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# Artificial Intelligence and Academic Research in Contemporary Society: Evidence from University Academics

***Vincent Eseoghene Efebeh**
Department of Political Science, Delta State University, Abraka
**http://orcid.org/0000-0003-2001-5026**
**Felix Orishede**
**Department of Business Administration, Delta State University, Abraka**
**https://orcid.org/0009-0009-4596-507X**

**Joseph Martins Igoh**
**Department of Business Administration, Delta State University, Abraka**
**https://orcid.org/0009-0005-1789-0585**

***Corresponding author: Email: vinefebeh15@gmail.com**

**Abstract**
**Background:** In recent years, academics have been able to use artificial intelligence as a powerful tool for their writing, research, and collaboration. Artificial intelligence facilitates research and writing more quickly, enhances collaboration, and offers new insights to the academic community. Researchers have focused less on the efficacy and dependability of employing artificial intelligence for academic research in Nigeria despite the technology's significance for research in academia globally.
**Objective:** The study investigated how artificial intelligence is affecting academic research in Nigeria, specifically focusing on the Faculty of Social Sciences at Delta University in Agbor, Delta State.
**Methodology:** This study applied the research survey design and collected data from 97 academic researchers at the Faculty of Social Sciences, Delta University's Agbor, Delta State. A purposeful sampling technique was used to choose a sample of respondents, and the primary source data collection method was adopted. The study's data were analysed using regression analysis, correlation analysis, and the t-test.
**Result:** Artificial intelligence has a major and overwhelmingly positive impact on academic research in Nigeria, particularly for Faculty of Social Sciences members at Delta University Agbor, Delta State. Tasks that would typically require a lot of manual labour, like data collection, data analysis, predictive modelling, and the automation of literature reviews, are now being revolutionised by artificial intelligence, offering a hopeful glimpse into the future of academic research.
intelligence has affected academic research.
**Conclusion:** Academic research is positively and significantly impacted by artificial intelligence. Technologies related to artificial intelligence present a very bright future for Nigerian academic researchers.

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**Unique Contribution:** In the Nigerian context, the study has offered empirical support for comprehending the relationship between artificial intelligence and scholarly academic research.
**Key Recommendation:** Academic institutions should develop and adopt clear ethical standards and guidelines for using artificial intelligence in academic research. These policies should cover data security, AI usage transparency, possible biases, and the validation of results generated with AI assistance.
**Keywords:** Artificial intelligence, academic research**,** academic institutions

## Introduction

The application of artificial intelligence (AI) has become a transformative force in the ever-changing field of academic research. AI is dedicated to developing systems capable of performing tasks that require human intelligence. These tasks determine learning, perception, reasoning, problem-solving, and language comprehension. Artificial intelligence is a dynamic field that includes natural language processing (NLP), deep learning (DL), and machine learning (ML). Artificial intelligence stands out in academic research due to its ability to process and analyse massive amounts of data quickly and accurately. Unlike traditional methods, AI can identify complex patterns, predict outcomes, and even uncover information that has never been found before (Zhang, 2020). The term artificial intelligence (AI) describes how data is processed, analysed, and interpreted in academic research using computer algorithms and statistical models. Academic research is among the many facets of contemporary society that AI is quickly changing.

AI makes an effort to imitate human intelligence so that systems can function independently. Artificial intelligence (AI) is widely used in a wide range of applications, including ridesharing, shopping, power electronics, transportation, and healthcare. Numerous industries are interested in AI as a potential differentiator in the market. Because AI-related advancement and research are essential to national security and economic competitiveness, authorities have also been supporting and funding this work (Abadi et al., 2020). According to Lee (2023), it is critical to comprehend how AI technologies affect research methods, conclusions, and the creation of new knowledge as academics discuss these technologies more and more. It has significantly impacted academia, bringing in an entirely novel phase of data analysis and research methods. Modern AI algorithms and NLP (natural language processing) technologies are helping researchers with everything from reviewing the literature to interpreting complicated data. This helps researchers work more quickly and efficiently while also creating previously unthinkable new research directions. If ethical issues and methodological rigour are properly addressed, established research paradigms could be transformed by AI's application in academia (Pigola et al., 2023).

According to Chen et al. (2020), the National Science Foundation (NSF) in the United States and the National Natural Science Foundation (NSFC) in China are the two primary funding sources for academic research in both nations. Established in 1950, NSF is an autonomous government agency in the United States that finances approximately 24% of all academic research carried out by American colleges and universities with federal support. All branches of basic science and engineering are funded by the NSF, with the exception of the medical sciences. Since its founding in 1986, the NSFC has been the primary source of funding for Chinese academic research. The NSFC's overall budget for 2017 accounted for over 27% of China's total expenditure on higher education. Research promotion, talent cultivation, and the building of facilities for academic research are the main foci of the NSFC funding system. The level of attention given to scholarly

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research in the AI field by the United States and Chinese governments is demonstrated by the financial support of AI-related studies by the NSF and NSFC (Abadi et al., 2020). However, in developing countries like Nigeria, the case is different.

Processing and analysing vast amounts of data quickly and effectively is one of the key benefits of employing AI in academic research. Large data are frequently encountered in domains like biology, medicine, and the social sciences, where this can be especially helpful. Researchers can find connections, trends, and patterns with the aid of artificial intelligence (AI) that may be hard to find with conventional research techniques (Burger et al., 2023). Given that AI has many benefits for academic research and has been the subject of numerous research documents in developed countries, relatively little research has been done on how AI influences academic research in Nigeria. This is because, as noted by Ekundayo et al. (2024), financing AI-related academic research is a significant challenge in developing countries, including Nigeria. Furthermore, there is still a lack of information about the precise impacts of AI on academic research processes and findings in Nigeria despite the growing body of literature on the subject.

**Objective of the Study**

This study investigated how artificial intelligence influenced academic research in Nigeria, with special reference to academic staff in the Faculty of Social Sciences, Delta University, Agbor, Delta State.

**Research Hypothesis**

To fulfil the purpose of this investigation, the following null hypothesis was examined:

**$H_1$:** There is a substantial relationship between artificial intelligence and academic research in Nigeria, with particular reference to the Faculty of Social Sciences, Delta University, Agbor, Delta State.

**Literature Review**

In general, AI refers to a group of techniques associated with computer systems' ability to perform tasks that require human intelligence. AI is the simulation of cognitive ability in machines that are designed to think and act like people. According to Haenlein and Kaplan (2019) and Okolie and Egbon (2023), AI is a machine's ability to match or surpass human intelligence, including experiential learning and logical reasoning. With its revolutionary potential in data analysis, predictive modeling, and the automation of literature reviews, AI is becoming an indispensable component of academic research (Shin, 2019). By improving the effectiveness, precision, and broadness of inquiry, the practical use of AI algorithms and techniques for machine learning has the ability to completely change the area of scholarly inquiry (Zouhaier, 2023). The large volumes of data and intricate computations that would be impossible or difficult for academic researchers to handle are now possible thanks to AI techniques. Foundational frameworks like information processing theory and decision support systems have bolstered artificial intelligence's role in academic research by offering an empirical basis for the technology's applicability in handling vast amounts of data and supporting intricate procedures for making choices (Guida et al., 2023).

Writing academic research involves a lot of creativity and combines theoretical, compositional, phenomenological, methodological and framing elements. Innovation research greatly benefits from the imminent integration of AI, which can be applied in many ways. Theoretically, a multitude of digital platforms exist today that leverage AI methods to find papers,

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proceedings, books, and editorial remarks in any field of study. AI supports researchers in describing the best theory for their research, organising information, and synthesising content. AI also provides summaries, points out trends on every topic, and analyses data (Mariani et al., 2023). The necessity for a more thorough adoption of AI into research methodologies is underscored by the fundamental role of AI and the ability to speed up findings and optimise procedures in scholarly inquiry. According to Von-Krogh et al. (2023), AI has proven to be a useful tool for statistical analysis and evaluation of literature, including systematic literature reviews.

**Advantages of AI in Academic Research**

AI's primary benefit to scholars is its ability to automate difficult research processes. Tasks that would typically require a lot of human labour, like data collection, organisation, and analysis, can be automated by AI. It additionally has the potential to find previously undiscovered trends and correlations in the study, which can provide crucial context for academic topics. According to Trisnawati et al. (2023), AI can extract insights from large amounts of content, like abstracts or literature, which usually requires a substantial amount of effort to finish by hand. Zhang (2020) asserts that AI's remarkable speed and accuracy in processing and analysing large data is what distinguishes it from other research methods in academia. AI, in contrast to conventional techniques, can recognise intricate patterns, forecast results, and even unearth previously undiscovered information. This opens up new research directions and quickens the pace of existing research.

AI has shown promise in fostering productive collaboration and deeper understanding among researchers. For instance, Elsevier has released an alpha edition of Scopus AI to facilitate cooperation and the social significance of research. This app blends generative AI with reliable Scopus data and content (Elsevier, 2023). This enables researchers to obtain deeper insights more rapidly. Nonetheless, important practical and ethical issues are brought up by the growing use of AI. Alam (2021) contends that AI can also help with teamwork, which benefits scientists. AI can help with team member interactions, assignments, and project collaboration. Additionally, AI is capable of helping automate document assessment and swapping, which facilitates academic collaboration on research endeavours. AI can also connect researchers with the tools and materials they need to complete their studies, making it easier for them to find and access the data they require to wrap up their academic endeavours. Furthermore, the use of AI in academic research can produce new ideas and perspectives. AI can also be used to generate new ideas and concepts and identify unique patterns in data. This can help academics see things from new angles and give them a deeper understanding of how to conduct their research.

**Challenges of AI in Academic Research**

Several difficulties and moral issues need to be resolved, including concerns about bias in AI algorithms, data privacy, and the requirement for open and accountable AI practices. We must deal with these issues as we try to leverage AI's immense potential to make sure that the advantages are available to everyone and do not unintentionally hurt society. Similarly, Garbuio and Lin (2021) confirm that additional real-world practice is still needed to examine ethical concerns related to the application of AI in academic research. It takes technological skills and the ability to comprehend what needs to be done to be equally explainable and transparent in what you do and to justify the choices made by AI systems.

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Sun and Dong (2018) assert that AI solutions must be implemented to ensure the security of the data employed and processes. This includes safeguarding privacy, utilising appropriate technology for the task, and having the capacity to gather more data and add advanced features to ensure continued progression. Researchers bear the responsibility of utilising AI in academic research, but AI becomes more difficult to explore as AI solutions build new research structures and theories. Furthermore, Elaiess (2023) contends that one possible disadvantage of AI is the possibility of data manipulation or erroneous results. Another potential drawback is the potential for AI to be used to circumvent unethical situations when conducting research. Additionally, it is possible that AI could be used to automate human-required tasks like editing and peer-review assessment. As a result, there is an established connection between research ethics and artificial intelligence, with AI often being used to conduct research without first considering ethical issues (Thomas et al., 2023). This is a significant challenge because, although AI can be used to reduce the burden of scholarly research, it can also be used to circumvent moral constraints that might be dangerous.

**Artificial Intelligence and Academic Research**

Artificial intelligence (AI), sometimes called the fourth wave of industrialisation (IR 4.0), is changing academic research and how we carry out tasks and engage with others. AI helped academic researchers write more productively and efficiently. Recent developments in AI and artificial intelligence-driven writing tools helped researchers find and fix spelling and grammar mistakes and provide the right citations. By using AI to summarized lengthy materials, academics can quickly flick through them and get to the important parts of research articles. AI-powered tools enable academics to work together on research endeavours in real-time, making sharing ideas, tracking progress, and providing feedback simpler (Garbuio& Lin, 2021).

AI is now commonplace in our daily lives due to the rising popularity of smartphones and other technological advances. The academic landscape is being gradually replaced by AI as the world of technology continues to grow and evolve (Gendron et al., 2022). Around the world, organisations, especially learning institutions, have embraced AI and used it in a range of situations. For academic researchers and institutions of learning, it offers a plethora of potential for streamlining and expediting administrative work (Alam, 2021). Simultaneously, there is an overwhelming need to improve the results of AI in terms of candour and clarity. In addition to promoting increased trust, this will bring AI applications closer to moral and societal norms.

According to Thomas et al. (2023), ChatGPT is one example of how the incorporation of AI into academic research has demonstrated substantial potential to expand approaches and ease the examination of enormous data sets. In order to ensure authenticity and a meaningful contribution to the field of knowledge, responsible integration of AI into academic research requires transparency and accurate authorship credit. Pigola et al. (2023) acknowledge that AI has the capability to greatly enhance academic innovation research when paired with a strict methodical strategy and pertinent concerns regarding ethics.

In a similar Vein et al. (2015) contend that in the digital age, AI has emerged as a game-changing force that is impacting academic research. A GPT derivative was even listed as a co-author in some studies, demonstrating the increasing acceptance of AI in academia (Kakatkar et al., 2020; Hajkowicz et al., 2023).Researchers are becoming more interested in using intelligent tutors,

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avatars, and simulators to create and/or study novel social phenomena. In qualitative research, AI has also been applied as a universal speech translation model (Ekundayo et al., 2024).

However, the literature reveals the adoption of AI at various stages, including problem discovery, decision-making, and solution choices (Mariani et al., 2023). Garbuio and Lin (2021) contend that because AI addresses cognitive barriers to creative idea generation, it can support various steps in troubleshooting and paradigm exploration. More efforts are undoubtedly required to advance AI in academic research by promoting the early stages of developing ideas, which will facilitate the discovery of problems, even though the majority of research investigations carried out to date have concentrated on the widespread use of AI in the solution choice stage for organisational problems. In order to give researchers the valuable assistance that AI techniques can offer to the advancement and influence of academic research and thereby demystify the unforeseen side of AI, a great deal of discussion and knowledge regarding the prospective influence of AI on academic research must be specified (Mariani et al., 2023). Therefore, by comprehending the adoption patterns of AI, academics can make informed investments in improving capabilities and predicting the future opportunities of AI technological devices.

**Theoretical Framework**

The Technological Acceptance Model (TAM) forms the basis of this study. According to Wangdi et al. (2023), the TAM is a well-respected theoretical structure that is frequently used to comprehend the acceptance and utilisation of emerging technologies, such as AI. According to Wangdi et al. (2023), TAM suggests that perceived ease of use (PEOU) and perceived usefulness (PU) are the two main factors that affect a technology's embrace and use. The term perceived utility (PU) describes how useful a technology is thought to be for accomplishing particular objectives or jobs. The capacity of AI to improve research procedures and results, as well as its ability to handle and analyse enormous volumes of data rapidly and effectively, may impact PU in relation to academic research (Al-Mamary& Shamsuddin, 2015). The degree to which AI is regarded as simple to use is known as PEOU. PEOU in academic research may be impacted by things like the degree of competence needed to use AI in research or the accessibility of easy-to-use AI instruments (Al-Mamary& Shamsuddin, 2015).

We can investigate the manner in which the adoption of AI in academic research could influence researchers' opinion of AI as well as their readiness to utilise the instrument in their research endeavours by applying the TAM to their study's hypotheses. This study has a strong theoretical foundation thanks to the TAM. It suggests that the largest influences on embracing technology are PU and PEOU. These core TAM principles are perfectly aligned with the discussion of this study. The framework suggested by this study includes the following elements:

i. PEOU: The degree to which a researcher thinks employing AI will require no work. This can involve elements like accessibility, simple-to-use interfaces, and an array of tools for support and training.
ii. PU: The extent to which researchers feel that employing AI will improve the quality of their work. This may involve elements like enhanced precision, better data analysis, and time-saving features.

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iii. The use of AI: A researcher's actual utilisation of AI in their work depends on how much of their desire to use AI.
iv. Research results: The influence of AI on the calibre, efficacy, and profitability of scholarly research, which is impacted by AI application.

**Research Methods**

In this study, the research survey design was applied. A structured, self-administered questionnaire was utilised in the study to collect data from 107 respondents using the purposeful sampling technique. Purposeful sampling, improves the study's validity by guaranteeing that the sample is composed of academic researchers with differing degrees of AI usage expertise. This approach was selected because it can produce rich data that can be analysed. We retrieved 97 of the 107 copies of the questionnaire that were distributed, yielding a 90.7% response rate. 43 women and 54 men made up the total of 97 responders. In order to fully comprehend and interpret the opinions and experiences of participants using AI in academic research, this study combined quantitative and qualitative research methods. The approach used for the study was informed by the perspective that knowledge is created by the combination of participants' varied perspectives and common experiences, as well as the academic researchers' stance within a technology-focused field.

The method used by the study to gather data from participants is a five-point Likert-style rating scale. Using a five-point Likert-style rating scale, participants were asked to indicate how much they agreed or disagreed with a series of statements. Strongly agreed was indicated by a score of five; for example, agreed was indicated by a score of four; a score of three, uncertainty; disagreed was indicated by a score of two; and strongly disagreed was indicated by a score of one. To ascertain the validity and reliability of the research instrument, a preliminary pilot study involving 25 participants was conducted without replacement, utilizing the Smart Personal Learning Style Criterion.

**Table 1: Validity and Reliability Results**

| Construct | No. of items | Composite Reliability | Cronbach's Alpha | Average Variance Extract |
|---|---|---|---|---|
| Artificial intelligence | 7 | .833 | .751 | .647 |
| Academic research | 7 | .859 | .798 | .664 |

**Source:** Field Survey, 2024

The values of the two constructs for Cronbach's alpha range from 0.751 to 0.798 and for composite reliability from 0.833 to 0.859, respectively, as shown in Table 1. All of the constructs are dependable since the composite results and Crombach's alpha coefficient are greater than the cutoff of 0.70 (Hair et al., 2017). The reliability findings are corroborated by the Average Variance Extract (AVE) discriminant validity figures, which are likewise above the 0.50 threshold (Hair et al., 2017). The study's constructs thus demonstrated remarkable internal uniformity and dependability. The Statistical Package for Social Sciences (SPSS) software version 23.0 was used to analyse the data using the t-test, correlation, and regression analysis.

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**Research Results**

Bivariate analysis is used to investigate the association between the independent and dependent variables. If there is strong evidence of a connection between the variables, accept the hypothesis, and reject it if p>0.05 indicates inadequate proof of a causal connection. This decision rule covers the outcomes of bivariate tests.

**Table 2: Results of the Correlation between Artificial Intelligence and Academic Research**

| | **Variables** | | **Artificial Intelligence** | **Academic Research** |
|---|---|---|---|---|
| **Spearman's rho** | **Artificial Intelligence** | Correlation Coefficient | 1 | .763** |
| | | Sig. (2-tailed) | | .000 |
| | | N | 97 | 97 |
| | **Academic Research** | Correlation Coefficient | .763** | 1 |
| | | Sig. (2-tailed) | .000 | |
| | | N | 97 | 97 |

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

**Source:** SPSS Output, 2024

The connection between AI and academic research is displayed in Table 2 using Spearman's correlation coefficients (rho = 0.763, N = 97, and P = 0.000). This finding implies a robust and constructive relationship between academic research and artificial intelligence. The result implies that AI can support Nigerian academic research. However, in a study like this, correlation analysis is unable to determine a cause or effect. The influence of AI on academic research in Nigeria was assessed using a linear regression technique, with special attention to the Faculty of Social Sciences at Delta University, Agbor, Delta State.

**Table 3: Summary of Regression Analysis of the Impact of Artificial Intelligence on Academic Research in Nigeria**

| **Source** | **DF** | **Sum of Squares** | **Mean Square** | **F- Value** | **Pr> F** |
|---|---|---|---|---|---|
| **Error** | 1 | 172.804 | 4.5610 | 117.410 | <.0001 |
| **Corrected** | 96 | 16.921 | 0.7030 | | |
| **Total** | 97 | 189.725 | | | |

**Source:** SPSS Output, 2024

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**Decision Rule**

If F's calculated value is higher than F's tabulated value (F cal>F tab), we reject the null hypothesis; if not, we accept it. The F tabulated at the 95% significance level ($\alpha = 0.05$) is as follows: F at 0.05, (1, 97) = 7.5448. The computed F, resulting in the value of 117.410, is higher than the tabulated F, which is 7.5448. As a result, the null hypothesis is untrue. With a 95% confidence level, the study's regression results verify that AI favours academic research in Nigeria. The results of the tested hypothesis demonstrated AI's substantial influence on Nigerian academic research.

**Discussion of Findings**

The study's findings demonstrated how artificial intelligence supports scholarly research at the Faculty of Social Sciences, Delta University, Agbor, Delta State. This outcome supports the claim made by Thomas et al. (2023) that AI is helping researchers with everything from literature review to complicated data analysis, which not only speeds up and improves the efficiency of research but also creates previously unthinkable new research directions. This finding supports the assertion made by Sun and Dong (2018) that, given appropriate attention to rigorous approaches and ethical issues, the use of AI in academic circles has the potential to transform established research paradigms completely. In Nigerian universities, the use of AI in academic research is nevertheless in its infancy. But as AI becomes more relevant, many more scholarly journals and editorials are focusing on how AI is used in academic research. AI in academia holds the potential to expand knowledge, streamline workflows, and promote scientific discoveries.

The study's findings also demonstrated that AI significantly impacts academic research in Nigeria. This outcome was in line with previous research (Musib et al., 2017; Mariani et al., 2023; Pigola et al., 2023; Ekundayo et al., 2024), which revealed that artificial intelligence has an advantageous effect on academic research. The result also aligned with a study by Trisnawati et al. (2023) that demonstrated how AI influenced how people consume information, constitute decisions, and even perceive the world. AI has a significant impact on academia, particularly by bringing in a new era of data analysis and research methods (Pigola et al., 2023). Burger et al. (2023) contend, however, that despite AI being a vital component of academic research for years and showing up in a variety of research techniques, there is a propensity to see AI in academic research in a limited way, frequently limiting it to the use of specific tools like ChatGPT.

The problems affecting academic research in Nigeria include data manipulation, privacy-related issues, bias in AI algorithms, ethical and transparent issues, responsible AI practices, and perceived issues with AI training. It is evident from a review of the difficulties in utilising AI for academic research that these difficulties affect academic research in Nigeria. Therefore, the use of AI can completely transform important facets of academic research in social sciences in Nigerian universities, including problem-solving and decision-making, thanks to its capacity to automate, anticipate, and identify patterns in massive amounts of data. Furthermore, social science researchers can use AI to explore and analyse large data in novel ways, providing many scientific opportunities. Gendron et al. (2022) state that processing and analysing vast amounts of data fast and effectively is one of the key benefits of employing AI in academic research.

**Conclusion and Recommendations**

The study's findings showed that AI significantly and favourably influences academic research in Nigeria and illustrates a generally positive attitude towards the use of AI in academic research,

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indicating an understanding of how it can improve the effectiveness, precision, and resilience of research findings in the Faculty of Social Sciences, Delta University, Agbor, Delta State. The findings also highlight how important it is for academic researchers to use AI tools carefully in order to reduce biases, protect user privacy, and uphold ethical standards. The findings of this study highlight the changing nature of the researcher's role in an increasingly AI-integrated academic environment. AI is viewed as a supplementary tool, not a replacement for human researchers; rather, it suggests a cooperative relationship between scholars and AI tools.

In conclusion, the use of AI is revolutionising the approach to research and expanding the frontiers of human understanding. We must adopt AI responsibly going forward, tackling its drawbacks and ensuring its advantages are maximised for the benefit of humankind. There is no doubt that the potential of artificial intelligence will influence academic research in the future. It is clear that the use of AI as a research tool is currently in its early stages in Nigerian universities, despite the increasing attention that it is receiving in the realm of academic discoveries; this disparity between the exploration of AI and its actual application in academic research points to the necessity of incorporating AI more deeply into cutting-edge research techniques in order to fully realise its potential for accelerating discoveries and streamlining procedures. The following suggestions are given to researchers who are interested in incorporating AI into their research practices in light of the results of the study and conclusion:

i. Academic institutions in Nigeria should take the lead in developing and implementing guidelines and ethical norms for the use of AI in academic research. These guidelines should address issues like data security, AI transparency, potential biases, and the verification of results produced with AI support.
ii. In light of the study's comparatively small sample size, more research with a larger participant is advised in order to confirm and expand on the findings.
iii. Future studies should examine how the growing use of AI is changing the roles that human researchers play and how this can be managed to optimise AI's advantages without jeopardizing the human-centred elements of academic research.

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