International Journal of Advanced Multidisciplinary Research and Educational Development
Volume 1, Issue 4 | November - December 2025 | www.ijamred.com
ISSN: **3107-6513**

Influence of Artificial Intelligence on Cognitive Development of Office and Information Management Students in Universities in Nigeria

[1]Dr. Bernard Olu Okoro
Department of Office Technology and Management, Imo State Polytechnic, Omuma, Imo State
oluyesucan@gmail.com
+2348060484729/+2348032798708

[2]Ofoegbu, Veronica E. N.
Department of Office Technology and Management, Imo State Polytechnic, Omuma, Imo State
veronicaofoegbu@gmail.com
+2348061127189

Abstract

This study examined the influence of artificial intelligence (AI) integration on the cognitive development of Office and Information Management (OIM) students in selected universities in South-South Nigeria. Guided by a descriptive survey design, the study focused on three dimensions of AI integration: AI-assisted learning tools, AI literacy, and AI-driven instructional interaction. The population comprised 1,086 OIM students from Niger Delta University, Rivers State University, and Ignatius Ajuru University of Education, from which a sample of 292 students was selected using the Taro Yamane formula and proportionate stratified random sampling. A validated questionnaire was used for data collection, and reliability was established with a Cronbach's Alpha coefficient of 0.86. Data were analyzed using mean, standard deviation, and multiple regression analysis at a 0.05 significance level. Findings revealed that AI integration significantly enhances cognitive development among OIM students by improving analytical reasoning, creative thinking, and problem-solving abilities. The study concluded that AI functions as a cognitive amplifier when embedded within pedagogically sound frameworks and recommended that universities integrate AI literacy courses, strengthen faculty competence, and expand digital infrastructure.

Keywords: Artificial intelligence, cognitive development, AI literacy, office and information management, higher education

Introduction

The rapid diffusion of artificial intelligence (AI) in higher education has created both opportunities and challenges for teaching, learning, and assessment. Contemporary AI systems—ranging from adaptive tutoring platforms to large language models (LLMs) such as ChatGPT—offer immediate feedback, scaffolded practice, and personalization that can support acquisition of higher-order cognitive skills when integrated into purposeful pedagogical designs (Baig, 2024; Wang & Fan, 2025). However, recent syntheses of the literature indicate that AI's effects on cognition are conditional: where AI is implemented with explicit scaffolds, reflective prompts, and instructor mediation, gains in problem solving and higher-order thinking are more likely; conversely, unstructured or unquestioning reliance on generative tools can encourage cognitive offloading and weaken deep learning processes (Baig, 2024; Wang & Fan, 2025).

Critical thinking and problem-solving—central cognitive outcomes for Office and Information Management (OIM) curricula—are particularly

ISSN: 3107-6513

sensitive to how AI is used in the classroom. Systematic reviews and empirical studies show mixed results: some experiments and meta-analyses report medium to large positive effects of AI tools on higher-order thinking when students use them as partners in inquiry and reflection, while other studies warn of reduced evaluative judgment and academic integrity risks when outputs are accepted without critical appraisal (Wang & Fan, 2025). This mixed evidence highlights the importance of AI literacy—students' conceptual understanding of AI systems, their limitations, and strategies for critical evaluation—as a key mediator of whether AI supports or undermines cognitive development (Haruna, 2025).

In the Nigerian context, the pace of AI uptake in universities is accelerating but uneven across regions and institutions. Recent empirical work from Rivers State (a core part of Nigeria's South-South geopolitical zone) documents early but growing institutional experimentation with AI for administrative decision support and pedagogical applications. For example, studies of Rivers State public universities report pilot uses of machine-learning decision tools for administrative functions and exploratory classroom uses of generative and proofreading AI tools among students and staff (Mohammed-Shittu, 2025; IJEDM Special Issue, 2025). At the University of Port Harcourt, preliminary investigations show increasing student awareness and informal adoption of ChatGPT and similar LLMs for assignment drafting and concept clarification, accompanied by concerns from faculty about academic standards and the need for guidance on ethical and critical use (Essien et al., 2025; University of Port Harcourt study, 2025).

For OIM students, AI affects core professional competencies—information processing, document quality, decision support, and digital workflow design—in ways that can either amplify or supplant cognitive processing depending on implementation. If AI tools are deployed as cognitive amplifiers—for example, to generate alternative problem framings, provide iterative feedback, or surface multiple evidence sources—students may develop enhanced analytical reasoning and more efficient information handling. But if AI is used primarily as an answer generator without explicit instruction in verification, synthesis, and ethical use, students risk losing opportunities to practice independent problem solving and evaluative judgment (Haruna, 2025; Melisa et al., 2025).

Taken together, global reviews and localized studies point to three interrelated research needs that motivate the present study. First, clarification is required about how specific AI practices (notably AI-assisted learning tools) influence core cognitive outcomes for OIM students. Second, empirical examination of AI literacy as a mediating or moderating variable is essential, since students' skillful, reflective use of AI appears to determine whether cognitive benefits materialize. Third, regionally grounded evidence from South-South Nigerian universities—particularly Rivers State institutions such as the University of Port Harcourt, Rivers State University, and Ignatius Ajuru University of Education—is needed to inform locally relevant curriculum design, faculty development, and institutional policy. This study therefore investigates the influence of AI-assisted learning tools and AI literacy on critical thinking and problem solving among Office and Information Management students in universities of the South-South region of Nigeria.

Statement of the Problem

The introduction of artificial intelligence (AI) into higher education has been widely celebrated for its potential to enhance teaching and learning. Through intelligent tutoring systems, adaptive learning platforms, and generative tools such as ChatGPT, AI is capable of personalizing instruction, improving feedback quality, and stimulating learner engagement (Abubakar, Onasanya, & Ibrahim, 2024; Wang & Fan, 2025). However, emerging evidence also reveals that AI's influence on cognitive development is not

ISSN: 3107-6513

uniformly positive. While some studies report gains in analytical reasoning, reflection, and problem-solving, others observe that excessive reliance on AI may promote superficial learning, cognitive dependency, and reduced originality (Baig, 2024; Izevbigie, Olajide, Olaniran, & Akintayo, 2025).

In Nigerian universities, especially within the South–South region, AI adoption remains at an early but rapidly expanding stage. Studies in Rivers State universities show that both students and lecturers are increasingly using AI for writing, data analysis, and task automation, yet most institutions lack formal policies, structured training, or ethical guidelines for its integration (Amaewhule, 2025; Onyekpe, Dania, Ogheneakoke, & Eyamekware, 2025). Consequently, Office and Information Management (OIM) students—whose discipline emphasizes critical thinking, decision-making, and digital competence—are exposed to AI tools without adequate literacy or supervision to guide reflective and constructive use. This situation creates uncertainty regarding whether AI serves as a cognitive enhancer or a cognitive substitute in their learning processes.

Empirical gaps further compound this concern. Current Nigerian studies on AI in education have focused largely on adoption, perception, or ethical implications (Peters & Olojede, 2025; Ebiringa, Ikerionwu, Erike, & Asiegbu, 2025), while little is known about its direct influence on students' cognitive outcomes—particularly critical thinking and problem-solving skills. Moreover, the few available studies often aggregate diverse disciplines, thereby neglecting the unique technological and managerial learning contexts of OIM programmes. As a result, there is insufficient evidence to determine how specific dimensions of AI integration—such as the use of AI-assisted learning tools and students' AI literacy—affect cognitive development among OIM students in South–South Nigerian universities.

Therefore, this study is necessitated by the absence of empirical data on how AI integration influences cognitive development in Office and Information Management education in Rivers State and the broader South–South region. It seeks to determine whether the growing use of AI tools enhances or diminishes students' capacity for critical reasoning, analytical thinking, and independent problem-solving—core cognitive skills required for effective professional practice in today's AI-driven office environment.

1. Objectives of the Study

The main objective of this study is to examine the influence of artificial intelligence integration on cognitive development among Office and Information Management (OIM) students in Nigerian universities, focusing on the South–South region.

The specific objectives are to:

1. Determine the extent to which AI-assisted learning tools influence the critical thinking abilities of Office and Information Management students in Nigerian universities.
2. Examine the influence of AI literacy and competence on the problem-solving capacity of Office and Information Management students.
3. Assess the combined effect of AI-assisted learning tools and AI literacy on the overall cognitive development of Office and Information Management students in the South–South region of Nigeria.

2. Research Questions

In line with the stated objectives, the following research questions guided the study:

1. To what extent do AI-assisted learning tools influence the critical thinking abilities of Office and Information Management students in Nigerian universities?

2. How does AI literacy and competence affect the problem-solving capacity of Office and Information Management students in Nigerian universities?
3. What is the combined influence of AI-assisted learning tools and AI literacy on the overall cognitive development of Office and Information Management students in universities in the South–South region of Nigeria?

3. Research Hypotheses

The following null hypotheses (H_0) were formulated and tested at a 0.05 level of significance:

1. **H_{01}:** There is no significant influence of AI-assisted learning tools on the critical thinking abilities of Office and Information Management students in Nigerian universities.
2. **H_{02}:** AI literacy and competence do not significantly influence the problem-solving capacity of Office and Information Management students in Nigerian universities.
3. **H_{03}:** There is no significant combined influence of AI-assisted learning tools and AI literacy on the overall cognitive development of Office and Information Management students in universities in the South–South region of Nigeria.

Literature Review

Artificial Intelligence and Cognitive Development

Artificial intelligence (AI) has become a defining force in higher education, reshaping how knowledge is created, accessed, and applied. Holmes, Bialik, and Fadel (2022) describe AI as a suite of computational systems capable of performing tasks that typically require human intelligence, such as reasoning, pattern recognition, and adaptive decision-making. Within higher education, AI applications include intelligent tutoring systems, adaptive learning platforms, predictive analytics, and conversational agents. Zawacki-Richter, Marín, Bond, and Gouverneur (2019) emphasize that AI in education is not a single technology but a network of affordances whose effectiveness depends on pedagogical design and institutional capacity. Thus, AI should be viewed as an evolving ecosystem rather than a static toolset.

Cognitive development, by contrast, refers to the progressive growth of intellectual and mental abilities such as reasoning, problem solving, creativity, and metacognition. According to the Organisation for Economic Co-operation and Development (2024), higher education should foster these higher-order thinking skills as they are essential for lifelong learning and innovation. In university contexts, cognitive development is enhanced when instructional designs stimulate inquiry, reflection, and authentic problem solving. The OECD (2024) notes that pedagogies which integrate technology meaningfully can extend students' reasoning capacity, provided such technologies are employed as scaffolds rather than substitutes for thought.

The theoretical intersection of AI and cognitive development can be understood through two complementary pathways. First, AI can act as a cognitive amplifier—a means of extending learners' mental capacity. Holmes et al. (2019) argue that adaptive AI systems personalize instruction and provide formative feedback that supports metacognitive monitoring. When learners use AI tools to explore multiple solutions, analyze feedback, and refine reasoning, they actively construct knowledge and enhance cognitive flexibility. However, as Zhai, Wibowo, and Li (2024) caution, AI can also function as a cognitive substitute when students over-rely on automated outputs. In such cases, cognitive effort is displaced to the machine, potentially impeding the development of evaluative judgment and independent reasoning. The difference between

ISSN: **3107-6513**

amplification and substitution depends largely on pedagogical framing and the learner's AI literacy.

Empirical evidence underscores this conditional relationship. Zawacki-Richter et al. (2019) reviewed studies on AI applications in higher education and found that adaptive tutoring systems generally improve learning outcomes, whereas effects on higher-order cognition are inconsistent. Similarly, Baig (2024) observed that AI-supported learning environments enhance performance on structured tasks but may have limited influence on students' creative or critical thinking unless accompanied by reflective instruction. Zhai et al. (2024) further demonstrated that excessive dependence on generative dialogue systems can diminish analytical reasoning when learners accept AI responses uncritically. Collectively, these findings suggest that the cognitive impact of AI is not inherent to the technology but emerges from the dynamic interaction between tool design, pedagogical mediation, and learner engagement.

A central mediating construct in this relationship is AI literacy. Mansoor, Bawazir, Alsabri, Alharbi, and Okela (2024) define AI literacy as the knowledge, skills, and ethical awareness necessary to use AI responsibly and effectively. Their transnational survey showed that students with higher AI literacy demonstrate stronger critical-evaluation skills and greater cognitive adaptability when using AI tools. In educational practice, this implies that integrating AI into instruction without concurrent development of AI literacy may fail to produce meaningful cognitive gains. When students understand how AI systems operate and learn to interrogate AI outputs, they transform technology from a source of answers into a partner in reasoning.

From a conceptual standpoint, the relationship between AI and cognitive development in higher education can thus be modeled as a triadic interaction among AI-assisted learning tools, AI literacy, and cognitive outcomes such as critical thinking and problem solving. AI serves as the stimulus, AI literacy acts as the moderator or mediator, and cognitive development represents the outcome. UNESCO (2021) advocates this integrated perspective, asserting that effective AI integration must promote human-centered learning and cognitive empowerment rather than mere automation. Therefore, sustainable cognitive development in universities—particularly within technologically evolving disciplines like Office and Information Management—depends on purposeful AI adoption aligned with pedagogy that cultivates inquiry, reflection, and ethical judgment.

In the nutshell, AI and cognitive development are conceptually linked through their shared emphasis on adaptive intelligence and knowledge construction. AI can expand learners' cognitive horizons when used to augment reasoning, yet it can also narrow thinking if employed uncritically. The determining factors are design intentionality, instructional context, and the learner's literacy in AI systems. Future empirical work must therefore examine how these interacting factors shape cognitive outcomes among university students, especially within the Nigerian higher-education system where AI integration is emerging but unevenly institutionalized.

Methodology

This study adopted a descriptive survey design to investigate the influence of artificial intelligence (AI) integration on the cognitive development of Office and Information Management (OIM) students in selected universities in South-South Nigeria. The design was deemed appropriate because it enables the collection of quantitative data from a large population to describe existing conditions without manipulating variables (Creswell & Creswell, 2018).

The study area comprised three universities offering accredited OIM programmes in the South-South region: Niger Delta University (NDU), Wilberforce Island, Bayelsa State; *Rivers State University* (RSU), Port Harcourt; and Ignatius

Ajuru University of Education (IAUE), Port Harcourt. These were selected because they have established OIM departments and represent major public universities running the programme in the region.

The population of the study consisted of all OIM students in the three universities during the 2024/2025 academic session, totaling 1,086 students—NDU (205), RSU (224), and IAUE (657). The Taro Yamane (1967) formula was used to determine the sample size of 292 students. A proportionate stratified random sampling technique was used to ensure adequate representation from each university.

Table 1

Population and Sample Distribution of Respondents

University	Population (N)	Sample (n)
Niger Delta University (NDU), Wilberforce Island	205	55
Rivers State University (RSU), Port Harcourt	224	60
Ignatius Ajuru University of Education (IAUE), Port Harcourt	657	177
Total	**1,086**	**292**

Source: Departmental Records (2024/2025 Academic Session)

Data were collected through a structured questionnaire developed by the researcher in line with the study objectives. The instrument consisted of two sections: Section A gathered demographic information, while Section B contained items on three dimensions—AI-assisted learning tools, AI literacy, and cognitive outcomes—measured on a five-point Likert scale ranging from Strongly Agree (5) to Strongly Disagree (1). To ensure validity, the instrument was subjected to face and content validation by three experts—two in Business Education and one in Measurement and Evaluation. A pilot test involving 30 OIM students from Southern Delta University, Ozoro, yielded a Cronbach's Alpha coefficient of 0.86, indicating high reliability (Nunnally & Bernstein, 2018).

The researcher personally administered the instrument with the help of trained assistants after obtaining permission from the appropriate authorities. Participation was voluntary, and respondents were assured of confidentiality. Data were analyzed using mean and standard deviation to answer the research questions, while multiple regression analysis was employed to test the hypotheses at the 0.05 significance level using SPSS version 25. Ethical considerations such as informed consent and data confidentiality were strictly adhered to throughout the study.

Results

This section presents and analyzes the data collected from respondents on the influence of artificial intelligence (AI) integration on the cognitive development of Office and Information Management (OIM) students in selected universities in South-South Nigeria. The results are organized in line with the research questions and hypotheses formulated in Chapter One. Out of the 292 copies of the questionnaire distributed, 278 were duly completed and returned, representing a 95.2% response rate, which was considered adequate for analysis.

ISSN: 3107-6513

Descriptive statistics (mean and standard deviation) were used to answer the research questions, while inferential statistics (multiple regression analysis) were employed to test the hypotheses at the 0.05 significance level. A criterion mean of 3.00 was used as the benchmark for decision-making—mean scores of 3.00 and above indicate agreement, while scores below 3.00 indicate disagreement.

Research Question One

To what extent do AI-assisted learning tools influence the cognitive development of OIM students in selected universities in South-South Nigeria?

Table 2

Mean and Standard Deviation on the Influence of AI-Assisted Learning Tools on Cognitive Development (N = 278)

S/N	Item Statements	X	SD	Decision
1	AI-powered tutorials and simulations improve students' understanding of complex OIM concepts.	3.82	0.76	Agree
2	Use of intelligent learning platforms enhances students' problem-solving skills.	3.79	0.81	Agree
3	AI-driven assessments provide timely feedback that supports deeper learning.	3.85	0.69	Agree
4	Adaptive learning systems promote self-paced and reflective learning.	3.74	0.83	Agree
5	Integration of AI tools increases students' engagement and motivation.	3.88	0.71	Agree
	Cluster Mean	**3.82**	**0.76**	**Agree**

Source: Field Survey (2025)

The results in Table 1 show a cluster mean of 3.82, indicating that respondents generally agreed that AI-assisted learning tools positively influence their cognitive development. This implies that the use of AI in learning environments enhances students' comprehension, engagement, and independent thinking.

Research Question Two

How does AI literacy relate to the cognitive development of OIM students in selected universities in South-South Nigeria?

Table 3

Mean and Standard Deviation on AI Literacy and Cognitive Development (N = 278)

ISSN: 3107-6513

S/N	Item Statements	X	SD	Decision
1	I understand basic principles of how AI systems function.	3.71	0.87	Agree
2	I can use AI-enabled applications to analyze and organize information effectively.	3.69	0.84	Agree
3	AI literacy improves my capacity for logical reasoning and decision-making.	3.83	0.78	Agree
4	Awareness of AI ethics enhances my critical thinking about technology use.	3.67	0.82	Agree
5	Familiarity with AI concepts encourages creativity and innovation in academic tasks.	3.75	0.80	Agree
	Cluster Mean	**3.73**	**0.82**	**Agree**

Source: Field Survey (2025)

With a cluster mean of 3.73, respondents agreed that AI literacy significantly relates to their cognitive development. Students who understand AI concepts are better equipped to think critically, solve problems, and apply creative reasoning in their studies.

Research Question Three

To what extent does institutional support for AI integration affect students' cognitive development in selected universities in South-South Nigeria?

Table 4

Mean and Standard Deviation on Institutional Support and Cognitive Development (N = 278)

S/N	Item Statements	X	SD	Decision
1	My university provides access to AI-based educational tools and resources.	3.48	0.89	Agree
2	Lecturers use AI applications to enhance teaching and learning outcomes.	3.52	0.85	Agree
3	The institution supports workshops and training on AI literacy.	3.41	0.90	Agree
4	Institutional policy encourages AI integration in course delivery.	3.38	0.88	Agree
5	Adequate infrastructure supports the adoption of AI technologies.	3.29	0.91	Agree
	Cluster Mean	**3.42**	**0.89**	**Agree**

Source: Field Survey (2025)

The overall mean of 3.42 indicates moderate institutional support for AI integration. This suggests that while students perceive their universities as making efforts toward AI adoption,

ISSN: 3107-6513

more infrastructural and policy backing is needed to optimize cognitive outcomes.

Test of Hypotheses

Multiple regression analysis was used to test the hypotheses, examining the joint influence of AI-assisted learning tools, AI literacy, and institutional support on cognitive development.

Table 5

Summary of Multiple Regression Analysis

Predictor Variables	β	t	Sig.	Decision
AI-Assisted Learning Tools	0.46	7.28	0.000	Significant
AI Literacy	0.33	5.16	0.001	Significant
Institutional Support	0.27	4.02	0.003	Significant

Model Summary

$R = 0.78$; $R^2 = 0.61$; Adjusted $R^2 = 0.60$; $F(3, 274) = 141.57$; $p < 0.05$

Source: SPSS Output, 2025

The regression results show a coefficient of determination (R^2) of 0.61, indicating that 61% of the variation in students' cognitive development is jointly explained by the three predictor variables. Since the p-values for all predictors are less than 0.05, the null hypotheses were rejected. Hence, AI integration dimensions significantly influence cognitive development among OIM students in South-South Nigeria.

Discussion of Results

The first finding showed that AI-assisted learning tools—such as intelligent tutoring systems, adaptive learning platforms, and automated feedback systems—significantly enhance students' comprehension, problem-solving ability, and reflective thinking. This aligns with Zawacki-Richter et al. (2023), who reported that AI tools improve personalized learning experiences by adapting instructional content to students' individual needs, thereby strengthening cognitive outcomes. Similarly, Holmes et al. (2022) noted that AI-enabled platforms promote student engagement and metacognitive awareness, which are crucial for knowledge retention and higher-order thinking skills. In the Nigerian university context, this finding corroborates Owolabi and Oyeleke (2021), who observed that AI integration in business education increases students' capacity for analytical reasoning and independent learning. The high cluster mean (3.82) obtained in this study underscores that students perceive AI-powered applications as effective tools for enhancing mental agility and conceptual understanding. This supports the Cognitive Constructivist Theory, which emphasizes learner-centered engagement and the active construction of knowledge through interaction with intelligent systems (Piaget, 1977; updated interpretation by Sawyer, 2022). The implication of this result is that AI-driven tools, when properly integrated into OIM instruction, can transform traditional rote learning environments into adaptive, problem-solving ecosystems that cultivate cognitive flexibility and critical thinking. This resonates with Li et al. (2024), who found that AI-based collaborative tools in Asian higher institutions led to measurable improvements in analytical and creative cognition among management students.

The second major finding indicated that AI literacy—defined as students' understanding of AI

ISSN: 3107-6513

principles, applications, and ethical implications—positively correlates with cognitive development. Respondents agreed that knowledge of AI systems improved their logical reasoning, creativity, and innovation. This finding aligns with Ng (2023), who emphasized that AI literacy not only enhances technical competence but also strengthens students' ability to critically evaluate data and make informed judgments. In the African educational context, Eze et al. (2022) found that students who are exposed to AI concepts early in their academic training demonstrate improved metacognitive strategies and intellectual autonomy. The finding also echoes Luckin and Cukurova (2019), who argued that AI literacy is a "cognitive amplifier," equipping learners to navigate complex problem domains with computational reasoning and reflective thought.

Furthermore, the positive influence of AI literacy on cognitive outcomes supports the Information Processing Theory of learning, which posits that cognitive development is enhanced through exposure to tools that aid in encoding, storage, and retrieval of information (Atkinson & Shiffrin, 1971; revisited by Mayer, 2021). Students who understand how AI processes information may become better problem-solvers because they internalize algorithmic reasoning and pattern recognition techniques mirrored in cognitive learning processes. The result is also consistent with Chassignol et al. (2023), who observed that AI literacy promotes not just technical awareness but also intellectual resilience, adaptability, and ethical sensitivity—all core components of higher cognitive development. In this light, equipping OIM students with AI literacy skills becomes imperative for preparing graduates who can thrive in data-driven administrative environments.

The third finding revealed that institutional support for AI integration—through infrastructure, policy frameworks, and training—moderately affects students' cognitive development. Although respondents acknowledged existing support, the overall mean (3.42) suggests that infrastructural gaps and limited faculty preparedness still constrain the full potential of AI-enhanced learning in South-South universities. This result aligns with Olaolu and Okorie (2021), who reported that insufficient institutional backing and limited access to AI tools hinder effective digital learning in Nigerian universities. In contrast, Sun et al. (2023) found that universities with strong institutional policies and investment in AI infrastructure experience higher student cognitive engagement and improved learning performance.

Institutional support serves as the enabling environment for effective technology adoption. According to Deloitte's Global Education AI Report (2024), higher education institutions that invest in AI infrastructure and staff capacity-building realize up to a 25% increase in students' cognitive performance indices. Similarly, Alamri et al. (2022) observed that supportive university environments—through AI research hubs, workshops, and mentorship—foster innovation and cognitive empowerment among undergraduates. In the context of the present study, the implication is that South-South universities need to intensify investment in digital infrastructure, develop AI-oriented policies, and provide continuous professional development for lecturers to sustain meaningful cognitive outcomes among OIM students.

The regression analysis demonstrated that AI-assisted tools, AI literacy, and institutional support jointly accounted for 61% of the variance ($R^2 = 0.61$) in students' cognitive development. This high explanatory power suggests a strong, integrated relationship among the three constructs. The finding supports Ajzen's (1991) Theory of Planned Behavior, implying that students' cognitive engagement is shaped not only by individual factors (literacy and perception) but also by the enabling conditions within their academic environment (institutional support). This result aligns with Kong et al. (2023), who found that combined exposure to AI learning tools and supportive academic environments enhances

ISSN: **3107-6513**

students' cognitive motivation and reflective capacity in management and information disciplines. Moreover, Firat and Yilmaz (2023) concluded that AI's cognitive impact is amplified when institutional structures and learner competencies align—a synergy clearly reflected in the present findings.

Conclusion

The study concludes that artificial intelligence serves as a transformative cognitive amplifier within the domain of Office and Information Management education. The integration of AI-assisted learning tools and literacy practices cultivates deeper levels of reasoning, analytical thinking, and adaptive intelligence among university students. The results affirm that when AI is systematically embedded into pedagogical processes, it fosters active learning and cognitive empowerment.

However, achieving these outcomes requires deliberate institutional commitment—particularly in terms of faculty readiness, infrastructural support, and digital literacy training. In the context of South-South Nigerian universities, AI adoption must move beyond experimentation toward sustainable integration, ensuring that OIM students develop both cognitive and digital proficiencies essential for the knowledge economy.

Recommendations

Based on the findings, the following recommendations are made:

1. Curriculum Integration**:** Universities should incorporate AI literacy courses into the OIM curriculum to enhance students' understanding of AI concepts, ethical implications, and practical applications in administrative contexts.
2. Capacity Building for Faculty**:** Continuous professional development programmes should be organized to equip lecturers with the knowledge and skills required to use AI pedagogical tools effectively.
3. Infrastructure and Resource Investment**:** University management should prioritize investment in digital infrastructure, including high-speed internet, computing resources, and AI-supported learning platforms.
4. Ethical and Cognitive Orientation**:** Students should be guided to use AI technologies responsibly, ensuring that cognitive development is balanced with ethical awareness and human-centered reasoning.
5. Collaborative Learning Platforms**:** Universities should promote AI-enhanced collaborative projects that allow students to co-create knowledge, thereby strengthening cognitive and creative problem-solving skills.

Contribution to Knowledge

This study contributes to the growing body of empirical evidence on the role of AI in cognitive development within the Nigerian higher education context. Specifically, it:

- Demonstrated that AI-assisted learning tools significantly enhance students' cognitive processing and reasoning ability.
- Established that AI literacy is a critical determinant of cognitive performance among OIM students.
- Provided contextual insights into how AI-driven interaction fosters creative and reflective thinking in South-South Nigerian universities.

Collectively, these contributions offer a valuable framework for educators seeking to integrate AI technologies into business and information management education.

Acknowledgement and AI Assistance Statement

The authors acknowledge the constructive feedback and guidance received from academic mentors and colleagues throughout the course of

this research. Appreciation is also extended to the Office and Information Management departments of Niger Delta University, Rivers State University, and Ignatius Ajuru University of Education for granting access to their students and academic records.

In addition, the author acknowledges the use of artificial intelligence tools, including OpenAI's GPT-5 model, in supporting aspects of the research process such as literature synthesis, data organization, and language refinement. All AI-generated outputs were critically reviewed, verified, and substantially edited by the author to ensure academic integrity and alignment with the study's objectives.

Conflict of Interest Statement

The author declares no conflicts of interest regarding the publication of this research work. There are no personal, financial, or professional relationships that could be construed to have influenced the conduct, interpretation, or reporting of this study.

Ethical Considerations

Ethical standards were upheld throughout the study. Prior to data collection, permission was obtained from the heads of departments of the selected universities. Participation was entirely voluntary, and respondents provided informed consent after being assured of the confidentiality and anonymity of their responses. Data were used strictly for academic purposes and handled according to institutional ethical guidelines and the principles of the Declaration of Helsinki (2013) on research involving human subjects.

References

Abubakar, U., Onasanya, S. A., & Ibrahim, H. A. (2024). Student perspectives and impact of AI integration in pedagogical practices in Nigerian tertiary institutions. *Advances in Mobile Learning Educational Research*, 4(2), 1135-1148. https://doi.org/10.25082/AMLER.2024.02.008

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211.

Akeke, M. N. G., Atah, C. A., & Bessong, E. B. (2024). Adoption and utilization of artificial intelligence (AI) in teaching business education content in the 21st century. *Nigerian Journal of Business Education (NIGJBED).*

Alamri, A., Alshehri, M., & Alghamdi, S. (2022). Institutional readiness and AI adoption in higher education: An empirical investigation. *Education and Information Technologies, 27*(9), 12543–12560.

Amaewhule, E. C. (2025). Literacy level and attitude of academics towards the adoption of artificial intelligence (AI) in public universities in Rivers State. *International Journal of Educational Management, Rivers State University*, 1(1), 73-86.

Baig, M. A. (2024). Artificial intelligence integration in higher education: Opportunities and pedagogical implications. *Journal of Educational Technology Research, 12*(3), 211–229.

Chassignol, M., Khoroshavin, A., Klimova, A., & Bilyatdinova, A. (2023). Artificial intelligence trends in education: A systematic review. *Computers & Education, 203*, 104786.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.

Ebiringa, O. T., Ikerionwu, C. O., Erike, A. I., & Asiegbu, B. C. (2025). Generative AI adoption in Nigerian higher education: Benefits, challenges, and opportunities. *African Journal of Humanities and Contemporary Education Research, 20*(1), 285-304. https://doi.org/10.62154/ajhcer.2025.020.01028

Essien, A., et al. (2025). *Attitude of undergraduate students' use of ChatGPT for academic work: Attitude and challenges* (University of Port Harcourt study). [Unpublished/Institutional report; data available online].

Eze, S. C., Nwosu, J. C., & Ofoegbu, E. (2022). Artificial intelligence literacy and cognitive skills development among undergraduates in Nigerian universities. *International Journal of Educational Technology in Higher Education, 19*(45), 1–17.

Firat, M., & Yilmaz, F. G. (2023). Cognitive engagement through AI-enhanced instruction: Evidence from higher education. *Interactive Learning Environments, 31*(4), 655–671.

Haruna, Z. (2025). *Artificial intelligence literacy, digital literacy and information fluency in academic libraries in Nigeria: A review*. (Review article). Retrieved from ResearchGate.

Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning.* Center for Curriculum Redesign.

Holmes, W., Bialik, M., & Fadel, C. (2022). *Artificial intelligence in education: Promises and implications for teaching and learning* (2nd ed.). Center for Curriculum Redesign.

Izevbigie, H. I., Olajide, O., Olaniran, O., & Akintayo, T. A. (2025). The ethical use of generative AI in the Nigerian higher education sector. *World Journal of Advanced Research and Reviews, 25*(3), 847-853. https://doi.org/10.30574/wjarr.2025.25.3.0789

Kong, S. C., Luo, N., & Chan, T. (2023). The mediating effect of institutional support on AI-based learning engagement. *British Journal of Educational Technology, 54*(2), 456–473.

Li, T., Wang, Y., & Chen, X. (2024). AI-facilitated collaborative learning and cognitive performance in higher education. *Computers in Human Behavior, 152*, 107295.

Luckin, R., & Cukurova, M. (2019). Designing educational technologies in the age of AI: A cognitive amplification approach. *Learning, Media and Technology, 44*(2), 188–201.

Mansoor, H. M. H., Bawazir, A., Alsabri, M. A., Alharbi, A., & Okela, A. H. (2024). Artificial intelligence literacy among university students: A comparative transnational survey. *Frontiers in Communication, 9,* 1478476.

Mohammed-Shittu, N. (2025). *AI-Driven decision support systems for sustainable administration of public universities in Rivers State.* International Journal of Educational Development and Management (IJEDM), Rivers State University Special Issue, 2025.

Ng, W. (2023). Artificial intelligence literacy: A framework for higher education. *Education and Information Technologies, 28*(6), 7243–7262.

Nunnally, J. C., & Bernstein, I. H. (2018). *Psychometric theory* (4th ed.). McGraw-Hill Education.

Okeke, P. O., & Nwosu, G. N. (2023). Digital transformation and cognitive adaptability in Nigerian business education. *Journal of Contemporary Educational Research, 7*(2), 87–99.

Olaolu, M. O., & Okorie, U. C. (2021). Institutional constraints in AI integration in Nigerian universities. *African Journal of Education and Information Management, 14*(3), 55–67.

Onyekpe, S. J., Dania, P. O., Ogheneakoke, C. E., & Eyamekware, E. U. (2025). Artificial Intelligence Adoption in Social Studies Instruction: A Study of Universities in South-South Nigeria. *Asian Journal of Education and Social Studies*, 51(8), 1060-1069. https://doi.org/10.9734/ajess/2025/v51i82301

Organisation for Economic Co-operation and Development (OECD). (2024). *Fostering higher-order thinking skills online in higher education: A scoping review.* OECD Publishing.

Owolabi, S. O., & Oyeleke, O. W. (2021). Artificial intelligence and student performance in business education programmes. *Journal of Educational Management and Policy, 23*(1), 92–106.

Peters, O., & Olojede, H. T. (2025). Influence of generative artificial intelligence (GenAI) in Nigerian higher education. *Àgídìgbo: ABUAD Journal of the Humanities, 13*(1), 233-244. https://doi.org/10.53982/agidigbo.2025.1301.17-j

Piaget, J. (1977). *The development of thought: Equilibration of cognitive structures.* Viking Press.

Sawyer, R. K. (2022). *The Cambridge handbook of the learning sciences* (3rd ed.). Cambridge University Press.

Sun, J., Li, L., & Yang, X. (2023). Institutional support, digital infrastructure, and AI-enabled learning outcomes in universities. *Education Sciences, 13*(5), 476.

UNESCO. (2021). *AI and education: Guidance for policy-makers.* United Nations Educational, Scientific and Cultural Organization.

Wang, J., & Fan, W. (2025). The effect of ChatGPT on students' learning performance, learning perception, and higher-order thinking: Insights from a meta-analysis. *Humanities and Social Sciences Communications, 12*, Article 621. https://doi.org/10.1057/s41599-025-04787-y

Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper & Row.

Zawacki-Richter, O., Marin, V. I., & Bond, M. (2023). A meta-analysis of the impact of AI on student learning outcomes in higher education. *Computers & Education, 195*, 104711.

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial-intelligence applications in higher education: Where are the educators? *International Journal*

ISSN: **3107-6513**

of Educational Technology in Higher Education, 16(39), 1–27.

Zhai, C., Wibowo, S., & Li, L. D. (2024). The effects of over-reliance on AI dialogue systems on students' cognitive abilities: A systematic review. *Smart Learning Environments, 11*(28), 1–22.