

AWARENESS AND UTILIZATION OF ARTIFICIAL INTELLIGENCE (AI)-DRIVEN INFORMATION RETRIEVAL TOOLS BY RESEARCHERS IN ACADEMIC LIBRARIES IN NIGERIA

BY

Gabriel Keghtor Ubwa

Medical library, Benue State University Teaching Hospital
Makurdi Gabrielubwa8@gmail.com 08131974922

Aver Mngumber Christina

UBE JSS St Theresa's, Wurukum, Makurdi
mngumberaver@gmail.com +2347026613137

and

Dr. Jibrin Yakubu Azaki,

Department of Library and Information Science,
Prince Abubakar Audu University, Anyigba, Kogi State.
Email: jibrinyakubuazaki@gmail.com
08064069175

Abstract

This study examines the awareness and utilization of Artificial Intelligence (AI)-driven information retrieval tools by researchers in academic libraries in Nigeria. Using a descriptive survey design, data were collected from 120 respondents, including academic researchers, librarians, and postgraduate students across selected federal universities. A structured questionnaire was employed to assess awareness levels, extent of utilization, benefits, and challenges associated with AI-driven retrieval tools. Findings revealed a high level of awareness, with Google Scholar AI-enhanced search and ChatGPT being the most recognized tools, while Connected Papers had the lowest awareness. However, actual utilization of these tools remained low despite the high awareness, with researchers favoring more familiar tools. The study identified several benefits of AI tools, including 24/7 availability, improved accuracy and relevance, enhanced citation management, and automated literature reviews. However, challenges such as limited awareness, resistance to change, poor internet connectivity, high costs, and lack of technical expertise hinder adoption and utilization. Based on the findings, the study recommends targeted awareness campaigns, training programs, and practical workshops to increase recognition and utilization of AI tools in academic research. Libraries should integrate AI tools into research support services, while institutions should invest in better ICT infrastructure and affordable AI-powered platforms. Additionally, policies should be developed to encourage AI adoption among researchers.

Keywords: AI-driven tools, information retrieval, academic libraries, research utilization, awareness.

Introduction

In the digital age, the role of academic libraries has significantly evolved, with an increasing focus on integrating emerging technologies to enhance access to information. One of the most transformative developments in modern libraries is the application of Artificial Intelligence (AI) in information retrieval systems. AI-driven information retrieval systems encompass machine learning algorithms, natural language processing (NLP), predictive analytics, and automated indexing, all of which have revolutionized the way researchers' access and utilize academic resources. These technologies, according to Adebayo and Yusuf (2022), have become instrumental in improving search accuracy, retrieval speed, and overall user experience, especially for researchers in academic libraries where timely access to relevant information is critical for scholarly work. Researchers in Nigerian academic institutions rely heavily on library resources for conducting studies, writing academic papers, and staying informed about recent developments in their respective fields. According to Okonkwo, Eze, and Obidike (2021), AI-powered information retrieval systems have the potential to significantly enhance research efficiency by providing personalized search results, recommending relevant academic materials, and enabling automated content analysis. However, despite the growing availability of AI-powered library systems, challenges related to accessibility, digital literacy, and effective utilization persist in Nigerian universities.

Academic libraries in Nigerian universities, including those in states such as Lagos, Nasarawa, and Benue, are gradually integrating AI-driven solutions to improve information retrieval processes. AI-powered search engines, chatbots for research assistance, and automated indexing systems

are being adopted to streamline research activities and improve the discoverability of academic resources (Ibrahim and Olaniyi, 2020). In a similar development, Chukwuma and Adegbite (2019) observed that AI applications in library systems have the potential to minimize the limitations of traditional search methods by offering intelligent recommendations and improving the relevance of retrieved materials. With the increasing digitization of academic libraries and the widespread availability of online databases, AI technologies are becoming an indispensable tool for enhancing research efficiency.

Globally, AI has been integrated into library systems as part of efforts to optimize information retrieval and bridge the gap between users and vast digital repositories. Ojo and Adeyemi (2021) noted that AI applications in library settings enhance user engagement by making search processes more interactive, intuitive, and personalized. AI-powered systems, according to Brown and Smith (2018), enable advanced search features such as semantic search, voice search, and predictive analytics, all of which facilitate quicker and more accurate access to relevant academic materials.

Additionally, AI-driven virtual assistants and chatbots provide real-time support, helping researchers navigate complex databases, access full-text materials, and receive recommendations based on their search history. However, studies such as Nwafor (2023) suggest that while AI can significantly improve information retrieval, its success depends on factors such as system usability, data accuracy, and user familiarity with AI

technologies. Moreover, Aina and Okechukwu (2022) opined that digital literacy among researchers plays a crucial role in the effective adoption of AI-driven library systems. Researchers in Nigerian universities, like their counterparts globally, may face challenges related to poor AI literacy, limited access to advanced AI-powered tools, and concerns about data privacy, which could affect their ability to maximize the benefits of these technologies. Furthermore, research by Eze and Olatunji (2020) indicates that academic libraries in Nigeria face infrastructural challenges, such as inadequate funding, technical support, and the need for continuous AI system upgrades and maintenance. The lack of proper awareness and training on the use of AI-powered search tools among researchers may further widen the gap between the availability of AI-enhanced resources and their actual utilization. Therefore, this study 1. aims to investigate the impact of Artificial Intelligence on information retrieval efficiency by researchers in academic 2. libraries in Nigeria. The research will explore factors such as the availability and functionality of AI-driven search tools, the 3. level of awareness and adoption among researchers, and the challenges faced in leveraging AI for information retrieval. By 4. examining these aspects, the study will contribute to a deeper understanding of how AI can be optimized to enhance research outcomes and improve the efficiency of information retrieval in Nigerian academic libraries.

Statement of the Problem

Artificial Intelligence has significantly transformed information retrieval in academic libraries worldwide, enhancing

search precision, retrieval speed, and user experience. However, researchers in Nigerian universities face challenges in effectively utilizing AI-driven search tools. Limited awareness, inadequate training, and insufficient technological infrastructure contribute to their underutilization. This study aims to assess researchers' awareness and utilization of AI-powered information retrieval tools, evaluate the benefits associated with their utilization, and identify the major challenges researchers face in adopting and utilizing AI-powered information retrieval systems in academic libraries. By addressing the identified challenges, the study seeks to enhance AI adoption, improve information retrieval efficiency, and support research productivity in academic libraries in Nigeria.

Research Questions

1. To what extent are researchers in academic libraries in Nigeria aware of AI-driven information retrieval tools?
2. To what extent do researchers in academic libraries in Nigeria utilized AI-driven information retrieval tools?
3. What are the benefits associated with the use of AI-driven information retrieval tools by researchers in academic libraries in Nigeria?
4. What are the major challenges researchers face in adopting and utilizing AI-powered information retrieval systems in academic libraries?

Review of literature

This section of the study reviewed the theoretical framework, conceptual framework, past studies by other researchers that are in line with the study, the similarities and differences between the past and present study are highlighted

Theoretical Framework

Artificial Intelligence in Information Retrieval Model (Salton, 1989). The Artificial

Intelligence in Information Retrieval Model, developed by Gerard Salton in 1989, is based on the integration of AI techniques into information retrieval (IR) systems to enhance the accuracy, efficiency, and relevance of search results. This model laid the foundation for modern AI-powered search engines and intelligent retrieval systems. This model provides a foundational framework for understanding how AI enhances information retrieval efficiency in Nigerian academic libraries. The model emphasizes AI-driven techniques such as natural language processing, machine learning, and relevance feedback to improve search accuracy, speed, and relevance. In Nigerian universities, researchers often face poor search result ranking, limited access to updated research, and inconsistent metadata tagging, which AI can address by automating document classification, ranking search results intelligently, and recommending relevant materials. AI-powered library systems like Koha, DSpace, and Google Scholar are increasingly transforming research accessibility, reducing search fatigue, and enhancing research productivity. By integrating AI into academic library systems, researchers can access high-quality resources more efficiently, ultimately improving academic output and knowledge dissemination.

AI-Driven Tools

AI-driven tools are advanced technological solutions that leverage artificial intelligence to enhance automation, efficiency, and accuracy in various tasks,

including information retrieval, data analysis, and decision-making. AI-driven tools as noted by Achugbue (2024) refer to software applications and systems that leverage artificial intelligence technologies such as machine learning, natural language processing, and deep learning to perform tasks efficiently and autonomously. These tools on the other hand as noted by Miller (2021) are designed to process large volumes of data, identify patterns, and generate insights that assist users in various domains, including research, education, healthcare, and business. In academic settings, AI-driven tools are widely used for information retrieval, data analysis, plagiarism detection, automated literature reviews, and recommendation systems. Examples of AI-driven tools as listed by Funmilola (2024) include Google Scholar AI-enhanced search, ChatGPT, Iris.ai, and Connected Papers, which assist researchers in accessing and organizing scholarly materials effectively.

The adoption of AI-driven tools in academia as opined by Brown and Williams (2019) has significantly transformed how researchers interact with information and knowledge. These tools improve efficiency by automating repetitive tasks, reducing search time, and providing more accurate and relevant results. However, despite their benefits, Abubakar (2021) stated that challenges such as limited awareness, resistance to change, high costs, and technical complexity hinder widespread adoption. To maximize the potential of AI-driven tools, academic institutions must invest in training programs, awareness campaigns, and the integration of these tools into research workflows, ensuring that

researchers can leverage AI capabilities for enhanced academic productivity.

Information Retrieval

Information retrieval is the process of obtaining relevant data or documents from a large repository based on user queries, utilizing algorithms and indexing techniques to enhance search efficiency and accuracy. It is in this view that Funmilola (2024) opined that Information retrieval (IR) refers to the process of searching, retrieving, and managing information from a vast collection of data sources. The primary objective of IR systems is to help users locate relevant information efficiently, especially in digital environments such as databases, search engines, and academic repositories. Traditional IR systems as noted by Jha (2023) relied on keyword-based searches, but advancements in AI have introduced more sophisticated techniques, including semantic search, machine learning algorithms, and natural language processing, which enhance the accuracy and relevance of search results. AI-driven IR tools, such as Google Scholar and Semantic Scholar, utilize these technologies to improve research efficiency by filtering and recommending scholarly resources based on user preferences.

In academic research, Kumar and Sheshadri (2019) opined that effective information retrieval is crucial for accessing relevant literature, identifying research gaps, and supporting evidence-based studies. AI-driven IR systems can analyze vast amounts of scholarly articles, extract key insights, and provide personalized recommendations, streamlining the research process. However, challenges such as data overload, biased search algorithms, and limited accessibility

to premium databases remain barriers to effective IR. Addressing these challenges, as noted by Ogwo, Buchi and Nwachukwu (2023) requires continuous improvements in AI models, better indexing strategies, and the promotion of open-access repositories to ensure equitable access to high-quality information for all researchers.

Academic Libraries

Academic libraries are essential institutions that provide access to a wide range of scholarly resources, including books, journals, research papers, and digital databases, supporting learning, teaching, and research activities. Traditionally, Brown and Williams (2019) noted that academic libraries functioned as physical repositories of knowledge, but technological advancements have led to their digital transformation. Brown and O'Hara (2023), observed that modern academic libraries integrate AI-driven tools and digital technologies to enhance information retrieval, automate cataloging, and provide personalized research assistance. AI-powered chatbots, virtual reference services, and predictive analytics are examples of how academic libraries are evolving to meet the changing needs of students and researchers.

Despite these advancements, Dunning and Roberts (2020) argued that academic libraries face several challenges, including budget constraints, the digital divide, and resistance to AI adoption among librarians and users. Ensuring a smooth transition to AI-enhanced library services requires investment in ICT infrastructure, training programs for librarians, and the development of AI policies that align with institutional goals. Similarly, Davis and

Wang (2023) stated that academic libraries must also address ethical concerns related to data privacy, algorithmic bias, and digital accessibility to ensure that AI-driven library services remain inclusive and beneficial to all users.

Research

Adetayo (2021) observed that research is a systematic and structured process of investigating, analyzing, and interpreting information to generate new knowledge, solve problems, or contribute to existing fields of study. It involves various methodologies, including qualitative, quantitative, and mixed methods, depending on the research objectives and discipline. In academic settings, research is fundamental to scientific discoveries, technological advancements, and policy development. Researchers rely on information retrieval tools, databases, and AI-driven applications to collect, analyze, and validate data efficiently, ensuring the accuracy and credibility of their findings.

AI has significantly impacted research by automating data analysis, improving literature reviews, and facilitating collaboration among scholars through AI-powered platforms. AI-driven tools enhance research productivity by providing real-time insights, predictive analytics, and automated summarization of complex data. However, ethical concerns, data reliability issues, and potential biases in AI-generated content present challenges to researchers. To maximize the benefits of AI in research, institutions must establish ethical guidelines, provide training on AI utilization, and encourage interdisciplinary collaboration to

address the evolving demands of modern research practices.

Awareness

Awareness is the state of having knowledge or understanding about a particular subject, concept, or phenomenon, enabling individuals to recognize its significance and implications in various contexts. Asongo and Akuse (2024) sees awareness as the state of being informed or knowledgeable about a particular subject, concept, or innovation. In the context of AI-driven tools and academic research, awareness involves understanding the existence, functionalities, and potential applications of AI technologies in information retrieval, knowledge management, and research support. The authors argued that a high level of awareness among researchers, students, and librarians is crucial for the successful adoption and utilization of AI-driven tools. Awareness can be increased through workshops, training programs, academic conferences, and digital literacy campaigns that educate users on the benefits and best practices of AI integration in academic settings.

Despite growing interest in AI, Kim and Lee (2019) observed that many researchers and librarians remain unaware of the full capabilities of AI-driven tools, leading to underutilization. Factors such as lack of exposure, limited training opportunities, and misconceptions about AI contribute to this gap. Addressing awareness, Jones and Smith (2019) stated that challenges requires proactive efforts from academic institutions, policymakers, and technology developers to ensure that users are equipped with the necessary knowledge to leverage AI for research and information retrieval

effectively. Increased awareness will ultimately bridge the gap between AI innovation and its practical application, enabling more efficient and effective academic research.

Review of literature

Asongo and Akuse (2024) investigated Awareness and utilization of Artificial Intelligence (AI) Tools for Enhanced Research among Postgraduate Students in Universities in Benue State. The study adopted a descriptive survey design. A sample of 231 postgraduate students participated in the study. The convenience sampling technique was used to obtain the sample. A self-constructed questionnaire titled Awareness and Utilization of AI Tools Questionnaire was used for data collection. The research questions were answered using mean and standard deviation, and the hypotheses were tested using one-way analysis of variance (ANOVA). Major findings revealed that there is a significant difference in the mean ratings of postgraduate students based on programme type on the level of awareness of AI tools for enhance research in universities in Benue State, and there is a significant difference in the mean ratings of postgraduate students based on programme type on the extent of utilization of AI tools for enhance research in universities in Benue State. The present and previous studies both examine AI tool awareness and utilization in academic research using a descriptive survey. However, the previous study focused on postgraduate students in Benue State, while the present study includes researchers, librarians, and postgraduate students across federal universities in Nigeria. Unlike the previous study, which used ANOVA to

compare awareness by program type, the present study explores specific AI-driven information retrieval tools, their benefits, and adoption challenges. It fills a gap by providing practical recommendations for enhancing AI integration in academic libraries.

Funmilola (2024) investigated the application of artificial intelligence (AI) in information retrieval systems in Nigerian libraries, focusing on students from the Library and Information Science department at Lead City University, Ibadan. Using a survey research design, data was collected from 141 respondents through questionnaires. Pearson Correlation was used to test one hypothesis, and data analysis was conducted using SPSS version 25.0. Findings revealed that most respondents viewed AI as a tool for libraries to innovate and stay competitive ($X = 1.71$, $SD = 0.49$) and as a means to improve access to information through better organization, retrieval, and dissemination of digital resources ($X = 1.63$, $SD = 0.61$). However, challenges to AI implementation in Nigerian university libraries include financial constraints, limited budgets, and a shortage of skilled librarians and IT staff. The study also found a significant negative correlation ($r = 0.745$) between perceptions of AI and the challenges faced in implementing it. Both studies examine the role of AI in academic libraries, focusing on awareness, utilization, and challenges related to AI-driven information retrieval tools. However, while the previous study concentrated on students from the Library and Information Science department at Lead City University, Ibadan, the present study includes a broader population—academic researchers, librarians, and postgraduate students across multiple federal

universities in Nigeria. The previous study used Pearson Correlation and SPSS for data analysis, whereas the present study employs descriptive statistics to analyze awareness, utilization, benefits, and challenges. A key gap addressed by the present study is the investigation of specific AI-driven information retrieval tools and their adoption in academic research, along with targeted recommendations for improving their integration, which were not covered in the previous study.

Baber, Islam, Ullah, and Ullah (2024) examined AI-driven solutions in libraries, focusing on how artificial intelligence enhances library operations. Using a quantitative survey with a structured methodology, the study employed a random sampling approach and questionnaires (both physical and digital) for data collection. Findings revealed that 45% of institutions studied were private, while 50% were public. Regarding experience levels, 62% of respondents had 1-10 years of experience, 31% had 11-20 years, and only 8% had over 21 years. The study underscores the importance of creating an AI-enhanced library ecosystem that improves efficiency while safeguarding user privacy and satisfaction. The research highlights AI's potential to transform libraries, envisioning AI-powered chatbots, predictive analytics, and virtual assistants as key features of future AI-driven libraries. Both studies explore the role of AI in academic libraries, focusing on its applications, awareness, and impact. However, while the previous study examined AI-driven solutions for enhancing library operations, including chatbots and predictive analytics, the present study specifically investigates the awareness and utilization of

AI-driven information retrieval tools among researchers, librarians, and postgraduate students across federal universities in Nigeria. Additionally, the previous study included both private and public institutions and analyzed respondents' experience levels, whereas the present study focuses on federal universities with established AI-integrated library systems. A key gap addressed by the present study is the in-depth analysis of specific AI-driven retrieval tools, their benefits, and the challenges hindering their adoption in academic research, along with actionable recommendations to improve their utilization in academic libraries.

Tella, Odunola, and Lawal (2023) explored the impact of artificial intelligence (AI) on cataloguing and classification from the perspective of cataloguing librarians in Oyo State, Nigeria. Using a qualitative approach, they conducted interviews with 21 cataloguing librarians from 10 university libraries in Southwest Nigeria. The study found that librarians are aware of AI applications in cataloguing and classification, highlighting benefits such as automated cataloguing, faster task completion, improved accuracy, cost and time savings, and enhanced metadata creation for digital resources. However, challenges include inadequate funding, irregular power supply, and a lack of skilled personnel. Additionally, there is currently no strategic plan for AI implementation in Nigerian academic libraries. Both studies examine AI applications in academic libraries, focusing on awareness, benefits, and challenges. However, while the previous study explored AI's impact on cataloguing and classification from the perspective of cataloguing librarians in Oyo State, the

present study investigates the awareness and utilization of AI-driven information retrieval tools among researchers, librarians, and postgraduate students in federal universities across Nigeria. The previous study employed a qualitative approach using interviews, whereas the present study adopts a descriptive survey design with structured questionnaires. Additionally, the previous study focused on AI applications in cataloguing, whereas the present study examines AI-driven tools for information retrieval in research. A key gap addressed by the present study is the evaluation of specific AI retrieval tools, their adoption challenges, and recommendations for improving AI integration in academic research, providing a broader perspective beyond cataloguing functions.

Research Methodology

This study employed a descriptive survey design to assess Awareness and Utilization of Artificial Intelligence (AI)-driven Information Retrieval Tools by researchers in academic libraries in Nigeria. The descriptive survey approach was chosen for its effectiveness in collecting diverse insights on AI-driven information retrieval tools and their adoption among academic researchers. The study focused on academic libraries in selected Federal Universities across Nigeria, particularly those with established digital infrastructure and AI-integrated library systems. The population for this study comprised academic researchers, librarians, and postgraduate students who actively utilize information retrieval systems within these institutions. A total population of 1,200 respondents was considered, from which a sample size of 120 was selected using stratified random

sampling to ensure adequate representation across different disciplines and academic roles.

A questionnaire titled "Awareness and Utilization of AI-driven Information Retrieval Tools Questionnaire" was used for data collection. Face validation of the questionnaire was done by three experts, one each from Measurement and Evaluation Specialty, and two from Library and Information Science. The validates examined each of the items in terms of unclear statements, wrongly conceived ideas, missing information, and other observed errors. The suggestions made by experts were used to modify the final version of the questionnaire. A trial test was carried out on a similar sample of 20 respondents in university of Mkar, Mkar, Benue State who shared similar characteristics with the respondents of this study in order to determine the reliability of the questionnaire. The coefficient of internal consistency reliability indices of 0.74, 0.80, 0.76, and 0.77 were obtained for clusters I, II, III, and IV, respectively using Cronbach alpha, while the overall reliability of the questionnaire was 0.77. Descriptive statistics, including frequency, mean and standard deviation, were used to analyze the data. Real limits of numbers were used in making decisions for research questions 1 and 2 with 3.50-4.0 for Very High Extent, 2.50-3.49 for High Extent, 1.50-2.49 for Low Extent, and 1.49 and below for Very Low Extent. For research questions 3 and 4, a benchmark of 2.50 was used in making decisions. An item was deemed to be acceptable if its mean was 2.50 or higher, and rejected if its mean was less than that.

Results

Research Question 1: To what extent are researchers in academic libraries in Nigeria

aware of AI-driven information retrieval tools?

Table 1: Mean and standard deviation of respondents on the extent of awareness of AI-driven information retrieval tools by researchers in academic libraries

S/N	Item Statement	VHE	HE	LE	VLE	$\bar{x}$	SD	Dec.
1	EBSCO Discovery Service (AI-powered search)	24	40	38	18	2.58	0.98	HE
2	Google Scholar AI-enhanced search	59	55	6	0	3.44	0.59	HE
3	Semantic Scholar	0	57	26	19	2.62	0.93	HE
4	Scite.ai (AI citation analysis)	9	28	67	16	2.25	0.78	LE
5	Dimensions AI (Research analytics tool)	1	41	49	29	2.12	0.78	LE
6	CORE (AI-driven Open Access aggregator)	11	18	72	19	2.18	0.81	LE
7	Iris.ai (AI-powered literature review)	5	30	61	24	2.13	0.78	LE
8	Research Rabbit (AI research discovery)	8	48	50	14	2.42	0.78	LE
9	Connected Papers (AI-driven research visualization)	2	27	69	22	2.08	0.69	LE
10	ChatGPT (AI-powered research assistance)	54	54	12	0	3.35	0.66	HE
Cluster Mean						2.52	0.41	HE

Key: $\bar{x}$ = Mean, SD = Standard Deviation, HE = High Extent, LE = Low Extent, Dec. = Decision.

Result as presented in Table 1 shows that items 1-3, and 10 have mean ratings ranging from 2.50-3.49 set as benchmark for high extent. This implies that there is high extent of awareness of EBSCO discovery service ($\bar{x}$ = 2.58, SD = 0.98), Google Scholar AI-enhanced search ($\bar{x}$ = 3.44, SD = 0.59), Semantic Scholar ($\bar{x}$ = 2.62, SD = 0.93), and ChatGPT ($\bar{x}$ = 3.35, SD = 0.66) AI-driven information retrieval tools by researchers in academic libraries in Nigeria. The result also

shows that items 4-9 have mean ratings ranging from 1.50-2.49 set as benchmark for low extent. This implies that there is low extent of awareness of Scite.ai ($\bar{x}$ = 2.25, SD = 0.78), dimensions AI ($\bar{x}$ = 2.12, SD = 0.78), CORE ($\bar{x}$ = 2.18, SD = 0.81), Iris.ai ($\bar{x}$ = 2.13, SD = 0.78), Research Rabbit ($\bar{x}$ = 2.42, SD = 0.78), and Connected Papers ($\bar{x}$ = 2.08, SD = 0.69) AI-driven information retrieval tools by researchers in academic libraries in Nigeria. From the result, Google Scholar AI-enhanced search ($\bar{x}$ = 3.44, SD = 0.59),

follow by ChatGPT ($\bar{x} = 3.35$, $SD = 0.66$) are the AI-driven information retrieval tools researchers are mostly aware of, while Connected Papers ($\bar{x} = 2.08$, $SD = 0.69$) is the least. Overall, the result shows that there is high extent of awareness of AI-driven

information retrieval tools by researchers in academic libraries in Nigeria.

Research Question 2: To what extent do researchers in academic libraries in Nigeria utilized AI-driven information retrieval tools?

Table 2: Mean and standard deviation of respondents on the extent of utilization of AI-driven information retrieval tools by researchers in academic libraries

S/N	Item Statement	VHE	HE	LE	VLE	$\bar{x}$	SD	Dec.
1	EBSCO Discovery Service (AI-powered search)	8	49	53	10	2.46	0.74	LE
2	Google Scholar AI-enhanced search	55	38	27	0	3.23	0.80	HE
3	Semantic Scholar	22	38	39	21	2.51	0.99	HE
4	Scite.ai (AI citation analysis)	1	41	53	25	2.15	0.75	LE
5	Dimensions AI (Research analytics tool)	3	27	70	20	2.11	0.70	LE
6	CORE (AI-driven Open Access aggregator)	3	39	44	34	2.09	0.84	LE
7	Iris.ai (AI-powered literature review)	3	24	72	21	2.08	0.69	LE
8	Research Rabbit (AI research discovery)	11	25	78	6	2.34	0.72	LE
9	Connected Papers (AI-driven research visualization)	2	25	66	27	2.02	0.71	LE
10	ChatGPT (AI-powered research assistance)	52	39	29	0	3.19	0.80	HE
Cluster Mean						2.42	0.34	LE

Key: $\bar{x}$ = Mean, SD = Standard Deviation, HE = High Extent, LE = Low Extent, Dec. = Decision.

Result as presented in Table 2 shows that items 2, 3, and 10 have mean ratings ranging from 2.50-3.49 set as benchmark for high extent. This implies that there is high extent of utilization of Google Scholar AI-enhanced search ($\bar{x} = 3.23$, $SD = 0.80$), Semantic Scholar ($\bar{x} = 2.51$, $SD = 0.99$), and ChatGPT ($\bar{x} = 3.19$, $SD = 0.80$) AI-driven information retrieval tools by researchers in academic

libraries in Nigeria. The result also shows that items 1, and 4-9 have mean ratings ranging from 1.50-2.49 set as benchmark for low extent. This implies that there is low extent of utilization of EBSCO discovery service ($\bar{x} = 2.46$, $SD = 0.74$), Scite.ai ($\bar{x} = 2.15$, $SD = 0.75$), dimensions AI ($\bar{x} = 2.11$, $SD = 0.70$), CORE ($\bar{x} = 2.09$, $SD = 0.84$), Iris.ai ($\bar{x} = 2.08$, $SD = 0.69$), Research Rabbit

($\bar{x} = 2.34$, $SD = 0.72$), and Connected Papers ($\bar{x} = 2.02$, $SD = 0.71$) AI-driven information retrieval tools by researchers in academic libraries in Nigeria. From the result, Google Scholar AI-enhanced search ($\bar{x} = 3.23$, $SD = 0.80$), follow by ($\bar{x} = 3.19$, $SD = 0.80$) are the most utilized AI-driven information retrieval tools, while Connected Papers ($\bar{x} = 2.02$, $SD = 0.71$) is the least. Overall, the result shows

that there is low extent of utilization of AI-driven information retrieval tools by researchers in academic libraries in Nigeria.

Research Question 3: What are the benefits associated with the use of AI-driven information retrieval tools by researchers in academic libraries in Nigeria?

Table 3: Mean and standard deviation of respondents on the benefits associated with the use of AI-driven information retrieval tools by researchers in academic libraries

S/N	Item Statement	SA	A	D	SD	$\bar{x}$	SD	Remark
1	Improved accuracy and relevance	65	53	2	0	3.53	0.53	Agree
2	Improved citation management	50	60	10	0	3.33	0.63	Agree
3	Automated literature reviews	58	56	6	0	3.43	0.59	Agree
4	Enhanced collaboration and networking	63	51	6	0	3.47	0.59	Agree
5	Optimized library resource utilization	55	56	9	0	3.38	0.62	Agree
6	24/7 availability	72	48	0	0	3.60	0.49	Agree
7	Support for open access and institutional repositories	55	56	9	0	3.38	0.62	Agree
8	Plagiarism detection and research integrity	50	47	23	0	3.22	0.75	Agree
9	Access to multilingual resources	52	65	3	0	3.41	0.54	Agree
10	Enhanced search efficiency	62	55	3	0	3.49	0.55	Agree
Cluster Mean						3.43	0.37	Agree

Key: $\bar{x}$ = Mean, SD = Standard Deviation.

Result as presented in Table 3 shows that items 1-10 had mean ratings of 3.53, 3.33, 3.43, 3.47, 3.38, 3.60, 3.38, 3.22, 3.41, and 3.49 with standard deviations of 0.53, 0.63, 0.59, 0.59, 0.62, 0.49, 0.62, 0.75, 0.54, and 0.55 respectively. These mean ratings are above the criterion mean of 2.50 set for accepting an item. This implies that respondents agreed that improved accuracy and relevance, improved citation

management, automated literature reviews, and enhanced collaboration and networking among all the items in Table 3 are the benefits associated with the use of AI-driven information retrieval tools by researchers in academic libraries in Nigeria. From the result, 24/7 availability ($\bar{x} = 3.60$, $SD = 0.49$) is the highest benefit, follow by improved accuracy and relevance ($\bar{x} = 3.53$, $SD = 0.53$). Overall, the result shows that there are benefits associated with the use of AI-driven

information retrieval tools by researchers in academic libraries in Nigeria.

Research Question 4: What are the major challenges researchers face in adopting and utilizing AI-powered information retrieval systems in academic libraries?

Table 4: Mean and standard deviation of respondents on the major challenges researchers face in adopting and utilizing AI-powered information retrieval systems in academic libraries

S/N	Item Statement	SA	A	D	SD	$\bar{x}$	SD	Remark
1	Limited awareness and knowledge of AI tools	68	52	0	0	3.57	0.49	Agree
2	High cost of AI-powered platforms and subscriptions	57	55	8	0	3.41	0.62	Agree
3	Lack of technical expertise and training	58	58	4	0	3.45	0.56	Agree
4	Inadequate ICT infrastructure in academic libraries	61	56	3	0	3.48	0.55	Agree
5	Poor internet connectivity and bandwidth issues	61	57	2	0	3.49	0.53	Agree
6	Resistance to change from traditional search methods	63	56	1	0	3.52	0.52	Agree
7	Data privacy and security concerns	54	64	2	0	3.43	0.53	Agree
8	Limited AI integration in existing library systems	55	56	9	0	3.38	0.62	Agree
9	Difficulty in filtering AI-generated misinformation	44	53	23	0	3.18	0.73	Agree
10	Ethical concerns and bias in AI search algorithms	59	57	4	0	3.46	0.56	Agree
Cluster Mean						3.44	0.35	Agree

Key: $\bar{x}$ = Mean, SD = Standard Deviation.

Result as presented in Table 4 shows that items 1-10 had mean ratings of 3.57, 3.41, 3.45, 3.48, 3.49, 3.52, 3.43, 3.38, 3.18, and 3.46 with standard deviations of 0.49, 0.62, 0.56, 0.55, 0.53, 0.52, 0.53, 0.62, 0.73, and 0.56 respectively. These mean ratings are above the criterion mean of 2.50 set for accepting an item. This implies that respondents agreed that limited awareness and knowledge of AI tools, high cost of AI-powered platforms and subscriptions, lack of technical expertise and training, and inadequate ICT infrastructure in academic libraries among all the items in Table 4 are the major challenges researchers face in adopting and utilizing AI-powered information retrieval systems in academic libraries. From the result, the major challenges are limited awareness and knowledge of AI tools ($\bar{x} = 3.57$, $SD = 0.49$), resistance to change from traditional search methods ($\bar{x} = 3.52$, $SD = 0.52$), and Poor internet connectivity and bandwidth issues ($\bar{x} = 3.49$, $SD = 0.53$). Overall, the result shows that there are challenges researchers face in adopting and utilizing AI-powered information retrieval systems in academic libraries.

Findings

1. **Extent of Awareness of AI-driven Information Retrieval Tools:** The study found a high extent of awareness of AI-driven information retrieval tools among researchers in academic libraries in Nigeria, with Google Scholar AI-enhanced search and ChatGPT being the most recognized, while Connected Papers had the lowest awareness.
2. **Extent of Utilization of AI-driven Information Retrieval Tools:** Despite high awareness, the study revealed a low extent of utilization of AI-driven information retrieval tools, with Google Scholar AI-enhanced

search and ChatGPT being the most used, while Connected Papers had the lowest usage.

3. **Benefits of AI-driven Information Retrieval Tools:** The study identified several benefits of AI tools, including 24/7 availability, improved accuracy and relevance, enhanced citation management, automated literature reviews, and better collaboration and networking.
4. **Challenges in Adopting and Utilizing AI-driven Information Retrieval Tools:** The study highlighted key challenges hindering AI tool adoption, such as limited awareness and knowledge, resistance to change from traditional search methods, poor internet connectivity, high costs of AI-powered platforms, and lack of technical expertise.

Recommendations

Extent of Awareness of AI-driven Information Retrieval Tools: Academic libraries should conduct targeted awareness campaigns and training programs to increase knowledge and recognition of lesser-known AI tools such as Connected Papers, CORE, and Iris.ai.

2. **Extent of Utilization of AI-driven Information Retrieval Tools:** Libraries should integrate AI tools into research support services, offer practical workshops, and encourage researchers to adopt these tools through guided demonstrations and incentives.
3. **Benefits of AI-driven Information Retrieval Tools:** Institutions should promote the adoption of AI tools by emphasizing their advantages in improving research efficiency, streamlining literature reviews, and managing citations more effectively.

4. **Challenges in Adopting and Utilizing AI-driven Information Retrieval Tools:** To address adoption barriers, stakeholders should improve ICT infrastructure, provide affordable access to AI-powered platforms, offer regular training sessions, and develop policies that encourage the use of AI-driven tools in academic research.

Conclusion

The study concludes that while researchers in academic libraries in Nigeria have a high level of awareness of AI-driven information retrieval tools, their actual utilization remains low. Google Scholar AI-enhanced search and ChatGPT are the most recognized and used

tools, while others, such as Connected Papers and Iris.ai, have limited awareness and adoption. AI tools offer significant benefits, including improved accuracy, automated literature reviews, and 24/7 availability, yet several challenges hinder their full integration into academic research. These challenges include limited awareness, resistance to change, inadequate ICT infrastructure, and the high costs of AI-powered platforms. To bridge the gap between awareness and utilization, academic institutions must invest in awareness campaigns, training programs, and improved ICT infrastructure to facilitate the adoption and effective use of AI-driven information retrieval tools in research.

REFERENCES:

- Abubakar, A. (2021). Artificial intelligence and libraries: Opportunities and challenges. *Information and Knowledge Management*, 11(1), 1-13.
- Achugbue, E. I. (2024). Artificial intelligence (AI) and the future of academic library services: A study of librarians' AI skills in academic libraries in South-South Nigerian universities. *Nigerbiblios: Journal of National Library of Nigeria*, 34(1), 36.
- Adetayo, A. J. (2021). The nexus of social media use and research productivity of lecturers in private universities in Ogun State, Nigeria. *Library Philosophy and Practice* (e-journal). 4964. <https://digitalcommons.unl.edu/libphilprac/4964>
- Asongo, S. T., & Akuse, S. S. (2024). Awareness and utilization of artificial intelligence (AI) tools for enhanced research among postgraduate students in universities in Benue State. *International Journal of Innovative Science and Research Technology*, 9(9), 1712–1720. <https://doi.org/10.38124/ijisrt/IJISRT24SEP852>
- Baber, M., Islam, K., Ullah, A., & Ullah, W. (2024). Libraries in the age of intelligent information: AI-driven solutions. *International Journal of Applied and Scientific Research (IJASR)*, 2(1), 153-176. <https://doi.org/10.59890/ijasr.v2i1.1295>
- Brown, C., & Williams, D. (2019). Assessing the effectiveness of artificial intelligence in academic libraries: A comparative study. *Library Quarterly*, 49(3), 275-290.
- Brown, M., & O'Hara, S. (2023). Data-driven decision-making in academic libraries. *Library Resources & Technical Services*, 67(2), 112-126. doi:10.5860/lrts.67n2
- Chen, X., & Xu, J. (2021). Automatic cataloging with machine learning. *Journal of Library Metadata*, 19(3), 165-184. doi:10.1080/19386389.2021.1913582
- Davis, L., & Wang, H. (2023). Challenges of AI integration in academic libraries. *Journal of Library Administration*, 63(2), 157-173. doi:10.1080/01930826.2023.2002265
- Dunning, M. S., & Roberts, J. M. (2020). Machine learning and artificial intelligence in academic libraries: Current applications and future perspectives. *College & Research Libraries*, 81(6), 887-902. DOI: 10.5860/crl.81.6.887
- Funmilola, T. T. (2024). The application of artificial intelligence on information retrieval systems in libraries in Nigeria. *International Journal of Academic Multidisciplinary Research (IJAMR)*, 8(9), 151–156. <https://www.ijeais.org/ijamr>
- Garcia, C., & Nguyen, T. (2020). Exploring the impact of artificial intelligence on academic library operations: A case study approach. *Library Management*, 41(7), 890-905.
- Gomez, M. T. (2021). Exploring the role of AI in academic libraries: Current trends and future prospects. *Information Technology and Libraries*, 40(1), 35-50. DOI: 10.6017/ital.v40i1.12470
- Jha, S. K. (2023). Application of artificial intelligence in libraries and information centres services: Prospects and

- challenges. *Library Hi Tech News*, 40(07), 1-5. ISSN 0741-9058.
- Johnson, L., & Davis, E. M. (2021). AI in library cataloging: Innovations and challenges. In *Proceedings of the American Library Association Annual Conference*. Chicago, IL.
- Johnson, R. G. (Ed.). (2020). *Artificial intelligence and the future of libraries*. Springer. ISBN: 978-3030194876.
- Jones, A., & Smith, B. (2019). The role of artificial intelligence in academic libraries: A review. *Journal of Academic Librarianship*, 45(3), 301-315.
- Kim, H., & Lee, T. (2019). AI-powered chatbots and virtual assistants in libraries: Case studies and best practices. *Library Hi Tech*, 37(3), 431-448. DOI: 10.1108/LHT-09-2018-0185
- Kumar, V., & Sharma, N. (2021). The role of artificial intelligence in academic library management: A case study approach. *Journal of Library Administration*, 61(4), 422-437.
- Kumar, V., & Sheshadri, K. N. (2019). Applications of artificial intelligence in academic libraries. *libraries: An SLR of cite score and IF journals' articles from 2018 to 2023*. Global Knowledge, Memory and Communication. Advance online publication. <https://doi.org/10.1108/GKMC-12-2023-0498>
- International Journal of Computer Sciences and Engineering, 7(16), 136–140. <https://doi.org/10.26438/ijcse/v7si16.136140>
- Martin, J., & Thompson, G. (2022). The impact of automation on library operations. *Library Management*, 43(4), 231-245. doi:10.1108/LM-04-2022-0073
- Miller, D. L. (Ed.). (2021). *AI in libraries: Changing roles, services, and operations*. Routledge. ISBN: 978-0367330921.
- Morris, R. K. (2022). Ethical implications of AI in libraries: Balancing innovation and privacy. *Library Quarterly*, 92(2), 123-139. DOI: 10.1086/717928.
- Ogwo, U., Buchi, F., & Nwachukwu, V. (2023). Applications and perceived impact of artificial intelligence in academic libraries in Nigeria. *Library Philosophy and Practice*. <https://digitalcommons.unl.edu/libphilprac/>
- Shahzad, K., Khan, S. A., & Iqbal, A. (2024). Effects of artificial intelligence on university
- Tella, A., Odunola, O. A., & Lawal, W. O. (2023). Katalogizacija i klasifikacija u eri umjetne inteligencije, prednosti i izazovi iz perspektive knjižničara katalogizatora u državi Oyo, Nigerija. *Vjesnik bibliotekara Hrvatske*, 66(1), 159–176. <https://doi.org/10.30754/vbh.66.1.1031>