ITMAHuB2023

Implications of ChatGPT in Library Services: A systematic review

Norizan Zakaria, Mad Khir Johari Abdullah Sani

College of Computing, Informatics, and Mathematics
Universiti Teknologi MARA (UiTM), Puncak Perdana Campus, 40150 Shah Alam, Selangor, Malaysia

nznorizanzakaria@gmail.com, madkhirjohari@uitm.edu.my
Tel: 014-5409188

Abstract

Libraries play a crucial role in delivering reliable information using emerging technologies like artificial intelligence (AI), specifically ChatGPT. This study systematically reviews 11 articles from Scopus and Web of Science, focusing on ChatGPT's implications for library services. The identified themes include information retrieval, reference assistance, language support, user engagement, personalization, information literacy, collection development, and cataloging and classification. While ChatGPT offers various benefits, challenges such as intellectual property, privacy, bias, accuracy, and reliability limitations exist. This article underscores the need for in-depth qualitative or quantitative studies to explore ChatGPT's potential in library services.

Keywords: ChatGPT, Library Service, Implication, Systematic Literature Review

1.0 Introduction

Libraries are recognized as trusted institutions of information that are responsible for supporting and enhancing life-long learning opportunities and providing access to information and knowledge. For instance, libraries gradually started to evolve and adapt to the quick advancement of technology (Perdana & Prasojo, 2020). Then, to sustain their mandate of existence and relevancy in supporting the teaching and learning process and providing quality education to their users, libraries need to focus on applying and exploring more current technology. Libraries are service-oriented businesses that have transformed in technologies such as artificial intelligence (Hussain, 2023). Apart from the fact that the basic purpose of libraries is to enable unrestricted access to information sources at any time and from any location, advancing the edge of technology is something that the entire world looks to libraries for.

There are several different definitions of artificial intelligence (AI). Technology that performs or at least mimics human sensory or cognitive functions is AI (A. M. Cox & Mazumdar, 2022). Earlier research explained AI as a way to understand, model, and mimic intelligence and cognitive processes using different computational, mathematical, logical, mechanical, and biological principles and devices (Lund et al., 2020). Another study defined AI as the ability of machines to do things that people would say require intelligence (Jackson, 1985, as cited in Hussain, 2023). Simply put, AI has become a tool to improve efficiency and productivity in any organization, including libraries.

Over the last few months, there has been a surge of news regarding ChatGPT, a rapidly spreading artificial intelligence platform developed by OpenAI. ChatGPT stands for Chat Generative Pre-Trained Transformer. Released in November 2022, the rise of

ChatGPT, an artificial intelligence-based chatbot that uses natural language processing (OpenAI, n.d.), has the potential to enhance library services by providing users with quick, accurate, and personalized responses to their queries. Therefore, the implications of AI, namely ChatGPT, in library services are considered the focus of this study.

Despite it being a new topic, some researchers have contributed papers on ChatGPT in various fields, such as health sciences (Cascella et al., 2023; Javaid et al., 2023; Khan et al., 2023; Sallam, 2023). However, there is still a lack of studies conducted on ChatGPT implications in the field of library and information science (Adetayo, 2023; C. Cox & Tzoc, 2023; Frederick, 2023; Oyelude, 2023; Panda & Kaur, 2023a). Some studies focused on the applications or potential use of ChatGPT in libraries, but efforts to systematically review these studies are still lacking. A systematic literature review is one of the ways to review existing literature in more systematic ways. Based on Xiao & Watson (2019), it is crucial to review previous studies systematically to understand the scope and depth of the existing body of work and identify gaps to explore, while Okoli (2015) stated that doing a systematic literature review helps to provide guidelines for developing theory in literature reviews.

2.0 Methodology

Systematic Literature Review (SLR) is an organized and transparent process where the search process is conducted over several databases, and the process can be replicated and reproduced by other researchers to answer the outlined research questions (Xiao & Watson, 2019). Conducting a systematic literature review requires following a protocol or established guidelines, which should be defined before initiating the review process. This study involves a review of existing literature on the latest artificial intelligence, namely ChatGPT applications in library services. Therefore, this review follows established guidelines for systematic reviews in information systems and management outlined by Okoli (2015). The guidelines consist of four phases: planning, selection, extraction, and execution. These phases consist of eight major steps, as per the below Fig. 1.
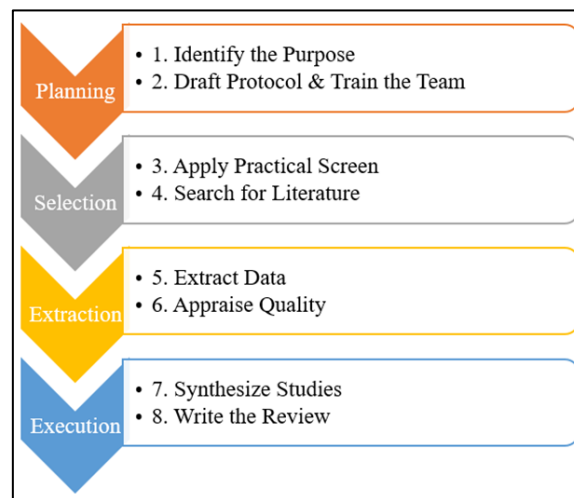

Fig. 1: A systematic guide to literature review development
(source: Okoli, 2015)

Based on this guideline, this review started with the formulation of suitable research questions, the selection of information resources, and the conduct of a systematic searching strategy that consists of identification, screening, and eligibility process. Then, this review proceeds with data extraction and an appraisal of the quality of selected articles. Lastly, this review explained how the extracted data were analyzed and presented.

2.1 Formulation of Research Questions
The objective of this review is to answer the research questions (RQ), which are formulated based on PICOC criteria (population, intervention, comparison, outcomes, and context). PICOC is a framework used in research to formulate a clear research question, as per the below table.

Table 1: PICOC Criteria

Scope	Criteria
P: Population/Participants	Library staff and library users
I: Intervention	Implications of ChatGPT in Library Services
C: Comparison	Comparison not applied
O: Outcome	Evaluation of the Implications of ChatGPT on Library Services
C: Context	Review of all literature related to ChatGPT in libraries.

The PICOC is a useful tool to identify the criteria that will help to derive the following research questions (RQ):
- RQ1: What are the implications of ChatGPT in library services?

- RQ2: What are the potential challenges and limitations of using ChatGPT to provide library services?

2.2 Resources

For information resources, Scopus and Web of Science were chosen for this review. The reasons why these databases are chosen are that both databases are considered the most popular and largest bibliographic databases for citations of literature and provide a comprehensive search function (Samsuddin et al., 2020). Scopus, launched in 2004 by Elsevier, is recognized as an expertly curated abstract and citation database, whereas Web of Science, initiated in 1960 by Clarivate Analytics, is acknowledged as the oldest bibliographic database. Both databases provide comprehensive coverage of various fields, such as scientific, technical, medical, and social science fields, with detailed citation information. Hence, this is very important to ensure the quality of the articles retrieved and reviewed for this study.

2.3 Systematic Searching Strategy

The process flow for systematic searching strategies of articles was adapted from Mohamed Shaffril et al. (2020). This version was chosen because it is easy to understand and eases the process of removing duplicated articles after the selection stage. It was originally based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) statement, which provides updated and advanced methods to identify, select, appraise, and synthesize studies (Page et al., 2021). Fig. 2 shows the process flow of systematic searching strategies, which include identification, screening, and eligibility.
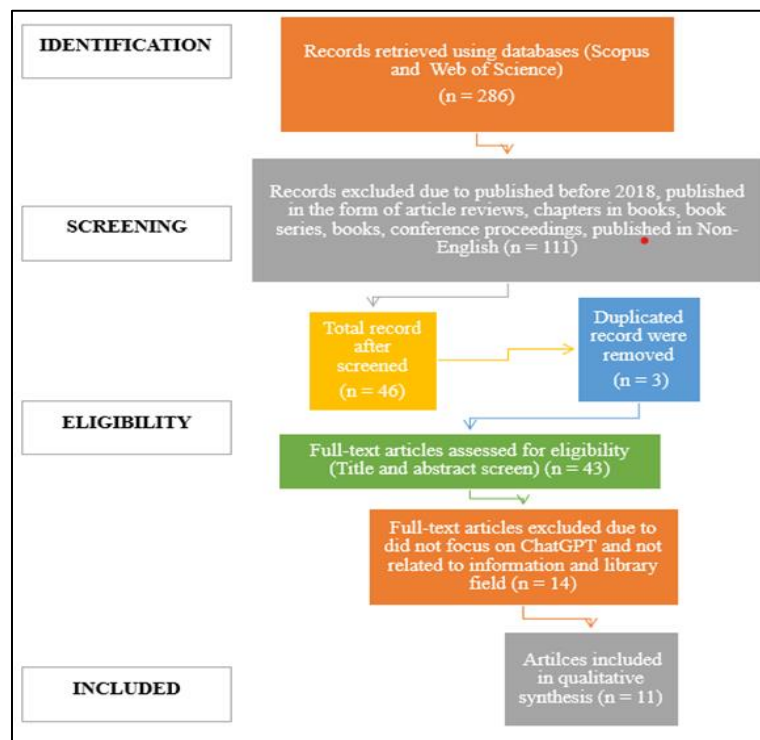

Fig. 2: The Flow Diagram of the Study
(Source: Adapted from Shaffril et al., 2020)

2.3.1 Identification

Several keywords were identified for this review based on information from thesaurus.com, keywords from previous studies, and keywords suggested by Scopus for keyword synonyms and other possible related terms in library services. This review also applied advanced search using boolean operators (AND, OR), field code functions, phrase searching, and truncation on both main databases, Scopus and Web of Science, as per the below table. The total number of records retrieved from this process is 286 from both databases.

Table 2: Keywords and Search Strings

Databases	Keywords Used
Scopus	TITLE-ABS-KEY (("academic librar*" OR "librar*") AND ("chatgpt" OR "chatbot*" OR "artificial intelligence*") AND ("implication*"))
Web of Science	TS= (("chatgpt" OR "artificial intelligence*" OR "chatbot*") AND ("library*" OR "academic library*") AND ("impact*" OR "implication*"))

2.3.2 Screening (Inclusion and exclusion criteria)

This process involved inclusion and exclusion criteria to include or exclude articles based on predetermined criteria, and it can be automatically filtered or generated by chosen databases. This is an important process to identify and retrieve suitable articles that are

265

to be included in the systematic review process. The first criterion is to exclude records that were published before 2018. The second criterion was the document types; only peer-reviewed articles were selected. The third criterion was language; only English-language records were selected. The details of the inclusion and exclusion criteria are presented in the table below.

Table 3: The Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Timeline	Between 2018 and 2023	< 2018
Document Type	Articles	Books, book chapters, conference proceedings
Language	English	Non-English

2.3.3 Eligibility

This process was done by reading the titles and abstracts of retrieved articles from the screening process. This is important to ensure the articles meet and are in line with the criteria. Concerning Fig. 2. This process excluded 29 articles because the articles did not focus on ChatGPT and were not related to the information and library fields. The process also removed three duplicate records, which left only 11 articles selected to be reviewed.

3.0 Data Analysis

The remaining 11 articles have been evaluated, reviewed, and analyzed. This process is important to identify relevant themes for this review. It was done by reading the title, abstracts, and full-text articles. Then, the extracted data will be analyzed thematically to identify key themes and patterns within the concepts of library services. The first stage of the thematic analysis is done by extracting the statements that are related to the research questions. Next, the statements were organized into tables and converted into valuable data through the identification of themes or meaningful concepts. A technique for analyzing qualitative data called thematic analysis involves reading through a collection of data and searching for patterns in the meaning of the data to identify themes. Making sense of the data is an active, reflexive process where the researcher's personal experience is crucial (Villegas, 2022).

At its core, any type of library is dedicated to helping its users access and use information, as well as emerging tools and technologies, including AI. Therefore, this review looks at the implications of ChatGPT through the lens of library services. There are eight themes, namely information retrieval, reference assistance, language support, user engagement, personalization, information literacy, collection development, and cataloging and classification, derived from the thematic analysis as per the below table (Table 4). Additionally, based on the information from chosen articles, there are potential challenges and limitations when using ChatGPT for library services, including issues like intellectual property, copyright, privacy, data security, bias, accuracy, and limited expertise in certain domains.

Table 4: The Themes

No	Articles	IR	RA	LS	UE	P	IL	CD	CC
1.	C. Cox & Tzoc (2023)	/	/				/		
2.	Frederick (2023)	/					/		
3.	Oyelude (2023)	/	/				/		
4.	Panda & Kaur (2023a)	/	/	/	/	/		/	
5.	Adetayo (2023)	/	/	/		/		/	/
6.	Fernandez (2014)	/							
7.	Lund & Wang (2023)		/						/
8.	Kirtania (2023)		/	/					
9.	Panda & Kaur (2023b)		/	/				/	
10.	Subaveerapandiyan et al. (2023)		/	/					
11.	Verma (2023)	/	/		/	/			

IR - Information Retrieval RA - Reference Assistance LS - Language Support UE - User Engagement
P- Personalization IL - Information Literacy CD - Collection Development CC - Cataloguing & Classification

4.0 Findings

The outcomes of the search procedure will be discussed further in this section. For the article search, two databases were chosen, namely Scopus and Web of Science. Then, an analysis of articles on the implication of ChatGPT in library services was done. After carefully examining these articles, only the most significant articles were selected. To make sure the chosen articles are the best fit for the review, quality assessment was also used. 11 articles in total made up the final dataset for this study. The results of the search will be discussed about the research questions.

4.1 RQ1: What are the implications of ChatGPT for library services?

From the review and analysis of selected articles, the introduction of ChatGPT in library services is changing the libraries' operations, where the use of ChatGPT has the potential to significantly improve library service outcomes and user satisfaction (Panda & Kaur, 2023a; Verma, 2023). Several articles have shown that ChatGPT can be successfully implemented in the context of library services

(Adetayo, 2023; C. Cox & Tzoc, 2023; Frederick, 2023; Kirtania, 2023; Lund & Wang, 2023; Oyelude, 2023; Panda & Kaur, 2023b, 2023a; Subaveerapandiyan et al., 2023; Verma, 2023). This new viral artificial intelligence (AI), ChatGPT, has been seeming to benefit library services in a variety of ways. Here are some implications of ChatGPT in library services:

4.1.1 Information Retrieval
According to the review, ChatGPT can serve as an interactive information retrieval tool by helping library users find relevant resources such as books, articles, or online databases (Adetayo, 2023; Frederick, 2023; Panda & Kaur, 2023a). Simply put, library users can access resources, put holds, and do other duties whenever they want without having to wait for a librarian to become available. This is particularly helpful for users who are unable to visit the library because of time constraints or accessibility issues. Hence, users who need to access library information late at night can also find it handy. ChatGPT could function as a search and discovery tool because it responds to queries with a list of links on a topic and can be used to improve the accuracy and effectiveness of library search systems (C. Cox & Tzoc, 2023; Frederick, 2023; Lund & Wang, 2023; Oyelude, 2023). Additionally, for users who need prompt and accurate answers to their questions, ChatGPT's capacity to offer rapid access to knowledge on a variety of topics is quite helpful and helps users save time and effort. For instance, it also improves their learning process by making it simple to access a wealth of knowledge.

4.1.2 Reference Assistance
From the evaluation and analysis of the selected articles, some studies stated Chatgpt could be used as reference assistance in library services (Adetayo, 2023; C. Cox & Tzoc, 2023; Kirtania, 2023; Lund & Wang, 2023; Oyelude, 2023; Panda & Kaur, 2023a, 2023b; Verma, 2023). In Verma (2023), with general knowledge of library policies, services, and resources, ChatGPT can help library visitors with reference inquiries. This can allow library staff to concentrate on more difficult jobs and give library users quicker and more effective service. Besides that, ChatGPT can act as virtual librarian assistance, where it is available 24/7 to address user questions and provide related information. It can offer guidance on library policies, help with navigating library resources, and offer recommendations based on user preferences and interests (Subaveerapandiyan et al., 2023).

4.1.3 Language Support
Another important aspect where ChatGPT has potential use in library services is language support. The review indicates that ChatGPT can be used to provide multilingual support and translation services to library users (Adetayo, 2023; Kirtania, 2023; Panda & Kaur, 2023a, 2023b; Subaveerapandiyan et al., 2023). As libraries serve diverse populations of users, ChatGPT can assist with language translation services. It can help users and library staff who speak different languages communicate with one another, removing language barriers and enhancing accessibility. Furthermore, as stated in Panda & Kaur (2023a), ChatGPT can communicate in multiple languages. This will be very helpful for libraries that serve diverse communities.

4.1.4 User Engagement
Nowadays, most students like to learn through online platforms using their smartphones or laptops to browse and read information online rather than read printed books or subject materials. Therefore, the library should take the initiative to implement current technologies to enhance library service as well as to fulfill library users' needs. Based on the review, ChatGPT can help libraries enhance user engagement and experience with its capacity to start discussions with users (Panda & Kaur, 2023a; Verma, 2023). ChatGPT can assist in organizing and promoting library programming and events. For example, it can provide event details and registration information and answer questions about upcoming activities, which will help increase user engagement and participation. Hence, it can also engage users through social media platforms.

4.1.5 Personalization
Another significant implication of using ChatGPT in library services that was discovered through the analysis of the selected articles is personalization (Adetayo, 2023; Panda & Kaur, 2023a; Verma, 2023). ChatGPT can personalize its services to suit the individual needs of each user. This means that it can provide tailored recommendations and services, such as suggesting books and other materials that match a student's reading level, interests, and reading history. Besides, it can also analyze a user's search history to make personalized recommendations for books, articles, and other resources. This can help users discover new and relevant information and encourage them to further explore the library's collections.

4.1.6 Information Literacy
According to the review, librarians can help library users develop the critical thinking skills they need to verify information and assess the value of information or responses given by ChatGPT. Information literacy skills will enable them to make educated judgments through critical examination of what is given (C. Cox & Tzoc, 2023; Frederick, 2023; Oyelude, 2023). Information literacy involves the ability to evaluate the reliability and credibility of sources. However, users must develop critical thinking skills and employ information evaluation techniques to independently assess the accuracy and reliability of the information provided, even though ChatGPT can be a valuable tool.

4.1.7 Collection Development
Some of the articles stated that ChatGPT can be used to create reading lists based on predetermined standards like age group, subject matter, and genre. Additionally, it can be used to analyze reading statistics and make suggestions for upcoming reading lists (Adetayo,

2023; Panda & Kaur, 2023a, 2023b). For instance, automating the process of keeping a master inventory of library resources may help to keep track of library collections. It may also examine the data from the library's catalog and produce a complete inventory for collection development.

4.1.8 Cataloging and Classification
Another implication of ChatGPT can be seen in the core process of library services, which is cataloging and classification (Adetayo, 2023; Panda & Kaur, 2023a, 2023b). Copy cataloging is one of the potential applications for ChatGPT in this situation. Copy cataloging is the process of making changes to an existing bibliographic record rather than creating a new one from scratch. Subject headings and classification numbers for library holdings can be generated automatically with the help of ChatGPT. Using the title and other details of a library item, ChatGPT can generate a list of relevant subject headings and classification codes based on what it understands about the item's content.

4.2 RQ2: What are the potential challenges and limitations of using ChatGPT in providing library services?
The use of ChatGPT in library services is becoming more visible and attempting to cover all aspects of the library services domain. However, the adoption of ChatGPT in libraries may raise some challenges and limitations. According to the findings of selected articles, while ChatGPT offers numerous benefits, there are also potential challenges and limitations associated with its use in providing library services, as discussed below.

4.2.1 Intellectual Property and Copyright
The review highlights legal and ethical concerns related to ChatGPT, particularly in the areas of intellectual property and copyright. The prevailing view, as suggested by various sources (C. Cox & Tzoc, 2023; Fernandez, 2014; Lund & Wang, 2023; Oyelude, 2023; Subaveerapandiyan et al., 2023), is that ChatGPT, not being a living sentient entity, is generally considered unable to claim copyright.

4.2.2 Privacy and Data Security
In terms of privacy and data security, the interactions with ChatGPT may involve sharing personal information or sensitive data (Fernandez, 2014; Frederick, 2023; Lund & Wang, 2023; Verma, 2023). Therefore, libraries must implement strong security measures and ensure compliance with privacy regulations to protect user information and maintain data confidentiality.

4.2.3 Bias
ChatGPT may unintentionally generate biased or discriminatory responses in the training data (Fernandez, 2014; Frederick, 2023; Lund & Wang, 2023; Subaveerapandiyan et al., 2023). Thus, ChatGPT must be properly examined to make sure that biases based on race, gender, or other sensitive characteristics are not developed or sustained.

4.2.4 Accuracy and Reliability
While ChatGPT can produce answers to a variety of questions, there is a chance that some of those answers won't be correct or trustworthy, especially when it comes to complicated queries that call for human judgment or experience (Frederick, 2023; Kirtania, 2023; Panda & Kaur, 2023b). ChatGPT's responses are generated based on patterns and examples in the training data, which may lead to mistakes or incomplete answers that will lead to misinformation if not properly monitored and validated.

4.2.5 Limited Domain Expertise
ChatGPT's knowledge is based on the data it was trained on, and training data only goes up to 2021, and it may lack current knowledge (Frederick, 2023; Kirtania, 2023; Panda & Kaur, 2023a; Verma, 2023). In such cases, human librarians may still be required to provide in-depth assistance or support to provide current and accurate information.

By acknowledging and addressing these challenges, libraries can effectively control ChatGPT while ensuring the provision of quality, reliable, and user-centered library services. Regular monitoring, user feedback, and continuous improvement strategies are vital for mitigating these limitations and maximizing the benefits of ChatGPT.

5.0 Discussions and Conclusion
The purpose of this study was to conduct a systematic review of the literature on ChatGPT implications in library services to gain a better understanding of its implications, challenges, and limitations. Two research questions were developed about the objectives. The first research question (RQ1) investigated the potential implications of ChatGPT for library services. To answer this question, 11 articles were examined. According to the findings, the majority of ChatGPT implications in library services are focused on information retrieval, reference assistance, language support, user engagement, personalization, information literacy, collection development, and cataloging and classification. This is where potential areas of library services can fully utilize ChatGPT's capabilities.

The second research question (RQ2) explores the challenges and limitations of ChatGPT in library services. The review identified and discussed several potential challenges and limitations resulting from the implications of ChatGPT in library services. Some of these challenges and limitations are intellectual property and copyright, privacy and data security, bias, accuracy and reliability, and limited domain expertise. Overall, these potential implications demonstrate how ChatGPT can expand library services, enhance the user

experience, and streamline various library operations. However, there are some limitations to this review, as it only selected articles to be reviewed and excluded other types of documents such as books, chapters in books, and conference proceedings. So, the findings may not cover all aspects of the implications of ChatGPT for library services. Besides, the findings solely explained the potential implications of ChatGPT in library services and its challenges and limitations; perhaps future studies will be conducted and empirically tested to measure the extent of its impact and implementation in libraries. For example, explore how ChatGPT can be integrated with existing library resources, catalogs, and databases and how it can enhance the accessibility and discoverability of library materials. Lastly, the findings from this review will hopefully provide valuable insights for libraries seeking to explore more ChatGPT technology to enhance their user services and experiences.

Acknowledgments

References

Adetayo, A. J. (2023). Artificial intelligence chatbots in academic libraries: the rise of ChatGPT. *Library Hi Tech News*. https://doi.org/10.1108/lhtn-01-2023-0007

Cascella, M., Montomoli, J., Bellini, V., & Bignami, E. (2023). Evaluating the Feasibility of ChatGPT in Healthcare: An Analysis of Multiple Clinical and Research Scenarios. *Journal of Medical Systems*, *47*(1), 1–5. https://doi.org/10.1007/s10916-023-01925-4

Cox, A. M., & Mazumdar, S. (2022). Defining artificial intelligence for librarians. *Journal of Librarianship and Information Science*. https://doi.org/10.1177/09610006221142029

Cox, C., & Tzoc, E. (2023). ChatGPT: Implications for academic libraries. *College & Research Libraries News*, *84*(3), 99–102. https://doi.org/10.5860/crln.84.3.99

Fernandez, P. (2014). Through the looking glass: envisioning new library technologies. *Library Hi Tech News*, *31*(7). https://doi.org/10.1108/lhtn-07-2014-0057

Frederick, D. E. (2023). ChatGPT: a viral data-driven disruption in the information environment. *Library Hi Tech News*, *November 2022*. https://doi.org/10.1108/LHTN-04-2023-0063

Hussain, A. (2023). Use of artificial intelligence in the library services: prospects and challenges. *Library Hi Tech News*, *2*, 15–17. https://doi.org/10.1108/LHTN-11-2022-0125

Javaid, M., Haleem, A., & Pratap, R. (2023). BenchCouncil Transactions on Benchmarks, Standards, and Evaluations ChatGPT for healthcare services : An emerging stage for an innovative perspective. *BenchCouncil Transactions on Benchmarks, Standards and Evaluations*, *3*(1), 100105. https://doi.org/10.1016/j.tbench.2023.100105

Khan, R. A., Jawaid, M., Khan, A. R., & Sajjad, M. (2023). ChatGPT-Reshaping medical education and clinical management. *Pakistan Journal of Medical Sciences*, *39*(2), 605–607. https://doi.org/10.12669/pjms.39.2.7653

Kirtania, D. K. (2023). *OpenAI ChatGPT for Library and Information Science (LIS) Professionals OpenAI ChatGPT for Library and Information Science (LIS) Professionals. April*. https://doi.org/10.13140/RG.2.2.19151.97445

Lund, B. D., Omame, I., Tijani, S., & Agbaji, D. (2020). Perceptions toward artificial intelligence among academic library employees and alignment with the diffusion of innovations' adopter categories. *College and Research Libraries*, *81*(5), 865–882. https://doi.org/10.5860/crl.81.5.865

Lund, B. D., & Wang, T. (2023). Chatting about ChatGPT: how may AI and GPT impact academia and libraries? *Library Hi Tech News*. https://doi.org/10.1108/LHTN-01-2023-0009

Mohamed Shaffril, H. A., Ahmad, N., Samsuddin, S. F., Samah, A. A., & Hamdan, M. E. (2020). Systematic literature review on adaptation towards climate change impacts among indigenous people in the Asia Pacific regions. *Journal of Cleaner Production*, *258*, 120595. https://doi.org/10.1016/j.jclepro.2020.120595

Okoli, C. (2015). A guide to conducting a standalone systematic literature review. *Communications of the Association for Information Systems*, *37*(1), 879–910. https://doi.org/10.17705/1cais.03743

OpenAI. (n.d.). OpenAI. https://openai.com/

Oyelude, A. A. (2023). Much ado about ChatGPT: libraries and librarians perspectives. *Library Hi Tech News*, *January*. https://doi.org/10.1108/LHTN-03-2023-0050

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *The BMJ*, *372*. https://doi.org/10.1136/bmj.n71

Panda, S., & Kaur, N. (2023a). Exploring the viability of ChatGPT as an alternative to traditional chatbot systems in libraries and information centers. *Library Hi Tech News*. https://doi.org/10.1108/lhtn-02-2023-0032

Panda, S., & Kaur, N. (2023b). Revolutionizing language processing in libraries with SheetGPT: an integration of Google Sheet and ChatGPT plugin. *Library Hi Tech News*. https://doi.org/10.1108/LHTN-03-2023-0051

Perdana, I. A., & Prasojo, L. D. (2020). International Conference on Educational Research and Innovation (ICERI 2019). *Digital Library Practice in University: Advantages,*

Challenges, and Its Position, *401*(2019), 44–48.

Sallam, M. (2023). *Practice : Systematic Review on the Promising Perspectives and Valid Concerns*. MI.

Samsuddin, S. F., Shaffril, H. A. M., & Fauzi, A. (2020). Heigh-ho, heigh-ho, to the rural libraries we go! - a systematic literature review. *Library and Information Science Research*, *42*(1). https://doi.org/10.1016/j.lisr.2019.100997

Subaveerapandiyan, A., Vinoth, A., & Tiwary, N. (2023). Netizens, Academicians, and Information Professionals ' Opinions About AI With Special Reference To ChatGPT. *Library Philosophy and Practice*, *April*.

Verma, M. (2023). *Novel Study on AI-Based Chatbot (ChatGPT) Impacts on the Traditional Library Management*. *February*. https://www.researchgate.net/profile/Manish-Verma-47/publication/368608640_Novel_Study_on_AI-Based_Chatbot_ChatGPT_Impacts_on_the_Traditional_Library_Management/links/63f0b1f419130a1a4a8d8121/Novel-Study-on-AI-Based-Chatbot-ChatGPT-Impacts-on-the-Traditio

Villegas, F. (2022, July 28). *Thematic Analysis: What it is and How to Do It | QuestionPro*. QuestionPro. https://www.questionpro.com/blog/thematic-analysis/

Xiao, Y., & Watson, M. (2019). Guidance on Conducting a Systematic Literature Review. *Journal of Planning Education and Research*, *39*(1), 93–112. https://doi.org/10.1177/0739456X17723971