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The Use of ChatGPT for Library System Innovation

Penggunaan ChatGPT untuk Inovasi Sistem Perpustakaan

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Abstract

Background of the study: Technology has advanced rapidly in recent years, including artificial intelligence (AI). AI can be used in various systems, including library information systems that facilitate users' use of library services. One AI that can be used is *ChatGPT*.

Purpose: This study aims to provide an overview of the use of *ChatGPT* for innovation in library information systems.

Method: This study uses a qualitative descriptive method with a case study approach (literature review), collects data from various journals, and analyzes it using thematic methods to identify information themes.

Findings: The study results show that the application of *ChatGPT* in library information systems can improve service efficiency and ease of access for users. *ChatGPT*, which uses artificial intelligence (AI) technology, enables the automation of various library services, including information retrieval, collection management, and reference services, and improves the process of digitizing library collections. However, using *ChatGPT* in library systems requires proper technological infrastructure and readiness of human resources to manage AI-based systems.

Conclusion: Using *ChatGPT* in library information systems provides significant innovation in improving services and the efficiency of information management.

Keywords: *ChatGPT; AI; innovation; library information system*

Abstract in Indonesia

Latar Belakang Penelitian: Teknologi dalam beberapa tahun terakhir mengalami kemajuan pesat, salah satunya teknologi dengan kecerdasan buatan atau *Artificial Intelligence* (AI). Penggunaan AI dapat digunakan dalam berbagai sistem termasuk sistem informasi perpustakaan yang dapat memudahkan para pengguna dalam menggunakan layanan perpustakaan. Salah satu AI yang dapat digunakan adalah *ChatGPT*.

Tujuan: Penelitian ini bertujuan untuk melihat gambaran penggunaan *ChatGPT* untuk inovasi sistem informasi perpustakaan.

Metode: Penelitian ini menggunakan metode deskriptif kualitatif dengan pendekatan studi kasus (*literature review*), mengumpulkan data dari berbagai jurnal, dan menganalisisnya menggunakan metode thematic untuk mengidentifikasi tema informasi.

Temuan: Hasil penelitian menunjukkan bahwa penerapan *ChatGPT* dalam sistem informasi perpustakaan dapat meningkatkan efisiensi layanan serta kemudahan akses bagi pengguna. *ChatGPT* yang menggunakan teknologi kecerdasan buatan (AI) memungkinkan otomatisasi berbagai fungsi perpustakaan, termasuk pencarian informasi, pengelolaan koleksi, dan layanan referensi serta meningkatkan proses digitalisasi koleksi perpustakaan. Namun, penggunaan *ChatGPT* dalam sistem perpustakaan memerlukan infrastruktur teknologi yang memadai dan kesiapan sumber daya manusia dalam mengelola sistem berbasis AI.

Simpulan: Penggunaan *ChatGPT* dalam sistem informasi perpustakaan memberikan inovasi yang signifikan dalam meningkatkan layanan serta efisiensi pengelolaan informasi.

Keywords: *ChatGPT*; AI; inovasi; sistem informasi perpustakaan

Introduction

Conventional library services in Indonesia are currently facing a range of critical challenges. These include a shortage of qualified librarians—particularly in specialized subject areas—limited reference service hours, and delayed responses to user information needs (Rusdiana, 2025). At the same time, user expectations are shifting toward faster, more personalized, and readily accessible services. In response to these evolving demands, libraries are compelled to adopt technological innovations to remain relevant and responsive to the information needs of the digital generation (Oktavia & Frinaldi, 2024).

Among the most notable recent technological advancements is **ChatGPT**, a natural language processing (NLP)-based artificial intelligence model capable of responding to user queries in real-time (Qardafil, 2023). With its ability to act as a virtual reference assistant, ChatGPT has the potential to answer complex questions, suggest relevant library materials, and assist users in navigating digital information sources in a personalized and efficient manner (Ningrum et al., 2024). Dewi argues that this form of intelligent assistance may offer viable solutions to longstanding service challenges within library systems.

To illustrate, the following matrix outlines several common limitations of conventional library services and the corresponding solutions enabled by ChatGPT:

Table 1: Comparison of Conventional Library Service Challenges and Solutions via ChatGPT

Conventional Challenges	Solutions via ChatGPT
Services restricted to librarians' working hours	24/7 availability through AI-based chatbot services
Lack of subject-specialist librarians	Responses derived from diverse interdisciplinary knowledge
Slow and impersonal user support	Instant and context-sensitive conversational replies
Difficulty in navigating digital resources	Step-by-step guidance for information search and retrieval

Source: Adapted and developed from an analysis of conventional library services and the potential use of AI (ChatGPT), 2025.

In alignment with the **Sustainable Development Goals (SDGs)**—specifically Goal 4 (Quality Education) and Goal 10 (Reduced Inequalities)—libraries play a strategic role in ensuring equitable and inclusive access to knowledge and information (Thaharah & Batubara, 2023). The adoption of AI technologies such as ChatGPT represents an opportunity for libraries to enhance their contributions toward the achievement of these global goals, particularly in expanding access to information among underserved communities.

Nevertheless, the integration of ChatGPT into Indonesian library systems is still in its early stages and faces several barriers. These include inadequate digital infrastructure, limited technological literacy among librarians, and the absence of institutional policies regulating the ethical and operational use of AI in information services (Trinova & Zen, 2025). Despite these challenges, ChatGPT holds significant promise in delivering fast, relevant, and contextual responses—especially in an era where digital service expectations are rapidly increasing and users demand around-the-clock support (Suharmawan, 2023).

Empirical evidence further supports this potential. A study by (Yang, 2024), titled “*ChatGPT: Unleashing the Power of Conversational AI for Library Reference Services*,” demonstrated that ChatGPT excels in interpreting unstructured questions and generating fast, informative responses. While the system can simulate reference interviews and support general information retrieval, it also presents notable limitations, such as producing fabricated citations and lacking access to localized library policies.

Complementing this, (Cox & Tzoc, 2023), in their article “*ChatGPT: Implications for Academic*

Libraries, ” emphasize ChatGPT’s capacity to augment traditional librarian functions. The technology can assist with research discovery, reference services, and academic support, and is viewed as a valuable extension of existing virtual help systems. More importantly, by automating routine inquiries, ChatGPT can enable librarians to focus their expertise on more complex, analytical, and value-added services.

Given this context, the present study aims to explore the adaptation and integration of ChatGPT within Indonesian library services, examining both the technological implementation and institutional readiness. This research focuses on evaluating ChatGPT’s potential to enhance service efficiency, broaden access to information, and reinforce the library’s role as an inclusive, adaptive, and technology-driven learning hub in the 21st century.

Method

This research uses a descriptive qualitative method with a literature study approach to explain in depth how artificial intelligence (AI) is used in libraries. This method was chosen because researchers wanted to understand this topic based on information from various written sources, without the need to collect data directly in the field (Sugiyono, 2017).

In this literature study approach, researchers collected, read, and analyzed various library materials related to the use of AI in libraries. The sources used included journal articles, research reports, scientific books, and other academic documents. All sources were obtained from scientific databases such as Scopus, Google Scholar, DOAJ, and ResearchGate. To find relevant sources, keywords such as: “Artificial Intelligence in Libraries”, “ChatGPT in Library Services”, “AI-based Library System”, and several other terms related to the topic of this research.

Table 2: Addressing Conventional Library Service Challenges with ChatGPT Solutions

Inclusion Criteria	Exclusion Criteria
1. Articles should be written in Indonesian or English.	1. Articles that discuss AI in general with no specific connection to the library field.
2. Published within the time span of 2021 to 2025.	2. Non-scientific articles such as news and mass media.
3. Discuss the application, benefits, and challenges of AI in libraries.	3. Articles that only include the keywords “AI” or “library” but are not relevant to the research focus.
4. Fully accessible and thoroughly researched.	4. Duplicate articles or different versions of the same publication.
5. Originate from accredited journals, scientific proceedings, or scientific research reports.	

Source: Developed by the author based on an analysis of conventional library service limitations and the potential of AI-powered tools (ChatGPT), 2025.

In this study, 5 journals, 2 proceedings, and 2 theses that met the inclusion criteria were analyzed. The articles consisted of empirical studies, literature reviews, and conceptual studies on the implementation of AI in various library services.

Table 3: Research flow

Author	Heading	Year	Result
Prathibha S. N. dan Shipa Rani N. R.	ChatGPT: A Boon to Library Services	2021	ChatGPT has a huge impact in various sectors due to its ability to generate human speech-like text and respond intelligently to questions. As a Large Language Model (LLM), ChatGPT replaces legacy methods by utilizing data from multiple sources in multiple languages and codes. While useful in natural language processing, ethical concerns arise, especially regarding potential misuse by learners. Like any other technology, ChatGPT brings both benefits and risks, depending on how its use is harnessed wisely and effectively.

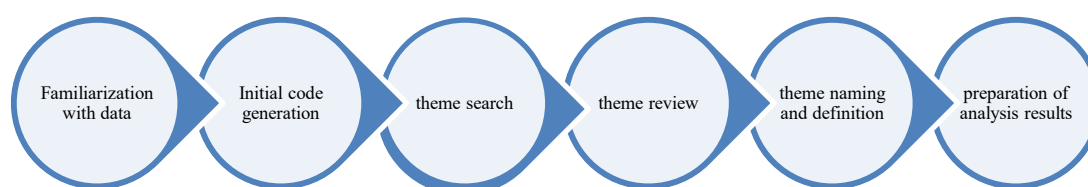
Author	Heading	Year	Result
Shiddiq Sugiono	The Role of Chatbot in Supporting Smart Services in Smart Library	2021	The results stated that there are at least 2 benefits that can be obtained from implementing a chatbot in library information services, namely: personalized information services and integration of cyberspace with the library. In personalized information services, customers can obtain information that suits their needs without being burdened with unnecessary information. As for integrating cyberspace with real life, customers are able to access services without having to come to the location. Efficiency is the key word in utilizing technology to support library services. Further empirical research on chatbots, especially in Indonesia, needs to be done to be able to develop and evaluate the utilization of this technology.
Kartika Puspita Sari, Anis Masruri, dan Desfiana Ramdhani Rosalia	Optimizing Information Retrieval with Artificial Intelligence Technology in Libraries	2023	The results of this study indicate that artificial intelligence in the STIPRAM library is very influential for users so that it can help users and librarians in conducting research and work more easily because information retrieval in the STIPRAM library can work optimally.
Mutia Atika dan Retno Sayekti	Literature review of Artificial Intelligence (AI)-based Library Information System	2023	This research shows that the development of library service systems can utilize advances in AI technology. Cooperation between libraries and AI experts is needed to develop innovations in library services. Future research can focus on the application of AI in predicting users' needs for library collections or improving other services with AI technology. Thus, libraries can remain relevant and provide services that meet the expectations and needs of users in the current information technology era.
Emmanuel Okwu, Ngozi Emmanuel Okwu, dan Bolaji David Oladokun	New Technological Trends And Application in Libraries: An Overview	2024	New technology trends have changed the way libraries operate and serve users, bringing digital resources, online catalogs, virtual services, mobile apps, and data-driven decision-making. These innovations improve information access, user experience and management efficiency. However, challenges such as IT staffing needs, budget constraints, and privacy and security issues remain. Overcoming these requires a proactive approach through training, technology collaboration, and appropriate policies.
Abd. Muis dan Fendy	Application of Information Technology in Libraries	2024	The results of this study can utilize the SLIMS (Senayan Library Management System) application, online-based

Author	Heading	Year	Result
Shiv Kumar dan Puja Dubey	The Role of AI in libraries in Achieving The Goal of Sustainable Development	2025	OPAC (Online Public Access Catalog) and website-based libraries optimally in the library and in library services can provide excellent service to users. Findings show that AI-powered libraries optimize resources, increase inclusivity, and ensure long-term sustainability, making them indispensable for the future of knowledge management and digital learning. Addressing policy, training, and infrastructure gaps is critical to maximizing the potential of AI in library science.

Source: Adapted from various studies on AI and chatbot implementation in library services

The data analysis process was conducted using thematic analysis developed by Braun and Clarke (2006), with the theme of optimizing reference and information services through chatgpt in libraries. The flow used can be seen in the following image:

Figure 1. Thematic Analysis Process: Six Phases by Braun & Clarke (2006)



Source: Adapted from Braun & Clarke (2006)

The following is an explanation of the six stages shown in the image above:

1. Familiarization with the data: Reading and thoroughly understanding the entire document.
2. Generating initial codes: Identifying key segments related to the use of ChatGPT in library services.
3. Searching for themes: Grouping the codes into initial themes, such as service efficiency, AI-based collection management, digital literacy, and ethical issues.
4. Reviewing themes: Ensuring coherence and relevance among the themes in relation to the research focus.
5. Defining and naming themes: Developing clear descriptions and boundaries for each theme.
6. Producing the report: Presenting the synthesized findings in a detailed narrative, supported by relevant quotations and interpretations.

Result and Discussion

Technology Concept

Information technology development has undergone rapid changes in recent decades, impacting various sectors of human life worldwide. This transformation changes how people interact and communicate and affects how information is accessed, processed, and utilized in daily life. These technological advances allow humans to obtain information more quickly, accurately, and efficiently than conventional methods. Today, access to information can be done easily through the Internet, which has become a global infrastructure available almost anywhere. There are no longer time or place restrictions for individuals to search or share information, as the internet network allows for extensive connectivity between various users worldwide (Tam and Robertson 2002).

Technology is the application of new knowledge and tools to create, modify or improve processes, systems or production to solve problems, meet needs or improve human capabilities. It refers

to the direction of innovation, techniques and methods that can facilitate using resources to achieve the desired results. In addition, technology is multidimensional and can be used as a guide for physical tools and machines and for systems, processes, and social aspects related to their development, distribution, and use. Technology is influenced by various factors, such as scientific knowledge, cultural values, economic considerations, and human needs and desires (Okwu, Okwu, and Oladokun 2024).

The use of technology provided by libraries to improve specifically the services of the user centre and facilitate and promoting cooperation between libraries and their users. In addition, with technology, libraries open opportunities for professionals in terms of identifying, collecting, organizing, modifying and conveying information from products and services in various formats and types to be disseminated to the user community, both for requests and anticipations in daily life and online (Funmilayo 2020).

With the development of new technology, library media such as content, information access methods, and others have also changed. Information is accessed through technological systems, which include digital devices, operating systems, digital media, networks, servers, and audio-visual systems (Kate, 2009 (Andrew Bauld 2023)). Digital information in libraries refers to information that has been digitized and stored in the library system. Technology drives the evolution of growing trends that affect how libraries are implemented in terms of vision, strategy, users, and internal procedures.

Libraries improve the quality of service by innovating information systems. One of the innovations that can be applied to library information systems is artificial intelligence, also called artificial intelligence (AI). Artificial Intelligence (AI) systems have the following criteria: 1) functional: the system must be able to perform the functions that have been designed; 2) capable of producing: the system must be capable of being produced by the existing manufacturing process, 3) designable: the design of the system must be conceivable by designers working in their cultural context, 4) marketable: the system must be considered to serve several purposes well enough when compared to competitors' approaches to guarantee the design and its manufacture (Vijay 2023). Artificial intelligence can be applied in library services to adapt the development of today's information technology to the expectations of users (Atika and Sayekti 2023).

An AI system is run by machines with explicit or implicit goals, referring to the reception of inputs and how to generate outputs such as predictions, content, recommendations, or choices that can affect the physical or virtual environment. AI systems rely on several shapeless or formless keys that can be considered inputs. It is also sometimes referred to as an element of the AI value chain. AI systems can now generate or assist with cognitive work, such as creating content (text, program code, visuals, etc.) or making decisions based on complex predictions, recommendations and optimizations. Based on typical use for output, valuable distinctions can be made between the latest Generative AI to generate predictions, optimization or decision-oriented and many designed to create content, such as text, code, photos, videos or voices with natural answers such as humans or prompts. Non-Generative AI relies more on algorithms that describe information directly from vast amounts of data to detect patterns, gather results and support decisions.

Generative AI systems are included in the Large Language Models (LLMs) category, with ChatGPT as a key example of Open AI. ChatGPT or Chat Generative Pre-trained Transformer is a bot text service launched on November 30, 2022. It has gained more than 1 million users and received approximately 96 million monthly impressions. The ChatGPT bot text service is an innovative language processing designed to generate conversational text for various purposes (Andrew Bauld 2023).

The use of ChatGPT can be used in library information systems. ChatGPT can access data by utilizing library services, which can help provide users with more accurate and thorough responses. Rare books, manuscripts and archives are just a few examples of materials often found in libraries but not easily accessible online. ChatGPT can provide specific data sources and information. The use of ChatGPT in libraries is an innovation that can improve search services, information sources, catalogues and development of metadata, content creation, and ethical issues that must be taken into account, including bias and privacy (Prathibha, S. N., & Shilpa Rani 2021).

Utilization of Technology in Libraries

Advances in digital technology have prompted libraries to transform from manual systems to virtual-based services. Libraries' role is no longer limited to storing physical collections but also as a modern, accessible, and responsive information center to user needs. In the digital era, libraries play an active role in providing relevant sources of information while equipping users with skills in accessing

and utilizing information effectively through print and digital collections (Abd. Muis 2024).

In an effort to improve the quality of services, libraries adopt various strategies to organize, manage, and organize information resources to make them more accessible to users. With the help of information and communication technology (ICT), libraries can present information in a more systematic way so that users can search, find, and access information efficiently (Brian 2024). The digitization system also allows libraries to create online catalogues, electronic databases, and digital collections that can be accessed anytime and anywhere.

Along with changes in education and learning methods, libraries also continue to adapt by providing more flexible and widely accessible services. Today, libraries not only serve as physical places that can be visited in person but also as digital libraries that allow users to access various collections and services through the internet (Ramadhani 2024). This is very important in supporting distance learning and meeting the needs of users who are not always physically present in the library.

This change reflects how libraries have transformed into more dynamic and user-oriented institutions. By utilizing digital technology, libraries function as information providers and facilitators in developing people's information literacy. Therefore, in the digital era, libraries must continue to innovate to provide quality services and support science development amid the rapid flow of global information (Tam and Robertson 2002).

In the context of libraries, AI technology has been applied in various operational aspects to improve information management efficiency and provide visitors and users a better experience. One of the most common examples of AI applications in modern libraries is the collection classification system and the management of library metadata. Previously, librarians carried out the process of classification and management of library collections manually, which, of course, required considerable time and effort. However, with AI, libraries can now rely on machine learning technology to automatically group and categorize their collections based on various parameters, such as topics, keywords, or specific types of documents. This process speeds up data processing and improves accuracy in collection management compared to manual methods (Fathulni, Herata, and Nelisa 2024). Thus, access to library collections becomes easier, systematic, and well-organized.

In addition to managing collections, AI also plays an essential role in data analysis related to library services. This technology allows libraries to collect, analyze, and interpret data about information search patterns, book lending preferences, and user engagement levels in various library activities. With AI-based analytics, libraries can better understand user behaviour and needs to design and customize services to be more relevant and aligned with their preferences. For example, one of the AI applications implemented in libraries is a book recommendation system that works similarly to algorithms used by e-commerce platforms or streaming services. The system can suggest books, scientific articles, or other sources of information based on the user's search history and interests, helping them find the resources they need more quickly and efficiently (Tam and Robertson 2002).

In addition, the application of AI is also increasingly widespread in the field of digital information services, such as artificial intelligence-based chatbots that can help answer user questions in real time. These chatbots can provide information about collections, guidelines for using the library system, and help users find literature that suits their needs. With this technology, libraries can provide more responsive and interactive services without being limited by operating hours.

ChatGPT as a library service development

With all its potential, AI has opened up new opportunities for libraries to continue to innovate and improve the quality of services for their users. This technology not only helps in the management aspects of user data collection and analysis but also creates a more personalized, efficient, and satisfying experience in accessing information. Therefore, in this digital era, integrating AI in libraries is a strategic step in answering challenges and meeting the ever-growing need for information.

Digital libraries can use OpenAI ChatGPT, such as chatbot services and virtual assistants. This can improve digital library services because users can help users find information more effectively (Atmoko P. W, Suprihatin 2023).

A study written by (Sari et al., 2023) mentioned that the Library of the Amabarukmo Tourism College Yogyakarta (STIPRAM) has utilized artificial intelligence (AI) technology through WhatsApp-based chatbots to provide information services automatically and in real-time to users. This chatbot can answer common questions related to library operating hours, collections, and regulations without having

to wait for a response from the officer, thus improving service efficiency and 24-hour access to information. The presence of chatbots not only optimizes operations but also allows librarians to focus on more complex tasks. However, response accuracy and user privacy protection remain essential aspects of implementing this technology.

Another study explained that in a survey by Mckie and Narayan in 2019, a chatbot called Lib-bot at the University of Technology Sydney showed how this technology could be used to support library information services. Implementing the chatbot indicates that several libraries have begun to develop innovative technology-based services to improve the quality of services to users (Sugiono 2021).

One of artificial intelligence (AI) implementations in the automation system is an automated notification system through emails sent to users regarding late book returns. In this case, the STIPRAM library system intelligently detects the due date and automatically reminds the user to return the borrowed collection immediately. In addition, the library also implements a flash return system, where users can simply scan the book barcode without the need for direct interaction with officers. This innovation not only speeds up the return process but also improves the efficiency and convenience of library services (Sari et al. 2023). This dynamic occurs due to the integration of various innovations into human life, creating challenges and opportunities that must be faced with a mature understanding. Therefore, awareness of the importance of adapting to technological developments is very crucial in facing this rapidly growing digital era (Okwu et al. 2024).

OpenAI ChatGPT can also be used for collection management. Librarians can use OpenAI ChatGPT to manage library collections and provide information about library collections, such as book status and availability. This information is usually found in the library's OPAC. Gilman, a school librarian, said that AI helps us create better collections when we create order messages. AI can provide us with diversity audits, tell us where we have gaps in our collections in libraries, present usage data to find emerging topics and make better book orders. He can help us with weeding and collection resource allocation (Andrew Bauld 2023).

ChatGPT can support managing events and various programs organized by libraries, not only in information services. Librarians can use ChatGPT as a collaborator partner to make their work more efficient, including helping prepare activity agendas, making announcements, and designing more interactive information literacy programs (Andrew Bauld 2023). For example, a digital literacy program can be used to explain how to use the library's online catalogue (OPAC), assess the credibility of information sources or even research methods that are appropriate for a particular field. With support, libraries can develop more innovative hosting programs that benefit the user community.

The integration of ChatGPT into library services contributes to the advancement of the Sustainable Development Goals (SDGs), particularly Goal 4 (Quality Education). By leveraging AI technologies like ChatGPT, libraries are able to broaden access to inclusive and equitable learning and information resources, including for users with limited access to physical collections. Moreover, this technological adoption aligns with Goal 9 (Industry, Innovation, and Infrastructure) by demonstrating the application of digital innovation in public service delivery. Additionally, ChatGPT supports the reduction of information inequality (Goal 10) and enhances the role of libraries as key institutions promoting transparency and information literacy in line with Goal 16 (Peace, Justice, and Strong Institutions) (Surya Hadi Wijaya & Retno Sayekti, 2024).

According to Kumar and Dubey (2025), the adoption of artificial intelligence in libraries enhances information retrieval capabilities, automates routine operations, and aligns library functions with Sustainable Development Goals (SDGs) such as promoting quality education and fostering innovation. Nevertheless, they stress the importance of addressing ethical concerns, including issues of bias, privacy, and data security, in the implementation of AI technologies. Additionally, the International Federation of Library Associations and Institutions (IFLA) highlights the critical contribution of libraries to achieving the SDGs by ensuring access to information and promoting advanced information literacy (Alp et al., 2019).

Synthesis and Implications of ChatGPT Adaptation in the Context of Indonesian Libraries

The literature reviewed in this study shows a strong consensus on the importance of information technology, especially artificial intelligence (AI), in transforming the role of libraries from mere providers of physical collections to adaptive and user-oriented digital information service centers. Tam & Robertson (2002) and Okwu et al. (2024) agree that technology has erased time and space boundaries in information

access, expanded global connectivity, and demanded libraries to innovate. This idea is reinforced by Funmilayo Racheal (2020) who emphasizes technology as a collaborative tool between libraries and users, bridging the information gap through a proactive approach.

However, other literature such as Atika & Sayekti (2023) and Vijay (2023) more specifically emphasize that technology, in the form of AI, not only offers efficiencies but also entails system design requirements that can be produced, used contextually-culturally, and marketed effectively. This broadens the narrative from mere transformation of function to a concern with the structural and functional readiness of technology in the library context.

When it comes to concrete applications of AI in libraries, various literatures show rich implementation experiences. For example, Fathulni et al. (2024) highlighted the success of machine learning in collection classification and metadata management that was previously manual and slow. While Sari et al. (2023) and Sugiono (2021) provide specific case studies on the utilization of AI chatbots at STIPRAM and University of Technology Sydney as a form of real-time service that improves efficiency and accessibility. This shows that AI, particularly in the form of chatbots such as ChatGPT, serves not only as a technical aid, but also as a robust user service entity.

However, some literature critically reminds the importance of ethical and social aspects in the application of this technology. Prathibha & Shilpa Rani (2021) and Andrew Bauld (2023) highlight the risk of algorithmic bias, lack of transparency, and the need for librarian oversight of the accuracy and reliability of AI responses. This is a critical point in the synthesis: on the one hand, AI boosts service efficiency and relevance; on the other hand, its application must be accompanied by a critical awareness of potential negative impacts on information privacy and fairness.

Furthermore, literature such as Atmoko & Suprihatin (2023) and Kumar & Dubey (2025) link AI utilization in libraries to the achievement of Sustainable Development Goals (SDGs), especially SDG 4 (Quality Education), SDG 9 (Innovation and Infrastructure), and SDG 16 (Resilient Institutions). ChatGPT and similar technologies enable more equitable digital inclusion, evidence-based services, and strengthened capacity of information institutions. This emphasis broadens the analytical framework from functional benefits to the strategic role of libraries in global development.

While most of the literature tends to be optimistic about AI, almost all of them implicitly or explicitly suggest that technology is only a tool - not a substitute for the basic values of the librarianship profession such as ethics, inclusiveness, and critical literacy. In this context, librarians are not just users of technology, but also curators of meaning and controllers of the direction of AI integration in public services.

Conclusion

This study demonstrates that the integration of ChatGPT as part of digital library information systems brings significant innovation in enhancing service efficiency, expanding information access, and strengthening the role of libraries in the digital era. Through a literature study approach, this article contributes by mapping the use of ChatGPT in automating reference services, managing collections, and developing digital literacy programs. The implementation of this technology also aligns with the achievement of the Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education), SDG 9 (Industry, Innovation, and Infrastructure), and SDG 10 (Reduced Inequalities).

For future implementation, a roadmap for ChatGPT development in libraries can be structured into four stages: first, the initial adoption stage through pilot chatbot use for basic reference services; second, the system integration stage with OPAC and collection management systems; third, the advanced adaptation stage involving user training and AI-based information literacy support; and fourth, the evaluation stage focusing on ethics, regulatory frameworks, and user data protection.

To support this implementation, practical recommendations are directed at various stakeholders: librarians are encouraged to enhance their AI literacy to critically manage services; system developers are advised to design modular and adaptive integrations; and policymakers should develop regulations that ensure transparency, ethics, and security in the use of AI. Further research is recommended to empirically examine the effectiveness of ChatGPT implementation in Indonesian library contexts and to evaluate its impact on service quality and user satisfaction.

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References

- Abd. Muis. 2024. "Penerapan Teknologi Informasi Pada Perpustakaan." 3(6):1–13. doi: doi.org/10.59638/jp.v3i6.49.
- Andrew Bauld. 2023. *Mission Critical*.
- Fiona Bradley. n.d.-a. *How Libraries Contribute to Sustainable Development & the SDGs IFLA ALP: Building Better Library Communities*.
- Anon. n.d.-b. *How Libraries Contribute to Sustainable Development & the SDGs IFLA ALP: Building Better Library Communities*.
- Alp, I., Better, B., & Communities, L. (2019). *How libraries contribute to sustainable development & the SDGs ALP 's Objective*.
- Atika, Mutia, and Retno Sayekti. 2023. "Open Access under Creative Commons Attribution NonCommercial Share Alike 4.0 International License (CC-BY-NC-SA) Studi Literatur Review Sistem Informasi Perpustakaan Berbasis Artificial Intelligence (AI) Library Information System Based on Artificial Intelligence (AI): Literatur Review." *Palimpsest: Jurnal Ilmu Informasi Dan Perpustakaan* 14(1):2023.
- Atmoko P. W, Suprihatin, Sukartini. E. 2023. "Implementasi Teknologi Ai (Artificial Intelligence) Dalam Mendukung Tugas Pustakawan Akademik Menuju Transformasi Perpustakaan Digital Melalui Pemanfaatan Openai Chatgpt." *Prosiding Seminar Nasional Pengembangan Perpustakaan Perguruan Tinggi Membangun* 117–31.
- Bawden, D., and L. Robinson. 2020. "The Dark Side of Information: Overload, Anxiety and Other Paradoxes and Pathologies." *Journal of Information Science* 46(5):635–52.
- Brian, Zaky. 2024. "Sosialisasi Penggunaan Online Public Access Catalog Dalam Pengelolaan Digitalisasi Perpustakaan Di Perpustakaan Uin Ar-Raniry Banda Aceh." Universitas Islam Negeri Ar-Raniry.
- Fathulni, Laila, Hagi Herata, And Malta Nelisa. 2024. "Implementasi Teknologi Untuk Meningkatkan Efisiensi Pengolahan Koleksi Di Upt Perpustakaan Universitas Andalas." *Jurnal Humaniora Revolusioner* 8(6):104–11.
- Ferreire, A. A., Q. Moreira, and C. Ribeiro. 2022. "Artificial Intelligence for Digital Libraries: Applications in OCR and Manuscript Restoration." *International Journal on Digital Libraries* 23(2):135–50.
- Funmilayo, Racheal Ayo-Olafare. 2020. "Global Trends and Emerging Technologies in Libraries and Information Science." *Library Philosophy and Practice* (3835):1–13.
- Kumar, Shiv, and Puja Dubey. 2025. "The Role of AI in Libraries in Achieving the Goal of Sustainable Development." 11(3):124–28.
- De la Vega Hernández, Iván Manuel, Angel Serrano Urdaneta, and Elias Carayannis. 2023. *Global Bibliometric Mapping of the Frontier of Knowledge in the Field of Artificial Intelligence for the Period 1990–2019*. Vol. 56. Springer Netherlands.
- Okwu, Emmanuel, Ngozi Emmanuel Okwu, and Bolaji David Oladokun. 2024. "New Technological Trends and Application in Libraries: An Overview." *Seminars in Medical Writing and Education* 3:64. doi: 10.56294/mw202464.
- Prathibha, S. N., & Shilpa Rani, N. R. 2021. "ChatGPT: A Boon to Library Services." *LIS*.
- Ramadhani, Ayu. 2024. "Optimalisasi Digitalisasi Dan Akses Terbuka Untuk Koleksi Di UPT Perpustakaan Universitas Islam Negeri (UIN) Datokarama Palu."
- Rathinasabapathy, G., and S. Al-Daihani. 2020. "Artificial Intelligence Applications in Academic Libraries: A Review of Recent Developments." *Library Hi Tech News* 37(9):10–15.
- Sari, Kartika Puspita, Anis Masruri, and Desfiana Ramdhani Rosalia. 2023. "Optimalisasi Temu Kembali Informasi Dengan Teknologi Kecerdasan Buatan Di Perpustakaan." *JIPi (Jurnal Ilmu Perpustakaan Dan Informasi)* 8(2):349. doi: 10.30829/jipi.v8i2.17775.
- Sugiono, Shiddiq. 2021. "Chatbot Sebagai Smart Service Di Library." 23(3).
- Sugiyono. 2017. *Metode Penelitian Kuantitatif, Kualitatif, Dan R&D*. Bandung: Alfabeta CV.
- Alp, I., Better, B., & Communities, L. (2019). *How libraries contribute to sustainable development & the*

SDGs ALP 's Objective.

- Cox, C., & Tzoc, E. (2023). ChatGPT: Implications For Academic Libraries. *ACRL TechConnect*, march 2022.
- Ningrum, A. R., Saputra, B. A., Mahardika, Y., & Puspita, N. (2024). Analisis Penerapan Chatgpt Sebagai Alat Bantu Akademik Dalam Meningkatkan Efisiensi Dan Kreativitas Mahasiswa. *Seminar Nasional Amikom SURAKARTA (SEMNAS) 2024, November*, 1376–1384.
- Oktavia, Y., & Frinaldi, A. (2024). Aplikasi Isumbarmambaco : Inovasi Budaya Kerja dalam Pelayanan Publik Berbasis Digital di Dinas Kearsipan dan Perpustakaan Provinsi Sumatra Barat. *Journal of Education Research*, 5(4), 5874–5885.
- Qardafil, R. (2023). *Peningkatan Efektivitas Kualitas Chatbot Jala Tech Melalui Implementasi Chat GPT, Auto-GPT, dan Langchain* [Universitas Islam Indonesia]. <https://dspace.uui.ac.id/handle/123456789/48582%0Ahttps://dspace.uui.ac.id/bitstream/handle/123456789/48582/20523244.pdf?sequence=1&isAllowed=y>
- Rusdiana, J. (2025). Transformasi Sistem Informasi Digital dalam Mewujudkan Layanan Prima: Studi Kasus Perpustakaan Sekolah Terakreditasi Di kota Banjarmasin. *Pustaka Karya: Jurnal Ilmiah Ilmu Perpustakaan Dan Informasi*, 13(1), 75–91. <https://www.ncbi.nlm.nih.gov/books/NBK558907/>
- Sugiyono. (2017). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta CV. <https://massugiyantojambi.wordpress.com/2011/04/15/teori-motivasi/>
- Suharmawan, W. (2023). Pemanfaatan ChatGPT Dalam Dunia Pendidikan. *Education Journal: Journal Education Research And Development*, 7(2), 158–166.
- Surya Hadi Wijaya, & Retno Sayekti. (2024). Analisis Tingkat Ketergunaan Aplikasi Perpustakaan Universitas Quality Dalam Mendukung Tujuan Pembangunan Berkelanjutan (SDGS). *Jurnal Literasi Perpustakaan Dan Informasi UHO: Jurnal Penelitian Kajian Perpustakaan Dan Informasi*, 4(3), 157–168. <https://doi.org/10.52423/jlpi.v4i3.18>
- Thaharah, A., & Batubara, A. K. (2023). Peran SASUDE sebagai gerakan swadaya literasi anak dalam membangun Sustainable Development Goals. *Satwika : Kajian Ilmu Budaya Dan Perubahan Sosial*, 7(1), 246–262. <https://doi.org/10.22219/satwika.v7i1.25599>
- Trinova, Z., & Zen, W. L. (2025). Studi Literatur Perbandingan Inovasi Dalam Pembelajaran Berbasis Artificial Intelligencess di Indonesia Dan Thailand. *Innovative: Journal of Science Research*, 5(2), 1396–1409.
- Yang, S. Q. (2024). ChatGPT: Unleashing the Power of Conversational AI for Library Reference Services. *International Journal of Librarianship*, 9(1), 109–115. <https://doi.org/10.23974/ijol.2024.vol9.1.375>
- Tam, Lawrence W. H., and Averil C. Robertson. 2002. “Managing Change: Libraries and Information Services in the Digital Age.” *Library Management* 23(8/9):369–77. doi: 10.1108/01435120210439843.
- Tredinnick, L. 2017. “Artificial Intelligence And The Internet of Things: The Future of Services for The Information Profession.” *Business Information Review* 34(1):37–41.
- Vijay, Frank. 2023. “Applicability of Artificial Intelligence in Different Fields of Life.”