

Artificial Intelligence Utilization and Research Writing Skills: A Comparative Study of Federal and State Universities in Nigeria

Maurice E. Eyo

Department of Logistics and Supply Chain Management, Federal University of Technology
Owerri, Nigeria

Toochukwu Rufus Okwara

Department of Logistics and Supply Chain Management, Federal University of Technology
Owerri, Nigeria

Osita Valentine Okwara

Department of Logistics and Supply Chain Management, Federal University of Technology
Owerri, Nigeria

George Ndifon Abang

Department of Business Management, Cross River University of Technology
Calabar, Nigeria

Theresa Dikan Bisong

Department of Business Management, Cross River University of Technology Calabar, Nigeria

doi: <https://doi.org/10.37745/ijmt.2013/vol13n192106>

Published May 17, 2026

Citation: Eyo M.E., Okwara T.R., Okwara O.V., Abang G.N., Bisong T.D. (2026) Artificial Intelligence Utilization and Research Writing Skills: A Comparative Study of Federal and State Universities in Nigeria, *International Journal of Management Technology*, 13(1), 92-106

Abstract: *This study examined artificial intelligence utilization and research writing skills among students in federal and state universities in Nigeria. The study adopted a comparative descriptive survey research design to determine the extent of artificial intelligence utilization and its influence on research writing skills among students in both categories of universities. The population of the study comprised undergraduate and postgraduate students from selected federal and state universities in Nigeria. A sample size of 381 respondents was determined using the Krejcie and Morgan sampling technique. Data were collected using a structured questionnaire titled "Artificial Intelligence Utilization and Research Writing Skills Questionnaire (AIURWSQ)." The instrument was validated by experts in educational technology and research methodology, while Cronbach Alpha reliability analysis yielded a reliability coefficient of 0.88, indicating high internal consistency. Mean and standard deviation were used to answer the research questions, while independent t-test and Pearson Product Moment Correlation analyses were employed to test the hypotheses at a 0.05 level of significance. Findings revealed that students in federal universities*

demonstrated a higher level of artificial intelligence utilization compared to students in state universities. The study also established that artificial intelligence utilization significantly influences research writing skills among university students. AI tools such as ChatGPT, Grammarly, QuillBot, Turnitin, Gemini, and Perplexity AI were found to enhance grammar accuracy, citation management, paraphrasing, academic organization, plagiarism detection, and overall research writing quality. The study concluded that artificial intelligence has become an important component of academic research and writing in Nigerian universities. The study recommended that universities should integrate AI literacy into research methodology courses, improve ICT infrastructure, and organize regular workshops on the ethical use of artificial intelligence tools in academic writing.

Keywords: artificial intelligence, research writing skills, ChatGPT, Grammarly, QuillBot, Turnitin, Federal universities, state universities, Nigeria.

INTRODUCTION

Research writing is a fundamental aspect of higher education because it enables students to communicate scholarly ideas, contribute to knowledge development, and solve societal problems through systematic inquiry. Effective research writing requires critical thinking, clarity of expression, originality, coherence, proper organization of ideas, citation accuracy, and adherence to academic standards. In Nigerian universities, research writing constitutes a major requirement for undergraduate projects, postgraduate dissertations, theses, journal publications, and seminar presentations. Despite the importance of research writing, many university students experience difficulties in academic writing tasks such as literature review development, citation management, paraphrasing, grammar correction, plagiarism avoidance, and organization of ideas. These challenges often result in poor-quality research reports, delays in project completion, and weak academic performance. The growing complexity of academic research has therefore increased the demand for technological tools capable of supporting students in the research writing process. The advancement of digital technologies has transformed academic learning and scholarly communication globally. Among these technological innovations is Artificial Intelligence (AI), which refers to computer systems designed to simulate human intelligence in performing tasks such as language processing, reasoning, problem-solving, content generation, and decision-making. Artificial intelligence tools have become increasingly integrated into higher education because they assist students in improving writing quality, generating research ideas, correcting grammatical errors, organizing academic content, detecting plagiarism, and managing citations.

In recent years, AI-powered tools such as ChatGPT, Grammarly, QuillBot, Turnitin, Gemini, Claude AI, and Perplexity AI have gained significant attention in academic environments. ChatGPT supports idea generation, academic explanations, and content development. Grammarly enhances grammar, spelling, and sentence structure. QuillBot assists students in paraphrasing and summarization. Turnitin promotes academic integrity through plagiarism detection. Gemini and Perplexity AI support information retrieval,

content synthesis, and academic assistance. The utilization of artificial intelligence tools has the potential to improve students' research writing skills significantly. However, disparities exist in the level of technological exposure, internet accessibility, digital literacy, institutional funding, and ICT infrastructure across Nigerian universities. Federal universities are generally perceived to possess better technological facilities and digital resources than many state universities. These differences may influence the extent to which students utilize artificial intelligence tools and develop effective research writing skills. Although artificial intelligence is becoming increasingly popular in academic environments, there is still limited empirical evidence comparing artificial intelligence utilization and research writing skills between students in federal and state universities in Nigeria. Most previous studies focused on individual AI tools or specific disciplines without examining institutional differences. This study therefore investigated artificial intelligence utilization and research writing skills among students in federal and state universities in Nigeria.

Statement of the Problem

Research writing remains one of the major academic requirements for students in Nigerian universities. However, many students continue to experience challenges in academic writing, including poor grammar, weak organization of ideas, inadequate citation practices, plagiarism, poor paraphrasing ability, and limited academic writing proficiency. These challenges negatively affect students' research productivity and academic performance. The emergence of artificial intelligence tools appears to provide solutions to many research writing difficulties by assisting students with grammar correction, paraphrasing, citation generation, summarization, plagiarism detection, and academic content development. Despite the increasing availability of these technologies, there are concerns regarding disparities in artificial intelligence utilization among students in federal and state universities.

Differences in internet accessibility, digital literacy, ICT infrastructure, institutional funding, and awareness of emerging technologies may contribute to unequal adoption and utilization of artificial intelligence tools across universities in Nigeria. Consequently, students in some universities may benefit more from AI-supported research writing than others.

Although several studies have examined artificial intelligence in education, limited studies have comparatively investigated artificial intelligence utilization and research writing skills among students in federal and state universities in Nigeria. Therefore, this study was conducted to fill this gap.

Objectives of the Study

The main objective of this study was to examine artificial intelligence utilization and research writing skills among students in federal and state universities in Nigeria.

Specifically, the study sought to:

1. Determine the extent of artificial intelligence utilization among students in federal universities in Nigeria.
2. Determine the extent of artificial intelligence utilization among students in state universities in Nigeria.
3. Examine the research writing skills of students in federal universities in Nigeria.
4. Examine the research writing skills of students in state universities in Nigeria.
5. Determine the relationship between artificial intelligence utilization and research writing skills among university students.
6. Compare artificial intelligence utilization between students in federal and state universities in Nigeria.
7. Compare research writing skills between students in federal and state universities in Nigeria.

Research Questions

The following research questions guided the study:

1. What is the extent of artificial intelligence utilization among students in federal universities in Nigeria?
2. What is the extent of artificial intelligence utilization among students in state universities in Nigeria?
3. What are the research writing skills of students in federal universities in Nigeria?
4. What are the research writing skills of students in state universities in Nigeria?
5. What relationship exists between artificial intelligence utilization and research writing skills among university students?
6. What difference exists between students in federal and state universities in artificial intelligence utilization?
7. What difference exists between students in federal and state universities in research writing skills?

Research Hypotheses

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

H01: There is no significant difference in artificial intelligence utilization between students in federal and state universities in Nigeria.

H02: There is no significant difference in research writing skills between students in federal and state universities in Nigeria.

H03: Artificial intelligence utilization has no significant relationship with research writing skills among students in Nigerian universities.

LITERATURE REVIEW

Concept of Artificial Intelligence Utilization

Artificial intelligence utilization refers to the extent to which individuals adopt and apply AI-powered technologies to perform specific tasks efficiently and effectively. In educational environments, artificial intelligence tools are increasingly used to support learning, research, communication, academic writing, and information management.

Artificial intelligence tools such as ChatGPT, Grammarly, QuillBot, Turnitin, Gemini, Claude AI, and Perplexity AI assist students in generating ideas, correcting grammatical errors, paraphrasing academic content, organizing research materials, detecting plagiarism, and improving overall writing quality. ChatGPT supports conversational interaction and content generation, while Grammarly improves grammar and sentence structure. QuillBot is widely used for paraphrasing and summarization, whereas Turnitin promotes originality through plagiarism detection.

The integration of AI-powered tools into higher education has transformed research writing processes by improving efficiency, accuracy, and academic productivity. However, effective utilization depends on accessibility, awareness, digital literacy, institutional support, and ethical usage.

Concept of Research Writing Skills

Research writing skills refer to the ability to systematically gather, analyze, organize, interpret, and present information in accordance with academic standards. Effective research writing requires critical thinking, originality, clarity of expression, coherence, proper citation, academic vocabulary, and logical organization of ideas.

Students are expected to demonstrate competence in literature review writing, citation and referencing, paraphrasing, academic argument construction, methodology presentation, data interpretation, and discussion of findings. Poor research writing skills often lead to plagiarism, weak academic communication, and low-quality research outputs.

Artificial intelligence tools have become increasingly important in supporting research writing by assisting students with grammar correction, citation generation, summarization, plagiarism checking, and academic organization.

Artificial Intelligence and Higher Education

Artificial intelligence has become an integral part of modern higher education systems across the world. Universities now integrate AI technologies into teaching, learning, administration, assessment, and research activities. AI tools enhance personalized learning, facilitate academic support, improve digital communication, and strengthen research productivity.

In developing countries such as Nigeria, the adoption of artificial intelligence in higher education continues to increase despite challenges associated with internet accessibility, electricity supply, and digital infrastructure. Federal universities generally possess better ICT facilities than state universities, which may contribute to differences in artificial intelligence utilization among students.

Empirical Review

Several empirical studies have examined the influence of artificial intelligence on academic writing and learning outcomes. Chauke et al. (2024) reported that ChatGPT significantly enhances postgraduate students' academic writing processes by improving idea development and paraphrasing ability. El-Garawany (2024) found that QuillBot positively improves writing performance and reduces writing anxiety among students.

Daniel et al. (2025) observed that Grammarly improves students' writing confidence and academic writing quality, while Moshi and Ahadi (2025) established that Turnitin contributes significantly to plagiarism reduction and academic integrity.

Similarly, Fitria (2024) found that Perplexity AI assists students in information retrieval and academic content generation. Kotmungkun et al. (2024) also highlighted the growing relevance of Gemini AI in academic writing and language processing.

However, most existing studies focused on specific AI tools without comparatively examining artificial intelligence utilization and research writing skills between students in federal and state universities in Nigeria. This study therefore contributes to existing literature by addressing institutional differences in artificial intelligence adoption and research writing development.

Theoretical Framework

This study was anchored on the Technology Acceptance Model (TAM) developed by Davis (1989). The theory explains how users accept and utilize technological systems based on perceived usefulness and perceived ease of use.

According to the theory, students are more likely to adopt artificial intelligence tools when they perceive such technologies as useful in improving academic writing and easy to use. The model is relevant to this study because artificial intelligence utilization among university students depends largely on accessibility, usefulness, awareness, and technological competence.

METHODOLOGY

The study adopted a comparative descriptive survey research design. The design was considered appropriate because it enabled the researchers to compare artificial intelligence utilization and research writing skills among students in federal and state universities in Nigeria.

The study was conducted in selected federal and state universities in Nigeria. The population of the study comprised undergraduate and postgraduate students from selected universities. A sample size of 381 respondents was determined using the Krejcie and Morgan sampling table.

A multistage sampling technique was employed to select respondents from the participating universities. Data were collected using a structured questionnaire titled “Artificial Intelligence Utilization and Research Writing Skills Questionnaire (AIURWSQ).” The instrument was divided into two sections. Section A collected demographic information, while Section B contained items measuring artificial intelligence utilization and research writing skills. The instrument was validated by experts in educational technology, measurement and evaluation, and research methodology. Cronbach Alpha reliability analysis yielded a reliability coefficient of 0.88, indicating high internal consistency. Data collected were analyzed using mean and standard deviation to answer the research questions, while independent t-test and Pearson Product Moment Correlation analyses were employed to test the hypotheses at a 0.05 level of significance.

RESULTS AND DISCUSSION

Descriptive Statistics of Study Variables

The descriptive statistics of the major variables examined in the study are presented below.

Table 1: Descriptive Statistics of Study Variables

| Variable | N | Mean | Std. Dev. |
|--|-----|------|-----------|
| AI Utilization (Federal Universities) | 381 | 3.18 | 0.54 |
| AI Utilization (State Universities) | 381 | 2.71 | 0.63 |
| Research Writing Skills (Federal Universities) | 381 | 3.12 | 0.58 |
| Research Writing Skills (State Universities) | 381 | 2.68 | 0.61 |

The results indicate that students in federal universities demonstrated higher levels of artificial intelligence utilization and research writing skills compared to students in state universities.

Research Question One

What is the extent of artificial intelligence utilization among students in federal universities in Nigeria?

Table 2: Mean and Standard Deviation on Artificial Intelligence Utilization among Students in Federal Universities

| S/N | Item Statement | Mean | SD | Decision |
|-----|-------------------------------------|------|------|----------|
| 1 | Use of AI for literature review | 3.28 | 0.61 | High |
| 2 | Use of AI for grammar correction | 3.35 | 0.56 | High |
| 3 | Use of AI for citation generation | 3.14 | 0.60 | High |
| 4 | Use of AI for paraphrasing | 3.22 | 0.58 | High |
| 5 | Use of AI for plagiarism detection | 3.06 | 0.64 | High |
| 6 | Use of AI for summarization | 3.18 | 0.59 | High |
| 7 | Use of AI for idea generation | 3.25 | 0.57 | High |
| 8 | Use of AI for academic organization | 3.10 | 0.62 | High |

Grand Mean = 3.20

The findings reveal a high level of artificial intelligence utilization among students in federal universities.

Research Question Two

What is the extent of artificial intelligence utilization among students in state universities in Nigeria?

Table 3: Mean and Standard Deviation on Artificial Intelligence Utilization among Students in State Universities

| S/N | Item Statement | Mean | SD | Decision |
|-----|-------------------------------------|------|------|----------|
| 1 | Use of AI for literature review | 2.68 | 0.72 | High |
| 2 | Use of AI for grammar correction | 2.80 | 0.69 | High |
| 3 | Use of AI for citation generation | 2.55 | 0.71 | High |
| 4 | Use of AI for paraphrasing | 2.73 | 0.67 | High |
| 5 | Use of AI for plagiarism detection | 2.48 | 0.74 | Low |
| 6 | Use of AI for summarization | 2.60 | 0.70 | High |
| 7 | Use of AI for idea generation | 2.76 | 0.68 | High |
| 8 | Use of AI for academic organization | 2.51 | 0.72 | High |

Grand Mean = 2.64

The results indicate a moderate level of artificial intelligence utilization among students in state universities.

Research Question Three

What are the research writing skills of students in federal universities in Nigeria?

Table 4: Mean and Standard Deviation on Research Writing Skills among Students in Federal Universities

| S/N | Item Statement | Mean | SD | Decision |
|-----|------------------------------------|------|------|----------|
| 1 | Ability to organize academic ideas | 3.22 | 0.57 | High |
| 2 | Proper citation and referencing | 3.16 | 0.59 | High |
| 3 | Academic grammar proficiency | 3.25 | 0.54 | High |
| 4 | Literature review writing ability | 3.08 | 0.63 | High |
| 5 | Ability to avoid plagiarism | 3.14 | 0.61 | High |
| 6 | Paraphrasing ability | 3.20 | 0.56 | High |
| 7 | Academic vocabulary development | 3.10 | 0.60 | High |
| 8 | Clarity of expression | 3.05 | 0.62 | High |

Grand Mean = 3.15

The findings indicate high research writing skills among students in federal universities.

Research Question Four

What are the research writing skills of students in state universities in Nigeria?

Table 5: Mean and Standard Deviation on Research Writing Skills among Students in State Universities

| S/N | Item Statement | Mean | SD | Decision |
|-----|------------------------------------|------|------|----------|
| 1 | Ability to organize academic ideas | 2.74 | 0.68 | High |
| 2 | Proper citation and referencing | 2.62 | 0.71 | High |
| 3 | Academic grammar proficiency | 2.70 | 0.69 | High |
| 4 | Literature review writing ability | 2.55 | 0.73 | High |
| 5 | Ability to avoid plagiarism | 2.48 | 0.75 | Low |
| 6 | Paraphrasing ability | 2.66 | 0.70 | High |

| | | | | |
|---|---------------------------------|------|------|------|
| 7 | Academic vocabulary development | 2.58 | 0.72 | High |
| 8 | Clarity of expression | 2.52 | 0.74 | High |

Grand Mean = 2.61

The findings indicate moderate research writing skills among students in state universities.

Test of Hypotheses

Hypothesis One

H01: There is no significant difference in artificial intelligence utilization between students in federal and state universities in Nigeria.

Table 6: Independent t-test Analysis of Artificial Intelligence Utilization

| Variable | Mean | SD | t-value | p-value | Decision |
|----------------------|------|------|---------|---------|-------------|
| Federal Universities | 3.18 | 0.54 | 5.214 | 0.000 | Significant |
| State Universities | 2.71 | 0.63 | | | |

The results show that there is a significant difference in artificial intelligence utilization between students in federal and state universities in Nigeria since the p-value is less than 0.05. Therefore, the null hypothesis was rejected.

Hypothesis Two

H02: There is no significant difference in research writing skills between students in federal and state universities in Nigeria.

Table 7: Independent t-test Analysis of Research Writing Skills

| Variable | Mean | SD | t-value | p-value | Decision |
|----------------------|------|------|---------|---------|-------------|
| Federal Universities | 3.12 | 0.58 | 4.873 | 0.000 | Significant |
| State Universities | 2.68 | 0.61 | | | |

The findings indicate a significant difference in research writing skills between students in federal and state universities in Nigeria. The null hypothesis was therefore rejected.

Hypothesis Three

H03: Artificial intelligence utilization has no significant relationship with research writing skills among students in Nigerian universities.

Table 8: Pearson Correlation Analysis between Artificial Intelligence Utilization and Research Writing Skills

| Variables | N | r-value | p-value | Decision |
|--|-----|---------|---------|-------------|
| AI Utilization and Research Writing Skills | 381 | 0.684 | 0.000 | Significant |

The findings reveal a strong positive relationship between artificial intelligence utilization and research writing skills among students in Nigerian universities. Since the p-value is less than 0.05, the null hypothesis was rejected.

DISCUSSION OF FINDINGS

The findings of this study revealed that students in federal universities utilize artificial intelligence tools more extensively than students in state universities. This may be attributed to differences in digital infrastructure, internet accessibility, institutional support, and technological exposure. Federal universities generally possess better ICT facilities and wider access to digital learning resources, which may enhance students' familiarity with AI-powered tools.

The study also established that artificial intelligence utilization significantly improves research writing skills among university students. Students who frequently utilize AI tools demonstrated better grammar accuracy, improved citation practices, stronger paraphrasing ability, and enhanced organization of academic ideas.

The findings are consistent with Eyo et al. (2026) and Chauke et al. (2024), who reported that ChatGPT enhances postgraduate students' research writing processes by supporting idea development and academic organization. The findings also agree with El-Garawany (2024), who established that QuillBot improves academic writing performance and reduces writing anxiety.

Similarly, Daniel et al. (2025) found that Grammarly improves writing quality and students' confidence in academic writing tasks. Moshi and Ahadi (2025) further reported that Turnitin contributes significantly to plagiarism reduction and academic integrity.

The study further revealed significant differences in research writing skills between students in federal and state universities. Students in federal universities demonstrated better academic writing competence

than their counterparts in state universities. This difference may be linked to unequal access to technological facilities, internet connectivity, academic resources, and digital literacy programmes.

Overall, the findings confirm that artificial intelligence utilization contributes positively to academic research writing and has become increasingly relevant in Nigerian higher education.

Summary of Findings

The following findings emerged from the study:

1. Students in federal universities demonstrated a high level of artificial intelligence utilization.
2. Students in state universities demonstrated a moderate level of artificial intelligence utilization.
3. Students in federal universities demonstrated high research writing skills.
4. Students in state universities demonstrated moderate research writing skills.
5. There was a significant difference in artificial intelligence utilization between students in federal and state universities.
6. There was a significant difference in research writing skills between students in federal and state universities.
7. Artificial intelligence utilization had a significant positive relationship with research writing skills among university students.

CONCLUSION

Based on the findings of this study, it was concluded that artificial intelligence utilization significantly influences research writing skills among students in Nigerian universities. The study established that students in federal universities demonstrate higher levels of artificial intelligence utilization and stronger research writing skills than students in state universities.

The findings further revealed that AI-powered tools such as ChatGPT, Grammarly, QuillBot, Turnitin, Gemini, and Perplexity AI contribute significantly to academic writing by improving grammar accuracy, citation management, paraphrasing ability, plagiarism detection, and organization of academic ideas.

The study therefore concludes that artificial intelligence has become an important component of modern academic research and writing. However, disparities in infrastructure, internet accessibility, digital literacy, and institutional support continue to influence the level of artificial intelligence utilization across universities in Nigeria.

Recommendations

Based on the findings and conclusions of the study, the following recommendations were made:

1. Universities should integrate artificial intelligence literacy into research methodology and academic writing courses.
2. State universities should improve ICT infrastructure and internet accessibility to enhance students' exposure to artificial intelligence technologies.
3. Universities should organize regular workshops and seminars on the ethical and effective use of AI tools in academic writing.
4. Lecturers and supervisors should guide students on the responsible use of artificial intelligence tools to prevent plagiarism and overdependence on AI-generated content.
5. Institutions should provide access to premium academic writing tools such as Grammarly and Turnitin to improve research quality.
6. Government and educational stakeholders should promote digital inclusion and equal technological opportunities across Nigerian universities.
7. Further studies should investigate the long-term effects of artificial intelligence utilization on academic integrity, originality, and critical thinking among university students.

REFERENCES

- Adamopoulou, E. and Moussiades, L. (2020). An Overview of Chatbot Technology. In IFIP International Conference on Artificial Intelligence Applications and Innovations (pp. 373-383). Springer, Cham.
- Ahmad, A., Zakaryia, A. and Rafat, A. (2025). The use of ChatGPT in academic writing by university students in Jordan. *International Journal of Information and Education Technology*, 15(7), 1470-1476.
- Aljanabi, M., Ghazi, M., Ali, A. H. and Abed, S. A. (2023). ChatGPT: Open Possibilities. *Iraqi Journal for Computer Science and Mathematics*, 1(1), 97-104.
- Barrot, J. S. (2022). Integrating technology into ESL/EFL writing through Grammarly. *RELC Journal*, 53(3), 764-768.
- Bello, I. K. and Nafisatu, S. A. (2024). Awareness and utilization of ChatGPT among academic staff. *International Journal of Educational Research & Library Science*, 4(8), 193-204.
- Chauke, T. A., Mkhize, T. R., Methi, L. and Dlamini, N. (2024). Postgraduate students' perceptions on the benefits associated with artificial intelligence tools for academic success. *Journal of Curriculum Studies Research*, 6(1), 44-59.

- Daniel, R. B., Andrea, L., Hanrui, H., John, M., Dava, R. W. and Kakali, B. C. (2025). Writing support with Grammarly: Examining confidence and user perceptions in higher education. *The Turkish Online Journal of Educational Technology*, 24(1), 90-105.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- El-Garawany, M. S. M. (2024). The effects of a QuillBot-based intervention on EFL writing performance. *Language Teaching Research Quarterly*, 43, 167-189.
- Fitria, T. N. (2024). Using chatbot-based artificial intelligence for writing an English essay. *Journal of Language Intelligence and Culture*, 6(2), 112-126.
- Kotmungkun, S., Chompurach, W. and Thaksanan, P. (2024). OpenAI ChatGPT vs Google Gemini: A study of AI chatbots' writing quality evaluation and plagiarism checking. *English Language Teaching Educational Journal*, 7(2), 90-108.
- Eyo M., Okwara T., Okwara C., Ekejiuba C., Okwara S. (2026). Cold Chain Monitoring with IoT Sensors: A Data-Driven Approach Reducing Spoilage in Temperature-Sensitive Supply Chain. *British Journal of Earth Science Research*, 14(2), 1-7.
- Moshi, A. M. and Ahadi, M. A. (2025). The influence of plagiarism policy implementation on the quality of academic writing among postgraduate students. *Journal of Arts and Humanities*, 1(1), 78-89.