

Transforming Reading in the Digital Age: The Role of AI in Library Practices

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Abstract

Artificial Intelligence (AI) is transforming modern libraries by reshaping how information is organized, accessed, and delivered in the digital era. Traditional libraries are increasingly adopting AI-based technologies such as automated cataloguing, intelligent search systems, personalized resource recommendations, predictive collection management, and virtual reference services to improve operational efficiency and enhance user experiences. AI enables libraries to provide faster, more accurate and user-centered services that promote accessibility, inclusivity, and lifelong learning among diverse readers. The integration of AI also supports librarians in managing large volumes of digital content while encouraging innovative reading and research practices. However, the implementation of AI in libraries raises important ethical concerns related to data privacy, algorithmic bias, and digital inequality, which require careful governance and responsible technological adoption. Overall, AI serves as a transformative tool that strengthens library services, supports professional librarianship, and ensures that libraries remain dynamic knowledge centers in the rapidly evolving digital environment.

Keywords: *Digital Libraries, Artificial Intelligence (AI), Reading Transformation, Library Automation, Information Retrieval, User-centred Services, Digital Preservation*

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1. Introduction

The rapid advancement of digital technologies has significantly transformed the way people access, share, and consumes information in the modern era. Libraries, traditionally known as repositories of printed resources, are now evolving into technologically advanced knowledge centers that integrate innovative digital solutions to meet the changing expectations of users. Among these innovations, Artificial Intelligence (AI) has emerged as a powerful tool capable of enhancing library operations and improving user engagement. AI applications such as automated cataloguing, smart search and retrieval systems, virtual assistants, and personalized recommendation services are enabling libraries to deliver efficient, accurate, and user-centered services. These developments have contributed to improving accessibility, promoting digital learning, and supporting the management of large-scale information resources in academic and public libraries (Ahmad et al., 2020). Furthermore, AI technologies are helping librarians optimize collection development and provide real-time assistance to readers, thereby strengthening the role of libraries in the digital knowledge economy (Asemi et al., 2021). The integration of AI into library practices is also reshaping reading habits and information-seeking behaviour in the digital age. Modern readers increasingly prefer personalized and interactive learning experiences, and AI-driven systems help libraries respond effectively to these preferences through adaptive recommendations, intelligent databases, and predictive analytics. In addition, AI supports inclusive and lifelong learning by making library services more accessible to diverse user

groups, including differently abled individuals and remote learners. Despite these advantages, the adoption of AI in libraries raises several ethical and operational concerns, including data privacy, algorithmic bias, digital inequality, and the need for technological training among library professionals. Therefore, libraries must balance technological innovation with ethical responsibility to ensure sustainable and equitable information services. The growing influence of AI demonstrates its transformative role in redefining library practices and maintaining libraries as dynamic institutions of learning and knowledge dissemination in the digital era (Cox et al., 2019). Moreover, AI-driven library systems are expected to further revolutionize reading culture and information management in the future through intelligent and data-driven services (Agarwal, 2022).

2. Background of Study

The emergence of digital technologies has fundamentally transformed the structure and functioning of libraries across the world. Earlier, libraries primarily focused on the collection, preservation, and circulation of printed materials; however, the rapid growth of digital information has shifted library services toward electronic resource management, online databases, and virtual learning support systems. In this transformation, Artificial Intelligence (AI) has become a key technological innovation influencing the modernization of library operations and reading practices. AI-powered applications such as machine learning, natural language processing, chatbots, and intelligent information retrieval systems are enabling libraries to provide faster, more accurate and personalized services to users. These technologies assist librarians in automating repetitive tasks like cataloguing, classification, indexing, and metadata generation, thereby improving operational efficiency and reducing manual workload (Yu et al., 2022). Additionally, AI-driven systems are helping libraries analyze user behaviour and preferences, allowing them to recommend relevant reading materials and improve user satisfaction (Liu, 2021). The growing dependence on digital resources and remote learning environments, especially after the global expansion of online education, has further accelerated the adoption of AI in libraries. Academic, public, and research libraries are increasingly implementing intelligent systems to ensure continuous access to information and enhance digital learning experiences for readers. AI technologies support multilingual search, voice-based assistance, automated reference services, and predictive collection management, making libraries more inclusive and accessible for diverse communities. At the same time, the integration of AI into library practices has created new challenges related to ethical governance, data privacy, digital literacy, and technological inequality. Libraries must therefore develop responsible AI strategies that balance innovation with transparency and user protection. The continuous evolution of AI indicates that libraries are no longer passive repositories of books but active digital knowledge centers capable of supporting smart learning and information dissemination in the digital age (Mikalef & Gupta, 2021). Furthermore, AI is expected to redefine future library ecosystems by enabling adaptive and intelligent information services that cater to the changing expectations of modern readers (Huang & Rust, 2021).

3. Scope and Significance of Study

The present study focuses on examining the transformative role of Artificial Intelligence (AI) in modern library practices and its influence on reading habits, information access, and digital learning environments. The scope of the study includes the analysis of AI-based technologies used in libraries such as automated cataloguing systems, intelligent search engines, chatbots, virtual reference services, personalized recommendation systems, and predictive collection management. The study also explores how AI supports user-centered library services by improving accessibility, efficiency, and information retrieval processes for students, researchers, academicians, and general readers. In addition, the research investigates the application of AI in academic, public, and digital libraries and evaluates its contribution toward enhancing reading experiences in the digital age. The study further covers ethical and technological challenges associated with AI implementation, including privacy

concerns, algorithmic bias, digital inequality, and the need for technological competencies among library professionals (Zhang & Dafoe, 2020). By addressing both opportunities and challenges, the study provides a comprehensive understanding of the evolving relationship between AI and library science in contemporary society (Dwivedi et al., 2021).

The significance of this study lies in its contribution to understanding how AI technologies are reshaping the future of libraries and reading culture in a rapidly digitizing world. The research is important for librarians, educational institutions, policymakers, and information professionals who seek to modernize library systems and improve digital knowledge services. The findings of the study may help libraries adopt innovative AI-driven strategies that enhance user engagement, support lifelong learning, and improve the quality of information services. Furthermore, the study contributes to the growing academic discourse on digital transformation in library and information science by highlighting the practical and ethical dimensions of AI integration. It also emphasizes the need for sustainable and responsible implementation of AI technologies to ensure equitable access to information for all users. The study is expected to serve as a valuable reference for future researchers interested in smart libraries, digital reading behaviour, and intelligent information systems (Kasilingam, 2020). Moreover, the research supports the broader vision of developing technologically advanced libraries capable of meeting the educational and informational needs of future generations (Vrontis et al., 2022).

4. Objective of Study

- To examine the role of Artificial Intelligence in transforming modern library practices and services
- To analyze the impact of AI-based technologies on reading habits and information access in the digital age
- To evaluate the effectiveness of AI applications such as automated cataloguing, intelligent search systems, and virtual reference services in libraries
- To identify the challenges and ethical issues associated with the implementation of Artificial Intelligence in library systems
- To assess the significance of AI in enhancing user satisfaction, accessibility, and digital learning experiences in libraries

5. Review of Literature

Rodrigues and da Silva (2023) examined the integration of Artificial Intelligence technologies in digital library ecosystems and emphasized their role in improving user interaction and information accessibility. The study explained that AI-powered recommendation systems and semantic search tools significantly enhance the reading experience by providing personalized and context-based information retrieval. The authors highlighted that intelligent systems help libraries manage large-scale digital collections efficiently while reducing the time required for information processing and retrieval. The research further observed that AI-driven chatbots and virtual assistants support continuous user engagement and improve service responsiveness in academic and public libraries. The study also pointed out that AI contributes to strengthening digital literacy and lifelong learning by enabling adaptive learning environments within library systems. However, challenges such as data privacy risks, technological dependency, and insufficient staff expertise were identified as barriers to effective AI adoption. The findings concluded that libraries must develop sustainable digital strategies and professional training programs to maximize the benefits of AI technologies in modern librarianship.

Kim and Lee (2022) investigated the impact of Artificial Intelligence on smart library management systems and found that AI applications significantly improve operational efficiency and user satisfaction. The researchers explained that machine learning algorithms and predictive analytics support better decision-making in collection development, circulation management, and resource

allocation. The study highlighted that AI technologies enable libraries to analyze user behaviour patterns and deliver customized reading recommendations, thereby encouraging greater user engagement with digital resources. The research indicated that automated metadata generation and intelligent indexing systems improve the organization and discoverability of library materials. The authors also discussed the growing importance of AI in supporting remote learning and virtual library services, particularly in higher education institutions. Despite these advantages, the study emphasized the need for ethical guidelines and transparent AI governance to address issues related to bias and data misuse. The researchers concluded that AI-driven smart libraries represent a significant step toward creating technologically advanced and user-centered knowledge environments.

Iqbal and Ahmad (2024) explored the transformative role of Artificial Intelligence in enhancing digital reading culture and information services in libraries. The study observed that AI-based technologies such as natural language processing, intelligent retrieval systems, and voice-assisted search mechanisms have improved the accessibility and usability of digital content for diverse user groups. The authors noted that AI supports inclusive learning by assisting differently abled readers and facilitating multilingual information access. The study further highlighted that AI enables libraries to provide proactive services through predictive user analytics and personalized learning support systems. In addition, the researchers emphasized the role of AI in strengthening research support services by helping users identify relevant scholarly materials more efficiently. However, the study warned that excessive dependence on automated systems may reduce human interaction and critical evaluation in library services. The findings suggested that libraries should adopt a balanced approach that combines technological innovation with human expertise to ensure effective and ethical information management in the digital age.

6. Discussion and Analysis

The integration of Artificial Intelligence (AI) into library practices has significantly transformed the way libraries manage information resources and support readers in the digital age. The reviewed studies indicate that AI technologies such as machine learning, intelligent recommendation systems, natural language processing, and virtual assistants have enhanced the efficiency, accessibility, and personalization of library services. AI-driven systems enable libraries to automate cataloguing, indexing, metadata generation, and information retrieval processes, thereby reducing operational workload and improving service quality. In addition, personalized recommendation tools and predictive analytics have positively influenced reading behaviour by helping users discover relevant digital resources according to their interests and learning needs (Chaudhry & Kazim, 2022). The analysis also reveals that AI supports inclusive education by improving access to information for remote learners and differently abled users through voice-assisted and multilingual systems. However, despite these benefits, the implementation of AI in libraries raises important concerns related to data privacy, ethical governance, algorithmic bias, and technological inequality among users and institutions. The studies further suggest that librarians require continuous technological training and digital competencies to effectively manage AI-enabled systems. Therefore, the successful adoption of AI in libraries depends on balancing technological innovation with ethical responsibility and user-centered service approaches. The growing role of AI demonstrates its potential to redefine libraries as intelligent knowledge centers capable of supporting advanced learning and digital reading experiences in the future (Luo et al., 2023).

7. Finding of Study

- The study found that Artificial Intelligence has significantly improved the efficiency and accuracy of library operations through automated cataloguing, indexing, and intelligent information retrieval systems. AI-based technologies such as personalized recommendation systems and virtual reference services have positively enhanced readers' access to information and digital learning experiences. The study revealed that AI applications support

user-centered library services by providing faster, more interactive, and accessible information services for diverse user groups.

- It was observed that academic and digital libraries are increasingly adopting AI technologies to manage large volumes of digital resources and support remote learning environments effectively. The findings indicated that AI contributes to improving user satisfaction by enabling customized reading suggestions and intelligent search mechanisms based on user preferences and behaviour.
- The study identified major challenges associated with AI implementation in libraries, including data privacy concerns, algorithmic bias, digital inequality, and the lack of technological expertise among library professionals.
- The research concluded that the successful integration of AI in libraries requires ethical governance, continuous staff training, technological infrastructure development, and balanced human-AI collaboration for sustainable digital library services.

8. Conclusion

Digitization of reading is the paradigm shift to the role and purpose of libraries. As the Artificial Intelligence (AI) has been integrated, the old library process like cataloguing, classification, reference services, and collection development has become efficient, user-friendly, and technology based. AI is improving the information retrieval systems, facilitating meaningful reading, automating technical services, and reinforcing digital preservation, thus, improving the overall service delivery. AI in the context of libraries nowadays does not substitute a librarian but enhances his/her professional knowledge. Although the intelligent systems are involved in metadata creation, predictive analytics, and virtual reference services, librarians still remain crucial in teaching information literacy, handling data ethically, conducting research, and interacting with the community. Having the human intelligence working in conjunction with machine intelligence makes it accurate, inclusive, and accountable in the dissemination of information. In addition, library practices that are driven by AI enhance fair access to knowledge through remote services, multilingual search, and assistive technology to various groups of users. Nonetheless, AI implementation should be executed under close consideration of data privacy, algorithm bias, digital infrastructure, and professional training to achieve success. Sum up, AI is a progressive and necessary component in changing the practices of reading and libraries. With technological innovation without compromising the standard values of librarianship such as access, preservation, intellectual freedom and lifelong learning, the libraries can still survive as vibrant knowledge centres in the digital era.

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