International Journal of Information Resource Management (IJIRM)
Volume 3, Number 3 (2026)
E- ISSN: 1118-7786

ARTIFICIAL INTELLIGENCE FOR LIBRARY SERVICES IN NIGERIAN UNIVERSITIES: ITS POTENTIAL BENEFITS AND SET-BACKS

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Abstract

This study examined the application of Artificial Intelligence (AI) for library services in Nigerian Universities. It adopted the qualitative and content analysis research methods to evaluate the issues at stake. It identified the areas of application in library services delivery, and highlighted the potential benefits and challenges. Findings reveal that AI could benefit the services of libraries in the areas of Acquisitions, knowledge organisation, circulation, reference services, serials management, etc. The challenges to the services provision of the library were equally highlighted.

Keywords: Artificial Intelligence, Library services, Nigerian Universities

Introduction

The advent of technology in our library activities has improved the library services and customer experience. It has received a huge attention recently. Artificial Intelligence (AI) is the application of the algorithms and computational models to stimulate intelligent behavior, allowing machines to learn from data and make judgments where necessary. It

has a wide range of applications in all the libraries. Artificial intelligence being part of the institutional quality, the push for investment and innovations in new technologies, training and/ or retraining is becoming the trend, especially in advanced climes where strict observance of quality, and for many it is a significant development that is revolutionizing library operations and services. (Adebayo, Bello, Kayode and Yusuf 2022). Saklofske)(2011) states that Artificial Intelligence (AI) is the capability of a device to perform functions that are normally associated with human intelligence such as reasoning and optimization through experience.

aI can also be said to be the intelligence of machines. According to Abdullahi (2023) Artificial Intelligence is the ability of a digital computer or computer-controlled robot to execute tasks often associated with intelligent beings.

It has the potential to enhance library services by increasing library activities efficiently and effectively, and improving the availability of library resources. For instance, it can assist the library clientele anytime any day by answering frequently asked questions and directing them on how to locate relevant materials. It also assists librarians in evaluating user activities, discover their patterns, and make personal recommendations. AI also can be used to automate repetitive processes like cataloguing, giving the librarians an additional time to carry out some more difficult work and assignments.

. Omali, et. al,. (2025), are of the opinion that artificial intelligence suggests the image of a powerful computer, equipped with advanced processing abilities, including

adaptable behavior such as incorporating sensors and other features that mimic human cognition and capabilities, thereby enhancing its interaction with people.

Artificial intelligence means a field of science that has to do with computer building and machines that can reason, learn and act in such a manner that would not require human intelligence or include data whose scale exceed what humans can analyze. Artificial intelligence is a complex and dynamic phenomenon. The technology conjures up different meanings depending on what it is used for. AI could be said to mean the ability of a machine to display human-like capabilities like reasoning, planning and creativity. AI could also be defined as a branch of science that stimulates intelligent behavior into computers to serve complex problems better than humans (Konwar, (2024).

Artificial intelligence is a replica of knowledge obtained through the use of computer peripherals and programmed to become actual and valuable to mankind due to its technical applications and usage (Emezaiwakpor, Idiodi & Urhiewhn, 2023). Frankenfield (2021) is of the view that AI is the stimulation of human intelligence, even as the High- level Expert Group (2019), described AI as a system that displays intelligent behavior by analyzing the environment, taking action with some degree of autonomy to achieve specific goals.

These definitions encompass all applications we currently qualify as AI and at the same time provide scope for future changes. Alongside advanced machines, learning and deep learning technologies, this definition also allows for other technologies including the more traditional approaches. (Sheikh & Schrijivers, 2023).

Artificial intelligence is referred to as computer manipulated system that assists in executing human related intelligence tasks. It performs through programming language to mimic human actions. We have several types of artificial intelligence powered technological tools that assists in teaching, virtual learning environments and natural language processing. Information

Krantz, Arni, Rao and Rao (eds.) (2013), state that Artificial Intelligence is the field of Computer science concerned with developing machines that behave in a way that would be considered intelligent if observed in humans.

Management (IM) in library is a systematic process that involves the collection, organization, storage, distribution, archiving, and preservation of information within an organization. It encompasses various forms of data and knowledge, including electronic and physical documents, audio files, videos, and more. (Detlor, 2023). Arua opined that the librarians must identify user communities' needs and adopt proper strategies to enhance efficiency in tertiary education. On a similar note, Uwachie, (2018) opined that effective information management is eminent for ensuring that libraries provide meaningful, reliable, and usable information when needed. This aligns with the broader goal of improving organizational effectiveness by managing information as a resource, thereby impacting more in the library navigation to artificial intelligence tools. The goal of information management is to ensure that the right information reaches the right people at the right time to support decision-making processes and business operations.

Artificial intelligence is transforming the educational activities by improving the accessibility, engagement, and the quality of teaching and learning experience globally. AI-driven technologies, such as intelligent tutorials, adaptive learning systems, and virtual assistants, are widely used in higher education. The idea of artificial intelligence (AI) and its possible uses in the library settings are examined by Banerjee (2023). His work emphasizes AI's potential as a professional tool for activities like acquisition, indexing, and reference services in libraries, while also highlighting its benefits and drawbacks. Similarly, Barki (2022) explored the revolutionary potential of AI in libraries, stressing the application of visual reality to facilitate immersive learning experience, intelligent systems for reference services and robots for book research and shelf maintenance.

From these definitions, it is clear that artificial intelligence is the result of enhancements in computers, computer technologies, machines and information communication technologies, allowing computers to perform functions that are almost human like.

Mckie and Narayan (2019) explored the importance of integrating librarians into the chatbot development and the necessity of working together with tech developers to establish a supportive learning environment in the supportive learning environment. In the same Nein, Cox et al (2019) determined that artificial intelligence (AI) is a crucial field that needs serious consideration in all field, including academic libraries. The basic information on library services and facilitates can be delivered via a variety of channels, includes simple

chats, extended chart, video conferencing, emails, FAQS, guided tours, Ask a librarian services, web forms, and chat bots. Furthermore, virtual reference tools, like chatbots, are critical for libraries since Chabots integration is cost effective and simple, allowing libraries to improve their information offerings. The integration of artificial intelligence technical issues in education is hindered by several challenges such as, inadequate infrastructure, digital literacy, and technical issues.

Efforts should therefore, be made to prioritize investments in AI infrastructure, Such as high-speed internet and cloud-based learning management systems, to facilitate seamless AI integration for library service:

Al has been increasingly integrated into library service, transforming how information is accessed, managed, and delivered.

The following are some key areas that Al improves library services:

Cataloguing and metadata, Recommendation Systems, Virtual Assistants and chatbots, Digital Achieves and Preservation, Predictive Analytics, Natural Language processing (NLP) for Search. Users can as well access materials they need in their preferred language. The integration of Al into library operations grows, enhancing how users interact with information and how libraries manage their numerous collections effectively and efficiently. This technology enhances the role of libraries in education, research and community engagement. (konwor, 2024)

Potential benefits of AI application to library services

Al offers several benefits to librarians and the patron's like, improving the efficacy and accuracy of library data, increasing the relevance and diversity of materials and services, services, increasing access to information, support innovation and learning. It can reduce manual and repetitive tasks for librarians, reduce errors and inconsistencies in data and tenable interaction with the library anytime any day and also facilitate discovery of new knowledge.

This Al is transforming libraries by improving efficiency, accessibility, and service delivery. As earlier stated, obsolescence and inadequacies of traditional library service in information society, such as ours, has underscored the benefits, if not the inevitability of modern technologies today. It should be obvious by now that there is no aspect of the library that is not affected by computer technology acquisition, storage, handling and dissemination, not least routine activities such as collection development, circulation and reference services, serial management and technical services, name it, have been improved tremendously with the use of technology. (Iheagwam and Edom, 2025).

AI have indeed made a point when they noted that the era of ICTs which is the advent of internet where academic library services has been transformed to electronic services which include social mediation application, digital cu-ration, mobile technologies, preservation and online scholarly communication has in one way or the other enhanced the mission of academic libraries this dispensation. (Iheagwam & Edom 2018).They further stressed that AI is no exception. Apart from improving all science and human interactions, the technology is reconfiguring many library tasks such as classification, indexing,

cataloguing, information retrieval, reference, information literacy and even learning. It has indeed been acclaimed to be the greatest usable intelligence that has the capacity of assisting librarians in decision making and administration. (Obiano, D. C., Ekwebelem, L. E., & Iheagwm, S. N. 2025).

Key benefits of Al to librarians/ information management:

There is a high level of positive impact of AI technologies at improving information management which includes the operational efficiency of library processes and the quality of user experience. Universities in Nigeria have successfully integrated several AI tools that have positive impact on information management by enhancing efficiency, user access, and administrative operations. The following are the basic impacts:

1. Improved cataloguing and organization: AI enables faster and accurate material analysis and classification, reducing human efforts, offer intuitive, natural language and semantic search capabilities, etc.

2. Accessibility and Inclusion: It enables users to access information in several Languages of their choice. It provides speech-to-text and text-to-speech functionalities to assist visually impaired or differently able individuals

3. Enhanced Research Support: Al catboats and visual research assistants help uses with inquiries, database navigation and bibliographic searches. Data Analysis and Visualization can help analyze and display big datasets for academic or institutional research.

4. Efficient Resource Management: Al can forecast borrowing trends, allowing librarians improve on acquisition and inventory Management. It may also automate tasks like, checkouts, refunds, and late notices, allowing humans to focus on more sophisticated activities.

5. Automation of Library

Artificial intelligence can easily automate such traditional library tasks as cataloguing, circulation, acquisition, reference, stock verification, free up librarian's time to focus on more tasks.

6. Allows for better Data Analysis

Artificial intelligence allows for analysis of big data sets, especially sets used for analysis across multiple data sets.

7. Reduces human error in library operations

With the advent of artificial intelligence in library operations, libraries record little or no errors and defects than when carried by humans.

8. It improves information retrieval

AI assists users and researchers search and retrieve information across different combination and equally assist with users' questions.

9. It provides visual assistance and Catboats.

Visual assistance can provide instant assistance to users, answer their questions and direct them to relevant resources. (Ankra, E. and Atuase, D. O. 2018).

Challenges of AI in library services:

There are many challenges which include, Data Privacy and Security, Staff Training, Ethical Concerns, Cost and Resource Allocation. The integration of AI is cost-effective. Libraries ought to evaluate the return on investment and consider and consider the impact on their budgets and resource allocation. There is a strong consensus that lack of adequate training and skills, insufficient digital infrastructure and unreliable power supply, and limitations in institutional support and funding are the interrelated challenges that impede the effective use of AI tools in information management. The challenges faced by librarians are multifaceted, encompassing technical, organizational, psychological, and ethical dimensions that collectively hinder optimal AI adoption in Nigerian university libraries. All of these are indicating systemic resource and capacity gaps, highlighting an urgent need for targeted interventions to mitigate them to fully leverage AI's benefits in library services. (Omali, et. al., 2025).

The basic challenges:

Culture of resistance to change

Fear of loss of job

Underfunding of AI operations

Unstable power supply

Lack of manpower

Lack of managerial support

Organizational restructuring

Poor internet connectivity

Fear of over dependence.

The way forward/possible solutions:

This study discovered that provision of comprehensive training programs, investment in reliable power supply and securing adequate funding are the possible solutions that can sustainably harness AI technologies in the overall information management. This study suggests that overcoming AI adoption challenges within Nigerian University libraries necessitates strategic and integrated approach. Prioritizing technical training and infrastructural improvements, fostering interdisciplinary collaborations, promoting ethical guidelines and engaging librarians and users in continuous awareness and change management efforts are imperative. Such holistic strategies will facilitate smoother AI integration, enhance staff competence and confidence, and improve overall information management and service delivery. (Omali T.O. et. al., 2025). Similarly, the role of capacity building and infrastructural investments, including power supply reliability for sustainable AI integration in Nigerian academic libraries.

AI technology in libraries has great potential for transforming how libraries operate and how users interact with them. Thus, there are needs for automation and cataloging such as organization, and metadata generation to reduce manual labor and making library resources more organized and accessible too. The enhanced information retrieval will make it easier for users to find relevant materials easily through smarter search engines, personalized recommendations and natural language processing. The personalizing user experiences can offer personalized reading lists, learning paths, and even suggest relevant services based on user preferences. The virtual assistance can provide steady support for answering queries, assisting with research, and helping users locate resources remotely, enhancing accessibility and user experience. The digitalization and preservation can assist in digitizing older, rare, or fragile materials and provide techniques for preserving and archiving digital collections, ensuring long-term access and preservation. The data-driven decision making can use AI tools to analyze data usage, helping them make informed decisions about acquisitions, resource allocation, and support academic libraries by providing advanced research tools, including citation analysis, research assistance, and AI-powered tools for creating and editing research materials. While the ethics and privacy considerations will carefully navigate issues related to data privacy, AI bias, and maintaining ethical standards in the use of AI-driven services.

CONCLUSION:

The future of artificial intelligence in libraries holds great promise, poised to revolutionize their operations and service delivery. Improvements in Al will enable libraries to automate various processes, enhance user experiences, and improve access to needed information. With the integration of Al, librarians can offer personalized recommendations, streamline information search, and automate routine tasks like cataloging and indexing. Finally, it can assist users by answering common queries and providing support. While challenges and ethical considerations remain, the transformative potential of Al can empower libraries to better serve their communities, making them more efficient, accessible, and user-focus.

This study conclusively illustrates that Nigerian universities, has successfully established a robust digital infrastructure with the availability of most leading AI tools, strengthening its position as a modern academic institutions equipped for advanced information management. This widespread availability facilitates operational efficiency and significantly enhances the user experience through personalized services and streamlined access to academic resources. However, the use and benefit of these AI tools are impeded by challenges such as inadequate skills and training, infrastructural deficits including unreliable power supplies, and limitations in institutional support and funding. (Omali, et. al., (2025). These challenges create serious barriers to optimal AI integration and adequate utilization of AI. Thus, there is need to prioritize a comprehensive capacity-building programs, reliable infrastructural investments, and sustained funding from the university management and external stakeholders also.

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