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Drivers and Impediments in the Adoption of Artificial Intelligence by Academic Libraries in Nigeria

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DRIVERS AND IMPEDIMENTS IN THE ADOPTION OF ARTIFICIAL INTELLIGENCE BY ACADEMIC LIBRARIES IN NIGERIA

Abstract

The adoption of Artificial Intelligence (AI) by academic libraries globally is not without its challenges despite its diverse benefits for efficient library operations and services. This paper examined the drivers of AI adoption and the likely impediments to its adoption by academic libraries in Nigeria. The methodology adopted for this paper was a documentary/literature review search to determine the trends and patterns in the extent of AI adoption by academic libraries globally and, in particular, in Nigeria. This paper discussed the concept of AI, application areas of AI, and impediments to the adoption of AI categorized under institutional, personal and technological factors. This paper further discussed the probable factors that may drive AI adoption by academic libraries in Nigeria using the Extended Technology Acceptance Model (TAM 3) as a framework. These factors include behavioural intention, perceived usefulness, perceived ease of use, subjective norm, AI playfulness, and AI self-efficacy, among others. This paper concluded that although AI is not yet fully adopted by academic libraries in Nigeria, there are impending factors that can drive AI adoption, as revealed in the adapted TAM 3 model. Furthermore, the impediments to the adoption of AI need to be urgently addressed by academic libraries in Nigeria before the full exploitation of these evolving technologies for library operations and services. It was recommended that academic libraries be supported by their respective parent institutions in terms of funding, quick uptake of AI technologies, and equally creating an enabling environment for AI users and the library at large.

Keywords: Artificial intelligence, Drivers, Adoption, Impediments, Academic libraries, Extended technology acceptance model, TAM3 Model, Library operations, AI, Nigeria

Introduction

Academic libraries globally have progressively employed diverse technological tools in the delivery of customized and efficient services. For instance, libraries have undergone varying technological evolution stemming from clay tablets, stones, parchments, paper, microfilms, computers, internet, virtual libraries, library 2.0, cloud computing, and lately, artificial intelligence, among others (Omame & Alex-Nmecha, 2020). Artificial Intelligence (AI) is an evolving technology that has contributed immensely to improving the administrative and routine functions in libraries, most especially in developed economies (Subaveerapandiyan, 2023). However, the degree of adoption of AI technologies may vary from one library to another, cutting across countries and continents and depending on their application areas. Therefore, the role of AI technologies cannot be undermined in the continual existence and

relevance of libraries in the 21st century and beyond. AI adoption in libraries, especially in the developed world, has changed the library landscape from what it used to be to a hub where many things can be done quickly. For instance, the adoption of virtual libraries has changed the conventional library environment to a place of convenience and entertainment where users can search and browse library collections freely from their comfort zones.

Lately, a new wave of technology, popularly known as AI, has gradually been embraced by academic libraries in developing countries like Nigeria. AI connotes the intelligence demonstrated by machines, therefore, the adoption of AI by academic libraries in Nigeria would go a long way in automating library services and rendering customized services to library users at large. Viera (2024) highlighted some of the benefits of AI to libraries, such as improvement in information organization, improvement in library operations and services, performing routine administrative tasks such as shelf management, data migration automation, the introduction of smart libraries whereby patrons can engage a personal digital assistant to search and retrieve materials, use of AI-driven services to meet users demands such as reference services, collection development, circulation services among others.

Quite a number of studies in the literature have examined the application of AI in library operations and services in developed and developing countries (E.g. Adetayo, 2023; Ajani et al., 2022; Huary, 2022; Abayomi et al., 2021) among others. These studies have revealed the wide acceptance and adoption of this tool by academic librarians in the surveyed libraries, however, there are challenges surrounding the adoption of AI by users and libraries at large. Few AI researchers in a developing country like Nigeria have pinpointed that these tools would improve the service delivery of libraries, however, the adoption of this tool may not be rapid as expected due to certain impediments such as inadequate funds to procure these tools, fear of change, resistance to innovation, lack of funds to train and re-train among others (Adetayo, 2023; Ajani et al., 2022; Abayomi et al., 2021).

In view of the above, this paper aims to examine the drivers and impediments of AI adoption by academic libraries in Nigeria, using the Extended Technology Acceptance Model (TAM 3) as a prototype. This paper will further discuss the concept of AI and the extent of AI adoption by academic libraries globally and in Nigeria. Impediments of AI adoption by academic libraries in Nigeria will be discussed. It will equally discuss the probable factors that can drive the adoption of AI using the Extended Technology Acceptance Model (TAM 3) as a framework for adoption. Lastly, the conclusion and recommendations will equally be made.

Concept of AI

AI is a branch of computer science that encompasses the following areas such as automatic programming, speech recognition, computer vision, intelligent control systems, image processing, natural language processing, planning and decision support, assisted instruction, robotics, machine learning, deep learning, expert system among others (Asemi & Asemi, 2018; Lowendahl & Calhoun-Williams, 2018). It has been defined by authors in the literature from similar and diverse perspectives. For instance, Oname and Alex-Nmecha (2020) defined AI as the act of making computers intelligent, just like human beings, so that they can proffer solutions to complex problems. Irizarry-Nones et al. (2017) defined AI as the programming and development of computers to perform human-required intelligence tasks, such as speech recognition, visual perception, language translation, talking, and expression of emotions. Similarly, Asemi and Asemi (2018) defined AI as the study or development of computer systems that have been equipped with the task of performing human intelligence oriented task such as learning and re-learning, reasoning and making inferences and judgment based on its knowledge base and inference machine.

Heath (2018) also defined AI as a technology that is capable of planning, learning, reasoning, solving problems, and creating feasible solutions. Based on the above definitions of AI, AI can be defined simply as an intelligent machine that performs several tasks as designed or configured. It can take in information, process it, and give appropriate feedback to users based on their needs.

Irizarry et al. (2017) further categorized AI into two areas: Computers with strong and weak AI. Computers with strong AI can think, perceive, learn, re-learn, and make sound judgments or decisions like human beings; while computers with weak AI are not flexible enough to attend to complex issues, they are designed to respond to specific situations one at a time. In other words, this depicts that the adoption of either strong or weak artificial intelligence systems in a library environment is highly dependent on the knowledge base and complexity of the tasks to be performed. This explains why some highly intelligent machines, such as robotics, can even perform better than humans in some assigned tasks due to their configurations (Tella & Ajani, 2022).

Application Areas of AI in Academic Libraries

Several authors have identified diverse areas in the library where AI can be of immense benefit. Majorly, AI is relevant in the rendering of efficient library information services to patrons within or outside the confines of the library environment. Oname and Alex-Nmecha

(2020) identified some library operations or services that are AI-driven in today's academic library. These activities are highlighted below:

- i. Automatic keyword indexing and abstracting of electronic resources via the use of Expert Systems.
- ii. Automatic subject indexing.
- iii. Translation of electronic resources (text, audio) through the use of Natural Language Processing and Optical Character Recognition.
- iv. Convert traditional library materials into electronic format through scanning or Optical Character Recognition (OCR) to facilitate searching and retrieval.
- v. Automatic textual analysis through the use of a Decision Support System (DSS).
- vi. Information retrieval through the use of speech recognition and Natural Language Processing.
- vii. Automatic analysis and retrieval of audiovisual resources via the use of Expert Systems/ OCR.
- viii. The application of data processing systems to support clerical and repetitive functions in cataloguing (technical processing of books), circulation control (charging and discharging of books), and serial management (tracking magazines, journals, and newspaper holdings), among others.
- ix. Use of intelligent/ advanced automated systems for searching, browsing, and downloading materials in virtual or smart libraries.

Apart from these AI-driven library operations listed above, there are other specific AI technologies used in libraries globally that have not been fully embraced in a developing country like Nigeria. For instance, the application of robots in library services is still a possibility in academic libraries in Nigeria, perhaps due to a lack of funds to procure such expensive AI technologies. Robots can be used to trace and store books in libraries, which helps to alleviate the stress and waste of one's time in tracing books in libraries (Li et al., 2015). Also, there are book shelving and retrieval robots that can undertake this task seamlessly in libraries. For instance, Suthakorn et al. (2022) designed an enhanced robotic library system for off-site shelving. This robotic library system helps retrieve books from library shelves and send them to an off-site scanning station. Another AI application in the library is the design of a robotic book retrieval system using the bookBot technology. The bookBot is a book-delivery system that automatically retrieves books for users on demand through the library's automated catalogue (Stone, 2019). The bookBot's robotic cranes

retrieve the requested item from the shelves and deliver it to those who forward those items to the users who may be within or outside the library.

Furthermore, some libraries in the developed world have been found to embed Radio Frequency Identification (RFID) tags into their collections (Cox, 2021). These tags are in the form of barcodes, which are unique identifiers for every library collection. These barcodes assist in the quick scanning of a library's collection using wireless, handheld RFID scanners/readers. There are also smart shelves containing RFID antennas that automatically register a book when it is removed or returned (Li et al., 2015).

On the whole, academic libraries in Nigeria, in little or no time, would need to close up the technological gap between them and their developed counterparts by embracing these evolving AI technologies to improve library operations.

Extent of Adoption of Artificial Intelligence by Academic Libraries Within and Outside Nigeria

The adoption of AI in academic libraries in Nigeria is still a far cry from what exists in other developed countries. Researchers at both international and local levels have examined the adoption of this evolving technology in diverse library environments. These studies have examined AI from several perspectives, such as the extent of use of AI tools and their applications in library operations, awareness and perception of libraries toward AI, and level of preparedness in the adoption of AI, among others (Adetayo, 2023; Ajani et al., 2022; Huang, 2022; Weijia, 2022; Abayomi et al., 2021).

Quite a number of researchers have examined the adoption of AI by academic libraries in countries outside Nigeria. For instance, Huang (2022) investigated the use of AI applications in Taiwanese University Libraries. The study surveyed AI-implemented and non-AI-implemented librarians using quantitative research techniques. Findings revealed that librarians in the surveyed area were favorably disposed to AI adoption. However, the surveyed librarians pinpointed that high cost, technical difficulties, privacy, and ethical issues were the factors that affected their adoption of AI. In another study, Harisanty (2022) examined the level of AI awareness among librarians in Indonesian academic libraries. Findings from the study revealed that the librarians were aware of the many benefits of AI, such as improved classification of library resources, improved circulation services, data analytics, and research support, among others. The study also identified some constraints in the adoption of AI in the surveyed area, such as budgetary allocation, management problems, and lack of a visionary leader to drive AI adoption, among others.

Weijia (2022) examined the factors that may likely influence librarians' level of preparedness to adopt AI, such as leadership focus, experience with AI applications, acceptance of AI, awareness of AI, and the innovation environment. Findings revealed that the adoption of AI was mostly determined by the leadership of the library, while the influence of competition was negligible. On this account, this study recommended that the leadership of libraries must motivate library staff by providing AI training and creating an enabling environment for openness to innovation. In addition, Winkler and Kiszl (2022) investigated the opinions of academic library directors on the application of AI in libraries. Findings revealed that most library directors regarded AI as an opportunity rather than a threat because of its relevance in areas such as digitization, information service delivery, information retrieval, and data processing, among others. In this study, 25% of the libraries surveyed found specific domain areas, such as reference services and virtual services, as most appropriate for AI support.

However, in the Nigerian environment, there are still very few empirical studies on AI adoption by academic libraries. For instance, Abayomi et al. (2021) examined the awareness and perception of academic librarians in Nigeria on the adoption of AI. The study adopted a survey research design using qualitative and quantitative approaches. A sample size of 80 librarians was purposively selected from 8 University libraries across the Country. Findings revealed that academic libraries were aware of the use of AI in library operations; however, they were concerned about the potential loss of jobs with the adoption of this technology. Due to the impending fear shown by the surveyed librarians, this study recommends that librarians need to attend a series of training sessions and conferences to prepare for the adoption of AI.

Ajani et al. (2022) examined the perspectives of librarians on the awareness and readiness of adopting AI for library operations and services. Findings revealed that academic libraries in Nigeria are aware of the use of AI and its relevance in libraries globally. In this study, the surveyed librarians were divided in response to their readiness to adopt this technology and integrate it into their daily operations. However, the academic librarians identified some obstacles that may affect the rapid adoption of AI, such as lack of finance, shortage of expertise, unstable power supply, employee training, and acquisition budgets.

Hussain (2023) researched the potential and difficulties of using artificial intelligence in library services. This study employed a qualitative research methodology. Findings revealed that while AI is a powerful technology that can improve library services, various obstacles, including a budget, librarian attitudes, and technical abilities, may prevent its application. The

paper suggested that librarians and information specialists might utilize low-cost AI applications to enhance library services.

Adetayo (2023) pinpointed that ChatGPT is an important tool for academic libraries due to its capability of assisting in delivering efficient and customized services in the library. Some of the benefits of ChatGPT to libraries include responding very fast to user inquiries and offering convenience and easy accessibility to library resources outside traditional library hours. ChatGPT can support library operations such as reference services, selective dissemination of information, and collection development. ChatGPT has the potential to improve library services and free up librarians' time for more complex tasks.

On the whole, these studies have shown that AI is gradually and steadily being embraced by academic libraries globally, however, academic libraries in a developing nation like Nigeria are slow to adopt fully the use of this technology due to several constraints such as lack of funds to procure this technology, lack of preparedness, resistance to change, erratic power supply, lack of training, the misconception of the use of AI among others.

Probable Factors that May Drive the Adoption of AI by Academic Libraries in Nigeria Using The Extended Technology Acceptance Model as a Prototype

The Extended Technology Acceptance Model (TAM 3) is very applicable in predicting the extent of AI adoption by academic libraries as reflected in the adapted model as shown in Fig 1 below. The Technology Acceptance Model (TAM) was initially propounded by Davis (1989). This model postulates that the acceptance of any new technology is predicated on several factors that influence their decision on whether users will adopt the technology or not. These factors are explained briefly as listed below:

- i. **Behavioral intention (BI):** It has to do with users' feelings and attitudes towards a new technology;
- ii. **Perceived usefulness (PU):** It is the degree to which a person believes that using a particular technology will improve his performance or efficiency;
- iii. **Perceived ease of use (PEOU):** It is the degree to which a person believes using a new technology will be free from effort.

However, several other researchers have expanded on the initial TAM model by incorporating other factors that are likely to affect technology adoption. For instance, Venkatesh and Bala (2008) proposed the TAM 3 model by incorporating other additional factors that may influence technology adoption. These factors can be subsumed under system

features, individual differences, social influence, and facilitating conditions, which are equally determinants of PU and PEOU. The TAM 3 model is shown below in Fig 1:

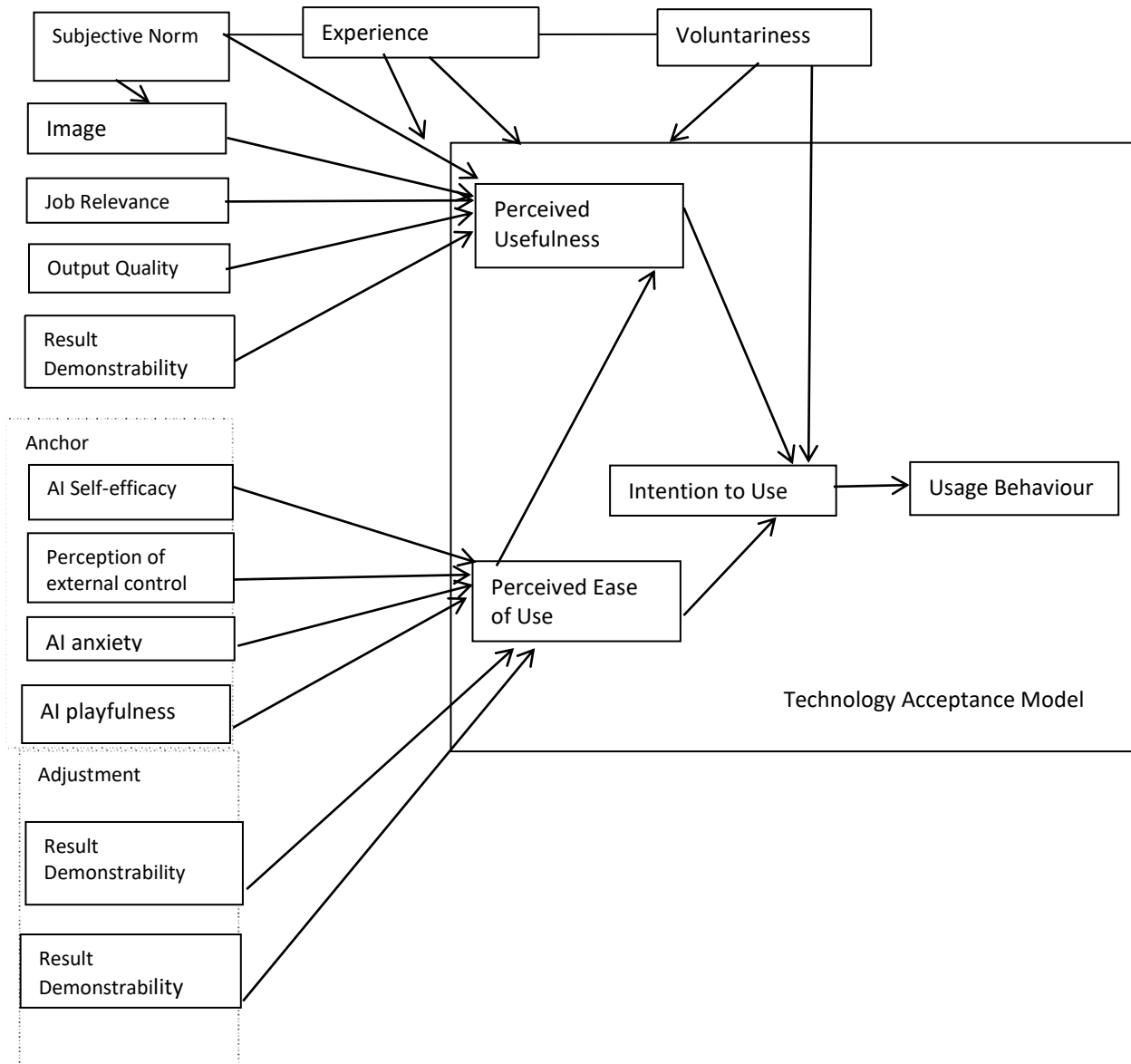


Fig. 1: Extended Technology Acceptance Model (TAM 3) as applicable to AI Adoption by Academic Librarians in Nigeria: Adapted from Venkatesh and Bala (2008)

The extent of adoption of AI by academic libraries in Nigeria can be predetermined by these prevailing factors, as proposed by Venkatesh and Bala (2008) in their TAM 3 model. As shown in Fig 1 above, the adoption of AI may be influenced by the perceived usefulness of the AI technology by academic libraries in terms of its benefits to the accomplishment of their daily tasks and improvement of their job efficiency. Another factor that can determine the extent of adoption of AI is the perceived ease of use; that is, the ability to use AI effortlessly without stress will contribute to its adoption and usage. When there is perceived

usefulness of AI, coupled with perceived ease of use, there would be an intention to use it, and eventually, it would lead to the actual use of AI by academic libraries.

However, there are other prevailing factors, as shown in the adapted TAM 3 model, that are externally driven, which may influence the perceived usefulness of AI by academic libraries. These are the subjective norm, image, job relevance, output quality, and result demonstrability. For instance, if academic libraries feel that the adoption of AI will lead to redundancy, this is a subjective norm that may affect their adoption negatively. Also, the image may affect the adoption in the sense that how do academic librarians perceive themselves in handling this tool? Do they see themselves capable of using this tool or not? Subjective norms have a way of directly affecting image, as shown in the adapted model.

Another factor that can affect the perceived usefulness of AI is job relevance. The question posed is: To what extent is AI relevant to a librarian's job? If it is relevant, it would increase the perceived usefulness of AI. Output quality is another factor, and this can be measured by the quality of the content generated by AI. This would also increase the level of perceived usefulness of AI.

The last factor that can affect perceived usefulness is result demonstrability. This has to do with the ability to demonstrate the usefulness of AI by its results or actions. If the results are positive, it would further increase the level of perceived usefulness of AI.

On the other hand, there are other prevailing factors that may influence the perceived ease of adoption of AI by academic libraries. These factors are majorly individually driven. Therefore, they can determine, to a large extent, the level of perceived ease of use of AI adoption by academic librarians. AI self-efficacy is one of the factors that can determine the perceived ease of use. In the context of AI, self-efficacy is the ability to use AI tools to accomplish several tasks in the library. If the level of AI self-efficacy is high among academic librarians, it will increase their perceived ease of use. Another factor is the perception of external control in terms of the positive disposition of external bodies towards the adoption of AI, both at the international and local levels. Some of these bodies are the International Federation of Library Association (IFLA), the American Library Association (ALA), Nigeria Library Association (NLA), among others. Positive inclinations of these Professional bodies towards AI, both at the local and international levels, would go a long way in increasing the perceived ease of use of AI tools by academic librarians. For instance, IFLA, as a professional body, has been clamouring for the adoption of AI by librarians globally. As a result, several policy statements relating to the adoption of AI have been documented (IFLA, n.d.)

Furthermore, AI playfulness is another factor that can determine the extent of perceived ease of use of AI by academic libraries. AI playfulness can be defined as the ability to derive fun and entertainment from the adoption of AI. When the level of AI playfulness is high, it will improve the perceived ease of use. AI anxiety is another possible factor that can influence the perceived ease of use of AI among librarians in academic libraries. When a high level of anxiety is exhibited towards AI tools, it will affect the perceived ease of use and vice versa. AI anxiety would bring about a negative disposition towards the adoption of AI. On this account, there is a need for sensitization programmes to improve the adoption of AI among academic librarians.

Lastly, result demonstrability is another factor that can influence the perceived ease of use of AI tools by academic librarians. According to Fig 1 above, the result demonstrability occurs twice. This depicts that if AI-generated content continuously meets the needs and expectations of academic libraries, it would improve their perceived ease of use and reinforce their need to adopt AI.

On the whole, these factors, as revealed in the TAM 3 model, can drive the adoption of AI by academic librarians in Nigeria. Therefore, academic librarians can be assessed empirically on their extent of adoption of AI by future researchers using TAM 3 as a framework.

Impediments in the Adoption of AI by Academic Libraries in Nigeria

Few researchers have examined impediments to the adoption of AI by academic libraries in Nigeria as pointed out in the literature (Adetayo, 2023; Ajani et al., 2022; Yusuf et al., 2022; Abayomi et al., 2021). However, these impediments have been classified under different categories such as institutional, technological/environmental and personal factors respectively as discussed by the author. These categorizations would enable academic libraries devise several ways and strategies of handling each of these impediments as the need arises based on their classifications.

A. Institutional Factors

i. Lack of Institutional support: The lack of leadership vision on the part of academic libraries along with their parent institutions may slow down the adoption of AI. Therefore, parent institutions must support their respective academic libraries to drive the quick adoption of AI.

ii. Inadequate training sessions: Academic libraries must be ready to educate and orientate users on the use and deployment of AI for specific library operations. However, without

adequate support by academic libraries, slow adoption of AI by users and library staff may be inevitable (Ajani et al., 2022).

iii. Lack of adequate funds: Lack of adequate funds to procure AI technology for use in academic libraries in Nigeria, may bring about delay in the adoption of AI technology and its applications (Ajani et al., 2022).

B. Personal Factors

iv. Fear of losing jobs: It was reported in a study by Ajani et al. (2022), who found that the fear of losing their jobs by academic librarians in Nigeria accounted for the slow adoption of AI. However, it has been pinpointed that the adoption of AI in libraries would not displace librarians in discharging their duties and responsibility to their patrons and users (Ajani et al., 2022).

v. Innovation resistance to new technology: In the Nigerian environment, users can pose some level of resistance to a new technology or innovation based on diverse reasons. For instance, active or passive resistance to the adoption of AI by academic libraries may be due to factors such as level of complexity, high cost of procurement, and constant updating of skills among others (Yusuf et al., 2022).

vi. New technology phobia/anxiety: At the initial stage of any new technology, users may tend to experience phobia and anxiety, thereby affecting the adoption of that technology. In the case of academic libraries, the adoption of AI by academic librarians may be affected by phobia or anxiety towards the use of the technology.

C. Technological /Environmental Factors:

vii. Inadequate AI experts that are knowledgeable on library automation: There are still very few AI experts that are knowledgeable on library automation, especially in a developing country like Nigeria. Due to these lapses, most academic libraries in Nigeria may be slow in the adoption of this new technology.

viii. Lack of technical skills to Use AI: Lack of technical skills by librarians may impede the adoption of AI in academic libraries in Nigeria. There is a need for requisite AI skills that would drive the adoption of this technology. When librarians lack the technical skill sets to operate AI, there would be slow adoption (Adetayo, 2023).

ix. Erratic or incessant power supply: The rendering of AI-powered services in the library needs to be sustained by constant power supply. However, in the Nigerian environment, the

problem of incessant power supply may hinder the adoption and sustenance of AI by academic libraries (Ajani et al., 2022).

Policy Recommendations on AI Adoption by Academic Librarians

The uptake of AI technologies by academic librarians in Nigeria is still at a slow pace, therefore, in order to speed up the quick adoption of this tool, the following policy recommendations are highlighted below:

- i** Academic libraries in Nigeria should design usage policies to guide AI adoption on the part of the librarians and library users.
- ii.** Professional bodies in Librarianship at the National and local levels in Nigeria such as the NLA, should be proactive in the adoption of AI by organizing regular workshops and seminars on AI by academic librarians.
- iii.** Procurement of AI tools in the library environment should be given utmost priority by the management of academic libraries in their annual library budget. This would lead to quicker adoption of these tools.

Conclusion and Recommendations

This paper has demonstrated the urgency and the need for academic librarians in Nigeria to embrace the evolving AI technologies for the efficient running of academic libraries; and most importantly meeting the challenges of the 21st century. However, there are quite a number of impediments to the adoption of AI by academic libraries in Nigeria, as classified in this paper such as institutional factors, personal factors, technological /environmental factors. Asides, there are probable factors that can drive the rapid adoption of AI as revealed by the TAM 3 model. Therefore, academic libraries in Nigeria should be ready to drive the rapid adoption of AI due to its immense benefits in diverse areas in Librarianship.

In conclusion, the full adoption of AI by academic libraries in Nigeria may seem to be a daunting task, but the payoffs cannot be overlooked. Therefore, in a bid to spur the readiness and use of AI technologies by academic libraries in Nigeria, the following recommendations are hereby made:

- i.** Academic libraries should be involved in organizing conferences, seminars and workshops for academic librarians in order to improve their level of awareness and adoption of AI.
- ii.** Academic libraries should organize workshops for librarians on likely ethical issues in AI adoption and ways of dealing with ethical dilemmas if confronted in the course of discharging their duties and responsibilities.

- iii. Academic libraries should participate in the design of AI tools, and most especially, generate and update AI content to meet users' needs and expectations.
- iv. Academic libraries should organize AI literacy programs continually for librarians for the purpose of acquiring multi- skills to improve their AI skill sets.
- v. Academic libraries should be involved in organizing user education programs whereby library users are trained to use diverse AI tools for different application areas within and outside the library environment.
- vi. Academic libraries should be supported by their Parent institutions in terms of funding in their uptake of AI technologies for the enhancement of library operations and efficient service delivery, and equally creating an enabling environment for AI users and the library at large.
- vii. Lastly, academic libraries should ensure that AI developers adhere to the ethical standard of privacy and inclusivity in Librarianship.

Suggestions for Future Studies

There are still very few empirical studies in the literature on AI adoption by academic libraries in Nigeria, therefore, there is an urgent need for researchers to undertake empirical studies as the adoption of AI improves exponentially, ranging from impediments constantly faced by librarians in the adoption of AI and from other varying perspectives that may be applicable to academic libraries in Nigeria.

References

- 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. <https://doi.org/10.1108/LHTN-01-2023-0007>
- 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. <https://doi.org/10.1080/10875301.2022.2086196>
- Asemi, A., & Asemi, A. (2018). Artificial Intelligence(AI) application in Library Systems in Iran: A taxonomy study. *Library Philosophy and Practice (e-Journal)*. <https://digitalcommons.unl.edu/libphilprac/1840>

- Cox, A. M. (2021). The role of the information, knowledge management and library workforce in the 4th industrial revolution. CILIP. <https://www.cilip.org.uk/general/custom.asp?page=researchreport> www.cilip.org.uk/resource/resmgr/cilip/research/tech_review/cilip_%e2%80%93_ai_report_-_final_lo.pdf
- Harisanty, D., Anna, N. E. V., Putri, T. E., Firdaus, A. A., & Noor Azizi, N. A. (2022). Leaders, practitioners and scientists' awareness of artificial intelligence libraries: A pilot study. *Library Hi Tech, ahead-of-print*(ahead-of-print). <https://doi.org/10.1108/LHT-10-2021-0356>
- Heath, N. (2018). *What is AI? Everything you need to know about artificial intelligence*. www.zdnet.com/article/what-is-ai-everything-you-need-to-know-about-artificial-intelligence/
- Huang, Y. H. (2022). Exploring the implementation of artificial intelligence applications among academic libraries in Taiwan. *Library Hi Tech*, (ahead-of-print). <https://doi.org/10.1108/LHT-03-2022-0159>
- Hussain, A. (2023). Use of artificial intelligence in the library services: Prospects and challenges. *Library Hi Tech News*, 40(2), 15–17. <https://doi.org/10.1108/LHTN-11-2022-0125>
- Irizarry-Nones, A., Palepu, A., & Wallace, M. (2017). *Artificial intelligence (AI)*. www.bu.edu/lernet/artemis/years/2017/projects/FinalPresentations/I.%20Presentation.pdf
- Li, R., Huang, Z., Kurniawan, E., & Ho, C. K. (2015). AuRoSS: An autonomous robotic shelf scanning system. *IEEE/RSJ International Conference on Intellig*
- Lowendahl, J. M., & Calhoun Williams, K. (2018). *5 best practices for artificial intelligence in higher education*. Gartner group.
- Omame & Alex-Nmecha (2020). Artificial intelligence in libraries. <https://www.researchgate.net/publication/338337072>. DOI: 10.4018/978-1-7998-1116-9.ch008
- Stone, Z. (2019). *This new library of the future brings you your books via robot*. <https://www.fastcompany.com/1681760/this-newlibrary-of-the-future-brings-you-your-books-via-robot>
- Subaveerapandiyani, A. (2023). Application of artificial intelligence (AI) In libraries and Its impact on library operations review. *Library Philosophy and Practice (e-journal)*. 7828. <https://digitalcommons.unl.edu/libphilprac/7828>
- Suthakorn, J., Lee, S., Zhou, Y., Choudhury, S., & Chirikjian, G. S. (2002). A robotic library system for an off-site shelving facility. *Proceedings of ICRA '02 -IEEE International Conference on Robotics and Automation*. 10.1109/ROBOT.2002.1014266
- Tella, A. & Ajani, Y. A. (2022). Robots and public

libraries. <https://www.researchgate.net/publication/361941297>
DOI: 10.1108/LHTN-05-2022-0072

Venkatash, V. & Bala, H. (2008). Technology Acceptance Model 3 and a research Agenda on interventions. *Decision Sciences*, 39(2), 273-315. <https://doi.org/10.1111/j.1540-5915.2008.00192.x>

Viera, C. (2023, April 5). 5 ways AI impact libraries. <https://www.aje.com/arc/ways-artificial-intelligence-impact-libraries>

Weijia, G. U. O. (2022). Research on influencing factors of libraries' artificial intelligence readiness. *Journal of Agricultural Library and Information Science*, 34(5), 47-56. <https://doi.org/10.13998/j.cnki.issn1002-1248.22-0016>

Winkler, B., & Kizsl, P. (2022). Views of Academic Library Directors on artificial intelligence: A Representative Survey in Hungary. *New Review of Academic Librarianship*, 28(3), 256–278. <https://doi.org/10.1080/13614533.2021.1930076>

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. <https://digitalcommons.unl.edu/libphilprac/6804>