

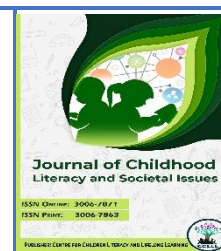


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AI Tools' Affordances for Ethical and Responsible Research: Role of Academic Libraries

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ABSTRACT

This study aims to investigate the role of libraries in the affordances of AI tools for conducting ethical and responsible research. It also sheds light on the challenges faced by research libraries regarding the responsible use of AI in research and how these libraries create awareness among researchers about the ethical use of AI. It is qualitative research that uses the phenomenology method to conduct interviews with 15 information professionals. Findings indicated that LIS professionals perceived that researchers use AI generative tools for plagiarism detection, instant help, reference and citation tools, and research assistance. The respondents indicated that authenticity and trust in research, data ethics and privacy, academic integrity, misuse of AI tools, originality of academic work, and threats to human intelligence and creativity were the major challenges to the ethical use of AI in research. Moreover, the status of AI literacy regarding the ethical use of AI generative tools in research is not satisfactory in libraries. The support of all stakeholders and AI literacy is thought to be fundamental for responsible research practices in an AI environment.



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Introduction

The proliferation of Artificial Intelligence (AI) technology has changed almost every sphere of life, such as business, industry, the education sector, and many other fields. In the education sector, AI has provided opportunities for every stakeholder, including teachers, researchers, and information professionals. AI has been accepted in education in various contexts (Ali, Warraich & Butt, 2024). Despite these opportunities, AI has also created challenges for all stakeholders in different forms. Perceived credibility is one of the challenges of AI-generated content. Rubinger et al. (2023) defined “AI as a broad term referring to the application of computational algorithms that can analyze large data sets to classify, predict, or gain useful conclusions” (p.1). Artificial Intelligence in an educational context is referred to as “the use of AI technologies or application programs in educational settings to facilitate teaching, learning, or decision-making” (Hwang et al., 2020, p. 1). Several studies have been carried out on AI in the education sector in different contexts. Tiwari et al. (2024) checked the influence of the perceived credibility of ChatGPT on students’ attitudes toward its use for academic purposes and found a significant relationship.

Libraries and stakeholders are ready to implement AI in libraries, and the use of AI in libraries has gained momentum (Ali, 2024). Library stakeholders are aware, and they have enough information to take the initiative of AI implementation in libraries (Harisanty et al., 2022). AI can be utilized in technical services, staffing, library management, information services, information literacy (Harisanty et al., 2023), data analysis, and remote services, and AI can make the library research-centered through big data (Pence, 2022). However, there are also challenges to implementing AI in libraries, such as a lack of funding and librarians’ attitudes and their technical skills regarding the implementation of AI in libraries (Jha, 2023). There are also research-related challenges that include ethical, privacy, and transparency-related challenges (Bouhouita-Guermech et al., 2023) and plagiarism in generative AI (Dien, 2023). Saeidnia (2023) described that incorporating artificial intelligence

(AI) systems into the library and information science domain presents significant ethical challenges, particularly concerning the perpetuation of bias and discrimination. These risks threaten the foundational objective of ensuring equitable access to information. Biases may emerge from inadequately representative training data, algorithmic decision-making frameworks influenced by systemic prejudices, and the opaque nature of many AI systems. If left unaddressed, these issues can exacerbate existing inequalities and hinder the development of inclusive library services. Consequently, there is a pressing need to embed ethical considerations into the design and deployment of AI technologies. Promoting responsible AI practices—grounded in fairness, transparency, and accountability—alongside sustained efforts in education and awareness, is essential to mitigate biases and support equity within the library and information industry. Therefore, this study aims to identify the researchers’ engagement with AI tools, their training affordances, challenges, and concerns with the use of AI in research from the library’s perspective.

Objective of the Study

1. To analyze how AI is supporting researchers
2. To examine the training affordances, a library is provided to researchers for ethical AI use in research.
3. To ascertain challenges to the ethical use of AI in research libraries
4. To determine ethical concerns with the use of AI in research from the library’s perspective

Research Questions

1. How do researchers engage with AI tools in their academic work?
2. What training library is provided to researchers for ethical AI use in research?
3. What ethical challenges do library professionals encounter when assisting researchers in the AI age?

4. How are ethical concerns addressed while using AI in research?

Literature Review

In this age of artificial Intelligence, academic and research libraries are adopting new technologies such as AI for user services. In this context, the role of libraries regarding the responsible and ethical use of AI is important. Studies discussed the importance and need for ethical and responsible use of AI in research and academic libraries. Researchers highlighted that libraries have long served as repositories of knowledge, accessible to individuals from diverse backgrounds seeking learning and personal development. In the context of a rapidly evolving world, libraries need to adapt to technological advancements to maintain their relevance. Among these innovations, artificial intelligence (AI) stands out as a transformative tool capable of streamlining operations, delivering personalized services, and enhancing user experiences. Nevertheless, the implementation of AI must be approached with caution. Given their commitment to ethical responsibility and equitable access, libraries are obligated to ensure that AI technologies are deployed in a manner that upholds these foundational values (Hodonu-Wusu, 2024). Researchers underscore the need to address the ethical dimensions of AI within library settings. They advocate for a human-centered approach to AI development and application in research libraries. It should actively engage diverse stakeholders throughout the process and place a strong emphasis on transparency and accountability in both the design and deployment of AI technologies (Kennedy, 2019). The ethical issues for libraries included bias, job displacement, and changes in the role of professionals, a lack of human interaction during service delivery due to the availability of AI-based chatbots. Privacy and security were other challenges for libraries while providing AI-based services to users (Mishra, 2023). Another study identified different ethical and value-related issues for libraries and archives. The major issues were related to accuracy, human intervention in the loop, bias, social justice, transparency, and privacy (Mannheimer et al., 2023). Generative AI such as ChatGPT has potential for publishing, but there is

a need to consider the ethical issues in research (Lund et al., 2023). Virtual libraries should consider ethical issues such as transparency, bias, privacy, and patron consent (Kumar et al., 2024).

The role of libraries and librarians is important in the implementation of ethical and responsible artificial intelligence services for users, especially researchers. Researchers discussed that the extensive potential of design can be harnessed to address emerging challenges and strategically advance the integration of AI. Critical areas such as ethical transparency, the development of appropriate competencies within libraries, and the recognition of AI as an autonomous agent warrant deeper theoretical and practical exploration. Moreover, it is essential to consider the dynamic relationship between libraries and their stakeholder communities (Gasparini and Kautonen, 2022). The role of the library is vital for providing AI-based services to researchers. Librarians will ensure the accuracy and reliability of AI-provided knowledge. In this scenario, librarians should understand the hidden mechanism (black box) of artificial intelligence (Kautonen and Gasparini, 2023). Another study highlighted the role of librarians in formulating policy for the ethical and responsible use of AI for libraries. Researchers described that academic librarians are experts in information ethics, intellectual property rights, and privacy. They can provide better input in formulating policy regarding the ethical and responsible use of AI for library users. Librarians can develop this policy by collaborating with researchers and library stakeholders (Michalak, 2023). Harisanty et al. (2022) identified challenges and benefits of AI among library leaders. Researchers described that all participants concurred that AI holds significant potential for implementation in libraries, offering various advantages and conveniences for librarians. They further emphasized that AI can support librarians in handling routine operations, resolving technical challenges, and performing data analysis. By integrating AI, library processes can be streamlined, productivity enhanced, and tasks completed more efficiently.

Research Design

It is a qualitative research design based on a phenomenology approach to get in-depth data through a developed interview guide finalized by two experts. The population of the study was information professionals, and data were collected through purposive sampling. The interviews were recorded with the consent of participants, and it was also assured the anonymity of their identification. The duration of interviews ranged from 45-60 minutes from 15 information professionals, labeled from R1 to R15. After 15 interviews, data collection stopped due to saturation in the responses of participants. After collecting the data, it was transcribed and then analyzed using NVivo software.

Findings and Discussion

Among the 15 respondents, 10 were male and five were female. They perceived that researchers use AI generative tools for plagiarism detection, instant help, reference, citation tools, and research

assistance (Figure 1). ChatGPT, ResearchRabbit, and Quiltboat are ranked as the major AI tools among researchers for academic purposes. R14 said, “ChatGPT is a complete package for the researchers. They rely more and frequently on using it”. ResearchRabbit is often used for literature collection on a research topic. R3 said, “ResearchRabbit provides visual representations of the literature and provides a clear picture of the relevant literature on a topic”. Researchers have been using Quiltboat to rephrase and detect plagiarism and AI detection. R7 said, “Researchers use ChatGPT to change reference styles and in-text citations. This task is time-consuming if they do it manually. R1 reiterates the same point: “AI tools are organizing references, summarizing material, and conducting more effective data analysis”. Findings indicated that researchers are frequently using AI tools for research. Literature proposed that AI tools are useful for boosting productivity, comprehending difficult ideas, and promoting creativity (Oyelude, 2024; Shtykalo & Yamnenko, 2024).

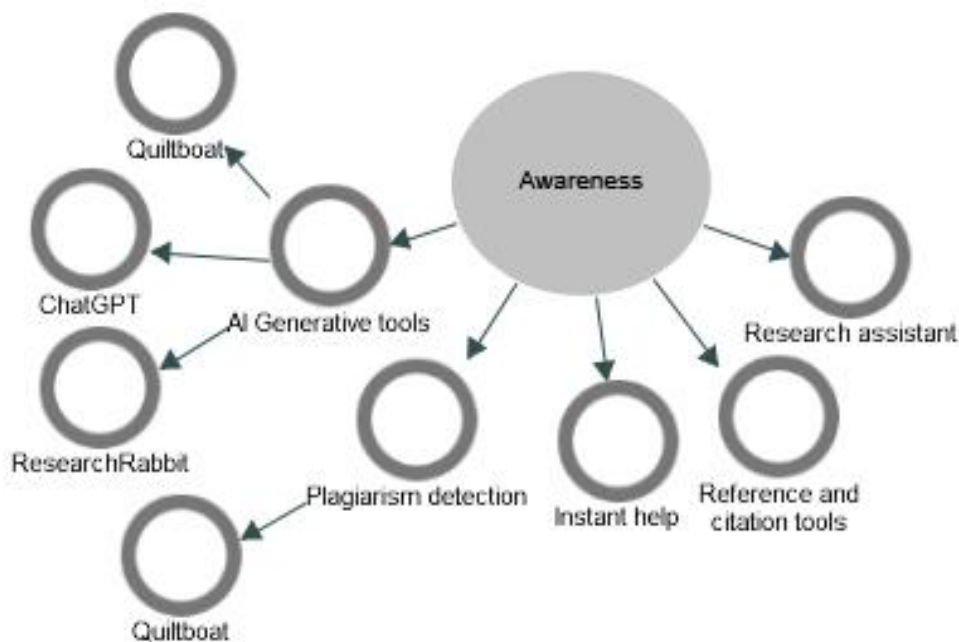


Figure 1. Awareness of researchers using AI tools

Three major themes emerge regarding the ethical concerns of using AI in research: authenticity and trust in research, data ethics and privacy, and academic integrity and originality (Figure 2). Authenticity and trust in research are a main concern of AI use. R12 said, “It is more difficult to

confirm the reliability and authenticity of the research due to the increasing use of AI generative tools”. R7 said, “AI generative tools sometimes provide misleading information, which raises significant ethical issues for the quality of academic work”. Data privacy is a significant

ethical concern while using AI tools, particularly when researchers enter sensitive or private data. R6 opined, “The information shared on the AI tools could be accessed, shared, or repurposed, which leads to plagiarism in academic work. Academic integrity and originality arose as ethical concerns of respondents while using generative AI tools for academic work. R7 said, “Due to the use of putting machine-generated ideas and content in

research, the trustworthiness of research has become debatable.” R5 said, “Using AI tools undermines the independent thinking and genuine creativity of the researchers”. Perkins and Roe (2024) emphasized that authorship and research integrity need to be handled carefully. Oyelude (2024) highlighted plagiarism, algorithm bias, and academic integrity as the main ethical concerns while using AI tools.

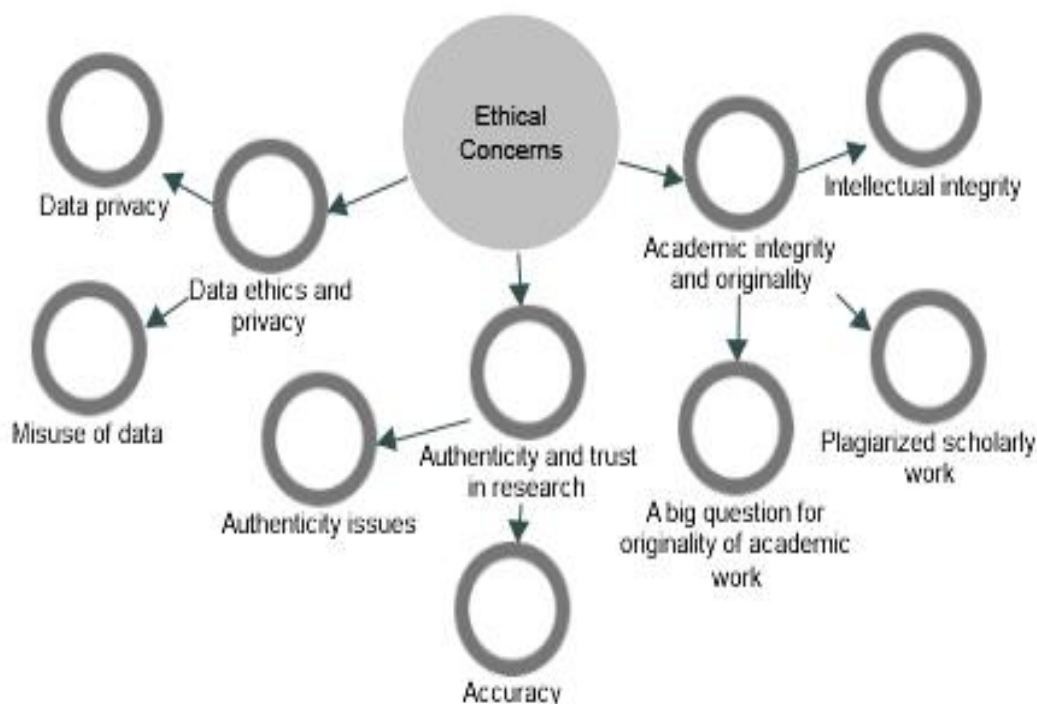


Figure 2. Ethical concerns while using AI tools

Thematic analysis of data identified the following challenges to the ethical use of AI in research, including accuracy and misinformation, misuse of AI tools, challenge to the originality of academic work, research ethics, and threat to human intelligence and creativity (Figure 3). R6 said, “Researchers have been aggressively using AI tools without bothering about the accuracy of the cited sources or the given information”. The

authenticity and credibility of the content of the academic work are doubtful. The unnecessary use of AI generative tools seriously affects human intelligence, innovation, and creativity. Plagiarism, over-reliance, poor documentation, risks to academic integrity, and false information are some of the issues while employing AI tools (Al-Sofi, 2024; Khalifa & Albadawy, 2024).



Figure 3. Challenges to the ethical use of AI in research

The status of training and guidance regarding the ethical use of AI generative tools in research is not satisfactory in libraries (See Figure 4). Most libraries do not provide any kind of training to the researchers. Some libraries are guiding researchers at the individual level. *R5 said, "At the individual level, we are providing guidance to the researchers on the ethical use of AI tools".*

Respondents revealed that there is a lack of expertise to conduct such training sessions in the libraries. Although librarians conducted a one-hour talk about the plagiarism issue to researchers. Institutional guidelines and training sessions are essential to endorse ethical and active AI use among researchers (Al-Sofi, 2024; Oyelude, 2024).



Figure 4. Training and guidance library provided

Conclusion

The main aim of this study was to identify the role of libraries in the affordances of the ethical and responsible use of AI tools. It also explored the challenges faced by libraries in the implementation of responsible use of AI, as well as the role of libraries in creating awareness among researchers regarding the ethical use of artificial intelligence. LIS professionals respond that researchers used different tools. The major AI tools that researchers used for academic purposes were ChatGPT, ResearchRabbit, and Quilboat. There were different ethical concerns about AI use in research. These were included: reliability, authenticity, privacy of data, ethics, and originality. LIS professionals perceived that researchers faced challenges in the ethical use of AI in their research. These challenges were included: accuracy of information, misinformation, misuse of AI tools, threat to the originality of academic work, research ethics, and threat to human intelligence and creativity. Regarding the role of libraries in the ethical use of AI tools in research, the situation is not satisfactory in libraries. The majority of libraries do not provide training regarding the ethical use of AI among researchers. There were a few libraries that were providing AI literacy to researchers at the individual level.

Practical and Theoretical Implications

This research presents many implications theoretically and practically. Theoretically, this research advanced the understanding of LIS professionals, researchers, and other stakeholders regarding the current situation of AI

implementation and challenges in libraries. This research also provides a pathway for researchers to further investigate the LIS professionals' understanding of AI technology for users, especially researchers. This research provided a framework (awareness, ethical concerns, challenges, and training provided by libraries) for conducting and testing this framework quantitatively. This study also advances the conversation on AI research ethics by emphasizing the need to update academic integrity frameworks to reflect AI capabilities. Academic research is made more convenient and efficient by AI tools, but they also present significant ethical issues, such as risks to data privacy, a decline in creativity, and threats to intellectual integrity. These results practically highlight the demanding need for institutional policies and organized AI literacy sessions to guarantee the ethical and responsible use of AI. Practically, this study provides a pathway for library administrators to formulate a comprehensive plan for AI in libraries at the national level.

Limitations and Future Directions

This research used a qualitative research approach to achieve the objective of knowing the in-depth situation regarding the role of libraries and their challenges in the implementation of AI technology for researchers. This study collected interview-based data from 15 participants. Future research can be conducted by adopting a quantitative approach using the framework regarding awareness, ethical concerns, challenges, and training provided by libraries from a large sample.

Author Contributions

Nosheen Fatima Warraich: Conceptualization (equal), Methodology (equal), Analysis, Writing –original draft, Writing –review & editing

Tayyaba Rasool: Methodology (equal), Analysis, Writing –review& editing

Irfan Ali: Methodology (equal), Analysis, Writing –review& editing

Declaration of Conflicting Interest

The authors declared no potential conflicts of interest with respect to research, authorship, and or publication of this article.

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