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# Information Literacy Skills, Proficiency Levels, and Ethics of AI Use in Research among Postgraduate Students

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**ABSTRACT:**

This study examined information literacy skills, proficiency levels, and the ethical use of artificial intelligence (AI) in research among postgraduate students in the Faculty of Social Sciences at Delta State University, Abraka, Nigeria. The study was guided by three research objectives: to identify information literacy skills possessed by postgraduate students, examine their proficiency levels in these skills, and investigate the relationship between information literacy and ethical AI use in research. Using a correlational research design, data were collected from 164 postgraduate students through a validated and reliable self-designed questionnaire titled "Information Literacy and the Ethical Use of Artificial Intelligence in Research among Postgraduate Students Questionnaire" (ILEUAIRPSQ). The instrument, which had a reliability coefficient of 0.78, comprised five sections covering demographic data, AI utilization, ethical principles adherence, information literacy skills possession, and proficiency levels. Data were analyzed using descriptive statistics and Pearson Product Moment Correlation at the 0.05 level of significance. Findings revealed that postgraduate students possessed basic and intermediate information literacy skills, with majority demonstrating competence in identifying and locating information (69.5%), retrieving and summarizing resources (61.6%), and online information retrieval (61.6%). However, advanced competencies such as formulating search strategies (41.5%) and integrating information into unified knowledge bases (37.8%) were less developed. Assessment of proficiency levels showed low overall proficiency (aggregate mean = 2.18, below criterion mean of 2.50), with most students rating themselves as beginners or novices across skill dimensions. The highest proficiency was observed in formulating search strategies (M = 2.32), while the lowest was in utilizing diverse information sources (M = 1.99). Crucially, a significant positive relationship was found between information literacy and ethical AI use ($r = 0.578$, $p < 0.05$), indicating that students with stronger information literacy skills demonstrated more ethical AI practices. The study recommends strengthened information literacy instruction, integration of AI ethics into research training, and clear institutional policies on ethical AI use...

**Keywords**: Information literacy, Artificial intelligence, Research ethics, Postgraduate students, and Academic integrity.

## INTRODUCTION

The pervasive integration of artificial intelligence (AI) into academic research has fundamentally transformed the scholarly landscape, particularly for postgraduate students who constitute the next generation of knowledge producers. As AI technologies increasingly mediate research processes—from literature searching and data analysis to citation generation and academic writing—the competencies required for effective and responsible scholarship have undergone significant redefinition (Asongo & Akuse, 2024; Llerena et al., 2025). Within this

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transformed environment, three interrelated dimensions have emerged as critical determinants of research quality and integrity: information literacy skills, proficiency levels in those skills, and the ethical use of AI in research. These three variables form the conceptual foundation of this study, which examines their manifestations and interrelationships among postgraduate students in the Faculty of Social Sciences at Delta State University, Abraka, Nigeria.

Information literacy, defined as the ability to recognise information needs, locate relevant sources, evaluate information critically, and apply retrieved information effectively and responsibly, constitutes the first variable of this investigation (Udem & Anaehobi, 2020). In the context of AI-enhanced research environments, information literacy extends beyond traditional competencies to encompass the capacity to interrogate AI-generated outputs, verify algorithmic suggestions, and maintain scholarly rigor when technological tools are employed (Ottonicar, Manhique, & Mosconi, 2021). Postgraduate students who possess robust information literacy skills are better positioned to distinguish credible from unreliable AI-generated content, identify potential biases embedded in algorithmic outputs, and apply appropriate referencing standards when incorporating AI-assisted materials into their research (Fasola & Oso, 2021). Conversely, deficiencies in information literacy may render students vulnerable to uncritical acceptance of AI-generated information, increasing the risk of plagiarism, misrepresentation, and erosion of academic standards (Osang, Idiong, & Akanimoh, 2025). Therefore, assessing the specific information literacy skills possessed by postgraduate students represents a foundational objective of this study, as it establishes baseline understanding of students' capacities to navigate AI-mediated information environments responsibly

However, the mere possession of information literacy skills does not guarantee their effective application in research contexts. Proficiency level—the degree of mastery or competence with which individuals apply their skills—constitutes the second variable of this investigation and introduces a critical distinction between awareness and capability. A student may possess basic awareness of information literacy concepts yet demonstrate low proficiency in executing complex search strategies, synthesising information from multiple sources, or evaluating conflicting evidence (Ibrahim & Bamgbose, 2023). Proficiency exists along a continuum from novice to expert, and understanding where postgraduate students fall on this continuum has significant implications for designing appropriate educational interventions (Oni et al., 2023). Studies have shown that while many postgraduate students demonstrate adequate basic information literacy skills, their proficiency in advanced competencies—such as formulating coherent search strategies, integrating information into unified knowledge bases, and critically assessing information quality—often remains underdeveloped (Effiong & Akwang, 2024; Nwankwo, 2023). Within the specific context of AI use in research, low proficiency in information literacy may manifest as inability to verify AI-generated claims, difficulty identifying when AI outputs contain errors or biases, and challenges in appropriately integrating AI-assisted content with original scholarly work. Consequently, examining the degree to which postgraduate students demonstrate proficiency in information literacy skills constitutes the second essential objective of this study, providing insights into the depth of their competencies beyond mere awareness.

The third variable—ethical use of artificial intelligence in research—represents the outcome dimension of this investigation, encompassing the principles and practices that govern responsible AI adoption in scholarly work. Ethical AI use requires researchers to maintain transparency about AI tool usage, verify AI-generated information before incorporation into research outputs, properly acknowledge AI contributions, protect personal and institutional data, avoid over-reliance on automated systems, and adhere to institutional policies governing AI use (Resnik & Hosseini, 2024; Arar, Saiti, & Guajardo, 2025). For postgraduate students, ethical AI use is not merely a compliance issue but a fundamental aspect of scholarly identity formation and professional development (Bamigbola & Joseph, 2025). The ethical challenges posed by AI in research are particularly acute in the social sciences, where research often involves human subjects, sensitive data, and complex theoretical frameworks that demand rigorous methodological and ethical scrutiny. Bin-Nashwan, Sadallah, and Bouteraa (2023) documented that while students widely adopt generative AI tools for academic support, their adherence to ethical principles—particularly disclosure and attribution—remains inconsistent. Similarly, Abubakar, Obielodan, and Abdullahi (2024) found that many postgraduate students in Nigerian tertiary institutions lack clear understanding of institutional expectations regarding AI-assisted content, leading to unintentional ethical violations. Assessing the extent to which postgraduate students adhere to ethical principles in AI use therefore constitutes the third critical objective of this study, providing empirical evidence of current compliance patterns and identifying areas requiring intervention.

The relationship between information literacy and ethical AI use represents the analytical core of this investigation, as understanding how these variables interact is essential for developing effective educational strategies. Theoretical and empirical literature suggests that information literacy and ethical AI use are not independent phenomena but are fundamentally interconnected (Ottonicar et al., 2021; Michael, Essien, & Ikwuobe, 2025). Students with stronger information literacy skills possess greater capacity to critically evaluate AI outputs, identify potential ethical issues, and make informed decisions about appropriate AI use in specific research contexts. Conversely, students with limited information literacy may lack the evaluative frameworks

necessary to recognise when AI use crosses ethical boundaries, leading to practices that compromise academic integrity (Samuel, 2025; Suleiman, Akanbi, & Ibidunni, 2024). This relationship is not merely correlational but potentially causal, as information literacy provides the cognitive and metacognitive tools that enable ethical reasoning in AI-mediated research environments (Usulor, Ubi, & Nwode, 2025). Therefore, investigating the relationship between information literacy and ethical use of artificial intelligence in research constitutes the final objective of this study, testing the hypothesis that these variables are positively and significantly associated.

The Faculty of Social Sciences at Delta State University, Abraka, provides a particularly appropriate context for examining these three interrelated variables. As a Nigerian university situated within a developing country's educational landscape, Delta State University faces both the opportunities presented by expanding access to AI technologies and the challenges associated with limited infrastructure, inadequate training programmes, and underdeveloped institutional policies on AI use (Eleje et al., 2025; Peters & Olojede, 2025). Postgraduate students in the social sciences engage with diverse research methodologies—quantitative, qualitative, and mixed methods—that present varying opportunities and challenges for AI integration. Additionally, these students operate within information environments that increasingly incorporate AI-powered databases, citation management tools, grammar checkers, and generative AI platforms, yet may receive limited structured guidance on how to use these tools ethically and effectively (Chukwu-Nwali & Udumukwu, 2025). Understanding how information literacy skills, proficiency levels, and ethical AI use manifest within this specific context is essential for developing targeted interventions that address the unique needs and circumstances of social science postgraduate students at Delta State University, Abraka.

The significance of this study extends beyond academic documentation to practical application in curriculum development, library instruction, and institutional policy formulation. For faculty members and research supervisors, findings regarding students' information literacy skills and proficiency levels inform the design of research methodology courses and supervision practices that address specific competency gaps. For librarians and information professionals, insights into the relationship between information literacy and ethical AI use guide the development of instructional programmes that integrate traditional information literacy competencies with emerging requirements for responsible AI use (Kotso, Gbaje, & Yabanet, 2025). For university administrators and policymakers, evidence of the positive relationship between information literacy and ethical AI use provides justification for investing in information literacy education as a strategy for promoting research integrity in the AI era. Ultimately, by examining information literacy skills, proficiency levels, and ethical AI use as interconnected variables within the specific context of the Faculty of Social Sciences at Delta State University, Abraka, this study aims to contribute to the broader goal of preparing postgraduate students for responsible, effective, and ethical engagement with AI technologies in their research careers.

Theories Related to *Information Literacy Skills*

These theories explain how students identify, find, evaluate, and use information.

**The Big Six Information Literacy Model (Eisenberg & Berkowitz, 1990):** This is the most directly applicable theory. It posits that information literacy consists of six core skills: Task Definition, Information Seeking Strategies, Location & Access, Use of Information, Synthesis, and Evaluation. *Application:* You can assess how postgraduate students apply these steps when using AI tools (e.g., using ChatGPT to synthesize sources vs. critically evaluating AI-generated content).

**SCONUL Seven Pillars of Information Literacy (Society of College, National and University Libraries, 1999; revised 2011):** This model presents IL as a circular process of seven "pillars": Identify, Scope, Plan, Gather, Evaluate, Manage, and Present. *Application:* It is particularly useful for mapping AI use—e.g., how well students "Evaluate" AI outputs for authority and bias, or how they "Manage" AI-generated citations.

**Metaliteracy Theory (Mackey & Jacobson, 2011):** An extension of IL for the digital age, emphasizing collaborative, participatory, and metacognitive skills. It includes domains like behavioral, cognitive, metacognitive, and affective. *Application:* Essential for understanding how students learn to use AI *critically* and reflectively, not just operationally. It highlights that AI literacy is a subset of met literacy..

## Literature Review

### Information Literacy Skills Possessed by Postgraduate Students

Information literacy skills constitute essential competencies for effective research engagement in contemporary academic environments. These skills encompass the ability to recognize information needs, locate relevant sources, evaluate credibility and relevance, and apply retrieved information appropriately in scholarly contexts (Udem & Anaehobi, 2020). For postgraduate students, possession of these skills represents a foundational requirement for independent research and knowledge creation, particularly as information environments become increasingly complex and technology-mediated.

Research examining information literacy skills among postgraduate students in Nigerian universities reveals a

pattern of moderate competence with significant variation across skill dimensions. Ibrahim et al. (2023) found that postgraduate students at Nasarawa State University demonstrated moderate awareness of online library databases and basic keyword search capabilities, indicating foundational skills in information access. Similarly, Oni et al. (2023) reported that postgraduate students at the University of Nigeria, Nsukka possessed functional abilities in identifying information needs and accessing scholarly resources through both print and electronic channels. These findings suggest that students entering postgraduate programs typically bring basic information literacy competencies that enable initial engagement with research requirements.

However, the depth and sophistication of these skills often prove insufficient for advanced research demands. Fasola and Oso (2021) observed that while many postgraduate students at Ajayi Crowther University could locate information independently, fewer demonstrated advanced competencies such as refining search strategies, utilizing specialized databases, or employing sophisticated search techniques. This pattern indicates that possession of information literacy skills exists along a continuum, with students typically clustering at basic to intermediate levels rather than achieving advanced expertise. The disparity between basic access skills and higher-order analytical capabilities represents a critical gap affecting research quality and scholarly development.

Studies examining specific skill components reveal uneven development across information literacy dimensions. Abdullahi (2023) emphasized that structured information literacy programs in public universities contributed significantly to improving postgraduate students' research competencies, particularly in database searching and citation practices. Ajiboye et al. (2025) documented noticeable improvements in students' information organization skills following participation in formal information literacy and research skills programs. These findings suggest that possession of information literacy skills is not static but can be enhanced through targeted educational interventions. However, Fasola and Oso (2021) noted that students lacking access to continuous training often retained only basic competencies, indicating that skill possession requires sustained institutional support.

The relationship between information technology skills and information literacy further complicates understanding of skill possession among postgraduate students. Mathew et al. (2021) found that postgraduate students' information literacy proficiency was closely related to their information technology skills and frequency of library use, suggesting that technological competence and information literacy develop in tandem. Jibrin et al. (2025) observed that postgraduate students in Kaduna State universities demonstrated average proficiency in accessing and using digital information resources, with variations based on prior exposure to technology-mediated learning environments. These studies collectively indicate that information literacy skill possession is influenced by multiple factors including institutional resources, disciplinary context, and individual learning experiences.

Recent scholarship has increasingly focused on information literacy in relation to emerging technologies, including artificial intelligence. Ottonicar et al. (2021) emphasized that information literacy encompasses awareness of AI ethics and the ability to apply critical evaluation to algorithmic outputs. This expanded conception of information literacy suggests that contemporary postgraduate students must possess skills that extend beyond traditional information handling to include evaluation of AI-generated content and understanding of algorithmic limitations. The integration of AI literacy into information literacy frameworks represents an evolving understanding of the competencies required for ethical research practice in technology-rich environments.

**Proficiency Levels in Information Literacy Skills**

While possession of information literacy skills indicates awareness and basic capability, proficiency levels reflect the depth of mastery and effective application of these competencies in research contexts. Proficiency encompasses not only the ability to perform information literacy tasks but the quality, efficiency, and sophistication with which these tasks are executed (Fasola & Oso, 2021). Assessment of proficiency levels provides crucial insights into the actual research capabilities of postgraduate students and identifies areas requiring enhanced educational support.

Empirical studies consistently characterize postgraduate students' information literacy proficiency as moderate, with significant room for improvement across most skill dimensions. Fasola and Oso (2021) reported that postgraduate students at Ajayi Crowther University possessed average proficiency in information literacy skills, particularly in locating academic materials and using basic library tools. Oni et al. (2023) similarly found that postgraduate students at the University of Nigeria, Nsukka showed moderate competence in recognizing information needs and retrieving scholarly resources. Ibrahim et al. (2023) observed that postgraduate students at Nasarawa State University demonstrated fair proficiency in database awareness and basic search strategies. These convergent findings suggest that moderate proficiency represents the typical achievement level for postgraduate students in Nigerian universities.

Examination of specific proficiency components reveals significant variation across skill areas. Ibrahim and Bamgbose (2023) found that postgraduate students at Michael Okpara University of Agriculture exhibited moderate proficiency in online searching but showed limited ability to critically evaluate the credibility and relevance of retrieved information. Nwankwo (2023) reported that postgraduate Library and Information Science

students in Anambra State demonstrated adequate proficiency in using library resources, yet their evaluation skills remained average. Effiong and Akwang (2024) observed that postgraduate students in public universities in Akwa Ibom State displayed moderate proficiency in information literacy indicators related to research productivity. These studies collectively indicate that while students develop functional proficiency in information access, higher-order skills involving critical evaluation and synthesis remain less developed.

The relationship between proficiency levels and academic outcomes provides important validation of the significance of information literacy mastery. Onifade et al. (2024) confirmed that students with higher levels of information literacy proficiency achieved better academic performance, implying that proficiency variation directly influences research quality and scholarly success. Udem and Anaehobi (2020) established a positive relationship between information literacy skills and research self-efficacy, suggesting that students with stronger proficiency demonstrate greater confidence in conducting independent research. These findings underscore the importance of moving beyond basic skill possession to achieve advanced proficiency levels that support high-quality research engagement.

Disciplinary and institutional factors significantly influence proficiency levels among postgraduate students. Udem and Anaehobi (2020) reported that postgraduate Library and Information Science students in Southeast Nigeria exhibited moderate to relatively high proficiency compared to students in non-library-related disciplines, indicating that disciplinary context shapes skill development. Abdullahi (2023) found that postgraduate students across public universities in Nigeria's northern geopolitical zones generally possessed moderate proficiency, with variations based on institutional information literacy programming. Ajiboye et al. (2025) documented significant differences in proficiency levels among postgraduate students before and after exposure to structured research skills programs, demonstrating that educational interventions can substantially enhance proficiency.

The implications of moderate proficiency levels extend beyond individual student performance to affect the quality of research outputs and the integrity of scholarly processes. Students operating at intermediate proficiency levels may struggle with complex research tasks requiring sophisticated information synthesis, strategic searching, and critical evaluation of diverse sources. These limitations become particularly significant in the context of AI-assisted research, where advanced information literacy skills are essential for evaluating algorithmic outputs and maintaining ethical standards. The documented pattern of moderate proficiency suggests that many postgraduate students may lack the advanced competencies necessary for fully autonomous and ethically grounded research in technology-mediated environments.

**Relationship Between Information Literacy and Ethical AI Use in Research**

The intersection of information literacy and ethical artificial intelligence use represents a critical frontier in contemporary research ethics scholarship. As AI technologies become increasingly integrated into academic research processes, understanding how information literacy competencies influence ethical decision-making becomes essential for promoting responsible scholarly practice. The theoretical connection between these constructs rests on the premise that information literacy provides the critical evaluation skills necessary for assessing AI outputs, understanding algorithmic limitations, and applying ethical reasoning to technology-mediated research activities (Ottonicar et al., 2021; Peters & Olojede, 2025).

Empirical research has established a positive relationship between information literacy and ethical AI use, demonstrating that students with stronger information literacy skills exhibit greater awareness of ethical boundaries and more responsible research practices. Michael et al. (2025) found that students with higher levels of digital and information literacy demonstrated stronger awareness of ethical issues when using generative AI tools for academic tasks. This relationship suggests that information literacy competencies enable researchers to distinguish between acceptable AI assistance and unethical practices such as plagiarism, misrepresentation, and unacknowledged use of algorithmic outputs. Samuel (2025) similarly reported that students possessing adequate information literacy were more capable of safeguarding academic integrity and data privacy when engaging with AI tools, indicating that literacy skills support ethical reasoning across multiple dimensions of research activity.

The mechanisms through which information literacy influences ethical AI use involve several interconnected cognitive and behavioral processes. Information literacy cultivates critical evaluation skills that enable students to assess the credibility, accuracy, and bias of AI-generated content, reducing uncritical acceptance of algorithmic outputs (Suleiman et al., 2024). Additionally, information literacy fosters understanding of authorship, attribution, and intellectual property concepts that inform appropriate acknowledgment of AI assistance in research outputs (Ajiboye et al., 2025). These competencies translate abstract ethical principles into concrete research behaviors, bridging the gap between ethical awareness and practical application.

Conversely, deficiencies in information literacy have been associated with unethical AI use in research contexts. Michael et al. (2025) reported that students with limited information literacy skills were more likely to rely uncritically on AI-generated outputs, increasing the likelihood of plagiarism and improper attribution. Asghar et al. (2025) demonstrated that ethical AI behavior was strongly interconnected with the cognitive and behavioral dimensions of AI literacy, which are rooted in foundational information literacy competencies. Usulor et al. (2025)

found that students lacking foundational literacy skills struggled to apply ethical standards consistently, even when aware of institutional rules. These findings suggest that information literacy serves as a protective factor against unethical AI practices, with skill deficiencies creating vulnerability to research integrity violations.

Institutional efforts to strengthen information literacy have demonstrated positive effects on ethical AI use. Ajiboye et al. (2025) documented that postgraduate students who underwent structured information literacy and research skills training demonstrated greater clarity in handling AI-assisted academic tasks responsibly. Kotso et al. (2025) found that academic librarians with higher AI and information literacy skills were better positioned to guide ethical AI usage within research environments. These studies indicate that information literacy education can be strategically leveraged to promote ethical AI practices, suggesting a actionable pathway for institutional intervention.

The relationship between information literacy and ethical AI use carries particular significance for postgraduate education, where students are expected to develop independent research capabilities while navigating complex ethical landscapes. As AI tools become increasingly sophisticated and accessible, the ability to use these technologies responsibly becomes a core competency for emerging scholars. The documented positive relationship between information literacy and ethical AI use suggests that investments in information literacy education yield returns in research integrity, positioning information literacy as a foundational element of ethical research training in the AI era.

## Methodology

This study employed a correlational research design to examine the relationship between information literacy and the ethical use of artificial intelligence in research among postgraduate students. The correlational design was appropriate for investigating the strength and direction of relationships between variables without experimental manipulation, allowing for the identification of naturally occurring patterns in the research context (Bhandari, 2021).

The study population consisted of 173 postgraduate students enrolled in the Faculty of Social Sciences at Delta State University, Abraka, Nigeria, during the 2024/2025 academic session. The population distribution across departments included: Economics (52 students), Sociology (21 students), Political Science (38 students), Geography and Regional Planning (8 students), Psychology (11 students), and Library and Information Science (43 students). A total enumeration sampling technique was utilized, including all available postgraduate students in the faculty to ensure comprehensive coverage and minimize sampling bias (Baxter & Babbie, 2004).

Data were collected using a self-designed questionnaire titled "Information Literacy and the Ethical Use of Artificial Intelligence in Research among Postgraduate Students Questionnaire" (ILEUAIRPSQ). The instrument comprised five sections: Section A collected demographic data; Section B examined AI utilization for research purposes; Section C assessed adherence to ethical principles in AI use; Section D identified information literacy skills possessed; and Section E measured proficiency levels in information literacy skills. The instrument was validated through face and content validity techniques, with expert review ensuring clarity, relevance, and adequacy of content.

The reliability of the instrument was established using the test-retest method. The questionnaire was administered to 20 students from a non-sampled faculty (Education), and re-administered after two weeks. Pearson Product Moment Correlation analysis yielded a reliability coefficient of 0.78, indicating acceptable internal consistency.

The researcher personally administered questionnaires to ensure high response rates, with research assistants facilitating distribution and collection where necessary. Out of 173 administered questionnaires, 164 were completed and returned, representing a 94.8% response rate that exceeded the standard 60% threshold for research validity.

Data analysis employed descriptive statistics including frequencies, percentages, and means. A criterion mean of 2.50 was established for interpretation on a 4-point scale, with scores equal to or above 2.50 indicating acceptance and scores below 2.50 indicating rejection. The Pearson Product Moment Correlation (PPMC) was used to analyze the relationship between information literacy and ethical AI use, with significance determined at the 0.05 alpha level.

## Results and Analysis

### Information Literacy Skills Possessed by Postgraduate Students

Analysis of information literacy skills possessed by postgraduate students revealed that students demonstrated competence in basic and intermediate skills while showing limitations in advanced competencies. Table 1 presents the distribution of responses regarding specific information literacy skills.

**Table 1**

*Information Literacy Skills Possessed by Postgraduate Students (N = 164)*

**Table**

| Skill | Agree | | Disagree | |
|---|---|---|---|---|
| | Freq. | % | Freq. | % |
| Ability to identify and locate desired information promptly | 114 | 69.5 | 50 | 30.5 |
| Competence in retrieving and summarizing information resources | 101 | 61.6 | 63 | 38.4 |
| Proficiency in online information retrieval (acknowledge sources) | 101 | 61.6 | 63 | 38.4 |
| Proficiency in utilizing diverse information sources (apply) | 99 | 60.4 | 65 | 39.6 |
| Proficiency in editing electronic resources (evaluate) | 98 | 59.8 | 66 | 40.2 |
| Skills in storing electronic information for future reference | 94 | 57.3 | 70 | 42.7 |
| Competence in assessing information effectively | 92 | 56.1 | 72 | 43.9 |
| Information recognition proficiency (find) | 74 | 45.1 | 90 | 54.9 |
| Capability to formulate a coherent search strategy | 68 | 41.5 | 96 | 58.5 |
| Aptitude to find and integrate information into a unified knowledge base | 62 | 37.8 | 102 | 62.2 |

*Note.* Data source: Fieldwork, 2026

The results indicate that the majority of students agreed they possessed skills related to identifying and locating information (69.5%), retrieving and summarizing resources (61.6%), and online information retrieval with proper acknowledgment (61.6%). However, fewer than half agreed they possessed advanced skills such as information recognition proficiency (45.1%), formulating coherent search strategies (41.5%), and integrating information into unified knowledge bases (37.8%). These findings suggest that while students possessed functional information literacy skills for routine research tasks, advanced competencies required for sophisticated research activities were less developed.

**Proficiency Levels in Information Literacy Skills**

Assessment of proficiency levels revealed that postgraduate students demonstrated low proficiency across all measured dimensions of information literacy. Table 2 presents the detailed proficiency ratings.

**Table 2**

*Degree of Proficiency in Information Literacy Skills (N = 164)*

**Table**

| Skill | Expert | Intermediate | Beginner | Novice | Mean |
|---|---|---|---|---|---|
| Capability to formulate a coherent search strategy | 22 | 48 | 55 | 39 | 2.32 |
| Competence in assessing information | 31 | 30 | 57 | 46 | 2.28 |

| Skill | Expert | Intermediate | Beginner | Novice | Mean |
|---|---|---|---|---|---|
| effectively | | | | | |
| Proficiency in online information retrieval | 24 | 31 | 69 | 40 | 2.24 |
| Aptitude for integrating information into unified knowledge base | 17 | 50 | 47 | 50 | 2.21 |
| Competence in retrieving and summarizing information resources | 20 | 38 | 61 | 45 | 2.20 |
| Information recognition proficiency | 20 | 39 | 53 | 52 | 2.16 |
| Skills in storing electronic information for future reference | 16 | 44 | 55 | 49 | 2.16 |
| Proficiency in editing electronic resources | 15 | 48 | 44 | 57 | 2.13 |
| Ability to identify and locate desired information promptly | 16 | 35 | 67 | 46 | 2.13 |
| Proficiency in utilizing diverse information sources | 15 | 31 | 55 | 63 | 1.99 |
| **Aggregate Mean** | | | | | **2.18** |
| **Criterion Mean** | | | | | **2.50** |

*Note.* Scale: 4 = Expert, 3 = Intermediate, 2 = Beginner, 1 = Novice. Data source: Fieldwork, 2025.

The aggregate mean of 2.18 fell below the criterion mean of 2.50, indicating low overall proficiency. The highest proficiency was observed in capability to formulate search strategies (M = 2.32, indicating beginner-to-intermediate level), while the lowest proficiency was in utilizing diverse information sources (M = 1.99, indicating novice-to-beginner level). The majority of students rated themselves as beginners or novices across most skill dimensions, with relatively few achieving expert or intermediate status. These results demonstrate that possession of information literacy skills did not translate into high proficiency levels, suggesting significant gaps between awareness and mastery.

**Relationship Between Information Literacy and Ethical AI Use**

Pearson Product Moment Correlation analysis was conducted to examine the relationship between information literacy and ethical use of artificial intelligence in research. Table 3 presents the correlation results.

**Table 3**

*Correlation Between Information Literacy and Ethical AI Use (N = 164)*

**Table**

| Variable | | Information Literacy | Ethical AI Use |
|---|---|---|---|
| Information Literacy | Pearson Correlation | 1 | .578* |
| | Sig. (2-tailed) | | .006 |

| Variable | | Information Literacy | Ethical AI Use |
|---|---|---|---|
| | N | 164 | 164 |
| Ethical AI Use | Pearson Correlation | .578* | 1 |
| | Sig. (2-tailed) | .006 | |
| | N | 164 | 164 |

*Note.* *Correlation is significant at the 0.05 level (2-tailed).

The analysis revealed a positive correlation coefficient of r = 0.578 between information literacy and ethical AI use, with a corresponding p-value of 0.006. Since the p-value (0.006) was less than the alpha level of 0.05, the correlation was statistically significant. This indicates a moderate-to-strong positive relationship between the variables, suggesting that higher levels of information literacy are associated with more ethical use of AI in research. The coefficient of determination ($r^2 = 0.334$) indicates that approximately 33.4% of the variance in ethical AI use can be explained by information literacy levels.

**Discussion of Findings**

The findings of this study provide important insights into the information literacy landscape among postgraduate students and its implications for ethical AI use in research contexts. The results reveal a complex pattern of skill possession, proficiency limitations, and significant relationships that have important implications for educational practice and institutional policy.

The finding that postgraduate students possessed basic and intermediate information literacy skills while demonstrating deficiencies in advanced competencies aligns with existing literature on information literacy in Nigerian higher education. Fasola and Oso (2021) similarly reported that postgraduate students possessed foundational skills but lacked advanced competencies required for in-depth academic research. This pattern suggests that information literacy instruction in postgraduate programs may emphasize access and retrieval over critical evaluation and synthesis. The high agreement rates for skills such as identifying information needs (69.5%) and retrieving resources (61.6%) indicate that students have developed functional capabilities for routine research tasks. However, the lower possession rates for advanced skills such as formulating search strategies (41.5%) and integrating information (37.8%) reveal critical gaps that may limit research sophistication and independent scholarly inquiry.

The finding of low proficiency levels across all information literacy dimensions represents a significant concern for postgraduate education quality. With an aggregate mean of 2.18, falling substantially below the criterion mean of 2.50, students demonstrated proficiency levels clustered at the beginner-to-novice range rather than achieving expert or intermediate mastery. This finding supports Ibrahim and Bamgbose (2023), who reported that postgraduate students exhibited low proficiency in online searching and evaluation skills despite frequent exposure to digital resources. The discrepancy between skill possession (where majorities agreed they had skills) and proficiency (where most rated themselves as beginners or novices) suggests that students may overestimate their capabilities or that information literacy instruction focuses on awareness rather than deep competency development. The particularly low proficiency in utilizing diverse information sources (M = 1.99) indicates limitations in students' ability to navigate multiple information channels effectively, a critical capability in contemporary research environments.

The significant positive relationship between information literacy and ethical AI use ($r = 0.578$, $p < 0.05$) represents the central finding of this study, confirming the theoretical proposition that information literacy serves as a foundation for ethical technology use in research. This result aligns with Ottonicar et al. (2021), who emphasized that information literacy enables researchers to understand AI limitations and apply ethical reasoning, and Michael et al. (2025), who found that students with higher information literacy demonstrated greater awareness of ethical issues in AI use. The moderate-to-strong correlation suggests that information literacy competencies provide students with the critical evaluation skills necessary to assess AI outputs, understand attribution requirements, and navigate the ethical complexities of AI-assisted research.

The practical implications of this relationship are substantial. Students with stronger information literacy skills appear better equipped to verify AI-generated information, appropriately acknowledge AI assistance, and avoid

over-reliance on algorithmic outputs. This protective effect of information literacy against unethical AI practices suggests that investments in information literacy education may yield significant returns in research integrity. Conversely, the finding that 66.6% of variance in ethical AI use remains unexplained by information literacy alone indicates that other factors—including institutional policies, disciplinary norms, individual ethical reasoning, and access to AI literacy training—also influence ethical behavior. This complexity suggests that comprehensive approaches addressing multiple determinants of ethical conduct are necessary for promoting responsible AI use.

The convergence of findings across the three study objectives reveals a developmental trajectory in which students possess foundational information literacy skills, demonstrate limited proficiency in applying these skills, and consequently may struggle with ethical AI use that requires advanced critical evaluation capabilities. The pattern suggests that current educational approaches may be insufficient for preparing postgraduate students to navigate the ethical challenges of AI-assisted research. Students who have not developed advanced information literacy proficiency may lack the cognitive frameworks necessary for sophisticated ethical reasoning about AI use, potentially explaining the documented gaps between AI utilization and ethical adherence observed in previous research (Abubakar et al., 2024; Osang et al., 2025).

The institutional context of Delta State University reflects broader patterns in Nigerian higher education, where rapid technological change often outpaces curriculum development and policy formulation. The finding that students rely heavily on AI tools for research (as documented in the broader study from which these data are drawn) while demonstrating limited information literacy proficiency and variable ethical practices suggests an urgent need for integrated educational interventions. The significant relationship between information literacy and ethical AI use provides empirical justification for strengthening information literacy programs as a mechanism for promoting research integrity in the AI era.

## Conclusion

This study examined information literacy skills, proficiency levels, and their relationship with ethical AI use among postgraduate students in the Faculty of Social Sciences at Delta State University, Abraka. The findings reveal that while students possessed basic and intermediate information literacy skills, their proficiency levels remained low across all measured dimensions. A significant positive relationship was established between information literacy and ethical AI use, indicating that stronger information literacy competencies are associated with more responsible AI practices in research.

The study concludes that information literacy serves as a critical foundation for ethical AI use in postgraduate research, providing students with the evaluation skills and critical thinking frameworks necessary for responsible technology integration. However, the documented gaps in advanced information literacy competencies suggest that current educational approaches may be insufficient for preparing students to navigate the complex ethical landscape of AI-assisted research. The low proficiency levels observed across skill dimensions indicate a need for enhanced instructional strategies that move beyond awareness-building to develop deep, applicable competencies.

The convergence of high AI utilization with limited information literacy proficiency and inconsistent ethical practices represents a significant challenge for postgraduate education quality and research integrity. Addressing this challenge requires intentional integration of information literacy and AI ethics instruction within research methodology curricula, supported by clear institutional policies and sustained faculty development. The significant relationship between information literacy and ethical AI use demonstrated in this study provides empirical support for prioritizing information literacy education as a mechanism for promoting responsible research practices in an increasingly technology-mediated scholarly environment.

## Recommendations

Based on the findings of this study, the following recommendations are proposed to enhance information literacy development and promote ethical AI use among postgraduate students:

University management should develop structured information literacy courses for postgraduate students that emphasize critical evaluation, advanced search strategies, information synthesis, and ethical information use. These courses should move beyond basic orientation sessions to provide sustained, scaffolded instruction that develops deep competencies across all information literacy dimensions.

Libraries and academic departments should collaborate to integrate AI literacy and ethics modules into research methodology and orientation programs. These modules should address specific ethical challenges including verification of AI outputs, appropriate attribution of AI assistance, data privacy protection, and avoidance of over-reliance on algorithmic tools.

: Institutional policies should be formulated or updated to explicitly define acceptable and unacceptable uses of AI in academic research, with clear guidelines for disclosure, attribution, and verification. These policies should

be communicated effectively to all postgraduate students and enforced through appropriate mechanisms that support compliance rather than merely punish violations.

: Information literacy instruction should incorporate practical assessments that require students to demonstrate applied competencies rather than merely self-report skill possession. Performance-based evaluations can provide more accurate measures of proficiency and identify specific areas requiring additional support.

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