The Role of Artificial Intelligence in Enhancing Service Delivery in Psychology Departmental Libraries Across North West Nigeria Universities

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A R T I C L E   I N F O

ABSTRACT   **Case Studies**

This study is designed to investigate the role of Artificial Intelligence (AI) in enhancing service delivery in psychology departmental libraries across North West Nigeria Universities. This study adopted Technological Acceptance Model (TAM) which is characterized as theory that focuses on perceived usefulness and ease of use of technology. The instrument was validated using face and content validation and the instrument was reliable using Product Moment Correlation (PPMC).A structured questionnaire was formulated to elicit information from 40 librarians across the North West Nigeria University Libraries through the five research questions designed. Survey research design was used for this study. Simple random sampling technique was to select the area of research. Notable and recent publications were used for literature review. In order to achieve a dependable result, frequency counts and percentages were used for data analysis. The result showed that the major types of Artificial Intelligence used for enhance service delivery in Psychology Department Libraries across North West Nigeria Universities are chabot and virtual assistants, automated cataloging and indexing, text analysis and summarization, image and video analysis. It further revealed among others, the ICT facilities used towards enhanced service delivery in the era of Artificial Intelligence includes scanners, internet, routers, networks, software and smart television. The role of Artificial Intelligence on library service delivery includes basically for searching library resources, cataloging, and information retrieval. The study also revealed that the major impact of artificial intelligence as indicated is that it provides support to users, answering frequently asked questions, easy access to information, enhancing cataloging and information retrieval, categorize information quickly. Inadequate ICT infrastructure, inadequate funding, maintenance issues was recorded as the major challenges of using artificial intelligence on enhanced Service delivery. The study concludes and recommend that adequate ICT Infrastructure be available, adequate funding be prioritized, Technical Expertise should not be compromised.

Keywords: Artificial Intelligence, Service Delivery, Psychology Departmental Libraries, North West Nigeria Universities.

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Introduction

Artificial Intelligence (AI) is described as computers that "think" like humans, recognizing complex patterns, processing information, drawing conclusions and making recommendations. It concerned making computers behave like humans (Brooks & Neal, 2025). The term was coined in 1956 by John McCarthy at the Massachusetts Institute of Technology. Evans & Hughes (2023) opined that AI is all encompassing in diverse area of specialization. Similarly, Carrol & Boryez (2024) affirmed that AI is the area of

computer science centering on creating machines that can engage on behaviours that human consider intelligent. Barnes & Rivera (2025) acknowledged AI as a transformative game changer that gives ready-made answers to queries. In librarianship, AI can be applied in some areas such as cataloguing and classification, collection development, subject indexing, reference services, database searching, and document delivery (Saccucci & Salaba, 2024).

Saccucci, & Potter(2024) stressed that service delivery in all aspect of work have been receiving so much attention and appreciation particularly in the area of using Information and Communication Technology facilities and equipment. Similarly, Adams & Rose (2025) opined that utilization of Artificial Intelligence is now evolving and every intellectuals such as students, lecturers and researchers are having quick response to query through the use of phones, computers, etc. Subsequently, it has recorded high rate of success and perhaps reduced a lot of challenges towards accessing and retrieval of information. Libraries have traditionally played a vital role in providing access to information and knowledge. However, with the exponential growth of digital resources and the increasing complexity of information systems, librarians are faced with new challenges of using AI for effective and efficient service delivery (Chen & Bell, 2023). Artificial intelligence has emerged as a promising technology that can potentially transform various aspects of librarianship, offering opportunities for automation, efficiency, and improved user experiences. The integration of artificial intelligence (AI) in library and information centers has the potential to revolutionize library services and enhance information access and management (Dun & Harper, 2025).

Numerous studies have investigated the current state of AI applications in libraries and perhaps AI is being utilized for various tasks such as information retrieval, recommendation systems, data analysis, and automation. Intelligent search systems powered by AI algorithms improve the accuracy and efficiency of information retrieval, ensuring users can access relevant resources more effectively (Naikar & Indraji, 2025). Philips & Cole (2024) opined that Chatbots and virtual assistants are also being employed in libraries to provide automated support and assist users with their queries. Additionally, AI is used for cataloging and metadata management, allowing for improved organization and discoverability of library resources. AI information retrieval systems improve search accuracy, relevance ranking, and recommendations, leading to more efficient discovery of resources (Powell & Elis (2024). Cataloging and metadata management benefit from AI algorithms that automate classification, enhance metadata quality, and enable semantic search capabilities. User services are transformed with the introduction of AI-powered chatbots, virtual assistants, and personalized recommendation systems, offering 24/7 support and tailored user experiences. Knowledge management in libraries is also augmented through AI, facilitating knowledge discovery, extraction, and curation. Perceptions and Attitudes of Librarians: Studies have explored the perceptions and attitudes of librarians towards the integration of AI in their work (Hervieux & Wheatly, 2024). Findings indicate a range of perspectives, with some librarians embracing AI as an opportunity to improve services and streamline workflows, while others express concerns about job displacement and the loss of human interaction. Training and up skilling programs are identified as crucial to equip librarians with the necessary knowledge and skills to effectively utilize AI technologies and adapt to changing roles. Case Studies and Real-World Examples: Numerous case studies and real-world examples showcase successful implementation of AI in library settings. These examples demonstrate the practical applications of AI, such as the deployment of chatbots for user support, recommendation systems for personalized reading suggestions, and AI-driven data analytics for collection development and user engagement. These case studies provide valuable insights into the potential benefits and outcomes of AI integration in libraries (Kong & Li,2024).

Statement of the Problem

The growing concern such as ethical considerations, privacy issue, and biases in AI algorithms are key areas that makes some libraries undermines the use of AI as it affects transparency, fairness, and inclusivity in AI systems to avoid perpetuating biases and safeguard user privacy. Technical challenges, such as data quality and interoperability, as well as the need for specialized skills and resources (Lanke, 2023), Despite their benefits, AI-powered chatbots face several challenges, including limitations in understanding complex queries and potential biases in response generation. Misinterpretations of user intent can lead to inaccurate or irrelevant answers, undermining trust in the technology (Hervieux & Wheatly, 2024). Privacy concerns arise from the collection and storage of user interaction data, necessitating strict compliance with regulations such as the General Data Protection Regulation (GDPR) (Lanke, 2023). Resistance from users who prefer human interaction also poses a barrier to widespread adoption (Dun & Harper, 2025).Technical limitations. Including dependency on stable internet connectivity and integration challenges with legacy library systems, further complicate implementation (Harris & Young, 2025). Addressing these challenges requires ongoing refinement of AI models and clear communication with users about the capabilities and limitations of chatbots (Kong & Li, 2024).

Research Questions

The following research questions guided the study
1. What types of Artificial Intelligence are used for enhancing service delivery in Psychology Department Libraries across North West Nigeria Universities?

2. What ICT facilities are used towards enhanced service delivery in the era of Artificial Intelligence in Psychology Department Libraries across North West Nigeria Universities?

3. What Role does Artificial Intelligence has towards enhance service delivery in Psychology Department Libraries across North West Nigeria Universities?

4. What are the impact of using Artificial Intelligence for enhancing service delivery in Psychology Department Libraries across North West Nigeria Universities?

5. What challenges exists in using artificial intelligence for enhancing service delivery delivery in Psychology Department Libraries across North West Nigeria Universities?

Significance of the study

This would go a long way towards understanding the role and impact that artificial intelligence has in enhancing service delivery particularly in the library. It would also be an eye opener for those who are yet to deploy artificial intelligence in enhancing service delivery. It would be of immense benefit to librarians towards their work schedules as it has the potential of time saving. Researcher can also benefit by having quick answers to their questions using the appropriate ICT facilities to search and retrieve information. This study can create an insight for inform evidence-based decision-making, allowing for the implementation of targeted interventions and improvements in educational policies and practices. Collaboration idea and innovations between libraries, researchers, and AI experts will be explore and intensify towards driving innovative applications of AI in librarianship.

Theoretical Framework

Theoretical framework is foundational structure for a research study that uses existing theories and concepts to guide the research questions, methodology, and analysis. It provides a lens through which the researcher views the topic, helps define and relate key concepts, and establishes a connection to a broader body of knowledge by showing how the study builds upon established ideas.

This study adopted Technological Acceptance Model (TAM) which is characterized as theory that focuses on perceived usefulness and ease of use of technology as being faster, better and more efficient service. More so, on the basis of integration for library daily routines. In view of this efficiency, proficiency and promptness of artificial intelligence gave reasons for adopting it for this study.

Methodology

Survey research design was used for this study to gather data and evaluate the role of artificial intelligence in enhancing service delivery in psychology departmental libraries across north west Nigeria universities. North West Nigeria is home to several Federal and State Universities. There are 20 Universities in North West Nigeria and these Universities include Ahmadu Bello University, Zaria, Bayero University, Kano, North West University, Kano, Umaru Musa Yar'adua University, Federal University Dutsinma and Usmanu Danfodiyo University Sokoto. Sokoto State University, Kaduna State University, Maryam Abacha American University of Nigeria, Federal University Birnin Kebbi, Federal University, Gusau, Zamfara. Federal University of Agriculture, Zuru, Kebbi. Sule Lamido University, Greenfield University, Aliko Dangote University of science and technology, Skyline University Kano, Nigeria Defence Academy Kaduna, Air Force Institute of Technology, Al-Qalam University, Katsina, Sule Lamido University, Jigawa. Having these numbers of universities, the researcher decided to choose Federal Universities across North West Nigeria because of its long standing history and its high ranking status in accreditation details, resource visit, admission criteria, and courses offered. Therefore, Bayero University Kano, Ahmadu Bello University, Zaria, Kaduna, Federal University Birnin Kebbi, Federal University, Gusau, Zamfara. Federal University Dutsinma, Katsina and Usmanu Danfodiyo University Sokoto were considered for the study to form representation for each state in North West Zone.

The population of staff in Psychology departmental libraries in North West, Nigeria were presented in the table below.

S/N	INSTITUTIONS	TOTAL NUMBER OF STAFF
1	Bayero University Kano	8
2	Ahmadu Bello University, Zaria, Kaduna	8
3	Federal University Birnin Kebbi	7
4	Federal University, Gusau, Zamfara	5
5	Federal University Dutsinma, Katsina	6
6	Usmanu Danfodiyo University Sokoto	6
	Total	40

For the purpose of clarification, the Psychology departmental library is a subset and segment of the main university libraries. It is usually established to decongest the main library and perhaps to bring the library close to the students. These libraries were also established as departmental libraries for accreditation and resource visit. The table above represent the total number of Psychology departmental libraries in the respective Universities across North West, Nigeria. Therefore, 40 staff were considered for the study.

Instrumentation

The study adopted quantitative survey research method. Questionnaire was used to elucidate responses from the respondents on the basis of face-to-face interface. The questionnaire were subjected to face and content validation. The reliability of the instrument was tested using Pearson Product Moment Correlation (PPMC). All the 40 questionnaire distributed were answered and collected for data analysis and interpretation using frequency count and percentages.

Data Analysis

Research Question 1: What types of Artificial Intelligence are used for enhancing service delivery in Psychology Department Libraries across North West Nigeria Universities?

Table 1: Types of Artificial Intelligence are used for enhancing service delivery in Psychology Department Libraries across North West Nigeria Universities

S/No	types of Artificial Intelligence are used	PSYCHOLOGY DEPARTMENT LIBRARIES ACROSS NORTH WEST NIGERIA UNIVERSITIES												TOTAL	
		BUK		ABUZ		FUBK		FUGZ		FUDK		UDUS			
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	Chabot and virtual Assistants	7	87%	8	100%	7	100%	5	100%	6	100%	5	83%	38	95%
2	Natural Language Processing	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
3	Machine Learning	7	87%	5	62%	6	85%	4	80%	5	83%	5	83%	32	80%
4	Recommendation System	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
5	Automated Cataloging and Indexing	6	75%	8	100%	6	85%	5	100%	6	100%	6	100%	39	97%
6	Predictive Analytics	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
7	Text Analysis and Summarization	6	75%	8	100%	7	100%	5	100%	5	83%	5	83%	36	90%
8	Image and Video Analysis	7	87%	7	87%	7	100%	4	80%	5	83%	6	100%	36	90%

Table 1 revealed that majority of the respondents chose Chabot and virtual Assistants, Automated Cataloging and Indexing, Text Analysis and Summarization, Image and Video Analysis as the major types of Artificial Intelligence used for enhance service delivery in in Psychology Department Libraries across North West Nigeria Universities.

Surprisingly, none of the respondents picked Recommendation System and Predictive Analytics

Research Question 2: What ICT facilities are used towards enhanced service delivery in the era of Artificial Intelligence in Psychology Department Libraries across North West Nigeria Universities?

Table 2: ICT facilities used towards enhanced service delivery in the era of Artificial Intelligence in Psychology Department Libraries across North West Nigeria Universities

S/No	ICT Facilities for Enhanced Service Delivery	PSYCHOLOGY DEPARTMENT LIBRARIES ACROSS NORTH WEST NIGERIA UNIVERSITIES												TOTAL	
		BUK		ABUZ		FUBK		FUGZ		FUDK		UDUS			
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	Computers	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%
2	Scanners	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%
3	Phones	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
4	Smart Television	3	37%	4	50%	4	57%	3	60%	2	33%	3	50%	19	47%
5	Internet	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%
6	Routers	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%
7	Networks	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%
8	Software	6	75%	5	62%	4	57%	5	100%	5	83%	5	83%	30	75%

As revealed in Table 2, Computers, Scanners, Internet, Routers, Networks, Software and smart television are the major ICT facilities used for enhanced service delivery in Psychology Department Libraries across North West Nigeria Universities. Unfortunately, phones were not selected by the respondents.

Research Question 3: What Role does Artificial Intelligence has towards enhance service delivery in Psychology Department Libraries across North West Nigeria Universities?

Table 3: Role of Artificial Intelligence on Enhanced Service Delivery in Psychology Department Libraries across North West Nigeria Universities

S/No	Role of Artificial Intelligence on Enhanced Service Delivery	PSYCHOLOGY DEPARTMENT LIBRARIES ACROSS NORTH WEST NIGERIA UNIVERSITIES												TOTAL	
		BUK		ABUZ		FUBK		FUGZ		FUDK		UDUS			
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	Barcode Identification	8	100%	8	100%	5	71%	4	80	4	66%	5	83%	34	85%
2	Shelve Reading	3	37%	4	50%	3	42%	2	40%	2	33%	3	50%	17	42%
3	Stock Taking	4	50%	5	62%	4	57%	3	60%	4	66%	5	83%	25	62%
4	Searching Library Resources	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%
5	Image Processing	5	62%	5	62%	3	42%	4	80%	4	66%	3	50	24	60%
6	Checking-In and Checking- out Process	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
7	Cataloging	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%
8	Information Retrieval	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%

As revealed in table 3 above, the role of artificial intelligence on enhanced service Delivery is basically for searching library resources, cataloging, and information Retrieval which is ranked 100%. Then followed by barcode identification. Except checking-In and checking- out process which was not ticked at all.

Question 4: What are the impact of using Artificial Intelligence for enhancing service delivery in Psychology Department Libraries across North West Nigeria Universities?

Table 4: Impact of Artificial Intelligence on Enhanced Service Delivery in Psychology Department Libraries across North West Nigeria Universities

S/No	Impact of using Artificial Intelligence on enhanced service delivery	PSYCHOLOGY DEPARTMENT LIBRARIES ACROSS NORTH WEST NIGERIA UNIVERSITIES												TOTAL	
		BUK		ABUZ		FUBK		FUGZ		FUDK		UDUS			
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	Provides Support to users	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%
2	Answering Frequently asked Questions	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%
3	Directing to Relevant Resources	4	50%	4	50%	3	42%	3	60%	2	33%	2	33%	18	45%
4	Easy Access to Information	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%
5	Enhancing Cataloging and Information Retrieval	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%
6	Categorize Information Quickly	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%
7	Provide Personalized Assistance	7	87%	7	87%	6	85%	5	100%	5	83%	6	100%	36	90%
8	Check –in & Check –Out processes	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%

Table 4 reveals that the major impact of artificial intelligence as indicated is that it provides support to users, answering frequently asked questions, easy access to information, enhancing cataloging and information retrieval, categorize information quickly takes the highest precedence of respondents. Then followed by provides personalized assistance with 90% score. Easy access to Information.

Research Question 5: What challenges exists in using artificial intelligence for enhancing service delivery in Psychology Department Libraries across North West Nigeria Universities?

Table 5: Challenges of using Artificial Intelligence on Enhanced Service Delivery in Psychology Department Libraries across North West Nigeria Universities

S/No	Challenges of using Artificial Intelligence on enhanced Service delivery	PSYCHOLOGY DEPARTMENT LIBRARIES ACROSS NORTH WEST NIGERIA UNIVERSITIES												TOTAL	
		BUK		ABUZ		FUBK		FUGZ		FUDK		UDUS			
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	Inadequate ICT Infrastructure	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%
2	Negative Attitude Toward ICT	6	75%	5	62%	4	57%	3	60%	2	33%	4	66%	24	60%
3	Inadequate Funding	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%
4	Technical Expertise Issue	4	50%	5	62%	4	57%	3	60%	4	66%	4	66%	24	60%
5	Training and Retraining	5	62%	6	75%	4	57%	4	80%	5	83%	3	50%	27	67%
6	Maintenance Issues	8	100%	8	100%	7	100%	5	100%	6	100%	6	100%	40	100%

Table 5 revealed that inadequate ICT infrastructure, inadequate funding, and maintenance issues is recorded as the major challenges of using artificial intelligence on enhanced Service delivery in Psychology Department Libraries across North West Nigeria Universities which ranked 100% respectively. Other challenges such as negative attitude toward ICT, technical expertise issue, training and retraining were ticked and ranked above 60% response rate,

Discussion of Findings

The findings of the study revealed that that majority of the respondents chose Chabot and virtual Assistants, Automated Cataloging and Indexing, Text Analysis and Summarization, Image and Video Analysis as the major types of Artificial Intelligence used for enhance service delivery in in Psychology Department Libraries across North West Nigeria Universities.

With respect to the ICT facilities used towards enhanced service delivery in the era of Artificial Intelligence in Psychology Department Libraries across North West Nigeria Universities, Computers, Scanners, Internet, Routers, Networks, Software and smart television are the major ICT facilities used for enhanced service delivery.

The findings also revealed that the role of artificial intelligence on enhanced service Delivery is basically for searching library resources, cataloging, and information retrieval which is ranked 100%. Then followed by barcode identification which was 85% response rate.

The study also revealed that the major impact of artificial intelligence as indicated is that it provides support to users, answering frequently asked questions, easy access to information, enhancing cataloging and information retrieval, categorize information quickly takes the highest precedence of respondents

Lastly, the findings of the study revealed that inadequate ICT infrastructure, inadequate funding, maintenance issues is recorded as the major challenges of using artificial intelligence on enhanced Service delivery in Psychology Department Libraries across North West Nigeria Universities which ranked 100% respectively.

Conclusion and Recommendations

There is no doubt to conclude that artificial intelligence have revolutionized teaching, learning and research particularly in aspect of information dissemination in Psychology Department Libraries across North West Nigeria Universities. In this study, it has been established that artificial intelligence has a lot of benefits in area of library service delivery as it has become a vital part of all and sundry providing endless potentials information towards guiding and educating lecturers and students in tertiary institutions. Based on the findings of the study, the following recommendations were made:

I. The types of artificial intelligence used for enhanced service delivery in the psychology departmental libraries

be maintained and sustained for retrospective research process.

II. The computers scanners, internet, routers used should be maintained and the use of smart television and mobile phone be encouraged for independent search and reading anywhere.

III. Effort should be made by the librarians to intensify effort of giving areas that concern basic routines such as shelve reading, stock taking, checking-in and checking-out process a topmost priority.

IV. The librarians should set motion for artificial intelligence to direct users to relevant resources in the library, this will reduced the intensive ways of serving library.

V. The Institutions concern should make adequate ICT Infrastructure available, adequate funding be prioritized, Technical Expertise should not be compromised, Training and Retraining of staff be maintained, and routine maintenance should regular.

References

1. Adams, L., & Ross, J. (2025). AI chatbots in academic libraries: A comprehensive guide. Library Press.

2. Barnes, S., & Rivera, M. (2025). "Legal frameworks for AI in libraries: Protecting user rights."Journal of Information Ethics, 34(1), 78-92.

3. Brooks, D., & Neal, J. (2025). "Future trends in AI for libraries: What to expect." Library Hi Tech, 43(2), 210-225.

4. Chen, H., & Bell, S. (2023). "Machine learning in library chatbots: Enhancing user interactions. "Journal of Academic Librarianship, 49(3), 102-115.

5. Carroll, A. J., & Borycz, J. (2024). Integrating large language models and generative artificial intelligence tools into information literacy instruction. The Journal of Academic Librarianship, 50(4), 102899.

6. Dunn, P., & Harper, L. (2025). "Ethical AI in libraries: Policy recommendations." Library Quarterly, 95(1), 33-50.

7. Evans, W., & Hughes, R. (2023). "The evolving role of librarians in the age of AI." Journal of Library Administration, 63(6), 701-715.

8. Hervieux, S., & Wheatley, A. (2024). Building an AI literacy framework: Perspectives from instruction librarians and current information literacy tools. Choice.

9. Keller, S., & Ruiz, A. (2023). "Collaborating with AI developers: A guide for librarians." Journal of Library Innovation, 14(2), 22-35.

10. Kong, L., & Li, M. (2024). "AI solutions for library workload reduction." Library Resources & Technical Services, 68(2), 89-103.

11. Lankes, R. D. (2023). The new reference service: AI and the future of libraries. Libraries Unlimited.

12. Phillips, N., & Cole, J. (2024). "Hybrid reference services: AI and human collaboration." Reference Services Review, 52(3), 401-415.

13. Powell, R., & Ellis, D. (2024). "Ethical guidelines for AI in libraries." Journal of Information Ethics, 33(2), 67-82.

14. Naikar, S., & Indraji, C. (2025). AI-Driven Innovation in Information Retrieval: Transforming Library Operations and User Engagement. Available at SSRN 5261229.

15. Saccucci, C., & Salaba, A. (2024). Introduction to artificial intelligence (AI) and automated processes for subject access. Cataloging & Classification Quarterly, 59(8), 699-701.

16. Saccucci, C., & Potter, A. (2024). 16 Assessing Machine Learning for Cataloging at the Library of Congress. New Horizons in Artificial Intelligence in Libraries, 185.