Generative AI-ChatGPT's Impact in Health Science Libraries

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ABSTRACT

This study explores the integration of ChatGPT into library services, as well as the perceived benefits and challenges associated with its utilization. Through qualitative research methods, including semi-structured interviews with eleven health science librarians, insights were gained. The findings highlighted the challenge of building trust in the reliability and accuracy of ChatGPT, emphasizing the need for evaluation, monitoring, and addressing data privacy concerns. Integrating generative AI ChatGPT into library systems was found to enhance efficiency and assist patrons, but technical challenges such as glitches and downtime were reported. Librarians recognized the importance of caution and transparency when delivering ChatGPT-generated results to patrons. Balancing efficiency with accuracy and security emerged as a critical consideration. This study contributes to our understanding of the integration of generative AI in health science librarianship, providing insights that can inform future research and guide practical implementations in this field.

ALISE RESEARCH TAXONOMY TOPICS

Artificial intelligence; Information needs; Academic libraries; Library technology systems

AUTHOR KEYWORDS

Generative AI; ChatGPT; Library services; Health Science Librarians

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INTRODUCTION

In recent years, the integration of Artificial Intelligence (AI) technologies, particularly Generative AI models like GPT (Generative Pre-trained Transformer), has been on the rise across various sectors, including health science libraries. Generative AI offers the promise of enhancing the efficiency of information services by automating routine tasks, improving information retrieval, and providing personalized recommendations (Panda & Chakravarty, 2022). However, the utilization of AI technologies in library practice, including ChatGPT, presents a range of considerations and challenges that librarians must navigate. This study explores the evolving role of generative AI in health science librarianship, focusing on its impact on information accuracy and access. In health science libraries, where the demand for accurate and accessible information is paramount, the adoption of AI tools holds significant promise (Cox & Mazumdar, 2022).

Generative AI has gained attention for its ability to generate human-like text, comprehend complex data, and aid in various tasks such as information retrieval, summarization, and natural language understanding (Bridges et al., 2024). This study aims to investigate the utilization and perception of generative AI, specifically ChatGPT, by health science librarians. The primary aim is to understand how health science librarians use generative AI in their practices and explore the impact of this technology on library services. By examining the experiences and challenges faced by health science librarians in utilizing generative AI, specifically ChatGPT, the study seeks to contribute to the understanding of Generative AI's usage and adoption in health science libraries.

Toward this aim, the research proposes the following two research questions:

1. How do health science librarians integrate generative AI, particularly ChatGPT, into library services?
2. What are the benefits and challenges associated with the utilization of generative AI, such as ChatGPT, in health science libraries?

LITERATURE REVIEW

Generative AI adoption in libraries

AI technologies have been increasingly adopted in libraries across various sectors, including health sciences, to improve information services and needs of users. One of the primary motivations for generative AI adoption in libraries is to enhance user experiences. Studies have shown that AI-powered search engines and recommendation systems can significantly improve the discoverability of library resources and personalize the user experience (Cox & Mazumdar, 2022). AI technologies offer libraries the opportunity to automate routine tasks such as cataloguing, metadata tagging, and circulation management (Omame & Alex-Nmecha, 2020). By implementing AI-powered systems, libraries can streamline operations, reduce manual workloads, and improve efficiency. This automation allows library staff to focus on higher-value tasks, such as user engagement and community outreach (Bridges et al., 2024). Studies focusing on health science libraries specifically demonstrate how Generative AI models, including ChatGPT, is integrated into library systems to support tasks such as literature search, data analysis, and user interaction (Lund et al., 2024).

Benefits of Generative AI in libraries

Generative AI enable more accurate and efficient retrieval of relevant information for library users. Through advanced algorithms and natural language processing capabilities, generative AI can enhance search engines and recommendation systems, providing users with more precise results based on their needs and preferences (Panda & Chakravarty, 2022). For example, the use of generative AI in library catalogue systems can improve the search experience by understanding user queries and returning more relevant and contextually

appropriate resources (Hosseini & Holmes, 2023). Generative AI can analyse user data and preferences to generate personalized recommendations, suggestions, and resources, ensuring that users receive targeted information that aligns with their specific interests and requirements (Hodonu-Wusu, 2024). Personalized services are key to enhancing the user experience, and Generative AI plays a significant role in achieving this goal. By leveraging user data and preferences, generative AI algorithms can dynamically adapt to individual users' needs, improving the relevance and quality of the services provided (Wachter & Brynjolfsson, 2024). Generative AI can assist in data-driven decision-making processes within libraries, by analysing large datasets and identifying patterns and trends (Omame & Alex-Nmecha, 2020).

Challenges of Generative AI adoption and usage in libraries

The integration of generative AI in libraries can present a range of challenges and concerns that extend beyond technological considerations. Ethical considerations are at the forefront of these discussions, as libraries struggle with issues related to trust, accuracy, security, and fairness (Aggarwal et al., 2021).The literature highlights the need to address ethical implications and develop strategies to ensure the responsible use of generative AI in libraries (Hodonu-Wusu, 2024). This includes considering the ethical dimensions of generative AI in libraries, such as the protection of user data rights and the need for transparency. Literature emphasizes the need for transparency in data processing, protecting user data rights, and addressing legal and human rights issues (Alowais et al., 2023).

While the adoption of generative AI tools like ChatGPT is gaining momentum in library practice, LIS education has not fully kept pace with these emerging trends. Many LIS programs are still in the early stages of integrating AI literacy into their curricula, focusing primarily on traditional library skills and technology management. According to (Huang et al., 2021), there is a growing gap between the rapid advancements in AI technologies and the preparedness of LIS graduates to navigate these tools effectively. This highlights the need for LIS education to evolve, incorporating AI-related competencies such as ethical considerations, critical evaluation of AI-generated content, and technical skills in AI tool management.

METHODOLOGY

The methodology employed semi-structured interviews conducted over ten working days. Grounded Theory was selected for its suitability in developing new theories from the data (Holton, 2008). It is frequently used in exploratory studies where the goal is to generate theories and concepts from the data itself, rather than testing pre-existing hypotheses. Grounded Theory influenced the data collection and analysis process by providing a framework for coding and categorizing the interview data. Eleven health science librarians were chosen through purposive sampling, with criteria including relevant qualifications and experience of 5-10 years in academic or medical libraries (see Table 1). The interviews aimed to generate new viewpoints, were recorded, and notes were taken. Content analysis, specifically the conventional analysis method, was used to systematically code and categorize interview data, leading to the development of themes consistent with Grounded Theory.

Table 1: *Participants' information*

Participant ID	Type of Librarian	Location	Gender	Years of Experience	Library Service
1	Health Science Librarian System at a University	PA	F	6years	Cataloging and Collection Management
2	Public Librarian	OH	F	5years	Digital Library Services

3	Health Science Librarian at a Medical Library	NC	M	8years	Information Retrieval and Assistance
4	Academic Librarian at a Health Sciences Library	PA	M	10years	Instruction and Information Literacy
5	Health Science Librarian at a Medical Library	NC	M	5years	Reference and Research Services
6	Health Science Librarian at a University	OH	F	8years	Interlibrary Loan and Document Delivery
7	Health Science Librarian at a Medical Library	PA	F	8years	Retrieval and Assistance
8	Academic Librarian at a Health Sciences Library	PA	F	10years	Digital Scholarship
9	Public Librarian	PA	M	10years	Reference Services
10	Academic Librarian at a Health Sciences Library	PA	F	5years	Digital library services
11	Academic Librarian at a Health Sciences Library	PA	F	5years	Special collections

RESULTS

The journey from initial adoption to full integration of ChatGPT in library services encompasses several stages. Starting with building trust in the technology, librarians then move on to integrating ChatGPT into their systems, addressing technical issues, and ultimately using it to enhance services for patrons. The sections below delve into each of these stages, shedding light on the librarians' experiences and the challenges they encountered.

Building trust in Generative AI

The findings from the interviews revealed that the challenge faced by health librarians is building trust in the reliability and accuracy of generative AI, specifically ChatGPT, before fully incorporating them into patron interactions. Health librarians acknowledge the potential benefits of ChatGPT, but they emphasize the importance of ensuring its reliability and accuracy. For example, Participant 1 mentioned that, "*I am concern about building trust in ChatGPT's reliability and accuracy before fully integrating it into our services*."

Integration of ChatGPT in library systems

The findings from the interviews revealed that health science librarians have integrated generative AI into their systems, recognizing its potential to enhance efficiency and assist patrons more effectively. By integrating ChatGPT into their systems, health librarians agree that it has capabilities to improve various aspects of their services. In a few interviews, librarians spoke about using ChatGPT to create simple health literacy apps. For instance, Participant 2 stated, "*ChatGPT has really helped our information retrieval process, making it easier for patrons to find what they need.* "

Overcoming technical issues

During the interviews, it was found that health librarians faced technical challenges after integrating ChatGPT into their systems. These challenges included glitches, errors, and instances of downtime. For example, Participant 4 mentioned, that "*I had to continually update it, I don't know if it's the system, but it encountered errors a few times.*"

Delivering results to patrons

The findings reveal that after integrating ChatGPT into their systems, health librarians rely on it to deliver information to patrons. However, health librarians are mindful of sharing ChatGPT-generated results. They understand that ChatGPT is not an expert in any specific field and cannot offer opinions. Participants 9 stated that, "*ChatGPT can assist in answering general knowledge questions, offering different perspectives on a topic, and improving search and discovery processes but how do we deliver its findings to our patrons?*". Participant 4 mentioned that "Sometimes *I am worried about sharing the result I get from ChatGPT to our users*."

Balancing efficiency and innovation with accuracy and security concerns

The findings reveal that librarians face a challenge in finding a balance between efficiency and innovation, and concerns about information accuracy and security when integrating ChatGPT into health science libraries. Health librarian emphasized that on one hand, the potential for streamlined processes and enhanced information retrieval is exciting. However, we must also be diligent in ensuring the accuracy and reliability of the information generated by ChatGPT. Participant 5 mentioned that, "*In my experience, one of the main concerns is the need to verify and validate the sources provided by ChatGPT. While it can generate helpful responses, there is always a need for human intervention to double-check the information and ensure it meets our library's standards. We can't solely rely on ChatGPT for accuracy, as it might not always distinguish between credible and unreliable sources.*"

DISCUSSION

The findings of the study indicate that health science librarians recognize the potential benefits of ChatGPT and have begun integrating it into their systems. The findings reveal the challenges of integrating generative AI, particularly ChatGPT, into health science libraries. Health librarians express apprehension about building trust in the reliability and accuracy of ChatGPT before full integration into library services, which aligns with literature emphasizing the importance of establishing user trust in AI systems (Omame & Alex-Nmecha, 2020). To establish trust, health librarians can follow the recommendations outlined in previous studies, such as evaluating and testing the AI tool, monitoring its performance, educating patrons about its capabilities and limitations, and addressing data privacy concerns (Wachter & Brynjolfsson, 2024).

Despite these concerns, health librarians acknowledge the potential of ChatGPT to enhance efficiency and assist patrons effectively, and they have integrated it into their systems. However, they encounter technical challenges post-integration, such as glitches and errors, with highlight the need for robust technical support and maintenance procedures, as noted in previous research on AI integration (Lund et al., 2024). To overcome these technical challenges, librarians can take several steps: regular monitoring, and maintenance of ChatGPT can help identify and resolve any glitches or errors that may arise. While relying on ChatGPT to deliver information to patrons, health librarians are cautious about sharing its generated results, as they recognize its limitations in expertise and opinion provision. Therefore, librarians must ensure that patrons understand the limitations of ChatGPT and the nature of its responses (Hodonu-Wusu, 2024).

An unexpected finding is the challenge of balancing efficiency and innovation with accuracy and security concerns. This finding challenges the assumption that generative AI can solely replace human validation and highlights the continued need for human oversight in generative AI-generated information to maintain quality and credibility (Bohr & Memarzadeh, 2020).These findings make a significant contribution to the ongoing debate about the role of

AI in libraries by providing insights into the practical implementation of generative AI, specifically ChatGPT, within health science libraries. By exploring the benefits and challenges associated with integrating AI into library services, this study offers contributions to discussions surrounding the impact of AI in libraries. The findings highlight the complexities involved in incorporating generative AI technologies into library workflows, including issues related to trust-building, technical challenges, and the need for a balance between efficiency and accuracy. Overall, by addressing these key aspects of generative AI implementation in libraries, the study enriches the ongoing debate and provides practical insights for librarians.

IMPLICATIONS FOR LIBRARY PRACTICE

Integrating generative AI, particularly ChatGPT, into existing library services offers numerous practical implications for health science librarians. Librarians can implement ChatGPT as a virtual reference tool, enabling patrons to ask questions and receive instant responses, thereby enhancing accessibility to information resources. To facilitate successful integration, librarians may need training on ChatGPT's capabilities and limitations. This training should encompass strategies for verifying and validating AI-generated information to maintain accuracy and reliability. Also, librarians can explore use cases such as creating ChatGPT-powered health literacy apps to provide information and support to patrons. By strategically integrating ChatGPT into library services, health science librarians can enhance information retrieval processes, improve patron satisfaction, and increase the overall quality of services provided.

In the context of current practices in Library and Information Science (LIS) education, this study shows the importance of equipping future librarians with the skills to critically evaluate AI tools and understand their limitations. As generative AI becomes more embedded in library systems, LIS programs may incorporate AI literacy as a core competency, ensuring that future librarians are equipped with both technical proficiency and ethical awareness in managing AI-driven tools. This includes understanding AI's benefits and limitations, the importance of human oversight, and the ethical considerations around data privacy and security. Furthermore, educators should emphasize critical thinking skills to evaluate AI-generated information, balancing technological efficiency with maintaining information credibility. By addressing these areas, LIS education should prepare students to integrate AI responsibly and effectively into their professional practice, ensuring that libraries continue to serve as trusted and innovative information hubs.

FUTURE DIRECTIONS

An area for further research is the exploration of biases and trustworthiness in AI technologies like ChatGPT. Researchers should continue to investigate and address biases that may exist in ChatGPT-generated results, ensuring that the information provided is accurate and unbiased, and aligned with the standards of libraries. Further research can also focus on developing strategies and techniques to enhance the trustworthiness of AI-generated information and improve AI's interpretative capabilities.

CONCLUSION

In conclusion, building trust in the reliability and accuracy of ChatGPT emerged as a significant challenge, highlighting the need for evaluation, monitoring, and addressing data privacy concerns. Integrating ChatGPT into library systems was found to enhance efficiency and assist patrons, but technical challenges like glitches and downtime need to be addressed. Providing accurate results to patrons required caution and transparency about ChatGPT's

limitations. These findings contribute to our understanding of implementing generative AI in health science libraries, emphasizing the importance of trust and continuous improvement in technical preparedness.

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