knowledge in public universities. This finding agrees with Obasi and Ibegwam [14], which revealed that students' recognition of information needs indicators such as the nature of information need and scope of information need have significant influence on graduate students' research practices in the university libraries. It also corroborates Olakunle and Olanrewaju [25], which reported a positive relationship between information literacy skills and research productivity in university libraries as researchers with high information literacy skills often find it easier to engage in better research works than those with lower information literacy skills.

### **5.2 Ability to Locate Information Resources by Postgraduate Students has a Strong Positive Association with Research Productivity in Public Universities in Akwa Ibom State, Nigeria**

Regarding the association between the ability to locate information resources by postgraduate students and research productivity in public universities, the finding showed that the ability to locate information resources by postgraduate students has a strong positive association with research productivity in public universities in Akwa Ibom State, Nigeria. This finding indicated that the ability to locate information resources by postgraduate students enhances postgraduate students' research productivity by enabling them to effectively access and locate relevant and useful information resources from various print and non-print media for their research activities in public universities. This finding partially agrees with Omehia and Okwu [26], which revealed that postgraduate students possessed the ability to search for print materials on card catalogues, shelves and other archives, as well as the ability to search for electronic material using OPAC, Boolean search, and web search. It also partly affirms Nwosu et al. [5], which found that the level of information literacy skills to locate information sources moderately facilitates the research ability of academics in universities.

### **5.3 Ability to Evaluate Information Sources by Postgraduate Students has a Weak Association with Research Productivity in Public Universities in Akwa Ibom State, Nigeria**

The finding revealed that there is a weak association between the ability to evaluate information sources by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria. This result indicated that the postgraduate students do not possess adequate skills to critically evaluate the integrity and authenticity of various sources of information for enhanced research productivity. This finding disagrees with Nwosu et al. [5], which found that academics possessed moderate ability to evaluate information resources of different formats either on the web or library shelves for their research activities. It also disagrees with Fajonyomi et al. [9] as well as Oseghale [23], which revealed that the ability to evaluate information sources as an indicator of information literacy skills had a positive and significant influence on use of library resources by postgraduate vis-à-vis quality of research output in university libraries.

### **5.4 Ability to Understand Ethical Issues by Postgraduate Students has a Strong Positive Significant Association with Research Productivity in Public Universities in Akwa Ibom State, Nigeria**

The findings showed that there is a strong positive significant association between the ability to understand ethical issues of information by postgraduate students and research productivity in public universities in Akwa Ibom State, Nigeria. This finding indicated that understanding ethical issues in relations to the observance of copyright principles and strict avoidance of plagiarism are ingrained in quality research productivity of postgraduate students in public universities. The finding agrees with Nwosu et al. [5], which revealed that the level of information literacy in the areas of ethical and legal use of information significantly relates to quality of research activities. It however, disagrees with Ikenwe and Anaehobi [20,28,29], which discovered a low positive correlation between academics' skill to apply ethical and legal issues of information and utilization of digital library resources in research activities.

## 6. CONCLUSION

Information literacy skills of postgraduate students remain a cardinal factor in enhancing quality research productivity in public universities. This is because research productivity is characteristically a creation or product of effective, critical, meticulous and knowledgeable use of information from various print and non-print sources. It behooves to state that the information literacy skills are the nitty-gritty or linchpins of quality research productivity in public universities. In this study, it was discovered that the ability to recognize information needs, ability to locate information resources, and the ability to understand ethical issues of information have strong positive significant associations with research productivity of postgraduate students in public universities in Akwa Ibom State, Nigeria. On the contrary, the ability to evaluate information sources by postgraduate students has a weak association with research productivity in public universities in Akwa Ibom State, Nigeria. This result indicated the need for postgraduate students to pay priority attention to improving their information literacy skills in order to enhance the quality of their research productivity for better contributions to knowledge which the public universities exist to accomplish.

## 7. RECOMMENDATIONS

**Based on the findings of this study, the following recommendations were made:**

- i. Management of public universities should provide adequate infrastructural facilities including constant power supply and Internet connection in order to facilitate acquisition of information literacy skills by postgraduate students.
- ii. Management of public university libraries should prioritize teaching of information literacy skills to all categories of students in order to equip them for better learning and research activities.
- iii. Lecturers in the public universities should fine-tune their teaching pedagogies in line with changing trends especially in areas related to information literacy training in order to equip the postgraduate students with the information literacy skills.
- iv. Librarians should be willing to impart information literacy skills to postgraduate

students through friendly interactions and sharing of experiences to enable them improve their research productivity.

- v. Postgraduate students should improve their interest in the acquisition of information literacy skills, especially their ability to evaluate the suitability, credibility and authenticity of information sources in order to enhance their learning and research abilities for improved contributions to knowledge.

## DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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