The Role of Artificial Intelligence in Information and Knowledge Organisation in Academic Libraries in Kano State, Nigeria

Abdullahi Abdulhameed[1,*], Dr. Shittu Musa, CLN[2], Hamza Mohammed, PhD[3]

[1] Department of Library and Information Science, Azman University, Kano, Nigeria
[2] Kashim Ibrahim Library, Ahmadu Bello University, Zaria, Nigeria
[3] Institute of Education, Ahmadu Bello University, Zaria, Nigeria
* Corresponding author: abdullahi.a@azmanuniversity.edu.ng | ORCID: 0009-0000-5170-0048

ARTICLE HISTORY	ARTICLE INFO	HOW TO CITE
Received: 9 August 2026 Accepted: 4 September 2026 Published: October 2026	Vol. 1, No. 1 (2026), pp. 273–284 ISSN: 3141-6268 (Print) 3156-5077 (Online) DOI: 10.67523/auijmss.v1i1.025 License: CC BY 4.0	Abdulhameed, A., Musa, S., & Mohammed, H. (2026). The role of artificial intelligence in information and knowledge organisation in academic libraries in Kano State, Nigeria. *Azman Univ. Int. J. Manag. Soc. Sci.*, *1*(1), 273–284. https://doi.org/10.67523/auijmss.v1i1.025

ABSTRACT

This study examined the applications, benefits, and adoption challenges of Artificial Intelligence (AI) in information and knowledge organisation in academic libraries in Kano State, Nigeria. A descriptive survey design was adopted, involving 50 professional librarians from seven academic libraries: Bayero University, Kano; Aliko Dangote University of Science and Technology, Wudil; Maryam Abacha American University of Nigeria; Skyline University Nigeria; Khalifa Isyaku Rabiu University; Azman University; and Elrazi Medical University, Kano. Purposive sampling was used to select librarians with relevant experience in AI and knowledge organisation. Data were collected using a structured five-point Likert-scale questionnaire and analysed using mean and standard deviation, with a criterion mean of 3.00 for decision-making. The findings revealed that AI is applied in cataloguing, classification, metadata generation, subject indexing, information retrieval, and digital repository management. AI was also found to enhance accuracy, operational efficiency, information access, reduction of repetitive tasks, and managerial decision-making. However, inadequate funding, poor ICT infrastructure, limited AI competencies, high implementation costs, data privacy concerns, and the absence of institutional AI policies were identified as major challenges. The study concludes that AI can substantially improve information and knowledge organisation in academic libraries. It recommends increased investment in AI and ICT infrastructure, continuous professional development for librarians, and the development of institutional AI governance frameworks to support sustainable and responsible AI adoption.

Keywords: Artificial Intelligence; Information Organisation; Knowledge Organisation; Academic Libraries; Information Retrieval

1. Introduction

Artificial Intelligence (AI), the capability of computer systems to perform tasks that ordinarily require human intelligence such as learning, reasoning and language processing (Russell & Norvig, 2021), is increasingly applied in academic libraries through machine learning, natural language processing, expert systems and automated decision-support tools that support cataloguing, metadata creation, indexing, information retrieval and other library operations. These applications bear directly on information and knowledge organisation, the core professional functions through which libraries describe, classify, arrange and structure resources and their subject content to make them findable and usable, and on information retrieval, the process through which users locate and obtain relevant information from these organised collections (Bawden & Robinson, 2022). Academic libraries, as specialised institutions supporting teaching, learning and research (Association of College and Research Libraries [ACRL], 2026), increasingly require such technologies to manage the growing volume and complexity of digital resources and to enhance access to scholarly information.

These five concepts, AI, information organisation, knowledge organisation, academic libraries and information retrieval, are closely interconnected: AI provides the technological capability, information and knowledge organisation are the library functions it supports, academic libraries supply the institutional context, and information retrieval is the outcome that matters to users. Nevertheless, effective AI adoption may be constrained by inadequate funding, insufficient ICT infrastructure, limited professional competencies, high implementation costs, data privacy and security concerns, and inadequate institutional policies. The study therefore examines the applications, benefits and challenges of AI in information and knowledge organisation in academic libraries in Kano State, Nigeria.

1.1 Objectives of the Study

The main objective of this study is to examine the role of Artificial Intelligence (AI) in information and knowledge organisation in academic libraries in Kano State, Nigeria. Specifically, the study seeks to:

1. Examine the applications of AI in information and knowledge organisation in academic libraries in Kano State, Nigeria.

2. Assess the benefits of AI for enhancing information and knowledge organisation in academic libraries in Kano State, Nigeria.

3. Identify the challenges associated with the adoption of AI for information and knowledge organisation in academic libraries in Kano State, Nigeria.

1.2 Research Questions

This study addresses the following research questions:

1. What are the applications of AI in information and knowledge organisation in academic libraries in Kano State, Nigeria?

2. What are the benefits of AI for enhancing information and knowledge organisation in academic libraries in Kano State, Nigeria?

3. What challenges are associated with the adoption of AI for information and knowledge organisation in academic libraries in Kano State, Nigeria?

2. Literature Review

Artificial Intelligence (AI) refers to computer-based systems that perform tasks normally associated with human intelligence, including learning, reasoning, problem-solving and language understanding (Russell & Norvig, 2021); the OECD's broader definition describes such systems as inferring from inputs to produce outputs, such as predictions, recommendations or decisions, that may affect physical or virtual environments (OECD, 2024b). Information organisation refers to the systematic description, arrangement, classification and indexing of resources to facilitate their identification, retrieval and use, encompassing cataloguing, bibliographic description, subject analysis and metadata creation (Svenonius, 2000). Knowledge organisation extends this to the structuring and representation of concepts and subject relationships through classification schemes, subject headings, thesauri, taxonomies and ontologies (Hjørland, 2016; Dahlberg, 2006). In this study, the two terms together refer to the processes through which library resources and their subject content are described, classified and arranged to improve accessibility, discoverability and retrieval.

Academic libraries are libraries established within higher education institutions to meet the information needs of teaching, learning and research, acquiring, organising, preserving and providing access to resources for students, staff and researchers (International Organisation for Standardisation [ISO], 2022); in this study the term refers specifically to university libraries in Kano State, Nigeria. AI technologies, the computational tools through which these functions are increasingly performed, include machine learning, natural language processing, knowledge representation, computer vision and intelligent automation, applied here to cataloguing, classification, indexing, retrieval and recommendation (UNESCO, 2021).

2.1 Applications of Artificial Intelligence in Academic Libraries

Artificial Intelligence (AI) is increasingly applied in academic libraries through machine learning, natural language processing and advanced algorithms that support both technical operations and user-facing services. Core applications include automated cataloguing and classification, metadata generation and enrichment, subject indexing, semantic information retrieval, personalised recommendation systems, and digital repository workflows spanning the ingestion, validation, organisation and dissemination of digital assets (Chodacki et al., 2024; Cox et al., 2019; Islam et al., 2025; Mahmud, 2024). By automating repetitive administrative tasks, these technologies improve the consistency of bibliographic records, accelerate the retrieval of scholarly resources, and support semantic search, recommendation and knowledge-graph services that directly aid teaching, learning and research (Asemi et al., 2021; Cox, 2023; Lund et al., 2023; UNESCO, 2023). Sustainable deployment, however, depends on robust ICT infrastructure, specialised human capital, institutional backing and comprehensive governance frameworks (IFLA, 2024; Thinh, 2026).

2.2 Benefits of Artificial Intelligence in Academic Libraries

AI provides tangible value to academic libraries across two dimensions: internal operational gains, such as efficiency, faster information processing and reduced repetitive tasks, and external service gains, such as improved information retrieval, accessibility and scholarly discovery (Cox, 2023; Zondi et al., 2024). Automation frees librarians to focus on specialised, user-centred services (Asemi et al., 2021; Dwivedi et al., 2023), while AI-powered search, recommendation and virtual-assistance systems improve information discovery and support decision-making, resource management and service improvement (IFLA, 2024; Lund et al., 2023; ACRL, 2025; Mwantimwa & Msoffe, 2025).

2.3 Challenges and Ethical Considerations

AI adoption in academic libraries is constrained by institutional, technological, financial, human-resource and ethical factors, including inadequate funding and high acquisition costs, weak ICT infrastructure, limited staff competencies, absent institutional policies and governance frameworks, data privacy and security concerns, algorithmic bias, limited transparency in AI decision-making, and staff apprehension about job displacement (Asemi et al., 2021; Igbo et al., 2025; Ngulube & Mosha, 2025; OECD, 2024a; Thinh, 2026; UNESCO, 2021, 2023). In this study, these challenges refer specifically to the funding, infrastructural, technical-competency, policy and ethical barriers that impede the adoption of AI for information and knowledge organisation in academic libraries in Kano State. Addressing them requires continuous professional development, adequate infrastructure investment, clear institutional policy, and appropriate ethical and governance frameworks. AI therefore has considerable potential to transform information and knowledge organisation in academic libraries, but its sustainable adoption depends on addressing these technical, financial, human-resource and ethical challenges.

2.4 Empirical Review

Empirical evidence on AI in Nigerian academic libraries points to adoption that is real but uneven and still emerging. Moustapha and Yusuf (2023), surveying 450 librarians in Kwara State (410 responses), found adoption and utilisation growing but inconsistent across institutions, and reported that AI already contributes to more effective service delivery and the performance of complex library tasks. Aminu (2024), surveying 73 ICT staff in North-West Nigerian federal university libraries, found only foundational technologies such as OPACs, search engines and security scanners in active use, with more advanced AI tools yet to be widely adopted, indicating that adoption in this region remains at an early stage. Asemi et al. (2021) similarly found AI supporting retrieval, cataloguing and automation with resulting efficiency gains. On barriers, Igbo et al. (2025) identified high implementation costs, inadequate technical skills, insufficient infrastructure, unreliable power and the absence of policy frameworks as key constraints, a pattern Dada, Quadir and Mallam (2026), drawing on 245 professionals across 30 Nigerian university libraries, confirmed, while also finding that catalogue search and chatbot-assisted reference were already among the most widely adopted AI-powered practices despite these constraints.

2.5 Gap in the Literature

The reviewed studies reveal that previous research has largely examined general AI adoption, library service delivery and technological readiness. Limited empirical attention has been given specifically to the application of AI in information and knowledge organisation, particularly cataloguing, classification, metadata generation, subject indexing, information retrieval and digital repository management. Moreover, evidence focusing specifically on academic libraries in Kano State remains limited. The present study therefore addresses this gap by examining the applications, benefits, and challenges of AI in information and knowledge organisation in selected academic libraries in Kano State, Nigeria.

3. Theoretical Framework

3.1 Justification for the Theoretical Framework

This study is anchored on the Technology Acceptance Model (TAM) developed by Davis (1989). TAM is used here because the central research problem, whether and how librarians actually apply AI to information and knowledge organisation, is a question of individual technology acceptance rather than of technical system capability. TAM was developed specifically to explain and predict user acceptance of computer-based technologies in organisational settings, which matches the population and context of this study: professional librarians deciding whether to adopt AI-based tools within their institutions. The model evaluates technology from the standpoint of the people expected to use it, which is the standpoint from which the study's three objectives, applications, benefits and challenges, are framed.

3.2 Assumptions of the Model

TAM rests on four guiding propositions, illustrated in Figure 1. First, actual use of a technology is predicted by a person's behavioural intention to use it, rather than by the technology's objective features. Second, behavioural intention is shaped jointly by perceived usefulness, the degree to which a person believes a technology will improve their job performance, and by attitude toward using the technology. Third, perceived ease of use shapes perceived usefulness, since a technology perceived as difficult to use is also judged less useful regardless of its underlying capability. Fourth, external variables, such as infrastructure, training and organisational support, do not act on behaviour directly; their effect is assumed to be mediated through perceived usefulness and perceived ease of use. This last assumption is the one most directly examined by the present study, since Objective Three surveys external, structural conditions, funding, infrastructure, competencies and policy, that TAM predicts should operate on adoption indirectly, through librarians' beliefs, rather than as direct barriers in their own right.

3.3 Application of the Model to the Research Objectives and Questions

TAM's core constructs were used to derive the study's three objectives and corresponding research questions, rather than being fitted to them afterward. Perceived usefulness is operationalised through Objective Two and its benefit items. Perceived ease of use and its external antecedents are operationalised through Objective Three and its challenge items, since a barrier such as inadequate ICT infrastructure is, in TAM terms, an external variable expected to depress perceived ease of use. Actual use, the behavioural outcome TAM seeks to explain, is operationalised through Objective One's inventory of AI applications currently in practice. Structuring the objectives this way allows the study to test, rather than merely illustrate, the model's proposition that usefulness and ease of use jointly account for reported use.

3.4 Operationalisation and Methodological Implications

The questionnaire gives each construct a measurable form: items under Objective One operationalise actual use as self-reported current practice, items under Objective Two operationalise perceived usefulness, and items under Objective Three operationalise the external variables TAM treats as belief-mediated rather than direct influences on adoption. Because TAM explains use as a function of user belief rather than of a system's technical specification, the appropriate method for examining it is to measure belief directly, through self-report, rather than to audit AI systems technically. This is why the study adopted a descriptive survey of librarians' perceptions, why a five-point Likert scale was used to capture the strength of each belief, and why the scale midpoint of 3.00 was adopted as the criterion separating agreement from disagreement. The Discussion returns to this framework to assess whether the findings support TAM's assumption that external variables act only indirectly through belief, or whether some of the challenges reported under Objective Three constrain adoption more directly than the model assumes.

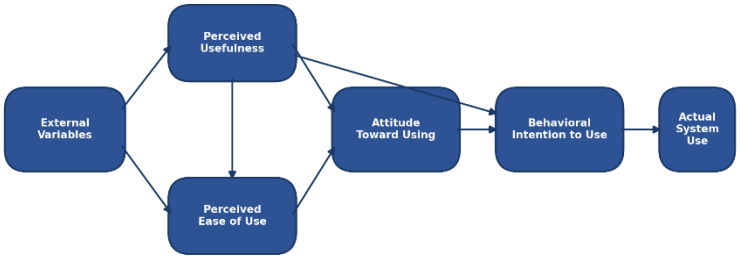

Figure 1: ***Technology Acceptance Model (Davis, 1989)***

4. Research Methodology

This study employed a descriptive survey research design to investigate the applications, benefits, and challenges associated with the integration of Artificial Intelligence (AI) in information and knowledge organisation in academic libraries in Kano State, Nigeria. The target population comprised 50 professional librarians drawn from seven selected universities: Bayero University Kano; Aliko Dangote University of Science and Technology, Wudil; Maryam Abacha American University of Nigeria; Skyline University Nigeria; Khalifa Isyaku Rabiu University; Azman University; and Elrazi Medical University.

Purposive and convenience criteria were used to identify the target population itself, ensuring the inclusion of professional librarians possessing specialised knowledge and practical experience in AI and knowledge organisation, while also accounting for their accessibility during the data collection phase (Etikan et al., 2016; Palinkas et al., 2015). Given the small size of this purposively identified population, the entire population of 50 librarians was surveyed as a census rather than a further sub-sample. Data were gathered using a structured, 18-item questionnaire employing a five-point Likert scale, with a decision criterion mean set at 3.00. To ensure measurement accuracy, the instrument underwent expert validation and a pilot study. The internal consistency of the instrument was established using Cronbach's alpha, yielding a reliability coefficient of 0.87. The questionnaire was administered to the entire target population, resulting in a 100% response rate, with all 50 copies successfully retrieved. Quantitative data analysis was conducted using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, specifically frequencies and percentages, were utilised to profile the demographic characteristics of the respondents, while mean scores and standard deviations were computed to address the three research objectives. Throughout the research process, strict adherence to ethical standards was maintained, ensuring informed consent, confidentiality, respondent anonymity, and voluntary participation.

5. Results and Discussion

5.1 Demographic Characteristics of the Respondents

This section presents the demographic characteristics of the respondents included in the study. The analysis describes the respondents' background information to provide a clear profile of the study population and facilitate the interpretation of the findings. The demographic variables examined include gender, age, educational qualification, years of professional experience, type of university, and professional rank. The results are presented in Table 1.

Table 1: Demographic Characteristics of the Respondents (N = 50)

Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	32	64.0
	Female	18	36.0
Age (Years)	20–29	8	16.0
	30–39	19	38.0
	40–49	15	30.0
	50 years and above	8	16.0
Educational Qualification	Bachelor's Degree (BLIS/B.Sc. LIS)	15	30.0
	Master's Degree (MLIS/M.Sc. LIS)	28	56.0
	Ph.D.	7	14.0
Years of Professional Experience	Less than 5 years	10	20.0
	5–10 years	18	36.0
	11–15 years	13	26.0
	Above 15 years	9	18.0
Type of University	Federal University	18	36.0
	State University	12	24.0
	Private University	20	40.0
Professional Rank	Assistant Librarian	9	18.0
	Librarian I/II	17	34.0
	Senior Librarian	13	26.0
	Principal/Chief Librarian	11	22.0
Total		50	100.0

Source: Field Survey, 2026.

Table 1 shows that the study involved 50 professional librarians with diverse demographic and professional characteristics. Male respondents constituted the majority (64.0%), and the largest age group was 30–39 years (38.0%), followed by 40–49 years (30.0%). Most respondents held a Master's degree (56.0%), and 36.0% had 5 to 10 years of professional experience, with a considerable proportion exceeding ten years. Private university librarians formed the largest institutional group (40.0%), followed by federal (36.0%) and state (24.0%) university librarians, while Librarian I/II was the largest rank category (34.0%), followed by Senior Librarians (26.0%), Principal/Chief Librarians (22.0%) and Assistant Librarians (18.0%). Overall, respondents were academically qualified and professionally experienced, and therefore well positioned to report on AI applications, benefits and challenges in their libraries.

5.2 Results Based on the Objectives of the Study

This section presents the findings in line with the specific objectives of the study. Quantitative data were analysed using frequencies and percentages for categorical variables, while mean scores and standard deviations were employed to analyse responses to the five-point Likert-scale items. A criterion mean of 3.00 was adopted as the decision threshold. Thus, mean scores of 3.00 and above were interpreted as indicating agreement with the statements, whereas mean scores below 3.00 were interpreted as indicating disagreement.

Table 2: Applications of Artificial Intelligence in Information and Knowledge Organisation (N = 50)

Item	SA f (%)	A f (%)	U f (%)	D f (%)	SD f (%)	Mean	STD	Decision
AI is used for cataloguing library resources.	21 (42.0)	21 (42.0)	8 (16.0)	0 (0.0)	0 (0.0)	4.26	0.71	Agree
AI supports classification of information resources.	18 (36.0)	20 (40.0)	12 (24.0)	0 (0.0)	0 (0.0)	4.12	0.78	Agree
AI facilitates metadata generation.	23 (46.0)	22 (44.0)	5 (10.0)	0 (0.0)	0 (0.0)	4.36	0.64	Agree
AI enhances subject indexing.	13 (26.0)	32 (64.0)	3 (6.0)	0 (0.0)	2 (4.0)	4.08	0.82	Agree
AI improves information retrieval and discovery.	21 (42.0)	26 (52.0)	3 (6.0)	0 (0.0)	0 (0.0)	4.36	0.58	Agree
AI supports digital repository management.	18 (36.0)	23 (46.0)	9 (18.0)	0 (0.0)	0 (0.0)	4.18	0.73	Agree
Grand Mean						4.23		Agree

Source: Field Survey, 2026. Note: SA = Strongly Agree; A = Agree; U = Undecided; D = Disagree; SD = Strongly Disagree. Decision rule: Mean ≥ 3.00 = Agree; Mean < 3.00 = Disagree.

Table 2 indicates that respondents generally agreed AI is being applied across major information and knowledge organisation activities in academic libraries in Kano State, with a grand mean of 4.23, above the criterion mean of 3.00. The highest means were recorded for information retrieval and discovery and for metadata generation (both 4.36), followed by cataloguing (4.26), consistent with Asemi et al. (2021), Cox (2023), Mahmud (2024) and Thinh (2026), who identified AI as increasingly useful in automating and supporting library operations and discovery. The finding further suggests that AI can improve the efficiency, accuracy, consistency and accessibility of library information resources, though the extent and sophistication of implementation may vary among institutions. Consistent with TAM, the high level of reported application likely reflects librarians' perceived usefulness of AI for professional tasks; even so, AI should remain a supportive technology, with professional judgement and human oversight preserved for accuracy, quality and ethical use.

Table 3: Benefits of Artificial Intelligence in Library Services (N = 50)

Item	SA f (%)	A f (%)	U f (%)	D f (%)	SD f (%)	Mean	STD	Decision
AI improves the accuracy of information organisation.	25 (50.0)	20 (40.0)	5 (10.0)	0 (0.0)	0 (0.0)	4.40	0.67	Agree
AI enhances efficiency in library operations.	27 (54.0)	19 (38.0)	4 (8.0)	0 (0.0)	0 (0.0)	4.46	0.64	Agree
AI reduces repetitive manual tasks.	28 (56.0)	18 (36.0)	4 (8.0)	0 (0.0)	0 (0.0)	4.48	0.64	Agree
AI improves users' access to information resources.	24 (48.0)	22 (44.0)	4 (8.0)	0 (0.0)	0 (0.0)	4.40	0.64	Agree
AI supports research, teaching, and learning.	26 (52.0)	20 (40.0)	4 (8.0)	0 (0.0)	0 (0.0)	4.44	0.65	Agree
AI improves decision-making in library management.	22 (44.0)	23 (46.0)	5 (10.0)	0 (0.0)	0 (0.0)	4.34	0.66	Agree
Grand Mean						4.42		Agree

Source: Field Survey, 2026. Note: SA = Strongly Agree; A = Agree; U = Undecided; D = Disagree; SD = Strongly Disagree. Decision rule: Mean ≥ 3.00 = Agree; Mean < 3.00 = Disagree.

Table 3 demonstrates that respondents strongly perceived AI as beneficial to library services, with a grand mean of 4.42, substantially above the criterion mean of 3.00. The highest-rated benefit was reducing repetitive manual tasks (M = 4.48), followed by enhanced efficiency in library operations (M = 4.46), support for research, teaching and learning (M = 4.44), improved accuracy of information organisation (M = 4.40), enhanced access to information resources (M = 4.40), and improved decision-making in library management (M = 4.34). The findings on accuracy and access are consistent with Mahmud (2024) and Lund et al. (2023), while the finding on research and learning support reflects the changing role of academic libraries in technology-driven educational environments, as highlighted by IFLA (2024) and UNESCO (2023). However, the high perception of benefits should be read alongside the challenges identified in Table 4: recognising AI's benefits does not by itself guarantee successful implementation, which instead requires adequate funding, reliable ICT infrastructure, relevant staff competencies, appropriate institutional policies and effective human oversight to translate perceived benefits into sustainable service improvements.

Table 4: Challenges Affecting the Adoption of Artificial Intelligence in Academic Libraries (N = 50)

Item	SA f (%)	A f (%)	U f (%)	D f (%)	SD f (%)	Mean	STD	Decision
Inadequate funding limits AI adoption.	30 (60.0)	17 (34.0)	3 (6.0)	0 (0.0)	0 (0.0)	4.54	0.61	Agree
ICT infrastructure is insufficient.	28 (56.0)	19 (38.0)	3 (6.0)	0 (0.0)	0 (0.0)	4.50	0.61	Agree
Librarians lack adequate AI competencies.	24 (48.0)	22 (44.0)	4 (8.0)	0 (0.0)	0 (0.0)	4.40	0.64	Agree
High implementation costs hinder AI adoption.	29 (58.0)	18 (36.0)	3 (6.0)	0 (0.0)	0 (0.0)	4.52	0.61	Agree
Data privacy and security are major concerns.	25 (50.0)	21 (42.0)	4 (8.0)	0 (0.0)	0 (0.0)	4.42	0.64	Agree
Lack of institutional AI policies affects implementation.	27 (54.0)	20 (40.0)	3 (6.0)	0 (0.0)	0 (0.0)	4.48	0.61	Agree
Grand Mean						4.48		Agree

Source: Field Survey, 2026. Note: SA = Strongly Agree; A = Agree; U = Undecided; D = Disagree; SD = Strongly Disagree. Decision rule: Mean ≥ 3.00 = Agree; Mean < 3.00 = Disagree.

Table 4 shows that respondents generally agreed several factors constitute significant challenges to AI adoption in academic libraries, with a grand mean of 4.48, above the criterion mean of 3.00; all six items scored above the decision threshold. The most significant challenge was inadequate funding (M = 4.54, SD = 0.61), followed by high implementation costs (M = 4.52, SD = 0.61), insufficient ICT infrastructure (M = 4.50, SD = 0.61), lack of institutional AI policies (M = 4.48, SD = 0.61), data privacy and security concerns (M = 4.42, SD = 0.64), and inadequate AI competencies among librarians (M = 4.40, SD = 0.64), consistent with Asemi et al. (2021) and Thinh (2026), who identified infrastructure, technical competencies, cost and governance as important barriers to AI implementation. As TAM predicts, recognising AI's usefulness is not sufficient for adoption: inadequate infrastructure, limited skills and high costs depress perceived ease of use and, in turn, actual adoption. Successful adoption therefore requires more than acquiring technology; it requires adequate funding, reliable ICT infrastructure, continuous staff training, clear institutional policies, data protection and human oversight.

6. Conclusion

The study concludes that Artificial Intelligence (AI) plays a significant role in the organisation of information and knowledge in academic libraries in Kano State. Specifically, AI enhances cataloguing, classification, metadata generation, subject indexing, information retrieval, and digital repository management. It also improves operational efficiency by reducing repetitive tasks, facilitating access to information resources, and supporting teaching, learning, and research activities. However, the adoption of AI is constrained by several systemic challenges, including inadequate funding, insufficient ICT infrastructure, limited staff proficiency in AI applications, high implementation costs, data privacy and security concerns, and the absence of robust institutional policies. Consequently, the effective integration of AI into academic library operations requires adequate financial investment, reliable technological infrastructure, continuous professional development for library personnel, and the establishment of comprehensive institutional policies and governance frameworks.

7. Recommendations

The study recommends that academic libraries in Kano State enhance their use of Artificial Intelligence (AI) in cataloguing, classification, subject indexing, metadata creation, and information retrieval. This integration is expected to improve the speed, consistency, and effectiveness of library operations, facilitating better access to relevant information resources for users.

Library management is urged to leverage AI technologies to boost operational efficiency, accuracy, productivity, information accessibility, and the overall quality of library services. However, it is crucial that AI serves as a supportive tool rather than a replacement for professional librarians, who should maintain their roles in professional judgment, critical evaluation, and human oversight, especially in contexts requiring ethical decision-making.

Academic libraries in Kano State must overcome challenges to adopt AI effectively by securing funding for technology, improving ICT infrastructure, and enhancing Internet connectivity. Essential measures include continuous training for librarians in AI skills and developing clear policies addressing data privacy, security, ethics, and accountability. These initiatives aim to reduce issues related to funding, costs, infrastructure, policy gaps, and competencies, promoting sustainable AI adoption in academic libraries.

8. Limitations of the Study

The study was limited by its geographical coverage, relatively small sample size, reliance on self-reported responses, and focus on librarians' perceptions rather than the technical performance of AI systems. Differences in institutional funding, ICT infrastructure, policies and staff competencies may also have influenced the findings. In addition, the rapidly changing nature of AI means that the findings reflect the situation at the time of the study and may change as AI technologies and their applications continue to develop. These limitations suggest the need for future studies with larger samples, wider geographical coverage and direct assessment of AI implementation and performance in academic libraries.

References

Aminu, M. B. (2024). Adoption of artificial intelligence for library operations in federal university libraries in North West states of Nigeria. *BW Academic Journal*, 1(3), 88–93.

Asemi, A., Ko, A., & Nowkarizi, M. (2021). Intelligent libraries: A review on expert systems, artificial intelligence, and robots. *Library Hi Tech*, 39(2), 412–434. https://doi.org/10.1108/LHT-02-2020-0038

Association of College and Research Libraries. (2025). *AI competencies for academic library workers*. American Library Association. https://www.ala.org/acrl/standards/ai

Association of College and Research Libraries. (2026). *Standards for libraries in higher education*. American Library Association.

Bawden, D., & Robinson, L. (2022). *Introduction to information science* (2nd ed.). Facet Publishing.

Chodacki, J., Hanhel, M., Iacus, S., Scherle, R., Olson, E., Pfeiffer, N., Holmes, K., & Hosseini, M. (2024). *GREI data repository AI taxonomy*. arXiv. https://doi.org/10.48550/arXiv.2411.08054

Cox, A. M. (2023). How artificial intelligence might change academic library work: Applying the competencies literature and the theory of the professions. *Journal of the Association for Information Science and Technology*, 74(3), 367–380. https://doi.org/10.1002/asi.24635

Cox, A. M., Pinfield, S., & Rutter, S. (2019). The intelligent library: Thought leaders' views on the likely impact of artificial intelligence on academic libraries. *Library Hi Tech*, 37(3), 418–435. https://doi.org/10.1108/LHT-08-2018-0105

Dada, K. S. J., Quadir, R. O., & Mallam, D. (2026). AI adoption in academic libraries: Practices, challenges, and research opportunities. *Informatio: Journal of Library and Information Science*, 6(2), 157–170. https://doi.org/10.24198/inf.v6i2.70037

Dahlberg, I. (2006). Knowledge organization: A new science? *Knowledge Organization*, 33(1), 11–19. https://doi.org/10.5771/0943-7444-2006-1-11

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. https://doi.org/10.2307/249008

Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., Baabdullah, A. M., Koohang, A., Raghavan, V., Ahuja, M., Albanna, H., Albashrawi, M. A., Al-Busaidi, A. S., Balakrishnan, J., Barlette, Y., Basu, S., Bose, I., Brooks, L., Buhalis, D., … Wright, R. (2023). So what if ChatGPT wrote it? Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*, 71, 102642. https://doi.org/10.1016/j.ijinfomgt.2023.102642

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1–4. https://doi.org/10.11648/j.ajtas.20160501.11

Hjørland, B. (2016). Knowledge organization. *Knowledge Organization*, 43(6), 475–484. https://doi.org/10.5771/0943-7444-2016-6-475

Igbo, H. U., Imo, N. T., Jidere, U. J., & Ugwu, F. N. (2025). Adopting artificial intelligence in academic library services in Nigeria: Requirements and challenges. *Nigerbiblios: Journal of the National Library of Nigeria*, 34(1), 1–18. https://nigerbiblios.nln.gov.ng/index.php/nigerbiblios/article/view/145

International Federation of Library Associations and Institutions. (2024). *Developing a library strategic response to artificial intelligence*. IFLA.

International Organization for Standardization. (2022). *Information and documentation—International library statistics* (ISO Standard No. 2789:2022). ISO.

Islam, M. N., Ahmad, S., Aqil, M., Hu, G., Ashiq, M., Abusharhah, M. M., & Saky, S. A. T. M. (2025). Application of artificial intelligence in academic libraries: A bibliometric analysis and knowledge mapping. *Discover Artificial Intelligence*, 5, Article 59. https://doi.org/10.1007/s44163-025-00295-9

Lund, B. D., Wang, T., Mannuru, N. R., Nie, B., Shimray, S., & Wang, Z. (2023). ChatGPT and a new academic reality: Artificial intelligence and academic libraries. *The Journal of Academic Librarianship*, 49(1), 102808. https://doi.org/10.1016/j.acalib.2023.102808

Mahmud, M. R. (2024). AI in automating library cataloging and classification. *Library Hi Tech News*. Advance online publication. https://doi.org/10.1108/LHTN-07-2024-0114

Moustapha, A. A., & Yusuf, I. O. (2023). Adoption of artificial intelligence to improve library service delivery in academic libraries in Kwara State, Nigeria. *Library Philosophy and Practice (e-journal)*, Article 7915. https://digitalcommons.unl.edu/libphilprac/7915

Mwantimwa, K., & Msoffe, G. (2025). Application of generative artificial intelligence in library operations and service delivery: A scoping review. *Technical Services Quarterly*, 42(2), 139–168. https://doi.org/10.1080/07317131.2025.2467574

Ngulube, P., & Mosha, N. F. V. (2025). Integrating artificial intelligence-based technologies "safely" in academic libraries: An overview through a scoping review. *Technical Services Quarterly*, 42(1), 46–67. https://doi.org/10.1080/07317131.2024.2432093

Organisation for Economic Co-operation and Development. (2024a). *Explanatory memorandum on the updated OECD definition of an AI system* (OECD Artificial Intelligence Papers No. 8). OECD Publishing. https://doi.org/10.1787/623da898-en

Organisation for Economic Co-operation and Development. (2024b). *What is an AI system?* OECD AI Policy Observatory.

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, 42, 533–544. https://doi.org/10.1007/s10488-013-0528-y

Russell, S. J., & Norvig, P. (2021). *Artificial intelligence: A modern approach* (4th ed., global ed.). Pearson.

Svenonius, E. (2000). *The intellectual foundation of information organization*. MIT Press.

Thinh, P. V. (2026). The role of artificial intelligence in academic libraries: A systematic review of trends, applications, and challenges. *European Journal of Science and Modern Technologies*, 2(2), 126–137. https://doi.org/10.59324/ejsmt.2026.2(2).11

UNESCO. (2021). *Recommendation on the ethics of artificial intelligence*. UNESCO.

UNESCO. (2023). *Guidance for generative AI in education and research*. UNESCO.

Zondi, N. P., Epizitone, A., Nkomo, N., Mthalane, P. P., Moyane, S., Luthuli, M., Khumalo, M., & Phokoye, S. (2024). A review of artificial intelligence implementation in academic library services. *South African Journal of Libraries and Information Science*, 90(2), 1–8. https://doi.org/10.7553/90-2-2399