



APPLICATION OF ARTIFICIAL INTELLIGENCE IN LIBRARY TECHNOLOGIES: A LITERATURE REVIEW

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Abstract: The field of artificial intelligence (AI) has opened up new opportunities for advancing research across all fields. The future looks bright because artificial intelligence technologies are present in every aspect of the workplace. The offering and utilization of library information resources, as well as the achievement of the library's aims and objectives, have benefited greatly from the application of AI. Due to the many uses of AI in libraries, like book distribution and filing, librarians must be creative thinkers in order to remain relevant in their roles. Its implementation opened up plenty of new options for the library, including the ability to link electronic and physical resources and to associate video assistance with specific materials and items. This paper covered a few AI components, although there is debate over the likelihood, professional work will not be immune to the effects of artificial intelligence (AI). This conceptual study examines the possibility that various AI strategies will be used by libraries.

Key words: Artificial Intelligence (AI), Libraries, Technology

Introduction: Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think and act like humans. It involves the development of algorithms and computer programs that can perform tasks that typically require human intelligence such as visual perception, speech recognition, decision-making, and language translation. AI has the potential to revolutionize many industries and has a wide range of applications, from virtual personal assistants to self-driving cars.

The purpose of this paper is to define artificial intelligence (AI) for librarians by looking at broad definitions, breaking down the various technologies that fall under this category, defining use cases according to different areas of library operations, and finally considering the implications for the field, particularly with regard to equality, diversity, and inclusion. This conceptual article, which targets librarians interested in AI from a strategic rather than a technical perspective, is based on an exploratory literature review.

Intelligence: The ability to learn and solve problems (Webster's Dictionary).

Why is artificial intelligence important for libraries?

AI may help librarians and their clients in a number of ways, including enhancing the effectiveness and precision of library data, raising the relevance and variety of services and resources, increasing information access, and fostering creativity and learning. AI can help librarians by eliminating manual and repetitive work, minimizing data mistakes and inconsistencies, offering personalized recommendations to users, enabling anytime, anywhere library interactions, and facilitating the discovery of new information.

AI and Libraries

Tanaji and Rahul (2021) opined that we all aware of development of latest technology in every field, and the library science are not behind. This article provides an overview of the use of artificial intelligence (AI) in library services, including applications such as Expert Systems in Reference Services, Technical, Indexing, Acquisition and its application in Natural Language Processing, Pattern Recognition and Robotics in library activities. Cataloging, user recommendation systems, and data analysis. The article also examines the potential benefits and challenges of using AI in library services, and discusses future directions for research in this area. In this research paper the benefit and demerit of artificial intelligence are given.

The study of Chhaya and Ravindra (2020) explored that it is necessary to understand the advantages and disadvantages of Artificial Intelligence and machine learning for better user and its application in Libraries and Information Centers. AI is impacting the way information is processed and searched for and information professionals will be able to use these exciting new technologies to enhance their services and help users find and access specific information more easily and quickly. Library and Information centers will get benefits by the development of the efficient expert system for technical services as well as Information processing and management.

Ajani (2022) was defined Artificial Intelligence (AI) for librarians by examining general definitions of AI, analysing the umbrella of technologies that make up AI, defining types of use case by area of library operation, and then reflecting on the implications for the profession, including from an equality, diversity and inclusion perspective. The paper is a conceptual piece based on an exploratory literature review, targeting librarians interested in AI from a strategic rather than a technical perspective. Five distinct types of use cases of AI are identified for libraries, each with its own underlying drivers and barriers, and skills demands. They are applications in library back-end processes, in library services,

The research findings of Azimi et al. (2021) indicate that artificial intelligence will play a role in acquisitions, organization, search on databases, reference, book circulation, information retrieval, planning and design and development of the library, and more extensively employed in public services and technical services compared to the library management services.

Kaser (2023) article offers information on various topics related to technology in libraries. These topics include web design best practices, the use of generative AI in library and educational settings, utilizing data for sustainable job searching, and addressing library network security concerns, such as illicit internet activities by patrons.

Knowledge exchange

Kaijun et al. (2019) in their study found that under the impact of artificial intelligence, the education system will change. The status of the library as a social education, learning center, knowledge center and communication center will be more important, and the library can obtain a broader development space. The introduction of artificial intelligence technology in libraries is not intended to replace librarians, but to enrich and enhance knowledge exchange and interpersonal interactions. Therefore, libraries should also change their minds in the application of artificial intelligence. They should embrace artificial intelligence in a more positive attitude and contribute to the activation of library communication functions and service efficiency.

Ajakaye (2021) discovered in his study that Artificial intelligence (AI) has brought about new prospects for expanding research in all areas. The presence of artificial intelligence technologies in all spheres of work has made the future promising. The application of AI has contributed immensely to the provision and use of library information resources and has helped to achieve the goals and objectives of the library. Librarians need to be innovative in their thinking to stay relevant in their jobs because AI has found numerous applications in libraries ranging from book filing to book delivery. Its application brought about several new possibilities in the library such as connecting physical library information resources and electronic resources, and also associating video help with physical information materials and objects. The chapter discussed some components of AI, library services it can be applied to, the benefits of its application, as well as the challenges libraries face in the application of artificial intelligence in the library.

Cox (2023) focused in his paper the application of AI to knowledge discovery. Eleven different potential approaches libraries might adopt to such AI applications are analyzed and their likelihood evaluated. Then it is considered how a range of internal and external factors might influence the adoption of AI. In addition to reflecting on the possible impact of AI on librarianship the paper contributes to understanding how to synthesize the competencies literature with the theory of the profession and presents a new understanding of librarians as hybrid.

ChatGPT

Richard (2023) the results of this study have significant implications for library cataloging. The ability to accurately create descriptive records using ChatGPT could significantly reduce the time and resources required for copy cataloging; this could free up library workers to focus on other important tasks, such as collection development, user services, and metadata management. Moreover, ChatGPT could improve the accuracy and consistency of records in library catalogs. As ChatGPT follows established cataloging rules, records created by the model are less likely to

contain errors or inconsistencies; this could lead to improved search and discovery experiences for library users, as well as better interoperability between library catalogs and other systems.

Brady and Ting (2023) in their recent research has examined the potential of ChatGPT in the library context. Lund and Wang discuss the implications of ChatGPT for libraries and the academy. According to their findings, ChatGPT can enhance library search systems' accuracy and effectiveness by automatically generating cataloging and metadata for library resources, such as book titles and descriptions. However, they also note the potential ethical and legal implications of using ChatGPT. As ChatGPT draws on publicly available material, it may include copyrighted content, necessitating careful evaluation of AI-generated content and coordination with the copyright holder.

James and Filgo (2023) examined The ACRL Framework for Information Literacy for Higher Education is open-ended enough for us to try new things in our teaching, explore new tools and new ways of helping students to understand the information in the world around them. These are just a few ways that we see how the Framework addresses ChatGPT and other generative AI tools. When we first were looking at this issue, we took a highlighter to the Framework document and made several dozen connections, and we're sure that's not all. In looking at these tools through the lens of the Framework, we can see both the promise and the pitfalls.

AI and Electronic resources

Harcourt et al. (2007) discovered in their study that the explosive growth of remote access electronic resources (e-resources) has added to the workload of libraries' cataloging departments. In response to this challenge, librarians developed various ways of providing access to electronic collections, but few dealt with the processing of free remote access e-resources, such as electronic books, Web sites, and databases.

Marshall (2023) study shows that AI technologies will impact libraries in multiple ways (user expectations, new capabilities in products and services provided by library vendors, and new AI-based services created directly by libraries). Library discovery tools will likewise need to evolve. In an earlier phase of the internet, the initial generation of web-based online catalogs that seemed complex and nonintuitive to many users was succeeded by a new generation of library discovery services with simpler interfaces, more-powerful keyword search engines able to deliver relevancy-ranked results, and faceted navigation. While those discovery interfaces have evolved considerably, libraries will benefit from a new phase of enhancement of these services that will bring them up-to-date with current expectations and take advantage of now widely available AI technologies.

Hosseini and Holmes (2023) Libraries play a central role on campus and will remain an indispensable partner and catalyst for universities' research and educational endeavors. Therefore, it is no surprise that libraries are actively guiding the consideration and use of generative AI on their campuses. On this journey, libraries will develop strategies to responsibly leverage generative AI technology while carefully managing risks. Generative AI is evolving at a rate rarely seen

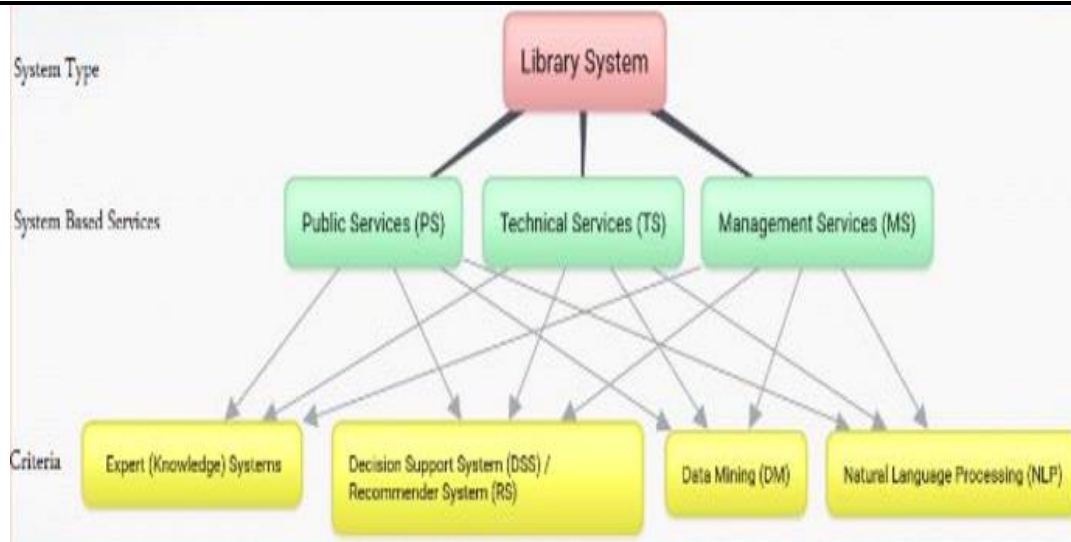
before, making it difficult to anticipate every challenge and develop comprehensive and consistent policies in response. By sharing different perspectives across different roles, geographies, and types of libraries, we can learn from one another, adjust strategies and services, and inspire new partnerships and opportunities for generative AI and other technologies to support and advance the work of our libraries.

AI and Academic libraries

This study examined the perspectives of librarians on the awareness and readiness of academic libraries to integrate artificial intelligence (AI) for library operations and services in Nigeria. Six libraries were drawn from the six geopolitical zones in Nigeria. An open-ended questionnaire posted to the respondents through the mail was used for data collection. Collected data was analyzed using thematic analysis. The findings reveal that the Nigerian academic libraries are aware of the integration of AI systems in libraries and how it is now being adopted and used in many academic libraries around the globe. However, this is not so in the Nigerian context. The findings also reveal that the librarians have mixed feelings about the readiness of academic libraries to integrate AI systems into library operations and services (Ajani et al.,2022).

Cox et al.(2019) paper is one of the first to analyse a substantial body of empirical data about perceptions of how the latest wave of AI is likely to affect academic libraries, the services they deliver and the territories they occupy. The analysis has combined the views of a number of participants, with varying views, to construct an overall picture. Even so, it is clear from the literature that there is a wider picture still, which is only beginning to emerge. With the growing prominence of AI in current governmental policies and increasing scrutiny of the strategies of the search/social media giants, it is highly likely there will in the immediate term continue to be intensive debate and activity around AI in many countries.

The investigation of the applications of Artificial Intelligence (AI) in the university libraries of Pakistan explored key factors that influence implementation of AI applications including highly integrated technological infrastructure, funding/cost associated with AI, collaboration between AI experts and professionals, and library users' feedback. The major identified challenges were the requirement of a highly networked and integrated environment, lack of budget, high cost of AI technologies, and lack of staff expertise Asim et al. (2023).



Asemi's Library System Development Assessment Model in using AI

Conclusion

Few AI technologies that are particularly relevant to libraries have been discussed in this study, along with some potential solutions for advancing the development of intelligent library systems. Finding a point of agreement between the ideas that AI will drastically transform libraries shortly and the idea that it won't have much of an impact is crucial. AI provides us with a powerful toolkit, particularly when paired with traditional and other cutting-edge computing techniques. But learning how to use such tools and applying them effectively to create truly valuable intelligent systems won't be simple.

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