Graduate Journal of Interdisciplinary Research, Reports & Reviews
(Grad.J.InteR^3)
ark:/85846/JPR3.2025AR.03010001
https://doi.org/10.5281/zenodo.15522086

ISSN(E): 2584-2919
Vol.03, No.01 (2025)
pp.1-15

Research Article

The Double-Edged Sword of Artificial Intelligence in Academic Libraries and Research

ONWUBIKO Emmanuel Chidiadi

Alex Ekwueme Federal University, Ikwo, Nigeria.
ORCID: https://orcid.org/0000-0001-9386-4972
Email: onwubikoemma@yahoo.com (Corresponding Author)

(Received: 08-12-2024; Accepted: 05-03-2025; Published Online: 28-03-2025)

ABSTRACT:
Background: Artificial Intelligence (AI) which as described by Onwubiko is a replication of human intelligence planted in machines as the brain and programmed to think and act as human but powered by computer.
Purpose: The study is an investigation into the beautiful and ugly sides of applications and utilization of artificial intelligence (AI) in Academic libraries and research.
Methods: It adopted a descriptive survey, while a Likert four point type structured questionnaire was the only instrument used for data collection. The instrument was validated by three experts in measurement and evaluation using Cronbach's alpha. Result showed coefficient of α=0.80. Data collected were analyzed using frequencies and simple percentile and presented in tables.
Results: The outcome of the study revealed among other things that application and use of AI in academic library will enhance service provision to users and can positively enhance academic research. While on the negative side, AI may not always provide accurate prediction or decision, depending on the complexity of the task and quality of data. With it, academic research, data security is not guaranteed that at a point in time. Also, researchers might start to think that AI knows everything and can replace human researchers among others.
Conclusions: Librarians and researchers agree that the application and utilization of AI will enhance library services and also enhance researchers' scientific discovery and accelerates research process. Librarians in academic libraries in Nigeria should discard the allayed fears and view AI from the angle that it is a vital tool for the provision of vital information and enhancement of knowledge.

Keywords: Artificial Intelligence, Academic library, Librarian, Researcher, Information and Communication Technology, ChatGPT

1. Introduction

Artificial Intelligence (AI) which as described by Onwubiko is a replication of human intelligence planted in machines as the brain and programmed to think and act as human but powered by computer [1]. As noticed in robots, it has brought about a new era of innovation, altering the sources of information, how it is generated, managed as well as the way it is distributed and utilized. In the past two decade, the evolution and advancement of AI is not only creating significant impact in virtually all human field it has also caused a significant shift in the technological environment. Artificial intelligence (AI), which is commonly defined as a machine's capacity to mimic intelligent human behavior is variety of tools intended to provide robots the ability to carry out operations that normally call for human intelligence [2]. It has grown from a science fiction idea to a real, widespread force that affects many facets of our everyday life covering the ability to solve problems, pick up knowledge from experience, comprehend spoken language and even visualize as humans [3]. In recent time, technological developments in machine learning, neural networks, and computing power have propelled the rise of AI, bringing in a world of previously unimaginable possibilities. It is

© 2025 Author(s). This article is published under the CC-BY license at http://jpr.vyomhansjournals.com.

against this backdrop that Tech Target asserted 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 as well as the ability of a digital computer or computer-controlled robot to execute tasks often associated with intelligent beings [4].

The phrase is widely given to the endeavor of producing systems with human-like cognitive processes, such as the ability to reason, discover meaning, generalize, or learn from past experience. Despite ongoing increases in computer processing speed and memory capacity, no programs can yet match human adaptability across broader fields or in activities requiring extensive everyday knowledge. From the above definitions and modus operandi of AI, it can be deduced that AI is super intelligence of machine in the form of robots that perform both the human intelligence and extra-ordinary functions and roles powered by computer comprising an expert system, fuzzy logic, artificial neural network, evolutionary algorithms, case-based reasoning, image processing, natural language processing, speech recognition, and robotic.

In a broad term, the belief is that AI has the potential to change how we live, work and play as it has been effectively used in business to automate tasks done by humans, including customer service work, lead generation, fraud detection and quality control. In a number of areas, AI can perform tasks much better than humans. Particularly when it comes to repetitive, detail-oriented tasks, such as analyzing large numbers of legal documents to ensure relevant fields are filled in properly, AI tools often complete jobs quickly and with relatively few errors [4]. Furthermore, the assertion is that AI also holds significant potential in the dissemination of information. Actually, in the age of AI, Selective Dissemination of Information (SDI) can be greatly enhanced by leveraging AI technologies and algorithms [5].

Libraries especially, academic libraries are not left out in the phenomenal transformation. As libraries situated within tertiary institutions, academic libraries are by obligation to provide effective information services that would enhance teaching, learning, and research within the university community. Research plays an important role in universities and other higher institutions of learning. Though teaching and learning are important aspects of the tertiary education system, more emphasis is on research. Research, in particular, is crucial to the survival of tertiary institutions being the fundamental process of knowledge acquisition. For members of faculty to impart knowledge, they must engage in research to deepen their understanding of concepts, and for students to learn, there is also the need to conduct research, with the view of seeking and identifying solutions to problems. Research is essential within the academic environment as it remains the only way to solve the problems in education and society [1]. The academic libraries to this end are at the forefront in the provision of relevant information resource materials to the academic community which comprises of the students, lecturers, staff, researchers and the entire personnel in the academic environment, in other to support teaching, learning and research needs. Academic libraries therefore play the role of collaborators when they provide services such as research data management, open scholarships, bibliometric and systematic reviews to their research work [6].

The assertion across academic librarians and academic information managers which may not be far from the truth is that the rapid advancements in AI and robotics have brought about transformative changes across various industries and academic libraries should not be in the exception. Academic Libraries serve as information hubs fostering learning, research and community engagement. Integrating AI and robotics into library services therefore has the potential to enhancing user experience and expanding access to information in innovative ways [1]. The bottom line is that academic libraries which include colleges and university libraries are specifically established to support the tripartite functions of learning, teaching and research in their various parent institutions. One known fact is that a nation cannot develop in isolation of her human resources. Tertiary institutions which by definition are institutions for the advancement and dissemination of knowledge are important agents in the development of human

© 2025 Author(s). This article is published under the CC-BY license at http://jpr.vyomhansjournals.com.

resources of any nation which is achieved through research. This major role in national development, writes Onwubiko is achieved through their programmes of teaching, learning and research totally backed up by the academic libraries which serve as the information hub and pivot on which all academic activities revolve especially academic researches with which the worth of every institution of higher learning is scaled [6].

Academic libraries to this end, serve as veritable tool for researchers to carry out meaningful academic researches that can stand the test of time in the academia and also prove the worth of the researcher as well as are specifically provide relevant and up to date information to enhancing faculty members researches in an era of .publish or you perish. On the other hand, with the invention of Artificial intelligence and the inclusion in academic libraries as one the means of enhancing services, its function in academic research has obtained relevant attention in recent years. This transformative technology, powered by machine learning algorithms and data analytics, is completely changing the research landscape. As with the aid of AI, researchers can process vast amounts of data, extract meaningful insights, and automate repetitive tasks [7]. Indeed, AI has the potential to fasten the pace of scientific discovery and enhance the quality of research outcomes. In fact, AI has brought about notable changes to academia, revolutionizing the way research is conducted, knowledge is generated, and education is delivered.

The inclusion of AI and AI tools in academic libraries as noted Vijayakumar and Sheshadri will bring a turnaround in academic library services and management as it will spur information technology connectivity and also actively support information usage as well as easing clients' search and immediately address their needs [8]. The impact of artificial intelligence and advanced computer technology on the nature of future libraries will be enormous and the quality difference varies from experts. Other highlighted areas AI tools can be of immense benefit to the university libraries as it concerns library services management and delivery include circulation services, shelving of books, cataloguing of library materials, among others. Many academic libraries, most especially those in the developed countries make use of AI for the provision of library services to the users [9].

Al-Aamri and Osman in their review of relevant Arabic and foreign studies that concentrated on AI applications in knowledge management inside information institutions observed that many libraries are already integrating AI technology in various services, such as technical support and reference services, to facilitate users' access to information [10]. The outcome also revealed how AI has improved library services and underlined the need for having a solid technical foundation and knowledgeable staffs as essential to maximizing its advantages.

Against the true state and nature of academic research, Artificial Intelligence (AI) has the potential to revolutionize academic research by automating repetitive tasks, analyzing large data sets, and even generating hypotheses. Machine learning algorithms can sift through voluminous literature, highlight gaps in existing research, and suggest new avenues for inquiry [11]. The above scenario no doubt makes a researcher a passerby and not a participant. A critical analysis therefore of the potentials of AI, if left unchecked, will play down the true purpose of academic research and academic researchers may no longer see the actual values of academic libraries. Furtherance, if the effect of the use of AI in academic research is not highlighted regardless of its accrued benefits; it would pose as a danger spice to the true essence of academic research and the optimal utilization of academic libraries for research.

Furtherance, it has been noticed that AI implementation can reduce human errors and inefficiencies, since there would be less redundancy and error free operations the library can satisfy the needs of the users even without meeting them physically. This will also allow librarians to focus on more important tasks like developing the library collections, the research sections etc. They aim to simulate human intelligence with computers. As posited, AI sub areas as expert systems is a computerized knowledge system that serves as an interface or gateway for providing access to the database and obtaining relevant information, while, the ultimate generation of computer language is Natural

© 2025 Author(s). This article is published under the CC-BY license at http://jpr.vyomhansjournals.com.

Language in that computer can understand the key language concepts within a question and solution through the natural language process [8].

On the other hand, the invention of AI technology has also its ugly side to the world as a whole and to the academic libraries in particular. Ultimately library automation brought about transformation to library services resulting to effective and efficient service delivery. The emergence of AI, it is believed, its applications to libraries will further enhance the services. This assertion has led to this call for libraries to explore the best of this technology without considering the ugly side of it. There is this school of thought that believes that it applications in the libraries will be a wind that may turn to tsunami regardless of the fact that most libraries especially those of the developing nations like Nigeria are currently battling operational inefficiency, technical disadvantage, challenges keeping their present audience and attracting new ones, and more and in this regards Korinek and Stiglitz maintained that advances in AI technologies might bring about job loss or job polarization [12].

In their exploration of the potential and limitations of using artificial intelligence (AI) in academic libraries in Africa Echedom and Okuonghae observed though that AI has the potential to significantly improve information services and provide a new level of efficiency but there are still challenges, such as inadequate infrastructure and a lack of proper training [13]. While Yoon, Andrews and Ward conducted a survey to learn about the opinions of North American librarians regarding the use of AI and associated technologies in libraries and found favourable perception of these technologies among academic and public librarians and also discovered, that 21% of librarians were already utilizing AI and related technologies and showed intense curiosity about these technologies and similar perspectives on whether AI is appropriate for various library tasks [14]. Significant obstacles to the ethical application of AI include problems like bias in training dataset that results in discriminating outputs, potential abuse for malevolent intent, and indistinct boundaries between generated and real information. This pose a challenge to educators as their job is changing in an era marked by significant breakthroughs in digital technology and AI to suit the changing requirements of students who see the latter as the savior to academic rigor. Within this paradigm is a chasm that needs to be filled so as to ensure that educators and students are ethically salvaged from falling prey to the misuse and the disorientation of the utopian information false belief. In this respect, Librarians are expected to bring to bear their professional competencies as AI literacy apostles and ethical advocates by situating themselves as the go-between among students, generative-AI and educators. These information experts are trained to help students and educators navigate the complexity of generative-AI domain by acting as information stewards, fact pointers, knowledge pool and encouraging latent critical thinking capabilities, ethical and netiquette considerations, stimulating generative-AI student-lecturer bond and providing a deeper comprehension of the digital world. Regardless of the rapidly evolving landscape of AI, which presents unparalleled opportunities there is still this fear of ethical intricacies experienced by researchers, librarians, students and educators in the use of AI that calls for an urgent global attention. It is on this premise that this research becomes imperative as to ascertain if there is need for AI in our libraries and also to determine the reasons behind the allayed fear. As a result, it can be said that in the rapidly evolving landscape of AI, the rise of AI presents unparalleled opportunities and ethical challenges that is calling out for Librarians globally to fulfill this role.

2. Objectives of the Study

The main objectives of this study therefore are to:

I Ascertain the need for application and utilization of artificial intelligence in academic libraries and

II Identify areas of fear in the application and utilization of AI in academic libraries

2.1. Research Questions

The study is also guided by two research questions:

I Why the need for application and utilization of AI in academic libraries?

© 2025 Author(s). This article is published under the CC-BY license at http://jpr.vyomhansjournals.com.

II What are the fears over the application and utilization of AI in academic libraries?

3. Review of Literature

In recent time, there have been empirical studies in the application and use of AI in libraries as it is believed that Artificial Intelligence (AI) application in libraries holds immense potential for revolutionizing library operations and enhancing user experiences. In this regard, Bi et al. reviewed Artificial Intelligence Technologies in Emerging Smart Libraries. They examine new technologies such as IoT, RFID, WiFi, BLE, NLP, Deep Learning, Recommender Systems, and OCR. They also delve into innovative library services such as attack prevention, machine vision, and intelligent circulation services using sensors, smart authentication, identification, and encryption. They provide a comprehensive survey on AI and IoT technologies in intelligent libraries, presenting a systematic and structured overview of this growing field. The study highlights the improvements that can be made in traditional librarianship with the integration of AI and IoT. The authors also discuss the challenges and prospects in the field [15].

Also Zhang in his study on the creative use of artificial intelligence (AI) in library management investigated how AI can increase library staff productivity and improve reader services through an ant colony optimization neural network model [16]. The result of this model, which integrates the ant colony optimization technique with the evaluation of library reader services, was determined to be precise and sound in science. Testing in a library environment demonstrated the effectiveness of this model's application. The deduction is that AI in library administration can significantly alter the library industry and lead to the intelligent and informational design of libraries.

While Pence in his study investigated how artificial intelligence (AI) might affect libraries. In which case, he identifies various vital uses of AI in libraries which include extensive data research, remote access, and data analysis. He was of the opinion that libraries can transform into virtual hubs for knowledge and connectivity by working with existing AI programs on campus, freeing librarians to provide advanced research expertise [11]. The essay offers a thorough analysis of the potential effects of AI on libraries and makes recommendations on how they may adopt and profit from this technology. The Harisanty and others study looked into the leaders of Indonesian academic libraries' level of AI awareness [17]. The survey discovered the participants' opinions of AI and its potential advantages for libraries were positive and enthusiastic. Improved circulation services, improved classification of library resources, data analytics, and research support are some of the benefits of AI that have been cited. To employ AI effectively in libraries, the participants also underlined the need for librarians to have a working knowledge of IT, data analytics, library management, and user behaviour. However, the participants also noted several difficulties that can prevent the adoption of AI in libraries, such as budgetary management problems, leadership vision issues, and murky policy frameworks.

Whereas, Thalaya and Puritat in their study looked at how the application of AI technology can raise the calibre of library services and increase user happiness [18]. The trial results showed that employing AI to respond to queries regarding book locations, opening times, and other pertinent information saved the librarian's time and enhanced the management of library services. The satisfaction survey findings revealed an increase of 0.45% among nursing students and instructors, which improved library service management. In the future, AI technology will bring about users satisfaction with the library's services.

In same vein, Harisanty et al., investigated the utilization of artificial intelligence (AI) in libraries and discovered that AI could be easily incorporated into libraries for administrative functions like staffing, technical functions like cataloguing, and informational functions like reference and information literacy [30]. To thoroughly implement AI in libraries, numerous obstacles must be addressed.

Hussain research was on the potential and difficulties of using artificial intelligence in library services [19]. This study used a qualitative research methodology.

© 2025 Author(s). This article is published under the CC-BY license at http://jpr.vyomhansjournals.com.

The results showed 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 findings imply that implementing AI in libraries may result in positive transformation and hasten library growth. The paper also identifies several low-cost AI apps that librarians and information specialists might utilize to enhance library services.

Xu studied the application of artificial intelligence (AI) in the library sector [20]. The study explores the existing literature on AI and libraries and investigates AI's significant roles in libraries-related industries. It focuses on six key technologies: OCR, data mining, natural language processing, face recognition, knowledge mapping, and machine learning, providing a detailed analysis of each technology and its application characteristics in the library field. The study presents an overview of the practical application results of AI in libraries, analyses the impact of AI on the development and reform of libraries, and examines the current status of various AI technologies in the field. Additionally, it identifies potential challenges and problems that libraries may face in implementing AI-related technologies.

Liu et al., conducted a study analyzing the correlation between artificial intelligence (AI) and libraries and the shift in research trends during the COVID-19 pandemic [21]. The researchers gathered secondary data from Scopus using keywords such as "AI," "library," and "repository" from 1993 to 2022. The findings revealed that keywords like "human," "deep learning," "machine learning, "surveys," and "open-source software" became popular in 2020 and closely related to digital libraries. The annual scientific production of papers also significantly increased in 2021. The study highlights the importance of AI implementation in libraries to support repositories during the pandemic. It suggests that librarians can maximize AI-based repository services and create policies using AI. The research identifies themes and knowledge gaps in AI in library repositories, providing insights for researchers, academicians, and practitioners to conduct further research in this area.

In their work titled; Application of AI in Library Digital Reading Promotion Service" Lin et al., explored the role of artificial intelligence (AI) in transforming library services, with special focus on digital reading promotion [22]. With the emergence of the era of great intelligence, libraries face challenges and opportunities for remodeling their services. Third-party companies, called "data aggregators," often provide digital reading promotion services. The article highlights the increasing popularity of online reading and the need for libraries to adapt their services to meet readers' demands. AI technology can enhance library services by identifying customers' interests and reading habits, allowing for personalized recommendations based on user preferences and reading history. This technology enables libraries to provide tailored suggestions to users, even considering factors such as reading time for each book or article.

In the same vein, Adetayo noted that artificial intelligence (AI) chatbots, such as ChatGPT, have become valuable tools for academic libraries [23]. They provide rapid and accurate responses to user inquiries, offering convenience and accessibility outside traditional library hours. ChatGPT's advanced language processing capabilities enable it to generate human-like and contextually relevant responses, making it an effective virtual assistant. Academic libraries can utilize ChatGPT for reference services, selective dissemination of information, and collection development. However, challenges exist, including the potential loss of library employment, misuse of the technology, inaccurate query responses, and limited comprehension compared to human librarians. Despite these challenges, ChatGPT has the potential to enhance library services by automating routine tasks and freeing up librarians' time for more complex assistance, ultimately improving the quality and efficiency of academic library services.

On their part Haffenden et al., discuss the use cases of the model in academic libraries, including text classification, enhanced searchability and improved OCR cohesion. They emphasize the value of AI for making digital collections more accessible and enabling new forms of research [24]. The conclusion highlights

© 2025 Author(s). This article is published under the CC-BY license at http://jpr.vyomhansjournals.com.

the reciprocal relationship between AI and libraries, suggesting that libraries can contribute to the future development of AI. There are also several challenges and ethical considerations that librarians need to address. As explained by Patron, AI systems are trained on data, and if the training data is biased or reflects societal prejudices, the AI models can perpetuate those biases [25]. To this end, librarians need to carefully curate and preprocess data to ensure fairness and mitigate bias in AI models.

Other ethical challenges he added include that AI research often involves handling large amounts of data, including personal and sensitive information. In which case, it behooves researchers to ensure that data collection, storage, and analysis adhere to relevant privacy regulations and obtain informed consent from participants and also that some AI algorithms, such as deep learning models, can be considered black boxes, making it difficult to understand and interpret their decision-making processes. In academic research, it is important to strive for transparency and develop methods to explain the reasoning behind AI-driven results. This implies that researchers should aim for reproducibility by providing clear documentation of their AI models, algorithms, and datasets. It is crucial therefore to ensuring that AI models are robust and can generalize well to unseen data, avoiding over fitting or biased results.

It is also believed that, AI research often involves collaboration and the use of pre-existing datasets and models. To this end, clear guidelines need to be established regarding intellectual property rights, data ownership, and the sharing of AI models and code among researchers. As AI becomes more autonomous, questions of accountability and liability arise. In view of this, researchers must consider the ethical implications of their AI systems and be aware of the potential risks and consequences associated with their deployment and there is also the ethical problem social impact and dual-use and misuse. As has been noted, AI technologies have the potential to disrupt industries and automate certain job roles as well under dual-use and misuse, AI technologies developed for academic research can have both positive and negative applications and may expose researchers to dual-use scenarios that may lead to ethical foul, misuse of data or unintended harm.

A recent survey revealed that many students believe AI negatively impacts their understanding of concepts, research skills, creativity, and critical thinking. Interestingly, despite these challenges, some students also highlighted the potential benefits of AI in improving academic performance if used correctly. Inasmuch as scientists are constantly exploring new tools to advance their research which include the use of artificial intelligence (AI). As noted, AI can be very helpful as it has the power of improving communication, accelerating discovery and enhancing education. But it can also cause some problems if one is ignorance of its potential negative effects which include inter-alia: the data that AI uses might be biased and not fair to everyone; people might start relying too much on AI and forget to think for themselves; AI might make mistakes when it tries to understand data and using AI might be unfair to some people and raises ethical concerns [25]. Likewise, when AI uses data that is not fair or inaccurate, the responses to scientist questions will be biased or inaccurate as well. This can cause problems and have a negative impact on new discoveries. As explained, AI might not be able to recognize some people's faces if the training data for facial recognition technology was only limited to images of white individuals. This can have serious consequences because it might cause the wrongful arrest of certain populations [26].

Another concern is that researchers might start to think that AI knows everything and can replace human researchers. While AI can assist researchers in understanding large amounts of data, it cannot replace creativity, intuition, and critical thinking skills that are essential in scientific research. Relying too much on AI can lead to a lack of diversity in research perspectives and limit our own scientific discoveries. The argument is that AI algorithms can analyze vast amounts of chemical data to identify potential drug candidates, but only human intuition and creativity can look at other important factors, like unforeseen side effects that cannot be predicted by the algorithm [27]. There is also the problem of Misinterpretation of data. Sometimes

© 2025 Author(s). This article is published under the CC-BY license at http://jpr.vyomhansjournals.com.

AI might make a mistake when it tries to understand scientific data.

This is because AI is not as smart as people are. It may not understand the context and nuances of scientific language, leading to inaccurate responses. AI might not be able to understand the difference between two things that look very similar but are actually different. This can cause a problem if scientists use AI to make important decisions based on wrong information. Evidence has further shown that AI algorithms are used to analyze large amounts of genetic data to identify patterns and associations that may be difficult for humans to detect. However, these algorithms may not take into consideration the biological function of the gene, making it difficult to determine whether the genetic variant is actually causally related to the disease or whether it is simply a bystander. This can lead to potentially harmful interventions [28].

Using AI in research noted Raimundo and Rosário raises ethical concerns around data privacy, data security, transparency and ownership [29]. AI algorithms require large amounts of data to function, and it is important to ensure that the information that scientists use is obtained ethically and with the proper consent of the individuals involved. Additionally, the use of AI in research may lead to the commodification of data, where individuals' personal information is bought and sold without their knowledge or consent. As illustrated, a researcher may collect personal data from individuals without their informed consent, or they may use data that has been obtained unethically, such through hacking or unauthorized access. This can result in harm to individuals, such as identity theft or financial fraud.

4. Methodology

The study adopted a descriptive survey design and was guided by two research questions. The population sample of the study was 150 librarians and lecturers selected from 75 universities in Nigeria covering both public and private universities through random sampling technique with the aid of research assistants from each of the universities while a Likert four point type structured questionnaire was the only instrument used for data collection. The instrument was validated by three experts from the department of measurement and evaluation of Nnamdi Azikiwe University, Awka, Nigeria using Cronbach's alpha. Result showed coefficient of α=0.80. The questionnaires were sent through respondents emails and were also returned through the same channel 100%. Data collected were analyzed using frequencies and simple percentile and presented in tables.

5. Analysis and Interpretation of Data

RQ 1: Why the need for the application and utilization of AI in academic libraries?

Table 1 above displays data collected and analyzed in respect of the need for the application and utilization of AI in academic libraries. As shown, of all the items only two, which are, AI will improve students' engagement and motivates them and that it will bring about cost-effective service delivery were below the mean benchmark threshold of 2.50, which indicates that they were rejected as among the reasons why AI is needed in service delivery in academic library while the other items in table mean where above the benchmark indicating that the respondents strongly agree or agree that they are areas AI can aid in service delivery in academic library therefore needed. The data show that the 150 respondents or 100% strongly agree that AI is needed in service delivery in academic libraries as AI is transforming the research process itself as it can assist researchers in literature review and knowledge synthesis by automatically, It can automate repetitive tasks, freeing up researchers' time to focus on higher-level cognitive activities, AI impacts on the way data is being analyzed, AI allows for virtual library services as well as that AI will enhance searchability.

RQ 2: What are the fears over the application and utilization of AI in academic libraries?

As shown in table 2, apart from elimination of jobs due to the growing capabilities of Artificial intelligence (AI) which had a statistical mean of 1.16, all other items in the table statistical mean were 3.12 to 4.00 which indicate acceptance of them as the reason why librarians are afraid of the inclusion of AI in service delivery in academic library. In fact the data did show that the 150 respondents representing 100% strongly

© 2025 Author(s). This article is published under the CC-BY license at http://jpr.vyomhansjournals.com.

Table 1: Need for the application and utilization of AI in academic libraries

Items	SA		A		DA		SDA		Mean
	F	%	F	%	F	%	F	%	
AI will improve students engagement and motivates them	23	15.33	30	20	52	34.67	45	30	2.21
AI will enhance service provision to users	65	43.33	70	46.67	6	4	9	6	3.27
It will bring about cost-effective service delivery	12	8	34	22.67	56	37.33	48	32	2.06
It will lead to continuous evaluation and improvement in the service of the library in the long run	53	35.33	39	26	30	20	28	18.67	2.78
AI can handle complex and dynamic situations including natural language processing, robotics and self-driving	75	50	35	23.33	16	10.67	24	16	3.07
AI can make decisions based on complex algorithm and data analysis without human intervention	80	53.33	23	15.33	29	19.33	18	12	3.10
AI impacts on the way data is being analyzed	150	100	***	***	***	***	***	***	4.00
AI tool enables researchers to identify patterns, correlations, and trends that may not be easily discernible through traditional methods	123	82	27	18	***	***	***	***	3.82
AI is transforming the research process itself as it can assist researchers in literature review and knowledge synthesis by automatically	150	100	***	***	***	***	***	***	4.00
AI will facilitate scanning and extracting relevant information from a wide range of scientific papers	76	50.67	30	20	14	9.33	30	20	3.01
It can automate repetitive tasks, freeing up researchers' time to focus on higher-level cognitive activities	150	100	***	***	***	***	***	***	4.00
Use of AI is capable of doing the job faster than a human	128	85.33	22	14.67					3.85
Application of AI reduces human error and defects	111	74	12	8	20	13.33	7	4.67	3.49
Use of AI makes it easy to do complex work without stress	120	80	12	8	14	9.33	4	2.67	3.65
AI allows for virtual library services	150	100	***	***	***	***	***	***	4.00
AI will make retrieval of information easy	65	43.33	36	24	29	19.33	20	13.33	2.97
AI is capable to explore things which are in outer space	150	100	***	***	***	***	***	***	4.00
AI will make information accessible to users without stress	79	52.67	24	16	26	17.33	21	14	3.07
AI will Enhance searchability	150	100	***	***	***	***	***	***	4.00
AI will make digital collections more accessible and enabling new forms of research	129	86	21	14	***	***	***	***	3.86

**Key: SA = Strongly Agree, A = Agree, DA = Disagree, SDA = Strongly Disagree* **Mean Benchmark = 2.50*

agree that the application and utilization of AI in academic libraries will poses a lot danger as AI may

© 2025 Author(s). This article is published under the CC-BY license at http://jpr.vyomhansjournals.com.

Table 2: Fears over the application and utilization of AI in academic libraries

Items	SA		A		DA		SDA		Mean
	F	%	F	%	F	%	F	%	
AI may not always provide accurate prediction or decision, depending on the complexity of the task and quality of data	150	100	***	***	***	***	***	***	4.00
The data that AI uses might be biased and not fair to everyone	85	56.67	49	32.67	11	7.33	5	3.33	3.43
AI might make mistakes when it tries to understand data	95	63.33	23	15.33	12	8	20	13.33	3.29
Researchers might start relying too much on AI and forget to think for themselves	150	100	***	***	***	***	***	***	4.00
Researchers might start to think that AI knows everything and can replace human researchers	101	67.33	36	24	13	8.67	***	***	3.59
Using AI might be unfair to some people and raises ethical concerns	150	100	***	***	***	***	***	***	4.00
Elimination of jobs due to the growing capabilities of AI	27	18	30	20	33	22	60	40	2.16
Bias due to improperly trained algorithms and human bias.	89	59.33	31	20.67	19	12.67	11	7.33	3.32
It may be misused due to deep fakes and phishing	139	92.67	7	4.67	4	2.67			3.86
It raises legal concerns, including AI libel and copyright issues	150	100	***	***	***	***	***	***	4.00
AI in research may lead to the commodification of data	150	100	***	***	***	***	***	***	4.00
With AI in academic research, data security is not guaranteed	150	100	***	***	***	***	***	***	4.00
There is limited amount of AI experts of library automation vendors	96	64	12	8	23	15.33	19	12.67	3.23
There is limited natural language capabilities in AI	75	50	33	22	27	18	15	10	3.12
Lack of technical skills by library staff	150	100	***	***	***	***	***	***	4.00
Dehumanized working experience	150	100	***	***	***	***	***	***	4.00
Inherent complexities of expert system development	65	43.33	57	38	19	12.67	9	6	3.19

**Key: SA = Strongly Agree, A = Agree, DA = Disagree, SDA = Strongly Disagree* **Mean Benchmark = 2.50*

not always provide accurate prediction or decision, depending on the complexity of the task and quality of data, Researchers might start relying too much on AI and forget to think for themselves, Using AI might be unfair to some people and raises ethical concerns, It raises legal concerns, including AI libel and copyright issues, AI in research may lead to the commodification of data, With AI in academic research, data security is not guaranteed and dehumanized working experience among other allayed fears.

6. Discussion of Results

The finding of this study did reveal that exploring AI in university library can positively enhance academic research. As shown in table AI has impacted on the way data is being analyzed positively as its tools enables researchers to identify patterns, correlations, and trends that may not be easily discernible through traditional methods and it is also transforming the research process itself as it can assist researchers in literature review and knowledge synthesis by automatically scanning and extracting relevant information from a wide

© 2025 Author(s). This article is published under the CC-BY license at http://jpr.vyomhansjournals.com.

range of scientific papers. Other areas it has impact on academic research include that AI can automate repetitive tasks, freeing up researchers' time to focus on higher-level cognitive activities as well as creating a leeway for academic research.

The outcome of this study is an affirmation assertion of Abbadia that AI can also be used in academic research by researchers to enhance their scientific discovery as AI can assist researchers in hypothesis generation, experiment design, and data analysis, accelerating the research process adding that AI-enabled automation streamlines research workflows, automates tasks like data collection and analysis and improves efficiency. She further revealed that AI has impacted on the way data is being analyzed. In that as a result of the emergence of AI researchers now leverage AI algorithms to analyze vast amounts of data quickly and efficiently. The use of this AI tool enables researchers to identify patterns, correlations, and trends that may not be easily discernible through traditional methods she added.

The study also discovered that exploring AI in university libraries for academic research may have some serious adverse effect on academic research. Among the adverse effects as shown in table 2 include that, data AI uses might be biased and not fair to everyone, researchers might start relying so much on AI instead of trusting on their capabilities thus forget to think for themselves. AI might also make mistakes when it tries to understand data, Using AI might be unfair to some people and raises ethical concerns, there may the problem of AI misinterpreting data and that at a point in time, researchers might start to think that AI knows everything and can replace human researchers among others [7].

This finding is in agreement with Dias and Torkamani who posits that AI has the problem of misinterpretation of data in that AI might make a mistake when it tries to understand scientific data as it is not as smart as people are and may not understand the context and nuances of scientific language, leading to inaccurate responses [28]. The study is also in conformity with the concern expressed by Heaven that researchers might start to think that AI knows everything and can replace human researchers [27]. While AI can assist researchers in understanding large amounts of data, it cannot replace creativity, intuition, and critical thinking skills that are essential in scientific research.

The study further discovered that AI driven academic researches are faced with lots of ethical challenges. Among them are that with AI data security is not guaranteed, AI driven academic research are faced with the issue of bias due to improperly trained algorithms and human bias, Legal concerns, including AI libel and copyright issues, Data privacy concerns and AI in research may lead to the commodification of data as well as the involvement of AI in academic research will lead to misuse of the system due to deep fakes and phishing.

This discovering is in tandem with Raimundo and Rosário views that using AI in research raises ethical concerns around data privacy, data security, transparency and ownership [29]. Inasmuch as AI algorithms require large amounts of data to function they added, it is also important to ensure that the information that researchers use is obtained ethically and with the proper consent of the individuals involved. They further revealed that the use of AI in research may lead to the commodification of data, where individuals' personal information is bought and sold without their knowledge or consent.

7. Conclusion and Recommendations

The outcome of this study has shown that the application and utilization of AI in academic library and research is that of a mixed feeling in that both librarians and researcher agree that the application and utilization will enhance library services and also enhance researchers scientific discovery as it can assist researchers in hypothesis generation, experiment design, and data analysis, as well as accelerates the research process among other benefits while on the other hand, there is these expressions of fear that the application and utilization of AI in academic libraries and research will among other things pose grievous ethical challenges and that researchers might start relying too much on AI and forget to think for themselves (see tables 1-2). Emphatically, many have not even begun to fathom the tremendous changes AI is bringing to

© 2025 Author(s). This article is published under the CC-BY license at http://jpr.vyomhansjournals.com.

the world and that academia and this technology are becoming increasingly intertwined and as it continues to advance, it is likely that academic libraries and researchers will continue to either embrace its potential or voice concerns about its risks. Be that as it may, it is natural for one to really bother about the vice that may be accruable from the use of AI in academic research from its use by unscrupulous users but one thing is sure, because of man's ability to adapt to situations fast, man is also disposed to use the same AI to counter those vices. The conclusion is that librarians and lecturers despite their negative perception of AI as a result of the fear of the unknown as displayed in table 2 still have positive perception of the Technology as they believe as shown in table 1 that AI applications and utilization in academic libraries in so many ways can enhance the library management and effective service delivery and facilitate academic research and that the skepticism about the application and utilizations in academic libraries and research is as result of presumed identified challenges.

In all, man by nature is allergic to change but the fact remains that in life the only thing that is constant is change and in a dynamic world, man must ever be prepared for change and when it comes to any transformation relating to information, libraries especially academic libraries as research hub must be at the forefront. Suffice it to say, that the spread of Artificial Intelligence certainly brings with it a combination of exciting opportunity and change. With forethought, planning, and consideration of the risks, libraries can ensure they are not only prepared for the changes that AI will bring but they are positioned to shape and then lead the world that AI is helping to create. Against this backdrop, the study recommends that:

I Librarians in academic libraries in Nigeria should discard the allayed fears and view AI from the angle that it is a vital tool for the provision of vital information or knowledge in line with the transformation agenda of the global sustainable development goals (SDGs) therefore must be harnessed to its fullest. In that the combination of AI and library and information science will be in sync with delivery on development of information for sustainable development as by so doing both will become public institutions and development agents.

II No matter the way it is look at, research has shown that AI is an asset to libraries and librarians thus librarians have significant role to play as AI can also play critical role in helping librarians make key decisions that will impact the future of the library. With this technology continuing to become more prevalent, librarians are also required to educate library users on Artificial Intelligence, and how it can enhance their daily life. This implies that librarians should not wait to be reminded to now tailor their efforts towards acquiring AI skills by training and retraining as to be prepared to face the challenges when the technology is finally introduced in their libraries and also to remain relevant in the scheme of things.

III As a follow up to the above, resolving the moral dilemma associated with job loss inasmuch as it requires strong policy frameworks and regulatory actions that call for governments, industry stakeholders, and academia to work together to create policies like re-skilling programs, tests with universal basic income, and ethical criteria for AI deployment, a well trained librarians with perfect AI skills need fear no fall. So the advice to librarians in federal universities in Southeast, Nigeria is embark on self sponsored training, retraining and retraining as there are many online courses now on AI and machine learning (ML) that are beneficiary to librarians.

IV The concern that increased use of AI could lead to the spread of disinformation and misinformation, not to mention security and privacy issues. Librarians can play a pivotal role in championing the responsible use of AI and must learn how to discern AI-generated text and images to pass these skills on to users and this can only be achieved when librarians are well trained and

© 2025 Author(s). This article is published under the CC-BY license at http://jpr.vyomhansjournals.com.

retrained. The bulk is therefore on the librarians table to utilize every opportunity offered by AI as by so doing both the libraries and librarians will be best for it.

V It is true that the implementation of AI in libraries as identified also poses certain challenges and considerations. These allayed fears which include Ethical concerns, privacy issues, and the need to ensure equitable access to information are important factors that must be carefully addressed. Libraries must balance the benefits of AI technologies and the preservation of human-centric values, ensuring that AI complements and enhances the work of librarians rather than replacing them. Moving forward, further research is needed to explore the long-term impact of AI on library operations, user behaviours, and information services. Additionally, collaboration between libraries, researchers, and technology developers is crucial to advancing AI solutions tailored specifically to the needs of libraries and their diverse user base.

VI Efforts should be made to promote knowledge sharing and the exchange of best practices to accelerate the adoption of AI technologies in libraries. AI has the potential to transform libraries into dynamic, user-centred spaces where information is easily accessible, and services are tailored to individual needs. By harnessing the power of AI, libraries can enhance their efficiency, expand their reach, and offer innovative experiences to their patrons. As AI continues to evolve, libraries must embrace these technologies while upholding their core values of providing equitable and inclusive access to information for all.

VII Finally, it is important for academic researchers to approach the use of AI with caution and thoughtfulness noting that while AI can certainly enhance academic research, one must ensure that it is not used to replace human researchers or perpetuate bias and discrimination. One must also be mindful of the ethical implications of using AI in research and take steps to protect the privacy and ownership of data.

Authorship contribution: Dr. Emmanuel Chidiadi Onwubiko is sole author.

Funding: No funding was used to support this research and the preparation of the manuscript.

Conflict of interest: The authors have no conflict of interest to report.

Declaration: The study has been conducted based on the method of document review in accordance with the qualitative approach of research and has been done on the basis of the secondary sources of data.

References

[1] Onwubiko, E. C. (2025) Effect of Exploring Artificial Intelligence in Academic Libraries on Academic Research: An Overview. In K. Sacco, A. Norton, & K. Arms (Eds.), Navigating AI in Academic Libraries: Implications for Academic Research, (pp. 41-58). IGI Global. https://doi.org/10.4018/979-8-3693-3053-1.ch003

[2] Britannica (2024). Definition and meaning of artificial intelligence. https://www.britannica.com/technology/artificial-intelligence

[3] 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. https://doi:10.1080/07391102.2020.1855250

[4] Tech Target (2024). How does AI works? http://www.techtarget.com/serachenterpriseai/definition/ai

[5] Okunlaya RO, Syed Abdullah, N & Alias R.A. (2022). Artificial intelligence (AI) library services innovative conceptual framework for the digital transformation of university education. Library Hi Tech., 40(6), pp.1869-1892

[6] Onwubiko, E.C. (2020). Library plus, Mauritius: Lambert Academic Publishing

[7] Abbadia, J. (2023). Exploring the role of AI in academic research. https://mindthegraph.com/blog/ai-in-academic-research/

[8] Vijayakumar, S & Sheshadri, K.N (2019). International Journal of Computer Sciences and Engineering, 7(16), https://doi.org/10.26438/ijcse/v7si16.136140

[9] Asemi, A & Asemi, A. (2018). Artificial Intelligence (AI) application in Library Systems in Iran: A taxonomy study. Library Philosophy and Practice

© 2025 Author(s). This article is published under the CC-BY license at http://jpr.vyomhansjournals.com.

(e-journal). 1840. https://digitalcommons.unl.edu/libphilprac/1840

[10] Al-Aamri, J and Osman, N. E (2022). The Role of Artificial Intelligence Abilities in Library Services. The International Arab Journal of Information Technology, 19(3A), pp.566–573. https://doi.org/10.34028/iajit/19/3A/16

[11] Pence, H. E. (2022). Future of Artificial Intelligence in Libraries. The Reference Librarian, 63(4), pp. 133–143. https://doi.org/10.1080/02763877.2022.2140741

[12] Korinek, A & Stiglitz, J. (2017), Artificial intelligence and its implications for income distribution and unemployment. NBER Working Paper No. 24174. National Bureau of Economic Research

[13] Echedom, A. U & Okuonghae, O (2021). Transforming academic library operations in Africa with artificial intelligence: Opportunities and challenges: A review paper. New Review of Academic Librarianship, 27(2), pp. 243–255. https://doi.org/10.1080/13614533.2021.1906715

[14] Yoon, J., Andrews, J. E & Ward, H. L (2021). Perceptions on adopting artificial intelligence and related technologies in libraries: Public and academic librarians in North America. Library Hi Tech, 40(6), pp. 1893–1915. https://doi.org/10.1108/LHT-07-2021-0229

[15] Dia, C.P. & Ke, F. (2022). Educational Applications of Artificial Intelligence in Simulation-Based Learning: A Systematic Mapping Review". Computer and Education: Artificial Intelligence, 3:100087. https://www.sciencedirect.com/science/article/pii/S2666920X2200042X?via%3Dihub

[16] Zhang, X. (2022). On the Innovative Work and Development of Library Reader Service in the Era of Artificial Intelligence. Wireless Communications

[17] 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 in libraries: A pilot study. Library Hi Tech, ahead-of-print (ahead-of-print). https://doi.org/10.1108/LHT-10-2021-0356

[18] Thalaya, N & Puritat, K. (2022). BCNPYLIB CHAT BOT: The artificial intelligence Chatbot for library services in college of nursing. 2022 Joint International Conference on Digital Arts, Media and Technology with ECTI Northern Section Conference on Electrical, Electronics, Computer and Telecommunications Engineering (ECTI DAMT & NCON), pp. 247–251. https://doi.org/10.1109/ECTIDAMTNCON53731.2022.9720367

[19] Haleem, A., Javaid, M., Quadi, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A Review. Science Direct, 3, pp. 275 – 285. https://www.sciencedirect.com/science/article/pii/S2666412722000137

[20] Xu, Z. (2023). Research on the application of artificial intelligence in the library sector. Third International Conference on Artificial Intelligence and Computer Engineering (ICAICE 2022), 12610, pp. 1420–1429. https://doi.org/10.1117/12.2671477

[21] Liu, M., Ren, Y., Nyagoga, L. M., Stonier, F., Wu, Z., and Yu, L., 2023. Future of education in the era of generative artificial intelligence: Consensus among Chinese scholars on applications of ChatGPT in schools. Future in Educational Research, 1(1), pp.72–101. https://DOI:10.1002/fer3.10

[22] Lin, X., Sun, Y & Zhang, Y.R (2023). Application of AI in Library Digital Reading Promotion Service. 2023 IEEE International Conference on Integrated Circuits and Communication Systems (ICICACS), 1–6. https://doi.org/10.1109/ICICACS57338.2023.10100096

[23] Adetayo, A. J. (2023). Artificial intelligence chatbots in academic libraries: The rise of ChatGPT. Library Hi Tech News, 40(3), pp.18–21. https://doi.org/10.1108/LHTN-01-2023-0007

[24] Haffenden, C., Fano, E., Malmsten, M & Börjeson, L. (2023). Making and Using AI in the Library: Creating a BERT Model at the National Library of Sweden. College & Research Libraries, 84(1), pp.30–48.https://doi.org/10.5860/crl.84.1.30

[25] Patron, M. (2023). Bias in the training data. Special-issue-proceed-caution-potential

[26] SITNFlash. (2020, October 26). Racial discrimination in face recognition technology – science in the News. Science in the News. Retrieved from Racial Discrimination in Face Recognition (Harvard)

[27] Heaven, W. D. (2023). AI is dreaming up drugs that no one has ever seen. Now we've got to see if they work. MIT Technology Review.) https://www.technologyreview.com/2023/02/15/1067904/ai-automation-drug-development/

[28] Dias, R & Torkamani, A (2019). Artificial intelligence in clinical and genomic diagnostics. Genome Medicine, 11(1). https://doi.org/10.1186/s13073-019-0689-8

[29] Raimundo, R. & Rosário, A. T (2021). The Impact of Artificial Intelligence on Data System Security: A Literature Review. Sensors, 21(21), 7029. https://doi.org/10.3390/s21217029

[30] Harisanty, D., Anna, N. E. V., Putri, T. E., Firdaus, A. A & Noor Azizi, N. A. (2023). Is adopting artificial intelligence in libraries urgency or a buzzword? A systematic literature review. Journal of Information Science, 01655515221141034. https://doi.org/10.1177/01655515221141034

© 2025 Author(s). This article is published under the CC-BY license at http://jpr.vyomhansjournals.com.

Copyright and License

[© 2025 **ONWUBIKO Emmanuel Chidiadi**] This is an Open Access article published in "Graduate Journal of Interdisciplinary Research, Reports & Reviews" (Grad.J.InteR^3), a **Diamond Open Access Journal** by Vyom Hans Publications. It is published with a Creative Commons Attribution - CC-BY4.0 International License. This license permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

How to Cite?

ONWUBIKO Emmanuel Chidiadi(2025). The Double-Edged Sword of Artificial Intelligence in Academic Libraries and Research. *Graduate Journal of Interdisciplinary Research, Reports and Reviews*, 3(01), 1-15. Retrieved from https://jpr.vyomhansjournals.com/index.php/gjir/article/view/33

© 2025 Author(s). This article is published under the CC-BY license at http://jpr.vyomhansjournals.com.