

Assessment of stakeholders' perceptions on the adoption of artificial intelligence in academic writing

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Abstract. While the development of artificial intelligence (AI) tools for academic writing continues to evolve alongside rapid technological advancement, ethical questions have arisen about their adoption. To try and answer these questions, the study reported in this article investigated the perceptions of some education stakeholders about the adoption of AI in academic writing, highlighting its practices, principles, and benefits. A mixed methods design was adopted. The study was anchored on Davis's technology acceptance model. Ten multiple-choice questions ($r = 0.73$) and one open-ended question were administered to participants at the workshop on adopting AI. The participants were purposively sampled from members of an association. The collected data were analysed using descriptive and inferential statistics and thematic analysis. About 51.5% of the participants were male, and 48.5% were female. Participants' results revealed a mean score of 28.09, a median of 30, and a range of 5 to 50. Participants suggested incorporating artificial intelligence into academic writing due to its inherent benefits while adhering strictly to its usage principles.

Keywords: artificial intelligence, academic writing, adoption of AI tools, technology in writing

1. Introduction

Artificial intelligence (AI) denotes the replication of human intelligence in machines, enabling them to learn, reason, and make decisions autonomously. This definition encompasses diverse techniques and methodologies, ranging from symbolic reasoning to deep learning algorithms. AI systems aim to perceive the environment, comprehend natural language, and exhibit adaptive behaviours akin to human cognition. The genesis of AI can be traced back to the mid-20th century when pioneering researchers such as McCarthy et al. [23] introduced the term and laid the groundwork for its development. Initial endeavours focused on symbolic reasoning and rule-based systems, culminating in early AI programs like the Logic Theorist [25]. However, the field encountered setbacks during the "AI winter" of the 1970s and 1980s, which was characterised by stagnant progress and waning interest [40]. Despite these challenges, renewed efforts and technological advancements in subsequent decades propelled AI into a new era of innovation and discovery.

Researchers have observed that integrating AI into academic writing has posi-

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tively impacted students' writing proficiency. Within the academic domain, AI has facilitated the creation of many technologies that aid in literature search, content analysis, scientific writing, and editing [32]. The AI-driven technologies facilitate multiple aspects of the writing process, including planning, drafting, and offering feedback, thereby improving students' involvement and productivity. ChatGPT, Gemini, RapidMiner, Copilot, and Iris.ai are powerful tools that provide notable benefits in automating processes, assisting in data analysis, doing literature reviews, and generating manuscripts. Nevertheless, some obstacles arise, such as the possibility of diminished critical involvement, inaccuracies, prejudices, and the inability to completely reproduce human comprehension. Integrating AI in higher education presents both potential and obstacles for research assessment [26].

For the optimal use of AI tools, it is important to incorporate features that allow for modifying and improving AI literacy. Ensuring the responsible use of AI is of the utmost importance, as it should enhance human efforts rather than substitute them while upholding scientific integrity and ethical conduct. In the future, AI will have extensive implications for nursing research and education, revolutionising the learning and knowledge generation processes and potentially accelerating innovation in research. The initial classification of online writing tools is machine translations [34]. Interlingual translation is crucial for the dissemination of knowledge across international boundaries. The advancement of technology has facilitated instantaneous translation across several languages with a simple click.

Academic writing is a crucial aspect of research that involves the organised presentation of ideas, evidence-based arguments, and coherent reasoning [19]. One aspect to consider about academic integrity is direct written assessments (DWAs). Generative AI tools such as ChatGPT are distinct from these. They complement the original material and cannot generate fresh content in response to a cue. Digital writing assistants are software applications that use artificial intelligence to aid the writing process. Web browsers or devices can access these applications. In this context, DWAs refer to tools that extend beyond basic grammar and spell checkers [34]. These tools can completely rephrase and paraphrase content at the sentence level while offering comments on the overall structure of the text. Grammarly is currently one of the most widely used DWAs. It utilises AI to enhance writing and offers recommendations for text improvement [15]. The program works with word processing software and has demonstrated efficacy in writing texts in English. O'Neill and Russell [27] discovered that Grammarly can assist students in enhancing their grammatical accuracy, fostering self-assurance and independence during the editing phase of writing.

One of the confounding obstacles to AI usage is plagiarism. Plagiarism in this context refers to falsely claiming or presenting someone else's intellectual work as one's own. Misrepresenting authorship involves submitting information that belongs to someone else without providing a proper citation [31]. An instance of such misconduct occurs when we incorrectly cite [17]. Roe, Renandya and Jacobs [34] stated that when using digital writing tools, textual plagiarism is the primary infringement of academic integrity norms that can occur.

There are many perceived views about adopting AI in the academic world, and the answers to these are unclear. Therefore, this study explores education stakeholders' perceptions of adopting artificial intelligence in academic writing, emphasising its practices, principles, and benefits.

Davis [12], building upon the theory of reasoned action (TRA), anchored this study on the technology acceptance model (TAM). TAM aims to explain and predict how users accept and use new technology (figure 1). Davis [12] introduced TAM to understand the influences on technology adoption, with a specific focus on two key beliefs: perceived usefulness (PU) and perceived ease of use (PEOU). TAM has emerged as one of the most

impactful models in the adoption field and is extensively used across various sectors, including education, healthcare, and business. This study considered the perceived usefulness element of the model, as participants were asked how they perceived AI tools' usefulness. Participants were also asked how easy they found it to use AI tools in their academic writing tasks, which is the second aspect of the model.

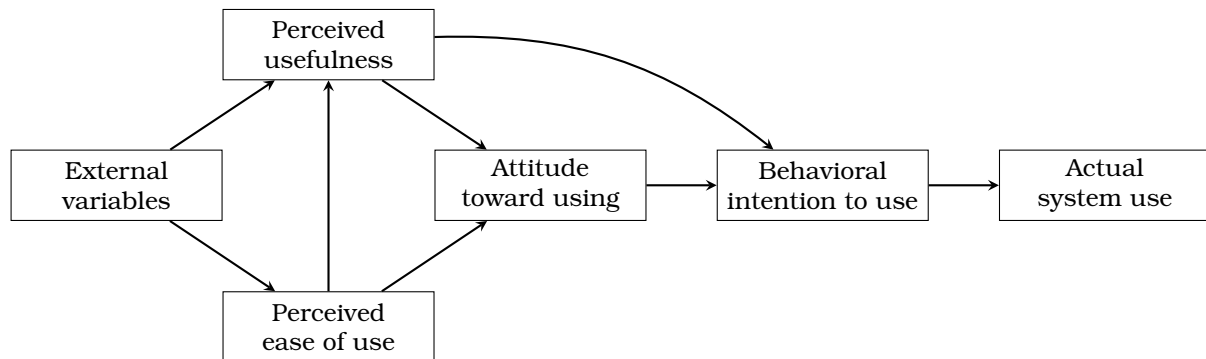


Figure 1: Technology acceptance model [12].

1.1. History of artificial intelligence

The literature traces the invention of artificial intelligence to 1937, when it underwent multiple evolutionary stages. Turing's work [39], specifically his concept of a "universal machine", established the foundation for modern computers. The Dartmouth Summer Research Project on Artificial Intelligence in 1956 established AI as a separate and identifiable area of academic study [23]. Over the next ten years, a significant amount of excitement and financial support was dedicated to AI, specifically in problem-solving and symbolic approaches.

In the 1990s, Breazeal [6] developed Kismet, a robot that could recognise and stimulate emotions with its face. In 2009, Google secretly developed a driverless car [43]. It passed the self-driving test in Nevada in 2012 [16]. In 2011, Apple released Siri, a virtual assistant on the Apple iOS [35]. In 2018, Google also developed Bidirectional Encoder Representations from Transformers (BERT), the first bidirectional, unsupervised language representation [14]. OpenAI launched ChatGPT [28], and in 2024, the first self-driving taxi began operating in San Francisco [37]; then, many AI tools for academic writing and generative texts emerged for checking grammar and plagiarism, making citation recommendations, conducting literature reviews, designing presentations, identifying AI-generated content, grading tests, composing letters, and analysing and interpreting data. Cummings, Monroe and Watkins [9] reported that 2023 was a memorable year, even for writing teachers who are not particularly worried about the impact of technology on writing. That year, generative AI caught the attention of everyone in higher education.

1.2. Practices of artificial intelligence

Due to the changes in academic life, there has been a considerable focus on prominent types of academic misconduct, such as contract cheating. This term refers to the practice where students delegate their work to someone else and then present it as their own [8]. Lancaster and Cotarlan [20] saw a rise in the number of searches for contract cheating websites in the initial phases of the epidemic. The regulatory authorities implemented measures to address contract cheating during the epidemic period. In Australia, the Tertiary Education Quality and Standards Agency (TEQSA) significantly suggested the "Prohibiting Academic Cheating Services Bill 2019" in the Australian Parliament [36]. Similarly, the United Kingdom has taken legal measures

to make “essay mills” illegal [24]. Different types of academic integrity breaches, including both inadvertent and deliberate violations facilitated by digital writing tools, have received insufficient attention. Consequently, the field of academic integrity research continues to lack adequate exploration. Higher education institutions (HEIs) have various options when it comes to policy development, such as addressing the numerous types of writing tools discussed in this document. An explicit and thorough institutional policy would emphasise the potential dangers and advantages of such technologies and their appropriate application by providing illustrative examples.

One drawback of this strategy is that it may necessitate frequent revisions and grow too lengthy and cumbersome. Another potential strategy to examine is the implementation of a cognitive offloading policy. According to Dawson [13], the cognitive offloading technique permits using certain tools to aid writing. However, the author must explicitly acknowledge and attribute the use of these tools. The advent of generative artificial intelligence (GenAI), exemplified by ChatGPT, has presented both prospects and obstacles to the conventional education framework [7]. These prospects include the use of AI tools to teach and learn mathematics. Furthermore, it is possible to use AI models that use natural language programs to interpret and solve word problems, enabling students to enter their queries in their natural language and receive step-by-step solutions. As a result, students can better comprehend complex mathematical problems.

1.3. Principles of artificial intelligence

There are two main categories of AI: weak artificial intelligence, also known as “narrow AI” or “specialised AI”, and strong artificial intelligence, also known as “artificial general intelligence” [11]. Weak AI surpasses human performance in a specific job due to its limited focus and adherence to stricter limitations compared to even the most rudimentary form of human intelligence. A strong AI can extrapolate its knowledge and employ it in novel scenarios, predict forthcoming occurrences based on accessible facts, and adapt to unfamiliar settings [38]. Examples are Google Maps, Apple autocorrect, chatbots, and intelligent assistants such as Siri, Alexa, and Cortana.

AI supports a wide range of services, such as publishing assistance. These services include responding to peer reviews, tracking manuscripts, and improving the peer review processes. For example, writers must disclose the use of AI tools in their publications. This study emphasises the increasing significance of AI in scientific writing and the need for transparency in its application [22]. Researchers must implement robust data anonymisation protocols, identify and mitigate biases, and ensure fair results using AI models. Involving human subjects in research requires informed consent, and algorithmic accountability mechanisms should be implemented to ensure stakeholders understand AI-driven decisions and ethical concerns. The following components are fundamental aspects of artificial intelligence: using data and previous knowledge to make informed decisions; identifying irregularities in data, networks, voices, and visuals; analysing and comprehending visual information; understanding written and spoken languages; and participating in informal discussions. AI adoption in academic writing enhances teaching and assessment processes and improves student writing proficiency through personalised feedback and efficient grading, as demonstrated in the study of AI-powered pedagogy. [34].

1.4. Benefits of artificial intelligence

Over several decades, the personal computer has increasingly become instrumental in writing text using word processors. Before the launch of ChatGPT in November 2022, the process of helping humans create texts using word processors was called “automated writing assistance”. Three primary categories of tools provided

this assistance: spell-checking, grammar-checking, and style-checking [10]. Artificial intelligence improves academic writing in six key areas: idea development, content organisation, literature synthesis, data management, editing, and ethical compliance. AI technologies are essential for improving the productivity and quality of academic writing and meeting the diverse needs of researchers and academics [3]. Some digital tools can help users with various writing tasks, such as formulating or translating thoughts into written text [15, 45]. AI tools have the potential to be more integrated and have a greater impact on research. In-depth analysis tools revealed that they enhance the literature review process across four key stages: literature search, literature mapping, reading and synthesising, and manuscript writing. AI can enhance the literature review process across four key stages: literature search, literature mapping, reading and synthesising, and manuscript writing. Table 1 presents some AI tools with their usefulness in academic writing.

Table 1

List of artificial intelligence tools and their functions.

AI tool	Function
QuillBot, Scipace, Scite	Paraphrasing, rewriting, editing, and modifying the tone of your text to enhance intelligibility
Elicit, Unriddle, Scite, Junia	Citation generation, simplifying articles, narrowing down points in articles, exploring open-access datasets, and formulating targeted research
Vizly, Chatpizel, Julius.ai	Data analysis and description
Wordtune, Prepal	Effectively modifies and restates written content
ChatGPT, Gemini, Copilot, Claude	Generate text suggestions, development of course content, and generation of test items
ZeroGPT, Originality, Scribrr, Undetectable	Detector for AI-generated content, paraphrasing, and citation generation
Slidego, designer	For PowerPoint design
Connected Papers, Research Rabbit, Paperpal, Writeful, Trinka	Literature review, academic and technical writing
Grammarly, Microsoft Word's Editor, ProWritingAid	Advanced grammar and spell-check functionalities
Paperpile	Organise and format references and citations
Synaesthesia	Turn text into video
Copy.ai	Writing tool that's all about writing workflows
DALL-E 2	Produces vivid, colourful images based on text prompts and designs
VEED	Image generator that builds cool, engaging graphics relatively quickly
Midjourney	Creates compelling graphics from text

2. Methodology

This study adopted a concurrent explanatory mixed-methods design. Triangulation was employed to improve the credibility and depth of findings by integrating quantitative and qualitative data sources. Methodological triangulation supplemented survey data with open-ended responses to gain a more comprehensive understanding of stakeholders' perspectives. The quantitative data revealed measurable trends and general patterns, while the qualitative data offered rich, contextual insights into participants' experiences and opinions. This combination of methods facilitated cross-validation of results, ensuring that interpretations were not solely based on one data type but reflected a more holistic view of the study.

We purposively sampled sixty-eight (68) participants from higher education institutions (HEIs), which include universities, polytechnics, colleges of education, and other educational outlets across Nigeria. These participants are members of the Association of Behavioural Research Analysts and Psychometricians (ABReAP) and were trained in a workshop titled “Adoption of Artificial Intelligence in Academic Writing: Practice, Principles, and Benefits”. After the training, consent was sought, and they gave informed consent to being assessed. The instrument used for data collection consisted of 10 multiple-choice questions on the knowledge of AI tools and one open-ended question about participants’ perceptions of adopting AI tools in academic writing. This instrument was validated through content and face validity by experts in instrument development, and an estimated reliability coefficient of 0.73 was established using the Kuder-Richardson reliability method. We administered a Google Forms to the participants, which included 10 multiple-choice questions and an essay question. All the data were extracted from the downloaded Google Forms. This data was subject to coding for quantitative and qualitative analysis. In this study, we conducted a thematic analysis of qualitative data to uncover patterns and insights from participants’ responses. The process began with familiarisation, during which we read all the responses multiple times to gain a comprehensive understanding. Then, we systematically labelled key ideas and recurring concepts through coding. We reviewed and organised these codes into broader themes to capture stakeholders’ perceptions about adopting AI in academic writing. We then refined and defined the themes to ensure consistency and clarity. The findings were presented narratively, incorporating direct quotations from participants to support and illustrate each theme, enhancing our interpretation’s authenticity and depth. Data were analysed using frequencies, percentages, means, medians, ranges, one-way ANOVA (Welch Robust Test and Games-Howell post hoc test) at the 0.05 significance level, and thematic analysis.

3. Results

3.1. Demographic data

Figure 2 reveals that 51.5% of the respondents are male, while 48.5% are female. This implies that the gender distribution is nearly even among the participants, with a slight majority of males.

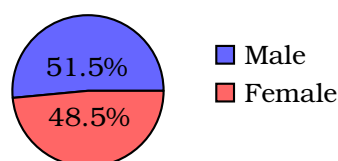


Figure 2: Distribution of participants by gender.

Figure 3 reveals that 55% of the respondents are affiliated with universities, 5.9% are affiliated with polytechnics, 7.4% are affiliated with colleges of education, and 5.9% are from other educational institutions. This implies that the participants’ institutional affiliation is distributed among the universities.

Figure 4 reveals that 43.1% of the respondents are lecturers, 39.2% are higher institution students, 5.9% are teachers, and 11.8% are other educational professionals. This implies that the participants’ academic status distribution is predominantly lecturers.

Figure 5 revealed that the average score of participants is 28.09 out of 50 points, which corresponds to 56.18% of the total. The median score is 30 points, indicating

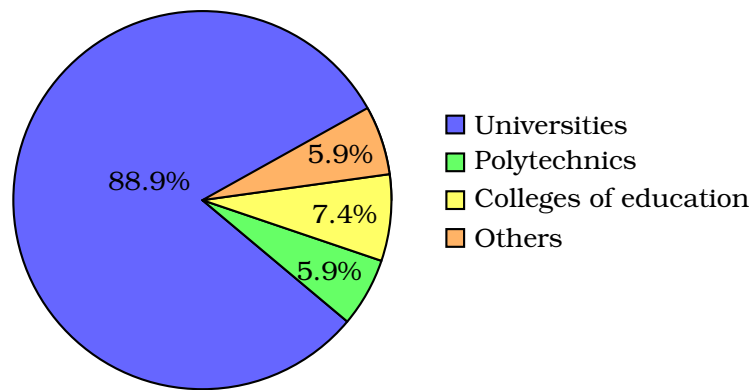


Figure 3: Distribution of participants by affiliation.

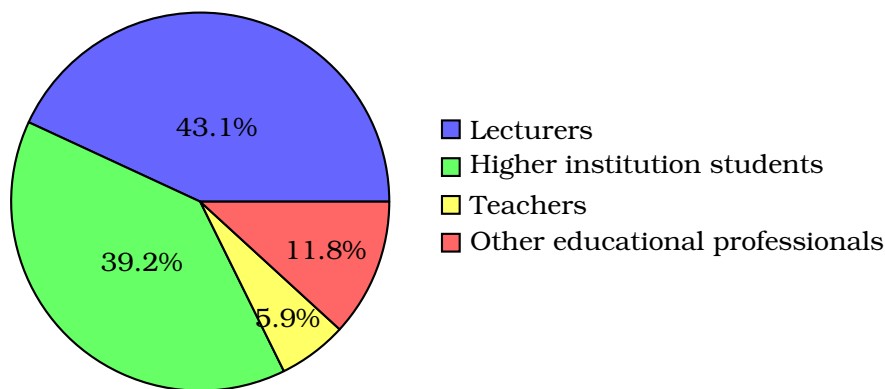


Figure 4: Distribution of participants by academic status.

that 50% of the participants scored below 30 and the other 50% scored over 30. The score range is from 5 to 50 points, and a range of 45 points indicates substantial variability. The distribution has a moderate leftward skewness, peaking at about 25 points. Most participants fall within the medium range, where the highest frequency of scores occurs between 25 and 30 points. A noticeable decrease in scores above 35 points indicates areas of knowledge of participants about AI.

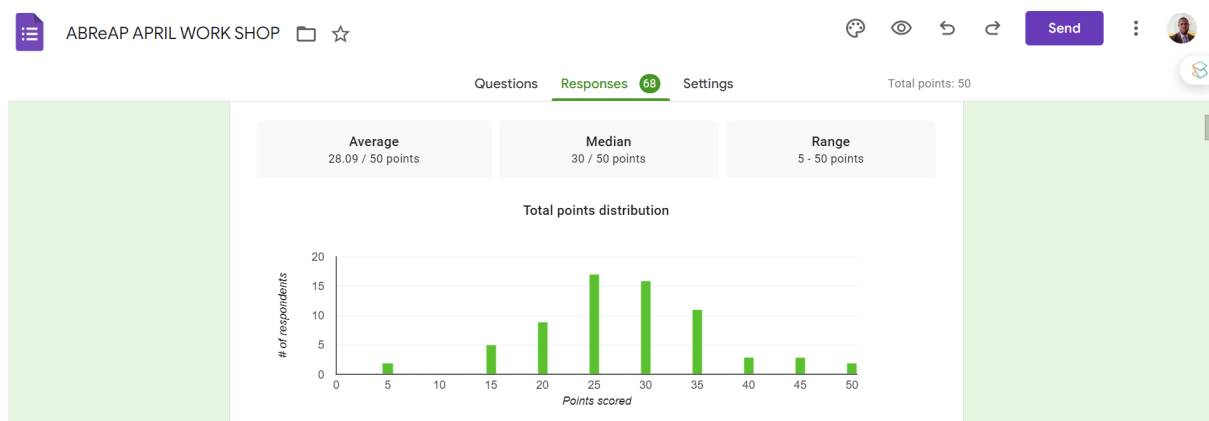


Figure 5: Descriptive analysis of participants’ scores in the objective test.

To gather more information about stakeholders’ responses regarding their knowledge and adoption of AI in academic writing, a one-way analysis of variance (ANOVA) was conducted to compare participants’ scores on the objective test.

Table 2
Descriptive analysis of variance of stakeholder scores.

Stakeholder	N	Mean	Standard deviation	Standard error	95% CI for mean		Min-Max
					Lower bound	Upper bound	
University	55	29.27	8.997	1.213	26.84	31.7	5-50
Polytechnic	4	20	10.801	5.401	2.81	37.19	5-30
College of education	5	22	5.701	2.55	14.92	29.08	15-30
Others	4	27.5	6.455	3.227	17.23	37.77	20-35
Total	68	28.09	9.062	1.099	25.89	30.28	5-50

The study evaluated the reliability of various groups of participants. The university group had the highest average score, with a confidence interval (CI) of 26.84 to 31.70. Polytechnic had the lowest average score, with a wide CI of 2.81 to 37.19. The college of education group had a narrower CI, with a mean score of 22.00, and the others group had a mean score of 27.50. The overall mean score was 28.09, with a standard deviation 9.06, indicating moderate spread. The university group had the highest and most reliable average score, while the polytechnic and the college of education had lower scores due to their small sample sizes. The others group scored similarly to the university group but had a small sample. The overall mean (28.09) was heavily influenced by the university group due to its large size.

Table 3
ANOVA analysis for stakeholder mean score comparison.

Score	Sum of squares	Degrees of freedom	Mean square	F	p
Between groups	525.561	3	175.187	2.253	0.091
Within groups	4975.909	64	77.749		
Total	5501.471	67			

Table 4
Games-Howell post-hoc test.

(I) Stakeholder	(J) Stakeholder	Mean difference (I-J)	Standard error	p	95% CI
University	Polytechnic	9.273	5.535	0.453	[-15.77, 34.31]
	College of education	7.273	2.823	0.143	[-2.5, 17.05]
	Others	1.773	3.448	0.951	[-12.44, 15.98]
Polytechnic	University	-9.273	5.535	0.453	[-34.31, 15.77]
	College of education	-2	5.972	0.985	[-25.42, 21.42]
	Others	-7.5	6.292	0.657	[-30.9, 15.9]
College of education	University	-7.273	2.823	0.143	[-17.05, 2.5]
	Polytechnic	2	5.972	0.985	[-21.42, 25.42]
	Others	-5.5	4.113	0.575	[-19.65, 8.65]
Others	University	-1.773	3.448	0.951	[-15.98, 12.44]
	Polytechnic	7.5	6.292	0.657	[-15.9, 30.9]
	College of education	5.5	4.113	0.575	[-8.65, 19.65]

The study measures variation between groups (525.561) and within groups (4975.909), with an $F = 2.253$ and $p = 0.091$. The results are not statistically significant at the 5% level, meaning there is no strong evidence of a significant difference in mean scores among the stakeholder groups. However, the p -value is close to 0.05, suggesting a possible trend. A larger or more balanced sample could potentially detect a significant difference.

The Welch ANOVA test was conducted due to unequal group sizes and variances. The results indicated no statistically significant difference in mean scores among stakeholder groups, with a test statistic $F = 2.414$ and $p = 0.157$ (greater than 0.05). This suggests that observed differences in scores are likely due to chance.

The test compared mean scores among four stakeholder groups: university, polytechnic, college of education, and others. No significant difference was found between any pair of groups. All p -values are above 0.05, and confidence intervals include zero, indicating the differences are not statistically significant. The result confirms that stakeholder type does not significantly affect mean scores.

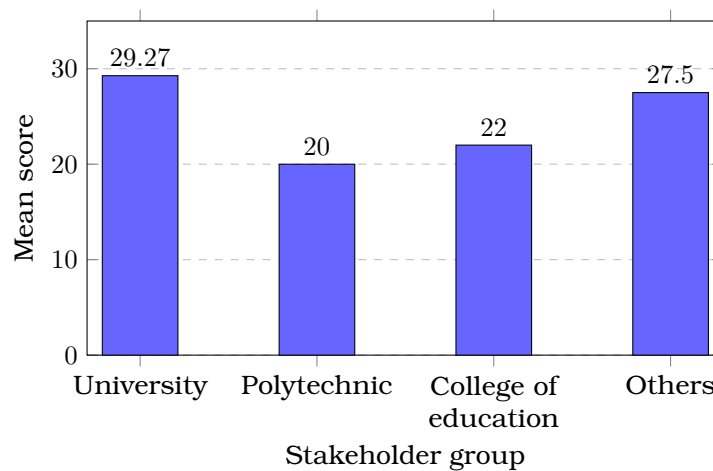


Figure 6: Stakeholder mean score chart.

3.2. Thematic analysis of participants' responses to perceptions of the adoption of AI in academic writing

The following codes, quotations, and themes were generated from the responses of the 68 participants.

3.2.1. Theme 1: Benefits of AI in academic writing

Subtheme 1.1: Enhanced efficiency and ease of writing

- 3: AI can lead to the quality use of technology in problem-solving.
- 10: AI makes academic writing much faster.
- 16: Makes research work easier and more accurate.
- 19: Makes research easier.
- 21: Helps in writing a good article and efficiently makes use of time.
- 24: Brings quality and originality in academic research.
- 26: Aids research writing and scholarly publication.
- 30: Improves the quality of research work and makes the work easier.
- 31: Makes academic writing stress-free and helps discover in-depth knowledge.
- 32: Enhances the quality of academic writing.
- 35: Simplifies research for both neophytes and erudite scholars.

- 36: Makes the world of research very simple.
- 41: Less stress in literature reviews.
- 42: Reduces the time needed for peer review processes.
- 43: Enhances the timely production of required writing.
- 44: Reduces wastage time and increases productivity.
- 48: Makes research easier, smoother and removes anxiety.
- 49: Helps in the modifications of research work and ensures originality.
- 55: Assists in writing without much stress.
- 57: Of great benefit to researchers.
- 59: Enhances educational experiences with high-quality instructional materials.
- 60: Enhances originality and quality of research outputs.
- 64: Makes academic writing easier, faster, stress-free, and efficient.
- 66: Faster than traditional methods.
- 67: Makes writing stress-free, easier, and faster.
- 68: Aids the speed of writing, accuracy, and modernised data analysis.

The themes are represented in figure 7.

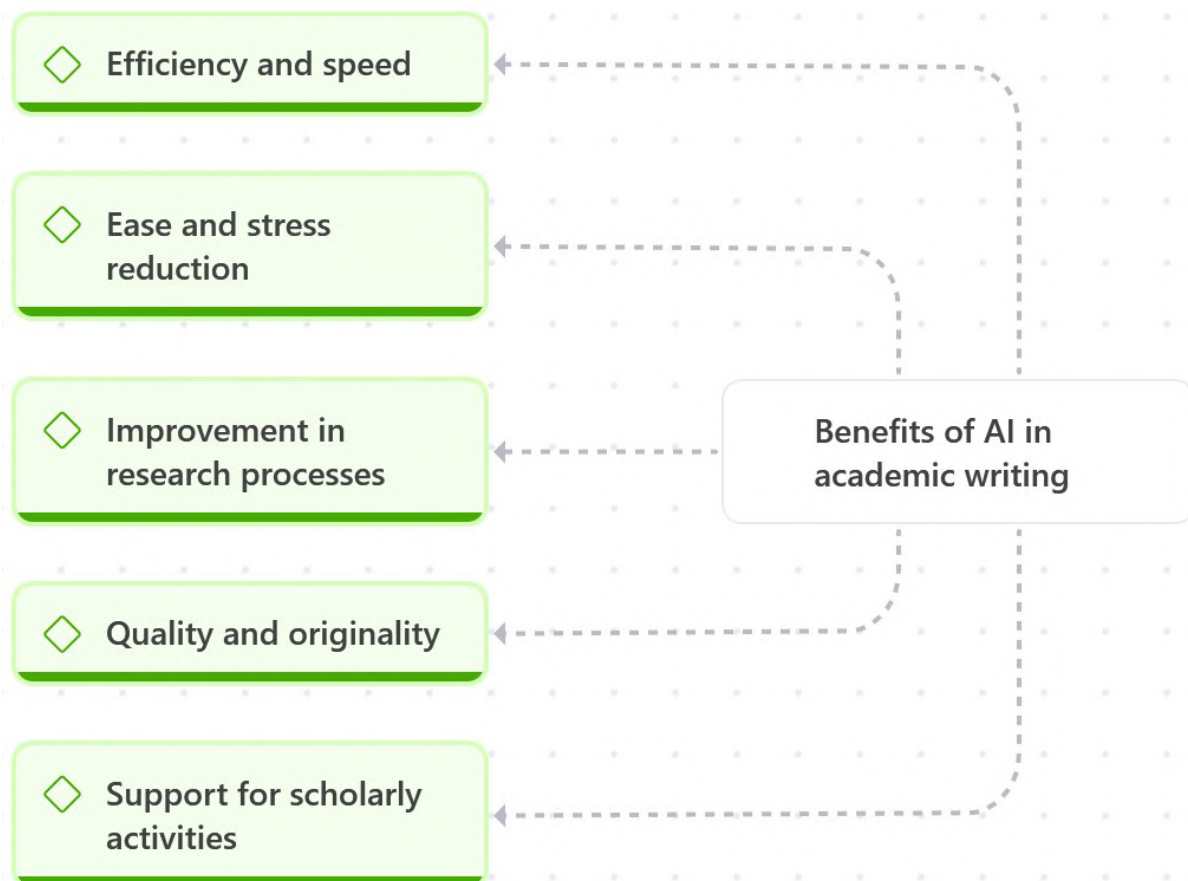


Figure 7: AI benefit in academic writing.

In subthemes 1.1 and figure 7, the participants overwhelmingly view AI as a valuable tool that improves the efficiency and ease of academic writing. They stated that it speeds up the writing process, reduces stress and cognitive load, and improves the quality and originality of research outputs. AI simplifies complex research tasks, making academic work more accessible to novice and experienced scholars. Also, it establishes better time management and increases overall productivity in academic

writing and publication efforts.

Subtheme 1.2: Efficiency and speed

- 10: AI makes academic writing much faster.
- 19: Makes research easier.
- 21: Helps in writing a good article and efficiently makes use of time.
- 30: Improves the quality of research work and makes the work easier.
- 36: Makes the world of research very simple.
- 43: Enhances the timely production of required writing.
- 44: Reduces wastage time and increases productivity.
- 55: Assists in writing without much stress.
- 66: Faster than traditional methods.
- 67: Makes writing stress-free, easier, and faster.
- 68: Aids the speed of writing, accuracy, and modernised data analysis.

In subtheme 1.2, the participants consistently highlight that AI tools significantly increase academic writing and research speed and efficiency. AI is seen as streamlining the writing process, reducing the time and effort required to complete academic tasks, and supporting the timely production of high-quality outputs. It not only accelerates writing but also minimises stress and enhances productivity. This suggests that AI is vital in optimising time management and making the academic research process simpler and more effective than traditional methods.

Subtheme 1.3: Quality and originality

- 8: AI can lead to the quality use of technology in problem-solving.
- 24: Brings quality and originality in academic research.
- 31: Helps discover in-depth knowledge.
- 32: Enhances the quality of academic writing.
- 49: Helps in the modifications of research work and ensures originality.
- 60: Enhances originality and quality of research outputs.

In subtheme 1.3, the participants recognise that AI significantly enhances the quality and originality of academic writing. It assists in generating in-depth insights, refining research content, and facilitating meaningful modifications to ensure originality. Additionally, AI is seen as a tool that improves problem-solving through effective technology use, ultimately leading to more authentic and higher-quality research outputs.

Subtheme 1.4: Ease and stress reduction

- 16: Makes research work easier and more accurate.
- 19: Makes research easier.
- 31: Makes academic writing stress-free.
- 41: Less stress in literature reviews.
- 48: Makes research work easier and smoother, and removes anxiety.
- 55: Assists in writing without much stress.
- 64: Makes academic writing easier, faster, stress-free, and efficient.
- 67: Makes writing stress-free, easier, and faster.

In subtheme 1.4, the participants consistently highlight that AI greatly alleviates academic writing and research stress and complexity. It simplifies tasks like literature reviews and content development, making them easier, smoother, and more manageable, reducing anxiety and mental effort. Overall, AI is viewed as a tool that fosters a more relaxed, efficient, and user-friendly writing experience.

Subtheme 1.5: Support for scholarly activities

- 26: Aids research writing and scholarly publication.
- 35: Simplifies research for both neophytes and erudite scholars.
- 57: Of great benefit to researchers.
- 59: Enhances educational experiences with high-quality instructional materials.

In subtheme 1.5, the participants see AI as a valuable tool that aids various scholarly activities, such as research writing, publication, and creating high-quality instructional materials. It assists both novice and experienced researchers by simplifying complex tasks and enhancing educational experience. This underscores AI's role in promoting academic productivity and scholarly engagement across all levels of expertise.

Subtheme 1.6: Improvement in research processes

- 10: AI makes academic writing much faster.
- 42: Reduces the time needed for peer review processes.
- 44: Reduces wastage time and increases productivity.
- 49: Helps in the modifications of research work and ensures originality.
- 68: Aids the speed of writing, accuracy, and modernised data analysis.

In subtheme 1.6, the participants emphasise that AI enhances research processes by increasing speed, improving accuracy, and modernising tasks like data analysis and peer review. AI tools streamline research workflows, minimise time wastage, and aid in refining and updating research, ultimately boosting productivity and overall efficiency.

3.2.2. Theme 2: Concerns about AI in academic writing

Subtheme 2.1: Potential negative impact on skills and learning

- 2: AI might make researchers lazy.
- 12: Should not displace human intelligence and dedication.
- 15: Negative effects on writing skills, reducing the productivity of learners.
- 29: Students might rely too much on AI.
- 33: Undergraduates might not produce new ideas or understand research.
- 37: Can lead to laziness in students.
- 40: Fear of overuse by students, hard to detect proper use.
- 46: Dependence on AI might make human input irrelevant.
- 58: Need proper guidelines and training to avoid verbatim use.
- 65: Should not be underestimated but needs balance.
- 66: Traditional methods might fade away.

In subtheme 2.1, the participants express concerns that excessive reliance on AI may negatively impact critical academic skills and student learning. They highlight risks such as reduced creativity, diminished writing abilities, and increased student laziness. There is also concern that AI could overshadow human intelligence and dedication, leading to overdependence and a decline in traditional research methods. Respondents emphasise the need for proper guidelines and training to ensure a balanced and ethical use of AI that does not undermine learner productivity and originality.

3.2.3. Theme 3: Need for guidelines and ethical considerations

Subtheme 3.1: Importance of proper use and ethical guidelines

- 5: Ethical issues should be properly addressed.
- 6: Adoption of AI should be guided and limited.
- 9: Balanced strategy with AI to retain academic integrity.
- 13: AI should complement, not replace, human intellect.
- 22: Should complement human creativity and critical thinking.
- 29: Need guidelines for responsible and ethical use.
- 34: Must have limitations or modes of use.
- 45: Guidelines for moderation and retention of creativity.
- 53: Caution to ensure originality and ethical use.
- 54: Need clear ethical guidelines before full adoption.
- 56: Should be used responsibly.
- 58: Proper checks to avoid verbatim use.
- 61: Guidelines improve the quality of educational output.

In subtheme 3.1, the participants emphasise the critical need for clear ethical guidelines and responsible use policies when adopting AI in academic settings. They stress that AI should complement human creativity and intellect rather than replace it, with safeguards in place to maintain academic integrity and originality. Proper moderation, limitations, and training ensure that AI supports educational quality while preventing misuse, plagiarism, and ethical violations.

3.2.4. Theme 4: Balanced approach

Subtheme 4.1: Balanced integration of AI with human input

- 7: A welcome innovation if principles are followed.
- 9: AI to better human writing with a balanced approach.
- 13: AI should complement human intellect.
- 20: Balance AI use with human creativity.
- 22: Balance AI use with preserving critical thinking.
- 23: AI usage should not be definitive; done with caution.
- 29: Guidelines for responsible use to avoid over-reliance.
- 45: Guidelines for moderation and retention of creativity.
- 51: AI cannot replace human beings; it needs human expertise.
- 53: Balance AI use with ethical considerations and creativity.

In subtheme 4.1, the participants advocate for a balanced integration of AI and human intellect in academic work. They view AI as a valuable innovation that should enhance, rather than replace, human creativity, critical thinking, and expertise. Responsible use, guided by clear principles and moderation, is essential to prevent overreliance on AI and maintain the quality and originality of scholarly outputs.

3.2.5. Theme 5: General positive sentiment

Subtheme 5.1: Overall acceptance and positive views

- 1: Fantastically okay.
- 8: AI is a cool tool to adopt in academic writing.
- 11: Accept.
- 25: AI facilitates teaching and learning.
- 28: Enhances research writing and promotes quality.
- 39: Welcome idea because of the advantages.
- 50: Good.
- 52: AI in academic writing is good.
- 62: Way to go as the world adopts AI.
- 63: AI is becoming the order of the day.

In subtheme 5.1, the participants generally express positive attitudes and widespread acceptance of AI in academic writing and education. They view AI as a useful, innovative, and forward-thinking tool that enhances teaching, learning, and research quality. Many regard AI adoption as a natural and beneficial step in line with global technological advancements, reflecting a strong willingness to embrace its integration into academic practices.

In summary, the thematic analysis yielded several subthemes, including increased productivity and ease in writing, improved efficiency and speed, reduced stress and ease of use, support for scholarly activities, enhancement of research processes, potential negative effects on skills, and the importance of proper use and adherence to ethical guidelines. The findings reveal a generally positive perception of AI in academic writing and research, with participants highlighting its capacity to enhance efficiency, quality, and originality. AI tools were seen to reduce the time and stress associated with scholarly tasks, improve productivity, and support both novice and experienced researchers in writing, data analysis, and scholarly publication. Many participants acknowledged that AI contributes to deeper knowledge exploration, streamlines research processes, and enriches the educational experience with improved instructional materials. There is a strong sense of overall acceptance, with several respondents viewing AI as a timely and valuable innovation that aligns with current technological advancements in education.

However, alongside these benefits, participants expressed concerns about potential drawbacks and the need for ethical use. Key issues included the risk of over-reliance on AI, which could reduce students' critical thinking, creativity, and academic skills. Respondents emphasised the importance of maintaining a balance between AI use and human input, calling for clear guidelines, moderation, and ethical standards to prevent misuse and preserve academic integrity. The consensus supports AI as a complementary tool rather than a replacement for human intellect, reinforcing the need for a thoughtful and responsible approach to integration in education and academic writing.

4. Discussion

The triangulation of results in this study revealed a convergence of findings from both qualitative and quantitative data regarding stakeholders' perceptions of AI adoption in academic writing. Quantitative responses indicated a generally positive outlook on the usefulness and efficiency of AI tools. In contrast, qualitative insights provided deeper context, highlighting nuanced concerns such as ethical implications, potential overreliance, and the need for proper guidelines. Many stakeholders acknowledged AI's potential to enhance productivity and support academic tasks, but they also emphasised the importance of maintaining academic integrity and critical thinking. This alignment between data sources reinforces the credibility of the findings and underscores stakeholders' complex yet cautiously optimistic stance toward AI integration in academic writing. The harmonious incorporation of artificial intelligence with human input will lead to widespread acceptance and excellent outcomes. However, the introduction of GenAI, such as ChatGPT, has posed opportunities and challenges to the traditional education model. The participants' responses show that most of them supported adopting and integrating AI into academic writing, with due caution and ethics to be observed. This aligns with the findings of Pereira, Komarlu and Mobeirek [30] that the acceptance rate, in general, was higher, with the push condition having a minimum acceptance rate of 35%. Also, the users displayed a high level of receptiveness towards the ideas provided by AI. To corroborate the findings, Lavidas et al. [21] examines the psychological and contextual factors influencing humanities and

social sciences students' intentions to use AI tools for academic purposes. The study is grounded in technology acceptance frameworks and identifies key determinants such as perceived usefulness, ease of use, and digital competence while addressing concerns regarding ethical use and academic integrity. The authors provide evidence-based insights into how student perceptions and readiness shape the adoption of AI technologies in higher education, contributing to a nuanced understanding of digital tool integration across disciplines.

Dale and Viethen [10] argue that the most significant advancement in writing brought about by AI is the implementation of AI-based sentence and phrase autocompletion, as well as alternate wording suggestion tools. It is important to balance the employment of AI writing tools by setting up writing tasks that involve both the system and alternative methods [1]. However, choosing the best among these available writing AI tools should be done carefully, and the output should be fact-checked. In an era of rapid technological advancement, Papadakis et al. [29] explores the integration of computer simulations and cloud-based innovative technologies as a transformative strategy for open learning. In this study, the potential of these tools to enhance accessibility, flexibility, and interactivity in education, particularly within distance learning and self-directed environments, was established.

The integration of AI into academic writing has garnered significant attention due to its potential to enhance efficiency, quality, and originality. AI tools, such as ChatGPT, have been widely adopted for tasks like grammar checking, summarising, and improving readability, particularly benefiting non-native English speakers [44]. A study analysing AI usage in academic writing found that improving readability (51%) and grammar checking (22%) were the primary purposes of AI tool usage. Furthermore, AI's ability to streamline research processes and assist in scholarly publication has been acknowledged as a significant advantage, facilitating teaching and learning [2]. These tools expedite the writing process and aid in refining research content, support meaningful modifications to ensure originality, and enhance problem-solving through effective use of technology.

However, the rapid adoption of AI in academic settings has raised concerns about its potential negative impact on students' critical thinking skills and learning outcomes. Over-reliance on AI tools may lead to reduced creativity, diminished writing abilities, and a lack of original thought among students [18]. A systematic review highlighted that excessive dependence on AI for information acquisition can negatively affect both critical thinking skills and dispositions, emphasising the need for educational strategies that foster these essential skills [4]. Moreover, ethical issues such as plagiarism and the authenticity of AI-generated content have become pressing concerns, necessitating a balanced approach to AI integration in education [41]. Educators have observed that students increasingly use AI tools like ChatGPT to generate entire essays, undermining the development of original thought and critical thinking [33].

The academic community is developing ethical guidelines and frameworks to address these challenges and ensure responsible AI usage. Leading journals and organisations emphasise the importance of transparency, accountability, and human oversight in AI-assisted academic writing [5]. For instance, the International Committee of Medical Journal editors mandates comprehensive disclosure of AI technology usage in all submitted manuscripts, underscoring that AI technologies cannot be acknowledged or credited as authors [5]. Additionally, educational institutions are encouraged to incorporate AI literacy into their curricula, fostering critical engagement with AI tools and preserving academic integrity [42]. By establishing clear policies and promoting ethical practices, the integration of AI in academic writing can be optimised to support learning while mitigating potential risks.

5. Conclusion and recommendations

The article examines the practices, principles, and benefits of incorporating artificial intelligence into academic writing. Recognising that AI is designed to enhance or augment tasks rather than completely replace human labour is essential. While AI excels in literature reviews and data analysis, it cannot replicate the fundamental aspects of exceptional research, particularly critical thinking and creativity. Researchers should leverage AI for repetitive tasks, which allows them to concentrate on analysing findings and drawing conclusions. The integration of AI tools has the potential to transform research, teaching, and learning. However, this integration requires careful ethical consideration, emphasising privacy, transparency, fairness, accountability, and responsible use to improve educational experiences and job performance.

Researchers must ensure that AI tools used in teaching do not worsen existing educational inequalities, maintain transparency about AI use in teaching materials and assessments, safeguard student privacy and sensitive data, and preserve human-centric aspects of teaching and learning. Ethical boundaries and accuracy in AI-assisted content are paramount, and AI should aid human effort rather than replace it. Clear disclosure of AI involvement and human oversight is essential for AI-augmented manuscript development process accountability. As researchers, the ultimate responsibility for the final manuscript rests on them. While these are central to understanding user acceptance, a more comprehensive exploration of other external variables or constructs within TAM, such as subjective norms, facilitating conditions, or experience, could offer a more profound understanding of the factors influencing users' perceptions. Such an approach is a valuable direction for future research. This study has several limitations. The use of purposive sampling from a single professional association in Nigeria restricts the generalisability of the findings, as the perspectives may not reflect those of stakeholders in other regions or cultural contexts. Moreover, a cross-sectional design limits the ability to observe changes over time or establish causality. Future research should consider broader, more diverse samples and adopt cross-cultural or longitudinal approaches to enhance the validity and applicability of the results.

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