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AI Tools in Academic Research: Perceptions, Adoption, and Challenges among Moroccan Student Researchers

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Abstract:
The evolving landscape of academic research worldwide has seen a new revolution with the development of artificial intelligence (AI). This article illuminates the perceptions, adoption and challenges of the use of AI tools among Moroccan student researchers. This study employed a cross-sectional quantitative approach for the collection and interpretation of data. A structured questionnaire was administered to a body of student researchers enrolled in master's and PhD programs across disciplines within the University of Sidi Mohamed Ben Abdellah of Fez. Built on the valid responses of 100 participants, the data obtained was analysed statistically with SPSS. The data analysis's results were divided into sections, revealing demographic information, then descriptive data, while also exploring correlations. The findings show that PhD students constituted the majority of respondents (n=69) and that overall participants have positive attitudes towards the integration of AI in their academic research. Participants frequently embed AI tools in their work with a remarkable preference for two AI tools: ChatGPT and Grammarly AI. This study also revealed that student researchers primarily adopt AI for information retrieval, idea generation, language refinement, and citation management, with limited use in advanced tasks such as data analysis and translation. Nevertheless, participants are aware of reliability and ethical concerns, and express an interest in further use of AI, yet not at the expense of diminished quality of writing and analysis. This study calls for guidelines and regulations for the responsible use, as well as addresses emerging issues such as AI citation in academic research.

Keywords: Academic research, artificial intelligence, adoption, challenges, Moroccan context, perceptions, research practices, student researchers
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Introduction

Among the growing technologies, artificial intelligence (AI) has gained popularity in academia within different fields. With the ability to perform human-like tasks, saving energy and time (Livberber & Ayvaz, 2023), AI is increasingly infiltrating research in its different stages. Considering that academic research involves handling a considerable amount of information, theories, and data, researchers often seek tools that will facilitate these operations (Khalifa & Albadawi, 2024). Various tools for academic research optimise the performance of specific tasks such as information retrieval, writing, literature reviewing, tracking citations, and analysing data. It is therefore apparent that artificial intelligence is revolutionising the field of academic research.

The scope of artificial intelligence is not limited to a particular field; it has a broader reach, as it can be used in the medical field, the agricultural field, finance, science, humanities, and more (Moukhliss et al., 2024). AI has thus triggered a radical shift in the way research is conducted. Researchers are increasingly leveraging artificial intelligence tools to advance their studies, leading to an upsurge in academic tools. We can cite many that are popular with researchers, for instance, ChatGPT, Grammarly AI, Semantic Scholar, Zotero, Mendeley, Jenny AI, and Quillbot, each facilitating the performance of a certain task.

However, amidst this evolution in research, other aspects of AI are to be considered. Therefore, this study seeks to explore the perceptions of researchers, and especially student researchers, toward the use of artificial intelligence in academic work, the perceived benefits and the challenges faced. Conducting the current study will serve to identify the extent to which artificial intelligence is implemented in student researchers' studies, as well as inform policymakers on how to best support the use of AI in academic research, especially in the Moroccan context.

Literature Review

The integration of artificial intelligence in academic research has instigated debate and controversies surrounding its validity and potential (Aich et al., 2025). Advocates for the use of artificial intelligence in academia defend AI technologies for the support they provide in science discovery, that is, literature management and synthesis, easy access to databases and the wealth of what has already been discovered and even data analysis and interpretation (Hastings, 2023). Indeed, many researchers have shown a newfound interest in the various AI tools that have reshaped the way research is conducted, which range from academic writing to actual research processes, including information retrieval, peer review and feedback on academic work (Aich et al., 2025). According to Madanchian and Taherdoost (2025): "the integration of AI into research processes offers substantial benefits, including significant reductions in time spent on tasks such as literature screening and data extraction" (p. 9).

As researchers encounter issues with academic writing, the use of chatbots and AI tools reduces the burden by serving as personal assistants, assisting with writing tasks, handling errors, and enhancing language (Kamal & Khaidzir, 2024). Thus, it is apparent that efficiency in research is highly required to augment production, foster creativity and facilitate processes (Madanchian & Taherdoost, 2025). Bouzar et al. (2024) view AI technologies like GPT-3 and ChatGPT as becoming easy to reach, scalable, and practical. ChatGPT is remarkable for its ability to generate human-like conversations and provide thorough responses to complex questions, as well as assist in promoting programs, customer service, and business. Nevertheless, they acknowledge that, at times, it lacks understanding of context, critical thinking, and ethical decision-making, and can inadvertently disseminate societal biases.

However, despite the upsurge of AI tools that perform various tasks, there are still concerns that arise and issues that researchers need to consider, with ethical concerns being a major one. Indeed, the use of artificial intelligence tools is bound to their trustworthiness, reliability, and conformity with ethical standards (Daoudi, 2025). These concerns are reasonable since the very essence of academic research is rooted in credibility, reliability, and transparency. Regardless of the agreed-upon merits of artificial intelligence, research has shown that academics fear diminished quality of writing as well as plagiarism, with many worrying it would re-conceptualise practices of creativity, research integrity and originality (Malik et al., 2024; Perkins & Roe, 2024). Therefore, it is of dire importance to make sure that using AI would not result in undermining the worth of academic work while still profiting from the numerous services it provides. Dahal (2014) posits that "Transparency in the use of GenAI and/or AI in research and the limitations of these tools are also critical ethical requirements" (p. 727).

The steady growth in the number of AI tools targeted at facilitating research has led to a proliferation of studies investigating its potential in academic writing, data analysis, and other research processes. For instance, Yan et al. (2024) conducted a user study involving ten qualitative researchers to explore the potential of ChatGPT as a collaborative tool in thematic analysis. Their findings demonstrated that ChatGPT had value in enhancing coding efficiency, facilitating initial data exploration, providing granular quantitative insights, and aiding comprehension for non-native speakers and non-experts. On the other hand, the researchers also identified persistent issues regarding ChatGPT's trustworthiness, accuracy, reliability, and contextual understanding, as well as concerns about its broader acceptance within the research community. Similarly, Gao and Wang (2023) conducted a study on quantifying the benefit of artificial intelligence for scientific research. They found that disciplines overall used more AI in their research over the past two decades. This increase occurred not only in computer science but also in a wide range of other disciplines, including physics, biology, and economics. Moreover, this increase had not been linear; there had been a notably sharp increase in the use of AI since 2015 across many disciplines.

Even though research on the use of AI tools in academic work is rapidly expanding, there is still limited empirical evidence on how student researchers in developing contexts, particularly in Morocco, perceive and adopt AI in their academic work. While various studies have highlighted potential benefits and ethical concerns, little is known about the extent of adoption, perceived usefulness, and challenges faced by the target population in Moroccan higher education. This gap restricts institutions from developing informed strategies and policies for responsible AI integration in research training. Therefore, three research objectives have been set to address this gap in the literature:

1. To investigate Moroccan student researchers' perceptions of AI tools in academic research.
2. To measure the extent and purposes of AI tools' adoption in academic research processes.
3. To identify the challenges and ethical concerns student researchers face when using AI tools.

Method

Research Design

The current study explores the perceptions, adoption and challenges of the integration of AI tools in academic research among Moroccan student researchers. Therefore, this study has adopted a quantitative approach to allow for systematic measurement of variables and gauging relationships amongst them, as well as conducting statistical analysis, and generalisation of

findings within the study population (Creswell & Creswell, 2017). This design was cross-sectional in nature as it sought to capture the researchers' perceptions at a single point in time.

Participants

This study was conducted during the spring semester of the academic year 2024/2025 at the University of Sidi Mohamed Ben Abdellah of Fez. The target population of this study were students of higher education, specifically master's and doctoral students across disciplines. The sample consisted of 100 Moroccan student researchers. The majority were PhD candidates (69%), with the remaining 31% at the Master's level. Gender distribution varied across age groups: the 20–25 group was predominantly female (79.3%), while the 31+ group was mostly male (84.1%) (see Table 1 and Figure 1).

Table 1. *Age group distribution (N = 100)*

	N	%
20-25	29	29.0%
26-30	27	27.0%
31 and above	44	44.0%

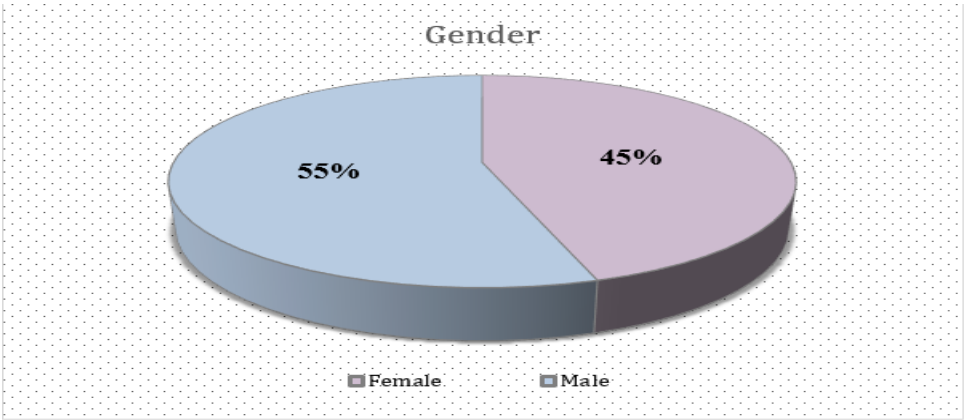


Figure 1. Gender distribution of participants (N = 100)

Instruments

This study employed a structured questionnaire as the primary data collection instrument, focusing on both descriptive and inferential statistics to identify patterns and relationships among participants' demographics, perceptions, and experiences with AI tools. The items explored in the questionnaire were built on the existing literature and adapted to the Moroccan context. The questionnaire was designed using Google Forms and was shared widely with graduate and postgraduate students through social media platforms. The questionnaire came back with a total of 100 valid responses that were coded and analysed using the Statistical Package for the Social Sciences (SPSS).

Results

Demographic Information

For the age group distribution, the age of participants was coded into three categorical groups. Most participants were aged 31 and above (44%), followed by 20–25 (29%) and 26–30 (27%). The average age group was between 26–30 and 31+ (M = 2.15, SD = 0.85), indicating a slightly older academic sample, with a median category of 2.00 (see Table 1).

Figure 2 shows the distribution of participants by area of study. The study targeted Moroccan student researchers enrolled in graduate and postgraduate programs across different academic disciplines. While the sample is predominantly composed of students from the Humanities, the inclusion of participants from a variety of academic backgrounds adds diversity to the dataset, allowing for a more nuanced understanding of how AI tools are perceived across different fields of study.

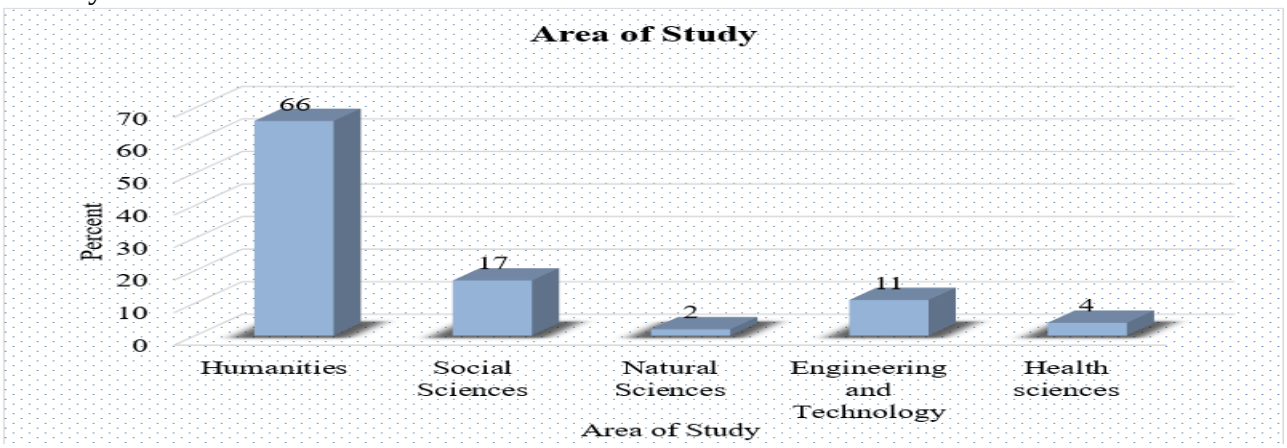


Figure 2. Distribution of participants by area of study (N = 100)

Frequency of AI tool usage

Figure 3, which shows the frequency of AI tool usage among student researchers, indicates a clear trend toward the regular and habitual integration of AI tools into academic research workflows. With over 60% of participants using AI tools either daily or several times a week, it is evident that these technologies are no longer peripheral – they are becoming central to students' research practices.

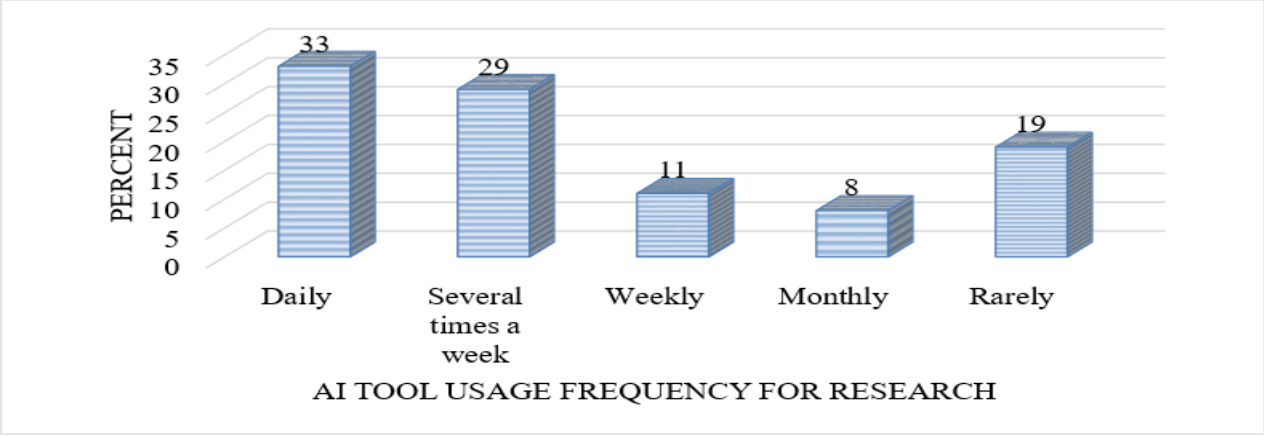


Figure 3. Frequency of AI tool usage for research among participants (N = 100)

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Among the AI tools that were presented for participants to select from, the bar chart clearly highlights that ChatGPT dominates usage among student researchers (89%), followed by Grammarly AI (40%) and Quillbot (36%). The remaining tools were selected by fewer than 30% of participants, indicating limited adoption.

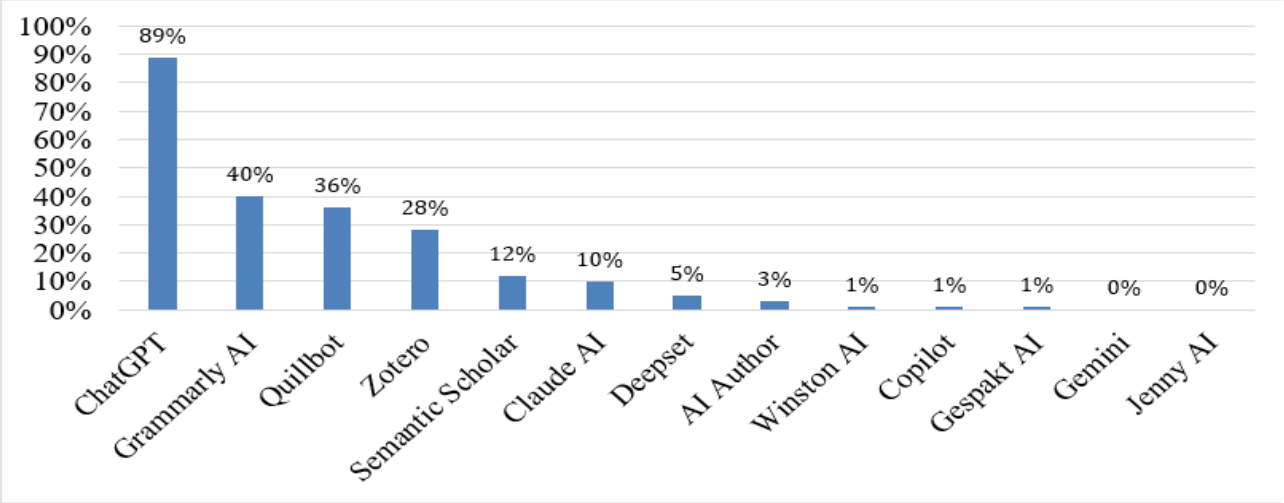


Figure 4. AI tools most frequently used by researchers

The data suggest that students rely on AI mainly for idea generation, language support, and research organisation, rather than for advanced analytical or translation tasks.

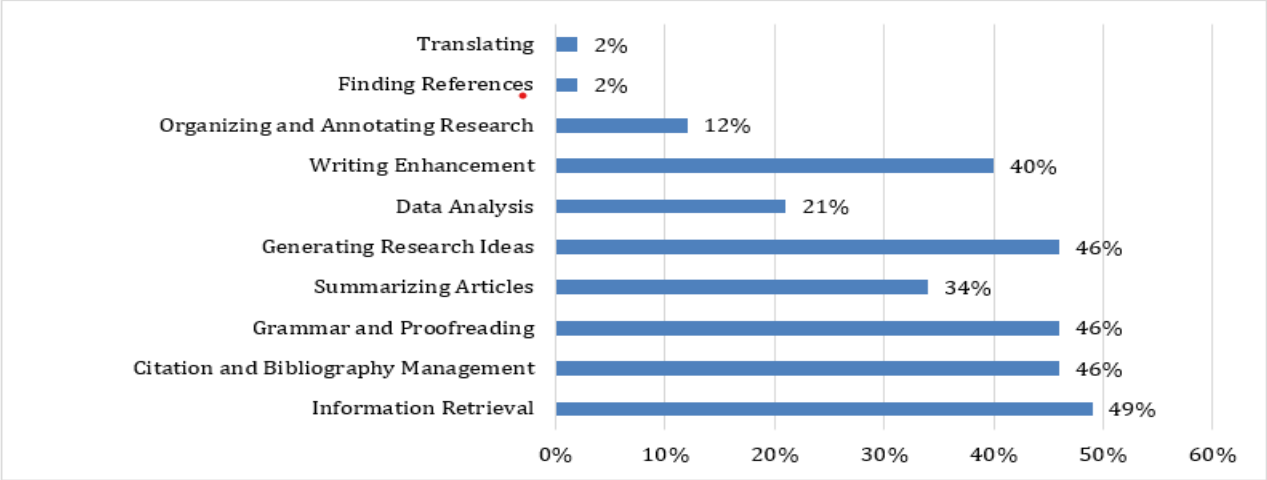


Figure 5. Participants' selected purposes for using AI tools in research

Perceived Benefits of AI Tools in Academic Research

The following figure presents the results of the Likert scale questions that sought to examine participants' perceived benefits of AI tools in Academic Research.

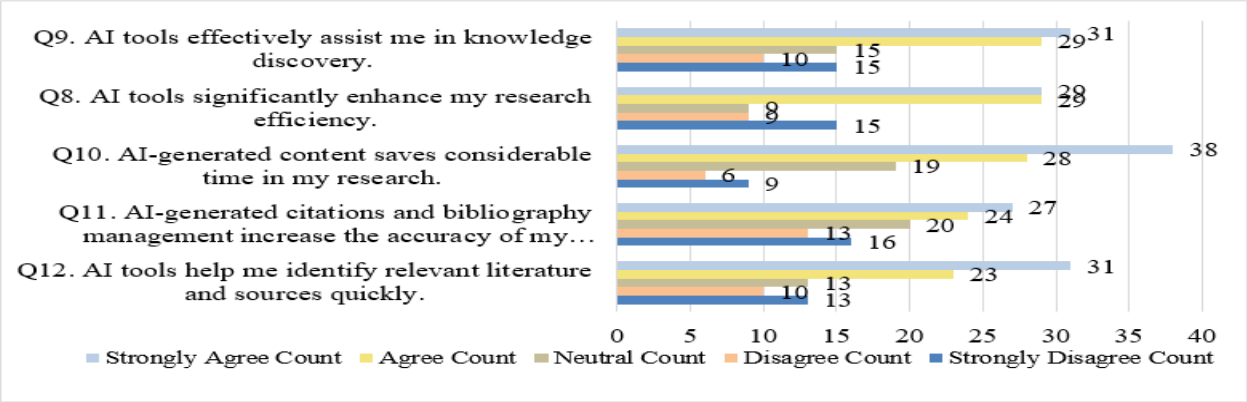


Figure 6. Participants' perceived benefits of AI tools in academic research

Participants' Satisfaction with AI Tools

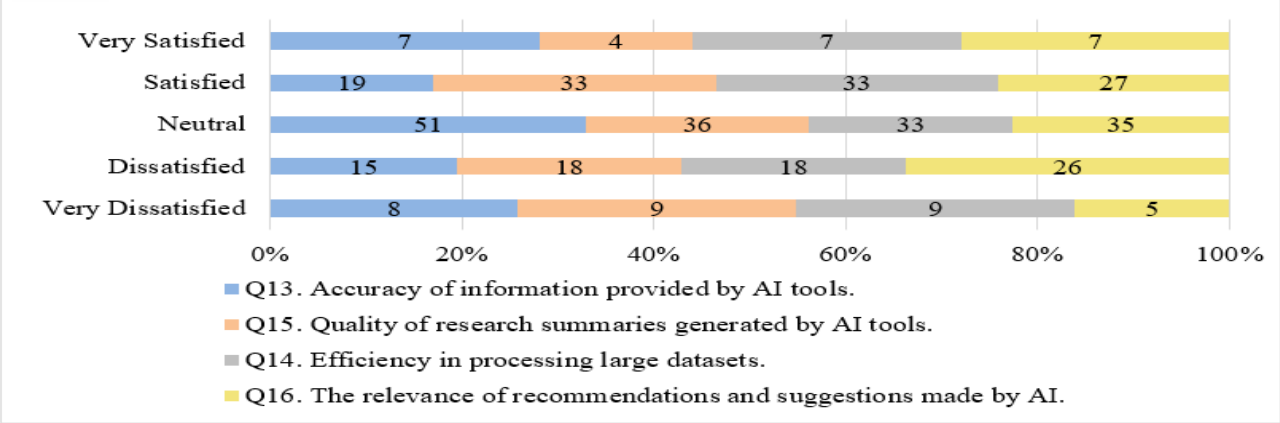


Figure 7. Participants' satisfaction with AI Tools

Challenges and Ethical Concerns

The responses of participants have reported an acute awareness of issues that arise with the continuous use of AI tools, as many have selected strongly agree with the statements presented in the Likert scale. However, statement Q18 has attracted a higher count of agreement, which shows that student researchers are mindful of the issues related to the reliability and accuracy of AI-generated insights.

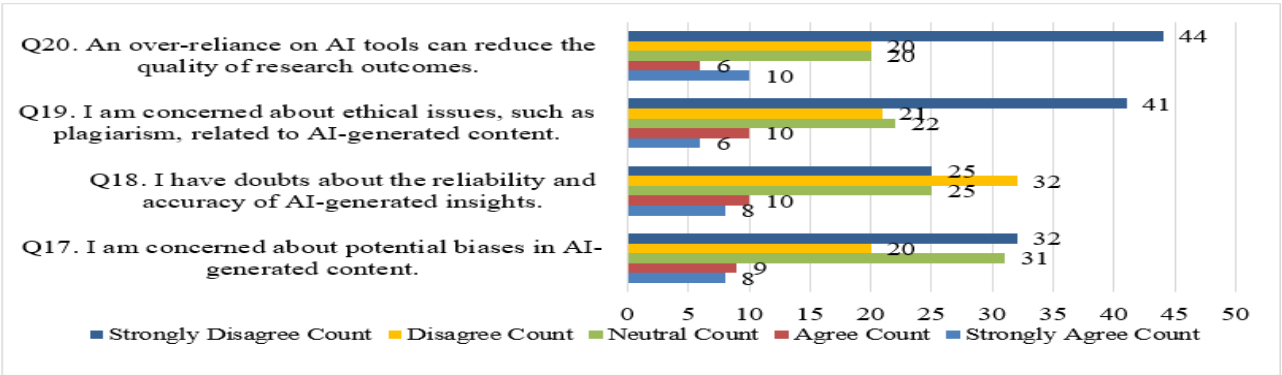


Figure 8. Students' concerns about the reliability and risks of AI tools in research

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Integration and future use of AI Tools in Academic Research

Participants expressed overwhelmingly positive attitudes regarding the integration and future use of AI tools in academic research (see Figure 9). These findings align with the broader theme of AI receptiveness, while also reinforcing the need for supportive academic infrastructure to maximise AI's value.

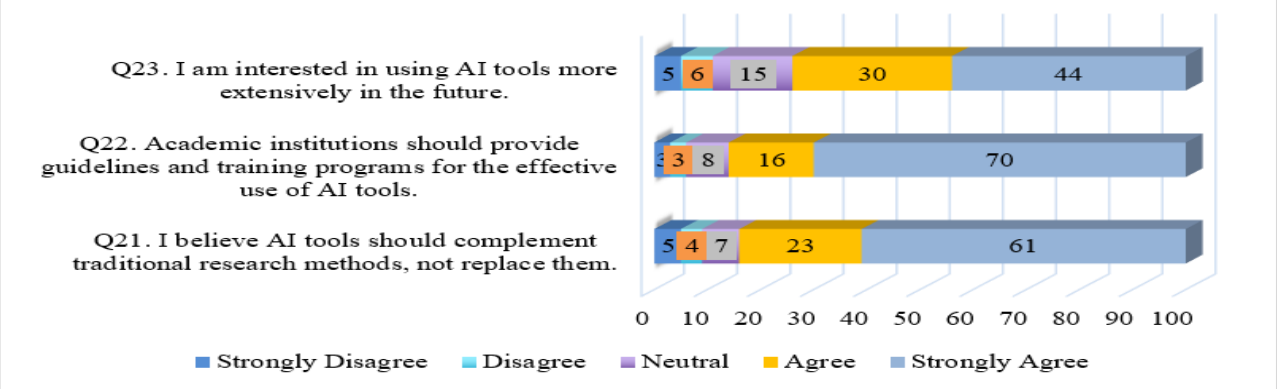


Figure 9. Student attitudes toward the integration and future use of AI tools in academic research

Correlations

Table 2. *Correlation between age group and AI tool usage frequency for research*

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17.461[a]	8	.026
Likelihood Ratio	19.265	8	.014
Linear-by-Linear Association	11.899	1	.001
N of Valid Cases	100		

a. 6 cells (40.0%) have expected count less than 5. The minimum expected count is 2.16.

A chi-square test of independence was conducted to examine the relationship between age group and AI tool usage frequency. The association was statistically significant, $\chi^2(8, N = 100) = 17.46$, $p = .026$, indicating that age is related to how often students use AI tools for research. Younger participants (20–25) were more likely to use AI tools daily, while older participants (31 and above) tended to report less frequent usage. The Linear-by-Linear Association also shows a clear directional trend, suggesting that as age increases, the frequency of daily AI tool usage may decline.

An independent-sample t-test was conducted to examine whether perceived benefits of AI tools differed between participants who use them frequently (daily/several times a week) and those who use them infrequently (rarely/monthly). The results revealed statistically significant differences on all five benefit items, suggesting that the frequency of AI tool usage is positively associated with higher perceived benefits in academic research. Participants who use AI tools more frequently tend to rate them more favorably across all dimensions.

Discussion

The findings of the current study capture the perceptions of student researchers toward the adoption of AI tools in academic research. Although the sample size is not large, it still

encapsulates attitudes and perceptions of the target population; it was also relatively balanced in terms of gender, with females slightly outnumbering males.

The data set shows that the sample of student researchers across disciplines has positive attitudes toward the integration of AI in academia, as they employ it frequently in their own works of research. They are also aware of the various tools available and how beneficial they are to their own work. However, they still show a preference to ChatGPT first, due to its generative nature and its highly conversational, adaptable interface and Grammarly AI second, for its assistance in improving writing skills. These inclinations reveal that participants lean more towards human-like content generated by conversational and natural language prompts (as stated by Bouzar et al., 2024). It also reveals that critical attention is paid to accuracy in academic writing.

The high frequency of AI usage and high levels of satisfaction with their performance suggest that AI tools are valued not just for their convenience but also for their perceived effectiveness in enhancing productivity, simplifying complex tasks, polishing writing, proofreading, and accelerating knowledge access. These findings correspond to the existing body of knowledge as they confirm the arguments advanced by Kamal & Khaidzir (2024) and Madanchian & Taherdoost (2025). They also show that participants are active and critical evaluators of AI tools, given their selective adoption and awareness of challenges and ethical concerns that arise with continuous reliance on artificial intelligence. Nevertheless, the limited use of advanced applications of AI tools in tasks such as translation, data analysis and finding references suggests that student-researchers use AI tools for foundational rather than specialised and analytical purposes. This caution stems from the reliability and ethical concerns highlighted previously, as well as risks of fabricated content.

Moreover, the presence of less frequent users (weekly, monthly, or rarely) reveals that while adoption is widespread, it is not yet universal. This could reflect disciplinary differences, varying digital literacy levels, or differing institutional support for AI integration. Taken together, the results confirm one of the core premises of the study: that while AI tools are broadly accepted and frequently used by student researchers, there remains a need for structured guidance, training, and critical understanding to ensure their use is effective, ethical, and equitable across research communities.

Conclusion

The ongoing debate about the integration of artificial intelligence in academic research raises multiple questions. The findings of the current study present an overview of the perceptions, adoption and challenges in the use of AI tools in academic research among Moroccan student researchers. This study targeted a specific population of researchers, a group that represents the emerging generation of academics and scholars in Moroccan higher education. Therefore, their insights serve as valuable data for a critical study of the integration of AI in academic research. This study highlighted an existing and widespread use of AI tools among these students, with varying frequencies among age groups. The overall acceptance and recognition of the benefits of using artificial intelligence, coupled with the awareness of its risks and challenges, reveal that student researchers are enthusiastic adopters of artificial intelligence, yet do not fully consider it as a research partner but rather an assistant.

Participants' recommendations for future use and integration of AI in research emphasise that it is welcome, albeit contingent upon proper training, clear institutional policies, and responsible

practices. More importantly, the data underscore the participants' view of AI as complementary rather than a replacement for traditional research practices.

The perspective of student researchers regarding this issue is of great value for mapping the current situation of academic research in Moroccan higher education. This study revealed much about the adoption and patterns of AI use, but above all, it set the ground for future research on the regulations for AI use and anticipated how the next wave of researchers will integrate AI into academic research. The findings of this study also raise questions about proper AI citation and the recognition of its contribution while maintaining academic integrity.

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Authenticity: This manuscript is an original work.

Artificial Intelligence Statement: During the preparation of this work, the author(s) used AI and AI-assisted technologies, specifically ChatGPT- 4.0 in order to enhance the language and increase readability. The authors reviewed and edited the content as needed and they take full responsibility for the content of the publication.

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Appendix

Students' researchers' questionnaire:

AI Tools in Academic Research: Perceptions, Adoption and Challenges among Moroccan Student Researchers

The advent of digital technologies and especially the emergence of artificial intelligence (AI) has reshaped the field of academia, presenting tools that facilitate information retrieval, archiving and knowledge discovery. There is a multitude of AI tools available for academics that enhance the research experience, such as ChatGPT, Claude, Grammarly AI, Semantic Scholar, Zotero, Mendeley, Winston AI, Jenny AI, AI Author and Quillbot. These AI tools help in different stages of research, and each offers certain functionalities that benefit the researcher, ranging from conversation and bibliography generators to writing assistants. However, as scholars make use of artificial intelligence in academic research, the line between reaping its benefits and abusing it blurs, as issues of ethical considerations, bias and reliability arise. Therefore, the purpose of the current study is to investigate the different perceptions of student researchers regarding the use of AI-powered tools in research, with a focus on the adoption, perceived benefits, and challenges.

Your contribution to this study is highly appreciated. It is voluntary, and each response is anonymous. The Data collected is guaranteed to be kept private and will only be used for academic purposes. Results obtained from analysing this data may be published in articles or presentations. Thank you again for your time and contribution to this research. Your input is highly valuable in shaping the future of academic research.

Section 1: Demographic Information

1. Gender
   - o Male
   - o Female
2. Age group
   - o 20-25
   - o 26-30
   - o 31 and above
3. Level of Study
   - o Master's
   - o PhD
4. Area of Study
   - o Humanities
   - o Social Sciences

- Natural Sciences
- Engineering and Technology
- Other :

5. University/ Higher Education institution

_____

Section 2: AI Tool Usage Frequency and Purpose

6. How frequently do you use AI tools for research?

- Daily
- Several times a week
- Weekly
- Monthly
- Rarely
- Never

7. Select the AI tools you regularly use for your research (Select all applicable)
You can select more than one answer.

- ChatGPT
- Claude AI
- Grammarly AI
- Semantic Scholar
- Zotero
- Mendeley
- Winston AI
- Jenny AI
- AI Author
- Quillbot

8. What are your primary purposes for using AI tools in research? (Select all applicable)
You can select more than one answer.

- Information retrieval
- Citation and bibliography management
- Grammar and proofreading
- Summarizing articles
- Organising and annotating research
- Generating research ideas
- Data analysis
- Writing enhancement

Other: _____

Section 3: Perceived Benefits of AI Tools

(1 = Strongly Disagree, 5 = Strongly Agree)

9. AI tools significantly enhance my research efficiency: [1] [2] [3] [4] [5]
10. AI tools effectively assist me in knowledge discovery. [1] [2] [3] [4] [5]
11. AI-generated content saves considerable time in my research. [1] [2] [3] [4] [5]
12. AI-generated citations and bibliography management increase the accuracy of my references. [1] [2] [3] [4] [5]
13. AI tools help me identify relevant literature and sources quickly. [1] [2] [3] [4] [5]

14. Accuracy of information provided by AI tools. [1] [2] [3] [4] [5]
15. Efficiency in processing large datasets. [1] [2] [3] [4] [5]
16. Quality of research summaries generated by AI tools. [1] [2] [3] [4] [5]
17. The relevance of recommendations and suggestions made by AI. [1] [2] [3] [4] [5]

Section 5: Challenges and Ethical Concerns

(1 = Strongly Disagree, 5 = Strongly Agree)

18. I am concerned about potential biases in AI-generated content. [1] [2] [3] [4] [5]
19. I have doubts about the reliability and accuracy of AI-generated insights. [1] [2] [3] [4] [5]
20. I am concerned about ethical issues, such as plagiarism, related to AI-generated content. [1] [2] [3] [4] [5]
21. Over-reliance on AI tools can reduce the quality of research outcomes. [1] [2] [3] [4] [5]

Section 6: Recommendations and Future Use

(1 = Strongly Disagree, 5 = Strongly Agree)

22. I believe AI tools should complement traditional research methods, not replace them. [1] [2] [3] [4] [5]
23. Academic institutions should provide guidelines and training programs for the effective use of AI tools. [1] [2] [3] [4] [5]
24. I am interested in using AI tools more extensively in the future. [1] [2] [3] [4] [5]
25. Please share any further suggestions and recommendations for improving the responsible use of AI tools in research.