4

THE CHALLENGES OF IMPLEMENTING ARTIFICIAL INTELLIGENCE (IA) IN SOME SELECTED PRIVATE UNIVERSITY LIBRARIES IN NIGERIA

Ojiodu Anthony Chidi[1], Unwana Isaac Udoh[2] & Odikpo Caroline Akunne[3]

Delta State University Abraka, Department of Library and information science[1]. Email: acojiodu@delsu.edu.ng[1]

Abia State University Uturu[2]. Email: uwanaudoh6@gmail.com[2]

The Library, Ogwashi-Ukwu Polytechnic Delta State[3]

Abstract:

Purpose: *The study was carried out to investigate the challenges of implementation of artificial intelligence (AI) in some selected private university libraries in Nigeria*

Design/Methodology/Approach: *The study adopted a descriptive survey using questionnaire to collect data. A total of 4 private university librarians in some university libraries in South-South Nigeria were picked. A total of 4 questionnaires were distributed and retrieved. Descriptive statistics, (mean and percentage) were used for analysis. A mean score of 2.5 and above and a percentage score of 50% were considered for decision making.*

Findings: *The study revealed five (5) challenges that are militating against the implementation of artificial intelligence (IA) in some selected private university libraries in Nigeria as financial constraints, lack of skilled personnel, the fear of losing their jobs, data privacy and security risk and cyber security threats. The study further affirmed the five (5) solutions to the successful implementation of artificial intelligence (AI) in some selected private university libraries in Nigeria in the following order: adequate budget for AI implementation, skilled personnel should be recruited, librarians should overcome anxiety; users should be able to access data and the need for librarians to attend seminars/workshop on AI.*

Implication: *This is the first of its kind in investigate the challenges of implementation artificial intelligence (AI) in some selected private university libraries The paper goes beyond investigating the challenges of implementation of artificial intelligence (AI) in some selected private university libraries in Nigeria by recommending solutions to the challenges identified.*

Originality/Value: *The study recommends that despite the obvious benefits of AI, libraries must design AI systems with a strong focus on data protection and user privacy and investing in training: It is crucial that library employees get ongoing training and up skilling. Attending classes, seminars, and workshops on artificial intelligence (AI) and its applications in library settings might be beneficial.*

Keywords: *Challenges, Artificial Intelligence (IA), Private University, Libraries*

Introduction

Private university libraries are academic libraries that serve the students and faculty of private institutions, supporting the curriculum and research needs of their university. With the new trend in artificial intelligence (IA), private university librarians seem to be very interested in artificial intelligence (AI). Libraries may benefit from artificial intelligence in a number of ways, including increased productivity through automation, better search and tailored suggestions, and more robust research support. AI increases resource discovery through semantic search,

simplifies repetitive chores like cataloging, and aids in collection management through trend prediction. A new age of efficiency, accessibility, and creativity is being ushered in by artificial intelligence (AI), which is transforming library services and improving user experience. AI has changed the face of libraries, bringing in a new era of productivity, accessibility, and creativity.

The capacity of a machine to carry out tasks often associated with human intellect, such as reasoning and experience-based optimization, is known as artificial intelligence (AI). AI saves librarians valuable time engaging in intellectually stimulating activities and ensures a more accurate and organized library system. Large volumes of data may be effectively analyzed by AI-driven systems, improving search capabilities and facilitating easier information retrieval for library users. Expert systems, fuzzy logic, artificial neural networks, evolutionary algorithms, case-based reasoning, image processing, natural language processing, speech recognition, and robotics are all included in artificial intelligence (AI), a branch of computer science (Kaushal et al., 2012). The significance of modernizing Nigerian libraries' technology cannot be overstated. In an era where knowledge is increasingly digitalized and readily accessible, libraries must adapt in order to effectively serve their communities. Despite the numerous benefits of artificial intelligence in libraries, university librarians still find it difficult to implement it.

Private university libraries sometimes find it more difficult to provide users with efficient and up-to-date services due to their incapacity to keep up with technological advancements (Enakrire, 2023). Nigerian libraries might overcome these obstacles and enhance their offerings to satisfy the evolving needs of their patrons by upgrading using AI. Customizing algorithms to efficiently handle the diverse and complex data sets that are specific to library operations is necessary to implement these improvements in library services. Developing AI models that can effectively handle and analyze the wide variety of data found in libraries, such as text, images, and multimedia, is the main difficulty. A number of issues must be resolved for AI to be successfully integrated and used in Nigerian libraries. These challenges can be grouped into the following subsections.

Technological Infrastructure: One of the biggest obstacles to Nigerian libraries utilizing AI technology is their restricted access to advanced computer resources. Libraries may find it challenging to deploy

and use AI techniques in the absence of adequate infrastructure, such as high-performance computer systems (Enakrire, 2023). This problem is made worse by a poor internet connection since effective AI application implementation in libraries depends on smooth data processing and online resource access; also, some Nigerian libraries do not have the hardware and software required to support AI technology. This includes out-of-date computers, poor internet access, and a lack of digital resources (Mahmud, 2024). Financial Restrictions: AI technology implementation necessitates a substantial investment, which frequently exceeds the financial allotment of many Nigerian libraries. Funding is a significant barrier to the use of AI in Nigerian libraries, according to Tolulope (2024). The high costs of acquiring and maintaining AI technologies may be prohibitive for many libraries, especially those with limited funding, (Blow 2024). Competent Staff: Another significant problem in Nigeria's library industry is the lack of skilled AI specialists. The efficient use and usage of AI technology in library settings is hampered by a lack of skilled personnel (Amzat, 2023).It is in light of the above challenges that this title the challenges of implementing Artificial Intelligence (IA) in some selected private university libraries in Nigeria is imperative.

Statement of the problem

Incorporating artificial intelligence (AI) technology into the provision of services in Nigerian libraries presents both significant problems and revolutionary opportunities. Through improved information retrieval, automated routine tasks, optimal resource management, increased accessibility, and the encouragement of research and innovation, AI offers a number of opportunities to enhance library services. The use of AI in Nigerian libraries is a complicated field with many prospects and major obstacles. The main constraints are inadequate funding, a lack of skilled labor, problems with the availability and quality of data, difficulties with laws and regulations, and social and cultural impediments. These difficulties highlight the necessity of comprehensive strategies to get around obstacles and provide a setting that fosters technological advancement.

It has been observed that research topics on the challenges of implementing Artificial Intelligence in libraries exist, but it appesrs from the literature not much studies have been done on the challenges of implementing Artificial Intelligence (IA) in some selected private university libraries in Nigeria hence the need for this research.

Research Questions

The following research topics were formulated to guide the study

1. What are the challenges affected the implementation of artificial intelligence (IA) in some selected private university libraries in Nigeria?

2. What are the solutions to the successful implementation of of artificial intelligence (IA) in some selected private university libraries in Nigeria?

Literature review

Artificial intelligence (AI) is becoming a crucial component of contemporary organizations. AI integration in academic libraries is becoming more and more important for various library services, and it has really engaged library patrons with other digital technologies (Hussain, 2023). Diffusion of Information Theory (DOI), Unified Theory of Acceptance and Use of Technology (UTAUT), Actor-Network Theory (ANT), and Technology Acceptance Model (TAM) are some of the models and theoretical frameworks that have been introduced to measure the complexity of innovative technologies. Several scholars in librarianship have used TAM for other technologies in academic libraries, such as mobile learning in academic environments (Masreka & Husseinb, 2021; Yoon, 2016).

In a similar vein, Shehzad and Khan (2023a) identified the integration of AI in academic libraries using this idea in a recent research. Although the adoption of AI is expected to be favorable, there is a significant disparity in users' AI literacy. This study may be utilized to comprehend AI in academic settings and how librarians' ignorance of AI impedes its practical use in academic libraries. This study recommends that university libraries focus user education and training programs to develop AI literacy, since peer institutional support and peer influence might increase the acceptability of AI technology (Mabona et al., 2024). Because different user groups in academic libraries have different opinions on AI technologies, Huang's (2024) study indicates that individual biases and past technological experience have a big impact on user acceptance.

According to a number of studies, such as Lund et al. (2020), librarians have different opinions on AI, and it is important for academic libraries to comprehend these opinions in order to customize their AI services and marketing approach. Although the literature offers insightful information on the adoption of AI technologies in academic

libraries, there are still a number of knowledge gaps. For example, the majority of the research that is currently available is cross-sectional and only offers a glimpse of user acceptability. As noted in the literature (Adetayo, 2023; Ajani et al., 2022; Yusuf et al., 2022; Abayomi et al., 2021), few scholars have looked at barriers to AI adoption by Nigerian university libraries. However, as the author discusses, these obstacles have been divided into several categories, including institutional, technological/environmental, and human considerations. Academic libraries need to be prepared to instruct and guide patrons on how to apply AI for certain library functions. However, it may be unavoidable for customers and library employees to embrace AI slowly if academic libraries do not provide sufficient assistance (Ajani et al., 2022). Lack of sufficient funding: The adoption of AI technology and its applications may be delayed if there are insufficient finances to purchase AI technology for use in Nigerian academic libraries (Ajani et al., 2022). According to a research by Ajani et al. (2022), the sluggish adoption of AI was caused by academic librarians in Nigeria being afraid of losing their employment.

However, it has been determined that the employment of AI in libraries won't replace librarians in carrying out their responsibilities to users and clients (Ajani et al., 2022). Users in Nigeria may be rather resistant to new innovations or technologies for a variety of reasons. For example, academic libraries may be actively or passively resisting the adoption of AI for a variety of reasons, including the complexity of the technology, the high cost of acquisition, and the need for ongoing skill development (Yusuf et al., 2022). The implementation of AI in Nigerian university libraries may be hampered by librarians' lack of technological expertise. The adoption of this technology would be fueled by the requirement for the necessary AI capabilities. Adoption would be sluggish if librarians lacked the technical know-how to use AI (Adetayo, 2023).

Despite academic libraries' aggressive use of AI in particular to change service paradigms, there is still a noticeable lack of thorough deployment (Wheatley & Hervieux 2019; Farag, Mahfouz & Alhajri 2021). While AI is being used to use big data and data analytics for operational and service-oriented objectives, it is still necessary to close this implementation gap in order to fully benefit from these technical advances (Garoufallou & Gaitanou 2021; Luca, Narayan & Cox 2022). Acknowledging the importance of incorporating state-of-the-art technologies such as artificial intelligence (AI) into

academic libraries, researchers have highlighted its potential to improve service accessibility, both on-site and online, and optimize operational efficiency, resulting in increased engagement among staff and patrons (Ogar & Dushu 2018; Pierce 2022). But despite the recognized need and potential benefits, there is still a gap in the use of AI in libraries, necessitating immediate action to encourage broader adoption (Wheatley & Hervieux 2019; Farag et al. 2021).

Methodology

The study adopted a descriptive survey using questionnaire to collect data. A total of 4 private university librarians in some university libraries in South-South Nigeria were picked. A total of 4 questionnaires were distributed and retrieved. Descriptive statistics, (mean and percentage) were used for analysis. A mean score of 2.5 and above and a percentage score of 50% were considered for decision making.

Table 1
Population of the study

S/N	SELECTED UNIVERSITY LIBRARIES	POPULATION OF UNIVERSITY LIBRARIANS
1	**Benson Idahosa University Library**	**1**
2	**Babcock University Library**	**1**
3	**Afe Babalola University Library**	**1**
4	**Landmark University Library**	**1**

Table 1 depicts the population of the study in the following order: Benson Idahosa University Library (1), Babcock University Library (1), Afe Babalola University Library(1) and Landmark University Library (1) respectively**,** which amounted to four (4) university librarians as the population of the study.

Table 2

Challenges affected the implementation of artificial intelligence (IA) in some selected private university libraries in Nigeria

Items		**SA**	**A**	**D**	**SD**	**-X**	**Decision**
1	Financial Constraints	4	0	0	0	4.0	Accepted
2	Lack of skilled personnel	2	2	0	0	3.5	Accepted
3	The fear of losing their jobs	1	3	0	0	3.2	Accepted
4	Data privacy and security risk	4	0	0	0	4.0	Accepted
5	Cyber security threats	2	1	1	0	3.2	Accepted

KEY: SA – Strongly Agree, A – Agree, D – Disagree, SD – Strongly Disagree

The table 2 revealed five (5) Challenges affected the implementation of artificial intelligence (IA) in some selected private university libraries in Nigeria in the

following order: Financial Constraints 4.0), Lack of skilled personnel (3.5), The fear of losing their jobs (3.2), Data privacy and security risk (4.0), Cyber security threats (3.2) respectively.

Table 2
Solutions to the successful implementation of artificial intelligence (IA) in some selected private university libraries in Nigeria

Items	SA	A	D	SD	-X	Decision
1 Adequate budget for AI implementation	3	1	0	0	3.7	Accepted
2 Skilled personnel should recruited	4	0	0	0	4.0	Accepted
3 Librarians should overcome anxiety	2	2	0	0	3.5	Accepted
4 Users should be able to access data	2	2	0	0	3.5	Accepted
5The need for librarians to attend seminars/workshop on AI	1	3	0	0	3.2	Accepted

KEY: SA – Strongly Agree, A – Agree, D – Disagree, SD – Strongly

Table 3 shows five (5) solutions to the successful implementation of artificial intelligence (AI) in some selected private university libraries in Nigeria in the following order: adequate budget for AI implementation (3.7), skilled personnel should recruited (4.0), librarians should overcome anxiety (3.5), users should be able to access data (3.5) and the need for librarians to attend seminars/workshop on AI should be critical (3.2).

Discussion of results

The study is on the challenges of implementing Artificial Intelligence (IA) in some selected private university libraries in Nigeria. Two research questions were formulated to guide the study. The study revealed five (5) challenges affected the implementation of artificial intelligence (IA) in some selected private university libraries in Nigeria as financial constraints, lack of skilled personnel, the fear of losing their jobs, data privacy and security risk and cyber security threats. The study further affirmed the five (5) solutions to the successful implementation of artificial intelligence (AI) in some selected private university libraries in Nigeria in the following order: adequate budget for AI implementation, skilled personnel should recruited, librarians should overcome anxiety; users should be able to access data and the need for librarians to attend seminars/workshop on AI.

Conclusion

The use of artificial intelligence (AI) to information management and library services has become a topic of growing scientific interest and significance. This study's major goal was to thoroughly

investigate how artificial intelligence (AI) affects the above stated fields. The investigation's findings have produced important and notable insights that might be a useful tool for guiding future tactics and research projects. In conclusion, AI technologies have a bright future in Nigerian private university libraries, with the ability to improve services, manage resources, and promote research. These opportunities must be weighed against the difficulties presented by budgetary limitations, infrastructural restrictions, and worries about user acceptability, skill development, and data protection. Libraries, institutions, and legislators must work together to address these issues and optimize the advantages of AI in academic libraries, with an emphasis on responsible AI integration and user-centric services. AI has the potential to significantly improve academic libraries in Nigeria and enhance the educational experiences of local researchers and students with proper design and funding.

Recommendations

1. AI use in libraries should be done carefully. Despite the obvious benefits of AI, libraries must design AI systems with a strong focus on data protection and user privacy.
2. Investing in Training: It is crucial that library employees get ongoing training and up skilling. Attending classes, seminars, and workshops on artificial intelligence (AI) and its applications in library settings might be beneficial.

Reference

Abayomi, O. K., Adenekan, F. N., Abayomi, A. O., Ajayi, T. A., & Aderonke, A. O. (2021). Awareness and perception of artificial intelligence in the management of university libraries in Nigeria. *Journal of Interlibrary Loan, Document Delivery & Electronic Reserve,* 29(7), 1–16.

Adetayo, A. J. (2023). Artificial intelligence chatbots in academic libraries: The rise of ChatGPT. *Library Hi Tech News,* 40 (3), 18–21. Available at https://doi.org/10.1108/LHTN-01-2023-0007 (Accessed Jan. 12, 2026)

Ajani, Y. A., Tella, A., Salawu, K. Y., & Abdullahi, F. (2022). Perspectives of librarians on awareness and readiness of academic libraries to integrate artificial intelligence for library operations and services in Nigeria. *Internet*

Reference Services Quarterly, 26(4), 213–230. Available at https://doi.org/10.1080/10875301.2022.2086196(Accessed Jan 16, 2026)

Amzat, P. (2023). The role of AI in enhancing library services: A case study of university libraries. *Digital Libraries Journal,* 29(1), 1-17.

Enakrire, J. (2023). AI and the future of academic libraries. *Library Trends*, 69(3), 353-372.

Farag, H.A., Mahfouz, S.N. & Alhajri, S. 2021. Artificial intelligence investing in academic libraries: reality and challenges. *Library Philosophy and Practice*, 1-34.

Garoufallou, E. & Gaitanou, P. (2021). Big data: opportunities and challenges in libraries, a systematic literature review. *College & Research Libraries*, 82(3): 410-435

Hussain, A. (2023). Use of artificial intelligence in the library services: Prospects and challenges. *Library Hi Tech News*, 40(2), 15–17. Available at https://doi.org/10.1108/LHTN-11-2022 0125.(Accessed March 06, 2026)

Kaushal, K.; Sarma P.; Rana S.V.; Medhi B. & Naithani, M. (2020). Emerging role of artificial intelligence in therapeutics for COVID-19: A systematic review. J. Biomol. Struct. Dyn. Available at doi: 10.1080/07391102.2020.1855250 (Accessed Nov. 12, 2025)

Luca, E., Narayan, B. and Cox, A. 2022. Artificial intelligence and robots for the library and information professions. *Journal of the Australian Library and Information Association*, 71(3): 185-188

Lund, B. D., Omame, I., Tijani, S., & Agbaji, D. (2020). Perceptions toward artificial intelligence among academic library employees and alignment with the diffusion of innovations' adopter categories. *College & Research Libraries*, 81(5), 865. Available at https://doi.org/10.5860/crl.81.5.865(Accessed Nov. 15, 2025)

Mabona, A., Van Greunen, D., & Kevin, K. (2024). Integration of artificial intelligence (AI) in academic libraries: A systematic literature review. In *2024 IST-Africa conference (IST Africa)* (pp. 1–9). Available at https://ieeexplore.ieee.org/abstract/d

ocument/10569288/ (Accessed Oct. 15, 2025)

Mahmud, O. (2023). Artificial intelligence in Nigerian libraries: Opportunities and future prospects. *Information Development*, 38(4), 589-600.

Masreka, M. N., & Husseinb, A. (2021). Intention to adopt mobile applications services: A studyamong Pakistani academic librarians. *International Journal of Innovation, Creativity, and Change*, 15(3), 38–54.

Ogar, C.E. & Dushu, T.Y. (2018). Transforming library and information services delivery using innovation technologies. *Library Philosophy and Practice*, 2036.

Shahzad, K., & Khan, S. A. (2023). Effects of e-learning technologies on university librarians and libraries: A systematic literature review. *The Electronic Library*, 41(4), 528–554.

Tolulope, J. (2024). AI and the future of academic libraries. *Library Trends*, 69(3), 353-372.

Wheatley, A. & Hervieux, S. (2019). Artificial intelligence in academic libraries: an environmental scan. *Information Service and Use*, 39(4): 347-356.

Yoon, J., Andrews, J. E., & Ward, H. L. (2022). Perceptions on adopting artificial intelligence and related technologies in libraries: Public and academic librarians in North America. *Library Hi Tech*, 40(6), 1893–1915. Available at https://doi.org/10.1108/LHT-07-2021-0229. (Accessed December 7, 2025)

Yusuf, T. I., Adebayo, O. A., Bello, L, & kayode, J. O. (2022). Adoption of artificial intelligence for effective library service delivery in academic libraries in Nigeria. Library philosophy and practice (e-journal). 6804. Avalable at https://digitalcommons.unl.edu/libphilprac/6804.(Accessed Jan. 26, 2026)