

A Systematic Review of Artificial Intelligence Technologies and Indigenous Knowledge Management in Special Libraries in Kenya

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The European Conference on Arts & Humanities 2026
Official Conference Proceedings

Abstract

This study employed systematic review methodology to explore 67 articles at the intersection of Artificial Intelligence technologies and indigenous knowledge management in Specialized Kenyan libraries between 2021 to 2025. The target journals included African Online Journal, Web of Science and ACM digital library. The findings show that the adoption of AI technologies in indigenous knowledge management among Specialized Kenyan libraries remains at the conceptual phase. Indigenous knowledge management activities and practices are unstructured, fragmented and unsupported by artificial intelligence technologies. The libraries face challenges such as insufficient technical capacity, absence of a defined policy framework, inadequate funding, and limited goodwill from key stakeholders. Nonetheless, artificial intelligence technologies present significant opportunities in Specialized Kenyan libraries. AI technologies have the potential to revolutionize, enrich and optimize indigenous knowledge management, use and application. However, meaningful progress and impact has to be achieved to strengthen the technical capacity of information professionals, develop supportive policy framework and infrastructure and also advance context-specific AI tools. This study contributes to literature by closing the gap on AI and indigenous knowledge management in African special libraries. It also offers insights to practitioners, policy makers and researchers seeking to safeguard indigenous knowledge in the phase of AI.

Keywords: indigenous knowledge management, AI technologies, specialized Kenyan libraries, systematic review

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Introduction

Indigenous knowledge comprises ecological and environmental knowledge, agricultural knowledge, medicinal knowledge, historical knowledge and cultural heritage and craftsmanship deeply imbedded in the society (Sergon et al., 2022). The knowledge plays a key role in economic and social development. Specialized libraries are libraries attached to entities such as government departments, corporate institutions and research bodies and usually serve the interests of the parent bodies. The libraries are uniquely positioned to capture, manage and share knowledge including Indigenous knowledge (Gosart, 2021). However, the absence of a dedicated platform within the libraries to identify, document, preserve, synthesize and disseminate indigenous knowledge jeopardizes its management (Mdhluli et al., 2021). Furthermore, oral traditions usually tend to fade away over time due to their tacit and experiential characteristics, and their unstructured and inherently fragile nature. AI technologies, including expert systems, knowledge graphs, natural language processing, machine learning, and automated transcription, have the capacity to capture, manage and advance indigenous knowledge for use and reuse (Jha, 2023). Previous studies show that Kenyan academic libraries have begun investigating the potential use of AI technologies in running their activities although awareness and readiness remains a major challenge (Masinde et al., 2024). Masinde et al. (2025) who examined big data and personal information privacy in libraries contend that insufficient awareness, systemic issues, infrastructural constraints, and the lack of comprehensive policies present considerable obstacles to the technology's implementation, particularly in emerging economies.

Kenya exhibits a scarcity of literature on the convergence of indigenous knowledge, AI technologies and specialized libraries. There appears to be little to know information on how specialized Kenyan libraries are employing AI technologies to capture, manage, preserve and advance indigenous knowledge for use and reuse. Furthermore, though critical, limited literature exists on the challenges faced by the libraries in the implementation of the technologies. Understanding the technology's potential benefits as well as its limitations, is critical for effective implementation.

Essentially, AI technologies can enable specialized libraries automate routine tasks such as capturing, documenting, preserving and synthesizing indigenous knowledge. The technologies can enhance user experience, increase efficiency through automation and decrease operating costs by minimizing the need for labor-intensive manual tasks. The technologies can also ensure inclusive, broader, prompt and convenient access to indigenous knowledge for economic development and societal advancement (Bonaldo & Pereira, 2023). However, AI technologies also pose a myriad of challenges, including high costs of implementation, distortion of traditional knowledge, perpetuation of epistemic injustices, stereotyping through linguistic biases, the exacerbation of existing inequalities through algorithmic biases and intellectual property concerns such as copyright infringement (Maina et al., 2026). In order to adopt the technologies, it is important to understand both its potential benefits and challenges. This study aims to systematically review the present body of literature on how specialized Kenyan libraries are capturing, managing and sharing indigenous knowledge with a focus on AI technologies. The study aims to pinpoint the present gaps, and recommend the best practices for effective and ethical application of AI technologies to capture, manage and optimize indigenous knowledge use in African special libraries.

Problem Statement

Specialized libraries in Kenya serve as valuable repositories for management and augmentation of indigenous knowledge. Indigenous knowledge includes enduring activities and practices passed down generations such as craftsmanship, weather forecasting, oral traditions, cultural and historical knowledge practices and agriculture and medicine traditions. However, this indigenous knowledge remains undocumented under-preserved, unstructured, inaccessible, unexplored and communal. Key among the contributing factors include the lack of a detailed policy framework to guide indigenous knowledge activities and practices, the erosion of traditional practices due to modernization and urbanization, the universal shift towards digital only collections and the obsolescence of physical media, the language attrition stemming from contextual loss and inadequate technical capacity (Asamoah & Ngulube, 2021).

Despite the wealth of indigenous knowledge and the integration of AI technologies in other sectors of the economy, Specialized Kenyan libraries are not utilizing the technologies to effectively capture, manage, and advance indigenous knowledge. The level of adoption is at the embryonic phase (Echedom & Okuonghae, 2021). Awareness and readiness remains limited (Masinde & Mugambi, 2026). There is also a limited body of knowledge on the practices and activities of AI technologies in the capture, management, and advancement of indigenous knowledge. Furthermore, there is no comprehensive and detailed policy framework to guide indigenous knowledge activities making it inaccessible, undocumented, vulnerable to misuse and susceptible to misappropriation. AI does not also account for critical components of indigenous knowledge such as cultural and community consent.

The integration of AI technologies in the activities and practices of specialized libraries is important, since poor management and sharing of indigenous knowledge can deprive of policymakers, researchers, stakeholders and future generations vital information. This can also promote social and economic stagnation and erode traditional heritage. The main challenges identified as limiting to the adoption of AI technologies include lack of awareness and readiness, insufficient technical expertise, and the absence of comprehensive and detailed policy frameworks to guide its implementation, as well as cultural and language attrition.

Study Objectives

The following objectives will guide the study:

1. To examine how Specialized Kenyan Libraries identify, document, manage, preserve, synthesize and share indigenous knowledge
2. To investigate how AI technologies have been employed by Specialized Kenyan Libraries to manage and advance indigenous knowledge
3. To analyze the challenges and opportunities for Specialized Kenyan Libraries in the application of AI technologies to manage and advance indigenous knowledge
4. To recommend the best practices for application of AI technologies to manage and advance indigenous knowledge in Specialized Kenyan Libraries

Theories Supporting the Study

The study will be supported by two theories, the Nonaka and Takeuchi's Knowledge Creation Theory and the Socio-Technical Systems theory which will guide the understanding of how AI technologies can advance the capture, management and sharing of indigenous knowledge.

Nonaka and Takeuchi's Knowledge Creation Theory

The theory (socialization, Internationalization, combination, externalization) lays the foundation on how specialized libraries can employ AI technologies to advance the management of indigenous knowledge. Indigenous knowledge is mostly tacit (oral traditions, experiences, etc.) since it resides in people's minds. AI technologies through externalization can help convert tacit knowledge into explicit knowledge through sources such as repositories, databases and electronic records. AI technologies can also enable the combination of indigenous knowledge with knowledge sciences, for example the combination of agricultural data with medical data. Additionally, users interacting with AI technologies such as ontologies, natural language processing and machine learning may engage in internalization and apply the knowledge in different contexts.

Socio-Technical Systems (STS) Theory

The theory lays emphasis on the interaction between people technology and organization. Managing indigenous knowledge is not only a technical activity but also involves people's consent, cultural values and institutional policies. Even though AI technologies offer the tools for management and sharing of indigenous knowledge, it has to align with the social, cultural norms, and institutional policies. The theory therefore provides the basis on how social systems and technological systems must co-evolve to ensure sustainable and ethical collection, management and sharing of indigenous knowledge.

Methodology

This study adopted systematic review methodology to map evidence, identify gaps and make recommendations. Systematic review methodology is increasingly being adopted in the information and knowledge management discipline due to the need to ensure thorough, transparent, exhaustive and evidence-based findings (Martin et al., 2024). In this study, a systematic review methodology was used to synthesize 67 articles on the convergence of indigenous knowledge, AI technologies and specialized Kenyan libraries to provide detailed, structured, replicable and evidence-based recommendations. These articles encompassed peer reviewed scientific articles and gray literature. The target journals included Web of Science, Thomson routers, African Online Journal, and ACM digital library.

This review adheres to the established guidelines for systematic review and meta-analysis reporting (Parums, 2021). The framework guarantees rigor, transparency and reproducibility through four key steps; identification, screening, eligibility, and inclusion ensuring the quality and completeness of the review process.

Inclusion

- i. Studies conducted from 2021 to 2025 (to capture the latest developments and trends in Indigenous knowledge, AI, and specialized libraries)
- ii. Studies examining indigenous knowledge management (capture, management, preservation sharing, and reuse)
- iii. Studies examining the convergence of AI technologies and knowledge management
- iv. Studies on Specialized Kenyan libraries (museum libraries, legal libraries, government libraries, and agricultural libraries)
- v. Research published in English

Exclusion Criteria

- i. Research on libraries of other categories such as public, academic, and school libraries
- ii. Studies not published between 2021–2025
- iii. Opinions/Articles lacking empirical evidence
- iv. Studies published beyond the borders of Kenya

Search Strategy

A comprehensive search strategy was conducted to guarantee an extensive coverage of all the pertinent literature on the convergence of indigenous knowledge and Specialized Kenyan libraries. The databases searched included:

- i. Web of science, Scopus, ACM digital library and Thomson routers to capture peer reviewed global literature
- ii. African journal online (AJOL) to capture African literature and emerging literature
- iii. Institutional repositories, to capture outputs from universities
- iv. Google scholar to capture gray literature

The search queries were tailored for each database as shown below:

("traditional knowledge" OR "local knowledge" OR "Indigenous knowledge") AND ("natural language processing" OR "machine learning" OR "AI" OR "artificial intelligence") AND ("special libraries" OR "media libraries" OR "research libraries" OR "museum libraries" OR "law libraries" OR "corporate libraries" OR "medical libraries" OR "hospital libraries" OR "technical libraries" OR "scientific libraries" OR "archival libraries" OR "medical libraries" OR "Newspaper Libraries" OR "prison libraries" OR "government libraries") AND Kenya.

Selection of Studies

Stage 1: All search results were exported to Zotero to ensure duplicate removal and reference management

Stage 2: Titles and abstracts were screened against the inclusion criteria with two independent reviewers included to minimize biases

Stage 3: All selected studies were screened to for relevance

Stage 4: All the final selected studies were included for extraction and analysis

A Prisma flow diagram was utilized to show the selection process. This includes the identification, screening, exclusion and finally inclusion of the selected studies (Rethlefsen & Page, 2021).

Extraction of Data

In line with Wafford & O'Dwyer, (2021) a standardized data extraction tool was designed to capture key details from all the selected studies. The extracted data included:

- i. Bibliographic information
- ii. Type of Specialized Kenyan library
- iii. AI tools applied
- iv. Purpose (Preservation, retrieval, access)
- v. Indigenous knowledge management domain

- vi. Challenges and opportunities reported
- vii. Theoretical lanes applied

Data Analysis

Data was analyzed using thematic Analysis. According to Masinde et al., (2024), thematic analysis has three stages:

- i. Coding: Data was extracted line by line
- ii. Descriptive themes were generated (e.g., AI tools in Indigenous knowledge domain, policy challenges, innovations in libraries, ethical issues)
- iii. Analytical themes to link the study to the main objectives, theoretical underpinnings

Quality Appraisal

Selected studies were evaluated for rigor using the Critical Appraisal Skills Programme (CASP) checklist (2022) for qualitative and mixed methods research. In accordance with Hughes et al., (2021), the adapted Authority, Accuracy, Coverage, Objectivity, Date, Significance (AACODS) checklist was utilized to evaluate grey literature. Only studies that met the quality criteria were included.

Ethical Considerations

Ethical considerations constitute an integral component of any research (Muthee & Masinde, 2020). While the study utilizes secondary data, appropriate attribution to the authors was ensured. In addition, sensitivity to community-owned knowledge and cultural heritage was emphasized in accordance with Kenya's constitutional and policy framework on indigenous knowledge and cultural heritage.

Discussion of Findings

Objective 1: To Examine How Specialized Kenyan Libraries Identify, Document, Manage, Preserve, Synthesize and Share Indigenous Knowledge

Study findings show that Specialized Kenyan Libraries are engaged in some form of indigenous knowledge activities and practices such as documentation and preservation. For example, the review shows that the libraries in the agricultural sector are engaged in documenting and preserving indigenous agricultural practices. Similarly, those in the traditional and cultural heritage are involved in digitizing and preserving tangible and intangible cultural practices while specialized libraries in medical institutions are engaged in cataloguing and preserving traditional medicinal knowledge. However, these activities and practices are institutional specific and are mainly dependent on donor funding and well-wishers. In addition, there is no unified national policy framework to guide the documentation and preservation activities and practices (Maina et al., 2026).

Study findings demonstrate that metadata acquisition and digitization of indigenous knowledge are the primary preservation activities in specialized Kenyan libraries with no evidence of the integration of AI technologies in their standard operations. The findings correspond with the assertions of Masinde et al., (2025) who posited that Specialized library in the global south primary focused on metadata creation, and traditional knowledge cataloguing before exploring other practices and strategies such as the adoption of emergent and disruptive technologies.

However, these findings deviate from the cultural expressions and traditional act of 2017 which mandates information institutions including knowledge centers, museums, archives and libraries to integrate new technologies into their routine activities.

Moreover, while Specialized Kenyan Libraries house a significant collection of indigenous knowledge, the findings indicate that their contributions are hampered by limited human capacity to effectively implement and utilize new technologies, inadequate funding to support the integration of contemporary strategies and practices such as AI and big data analytics, and the lack of a detailed and comprehensive policy framework to guide indigenous knowledge activities.

Objective 2: To Investigate How AI Technologies Have Been Employed by Specialized Kenyan Libraries to Manage and Advance Indigenous Knowledge

The findings of the study revealed no evidence that AI technologies had been integrated into the routine tasks of Specialized Kenyan Libraries including indigenous knowledge management activities and processes. The findings demonstrate that while Kenyan academic libraries had integrated AI technologies such as automated cataloging, virtual assistants, plagiarism detection tools and chatbots in their routine tasks, Specialized Libraries were still in discussion regarding the potential of the technologies as future enablers, a clear characteristic that the libraries are still in the embryonic phase. The findings are in tandem with those of Masinde et al., (2024), who explored the AI landscape in Kenyan academic libraries and established that academic libraries in the Global South are making significant progress towards the adoption of AI technologies. Even so, Specialized Kenyan Libraries still hold immense opportunities for implementation of AI technologies. Onwubiko, E. C. (2025) asserts that to improve discovery and visibility, natural language processing (NLP) can transliterate oral traditions such as lore, oral narratives, oral history and verbal testimonies in online repositories, enhancing their discovery and accessibility. In addition, hybrid indigenous knowledge bases could be developed through machine learning by enabling the integration of traditional medicinal knowledge into scholarly databases. Special libraries could also enable retrieval of indigenous knowledge through recommendation systems.

The findings also show a deficiency of goodwill on the adoption of AI technologies among key stakeholders. The lack of goodwill among key stakeholders, including parent organizations, poses a considerable challenge despite the interest in AI technologies. The libraries exist primarily at a conceptual level (Oyelude, 2023). These findings are consistent with the assertions of Masinde et al., (2024), who identify key limiting factors to the adoption of AI technologies in academic libraries of the Global South as limited funding, a lack of goodwill and institutional culture, and skill gaps among the human resources.

Objective 3: To Analyze the Challenges and Opportunities for Specialized Kenyan Libraries in the Application of AI Technologies to Manage and Advance Indigenous Knowledge

The findings of the study suggest that Specialized Kenyan libraries faced a myriad of challenges in the implementation of AI technologies. The challenges include:

- (i) barriers in technological infrastructure stemming from insufficient digital capabilities and the absence of interoperable metadata integration standards necessary for the application of AI technologies in managing indigenous knowledge, and:

- (ii) A skills gap resulting from a shortage of personnel equipped with the knowledge and competencies required in the application of AI technologies such as automated cataloguing, natural language processing and machine learning to manage indigenous knowledge in Specialized libraries. The limited understanding of AI technologies underscores the need for training.
- (iii) In addition, there is a lack of comprehensive and detailed legal and ethical framework to guide indigenous knowledge activities. The findings imply that significant AI related issues including informed consent, cultural misappropriation, and data sovereignty, remain unresolved. Experts caution that the adoption of AI technologies without involving the community and also curing critical issues may lead to the commodification of indigenous knowledge.

Despite the challenges, substantial opportunities exist for AI in specialized libraries. AI can ensure the capture, management, preservation, and optimization of indigenous knowledge (Masinde et al., 2024). It can enable the discovery, access, sharing and reuse of indigenous knowledge within the larger community through the co-creation of ontologies, and allowing specialized libraries to honor the community's cultural protocols while disseminating indigenous knowledge. Theoretically, the SECI model illustrates that AI can accelerate the conversion of indigenous knowledge by externalizing tacit knowledge (oral traditions) into digital formats and subsequently internalizing it through integration of scientific data with these oral traditions. Similarly, SES cautions that, in the absence of institutional, social, and cultural support, technology alone cannot guarantee ethical integration.

Synthesis of Findings

Study findings demonstrate that indigenous knowledge remains underutilized despite its significant contribution to economic, and social development. Though the Specialized libraries have digitized most of their functions, the lack of AI technologies limit the potential benefits and optimal utilization of indigenous knowledge. When effectively integrated AI technologies, can augment and enrich indigenous knowledge. However, the lack of good will and institutional, inadequate human resource capacity, limited technological capability compounded by the absence of a comprehensive ethical and legal framework curtails the integration efforts.

The findings also indicate a scarcity of studies on the application of AI technologies in the management of indigenous knowledge in Specialized Kenyan Libraries. There is a lack of literature on AI enabled practices and activities such as identification, documentation, preservation, synthesis and dissemination of indigenous knowledge in Specialized Kenyan Libraries. This study contributes to literature on AI enabled practices and activities of indigenous knowledge in Specialized Kenyan Libraries. In addition, it promotes the development of a comprehensive ethical framework to guide indigenous knowledge management activities and practices in Specialized Kenyan libraries.

In summary, the findings of this study show that:

1. Specialized Kenyan Libraries continue to employ conventional management techniques and practices to identify, document, manage, preserve, synthesize and share indigenous knowledge
2. AI technologies when integrated with indigenous knowledge can enrich and optimize its use and application. However, the findings demonstrate that the technologies are still seen as conceptual rather than practical

3. If implemented with an appropriate ethical framework, AI technologies have the potential to guarantee optimal, sustainable and long-term preservation and management of indigenous knowledge. However, AI technologies face myriad of challenges including the lack of institutional support and good will, inadequate human resource capacity, limited technological capability and the lack of a detailed legal and ethical framework

Therefore, need arises to develop a comprehensive framework to guide the integration of AI technologies and indigenous knowledge management activities and practices in Specialized Kenyan Libraries.

Summary and Conclusion

The study explored the application of AI technologies in the preservation and management of indigenous knowledge in Specialized Kenyan Libraries. The objectives of the study were to:

1. To examine how Specialized Kenyan Libraries identify, document, manage, preserve, synthesize and share indigenous knowledge
2. To investigate how AI technologies have been employed by Specialized Kenyan Libraries to manage and advance indigenous knowledge
3. To analyze the challenges and opportunities for Specialized Kenyan Libraries in the application of AI technologies to manage and advance indigenous knowledge
4. To recommend the best practices for application of AI technologies to manage and advance indigenous knowledge in Specialized Kenyan Libraries

Study findings show that Specialized Kenyan libraries, including State and government departmental libraries, museum and archival libraries, cultural libraries, agricultural libraries and medical libraries play a key role in documenting, preserving, synthesizing and sharing indigenous knowledge. For instance, the systematic review shows that the specialized libraries affiliated with museums play a critical role in documenting, preserving, synthesizing and sharing cultural heritage and oral histories. Additionally, the specialized libraries within agricultural research organizations, such as the Kenya Agricultural and Livestock Research Organization (KALRO), are critical in capturing, documenting, preserving, synthesizing and disseminating traditional farming methods and other indigenous agricultural practices. However, the Indigenous knowledge is characterized by its fragmented and unstructured nature, and is not supported by advanced technologies such as AI technologies.

AI technologies are generally considered revolutionary in indigenous knowledge management and sharing. The technologies for example natural language processing, ontologies, knowledge graphs, expert systems, and machine learning, augment, enrich, and optimize the utilization of indigenous knowledge.

The technologies have the potential to digitize oral traditions, enrich indigenous knowledge terminologies, and enhance the identification, management, preservation and sharing of indigenous knowledge. Nevertheless, study findings indicate that the implementation of AI technologies in Specialized Kenyan Libraries remains in its conceptual stage, primarily hindered by a lack of institutional support and goodwill, limited technical expertise, insufficient funding, inadequate technological infrastructure, and a deficient legal and ethical framework.

The study further highlighted the absence of policies both at institutional and national levels that advance the integration of AI technologies and indigenous knowledge in Specialised

Kenyan libraries. Even though Kenya possesses a robust and comprehensive legal and policy framework on Information Communication Technology and data management, the country lacks a dedicated policy that addresses indigenous knowledge and AI technologies within specialized libraries. This raises significant concerns about digital colonialism and the potential for erosion and misuse of indigenous knowledge when the knowledge is shared without an accompanying framework to guide its utilization.

From a theoretical standpoint, the social cultural systems theory highlights the importance of harmonizing the integration of information technologies, such as AI, with social, cultural, and ethical considerations within the framework of indigenous knowledge and specialized libraries. Furthermore, the knowledge management theory underscores the importance of systematically organizing, preserving, and sharing both tacit and explicit knowledge. Within the scope of indigenous knowledge, which is predominantly tacit, AI tools can play critical role in ensuring the codification and sharing of indigenous knowledge. Nonacks SECI theory demonstrates the significance of AI in ensuring internalization, externalization, socialization, and combination as essential components in enhancing and advancing the application of indigenous knowledge within specialized libraries.

Therefore, while AI possesses significant potential to advance and ensure access to indigenous knowledge, several challenges remain, including insufficient funding, limited technical capacity, inadequate technological infrastructure, lack of institutional support, and ethical concerns. Addressing these issues necessitates the establishment of a multi-stakeholder forum that includes librarians, researchers, and the broader community.

Study Limitations

The study's limitations include:

- i. The swift advancements of AI technologies may surpass the present body of knowledge.
- ii. The lack of knowledge on the intersection of indigenous knowledge, AI technologies and specialized libraries in Kenya.
- iii. Potential biases in the present literature as some community and institutional studies may remain unpublished.

Despite the limitations, the study ensured a thorough, comprehensive, and transparent review and synthesis of the present body of knowledge.

Conclusion

This review aims to analyze the relationship between AI technologies and the preservation and management of indigenous knowledge in specialized Kenyan libraries. The study offered insights into current practices of indigenous knowledge management within specialized Kenyan libraries. In addition, the study examined the role of AI technologies in the preservation and management of indigenous knowledge, highlighting both the opportunities and challenges for its integration. This study enhances existing knowledge by illustrating the application of AI technologies to conventional indigenous knowledge activities and practices, thereby optimizing their utilization.

Future research should explore empirical studies on the integration of AI technologies in Specialized libraries of other countries in the global south and Africa at large. In addition, pilot projects and policy frameworks that address AI technologies and the management of

indigenous knowledge within these institutions. This will ensure that the application of AI technologies in indigenous knowledge management is both technically feasible and grounded in social, cultural, and ethnic context.

Recommendations

In light of the study findings, the following recommendations are put forward:

1. Policy Recommendation

- a. The government should amend existing laws, such as the Copyright and Expressions Act, to incorporate the integration of AI technologies in the management of indigenous knowledge. This would safeguard against abuse, misappropriation, and digital colonialism.
- b. Establish a national innovation fund to support AI projects. This will support AI driven projects and reduce overreliance on donor funding and ensure long term sustainability and cost effectiveness.

2. Practice Recommendations

- a. Specialised Kenyan libraries ought to prioritize capacity building initiatives for their personnel. It is essential to enhance the technical capacity of staff in the areas of AI application, integration of indigenous knowledge and digitization, and ethical considerations.
- b. Specialised Kenyan libraries should engage in collaboration with the local community to identify, preserve, and synthesize indigenous knowledge. The collaborative development of metadata, classification frameworks, and ontologies will enhance authenticity, foster cultural sensitivity, and enrich indigenous knowledge practices.
- c. The libraries should prioritize open-source, cost-effective and sustainable AI technologies, such as natural language processing tools for local languages, to guarantee reduced financial burden and long-term sustainability.
- d. The libraries should prioritize the digitalization of indigenous knowledge resources, including traditional agricultural practices, conventional medicinal practices, and cultural heritage. Integrating AI technologies will augment, advance and optimize the discovery of indigenous knowledge resources.

3. Research Recommendations

- a. Future studies should conduct empirical research on specific Specialized Kenyan libraries such as government libraries, medical libraries and agricultural libraries to assess the actual impact of AI technologies on indigenous knowledge management.
- b. Future research should examine the impact of AI technologies on indigenous knowledge management, with emphasis on community trust, ethical considerations, and the intergenerational discrediting of knowledge.
- c. Researchers could also analyze Kenya's experiences in comparison with other African nations to identify scalable AI solutions and best practices for AI and indigenous knowledge management.
- d. Future studies should focus on the development of AI technologies that are informed by indigenous knowledge ontologies tailored to cultural contexts and local Kenyan languages.

The integration of AI technologies in indigenous knowledge management offers an innovative pathway for preservation, optimization and sharing of indigenous knowledge for societal and economic development. However, this can only be attained if policies and practices are aligned with the societal needs which include community centered approaches and ethical considerations. By implementing these recommendations, Specialized Kenyan libraries can be regarded as leaders in indigenous knowledge management while also embracing new technologies.

Disclosure of Interest

The Authors declares no relevant financial or non-financial competing interests to report.

Declaration of Funding

The Authors declares that no funding was received in the course of this study.

Data Availability Statement (DAS)

This is a systematic review study. The sources of the data are available in the reference section below.

References

- Asamoah, C., & Ngulube, P. (2021). Exploring models for the management of indigenous knowledge in academic libraries of Ghana. *Information Development*, 39(4), 787–797. <https://doi.org/10.1177/02666669211052928>
- Barsha, S., & Munshi, S. A. (2023). Implementing Artificial Intelligence in Library Services: A review of current prospects and challenges of developing countries. *Library Hi Tech News*, 41(1), 7–10. <https://doi.org/10.1108/lhtn-07-2023-0126>
- Bonaldo, R., & Pereira, A. C. (2023). Potential history: Reading artificial intelligence from indigenous knowledges*. *History and Theory*, 62(1), 3–29. <https://doi.org/10.1111/hith.12290>
- Echedom, A. U., & Okuonghae, O. (2021). Transforming Academic Library operations in Africa with Artificial Intelligence: Opportunities and Challenges: A Review Paper. *New Review of Academic Librarianship*, 27(2), 243–255. <https://doi.org/10.1080/13614533.2021.1906715>
- Gosart, U. (2021). Indigenous librarianship: Theory, practices, and means of social action. *IFLA Journal*, 47(3), 293–304. <https://doi.org/10.1177/0340035221991861>
- Hughes, S., Aiyegbusi, O., Lasserson, D., Collis, P., Cruz Rivera, S., McMullan, C., Turner, G., Glasby, J., & Calvert, M. (2021). Protocol for a scoping review exploring the use of patient-reported outcomes in Adult Social Care. *BMJ Open*, 11(4). <https://doi.org/10.1136/bmjopen-2020-045206>
- Jha, S. K. (2023). Application of artificial intelligence in libraries and information centers services: Prospects and challenges. *Library Hi Tech News*, 40(7), 1–5. <https://doi.org/10.1108/lhtn-06-2023-0102>
- Maina, S., Masinde, J. M., & Mwikya, J. R. (2026). From access to empowerment: How artificial intelligence is transforming learning experiences for students with physical disabilities in Kenyan universities. *Library Hi Tech News*, 1–4. <https://doi.org/10.1108/lhtn-05-2026-0111>
- Maina, S., Masinde, J. M., & Reuben, J. M. (2026). A framework for enhancing information accessibility for students with physical disabilities in Kenyan universities through ergonomic interventions. *Disability and Rehabilitation: Assistive Technology*, 1–17. <https://doi.org/10.1080/17483107.2026.2685881>
- Martins, M. R. (2023). Project Management Evolution: From traditional it implementations to AI-driven projects. *International Journal of Scientific Research and Management (IJSRM)*, 11(07), 5011–5028. <https://doi.org/10.18535/ijssrm/v11i07.em03>
- Masinde, J. M., & Mugambi, F. (2026). The influence of information gaps on the proliferation of idle palatial homes in rural villages: A case of Maitei Village, Kenya. *Library Hi Tech News*, 43(6), 19–23. <https://doi.org/10.1108/lhtn-03-2026-0047>

- Masinde, J. M., Mugambi, F., & Musyoka, F. M. (2025). Applying SERVQUAL model in library service delivery to attain students satisfaction at a private university in Kenya. *International Journal of Librarianship*, 10(1), 54–68. <https://doi.org/10.23974/ijol.2025.vol10.1.445>
- Masinde, J., Mugambi, F., & Muthee, D. W. (2025). Big Data and personal information privacy in developing countries: Insights from Kenya. *Frontiers in Big Data*, 8. <https://doi.org/10.3389/fdata.2025.1532362>
- Masinde, J. M., Mugambi, F., & Wambiri, D. M. (2024). Exploring the current landscape of artificial intelligence adoption in Kenyan academic libraries. *Proceedings of the 17th International Conference on Theory and Practice of Electronic Governance*, 403–408. <https://doi.org/10.1145/3680127.3680156>
- Mdhluli, T. D., Mokgoatšana, S., Kugara, S. L., & Vuma, L. (2021). Knowledge management: Preserving, managing and sharing indigenous knowledge through digital library. *HTS Teologiese Studies / Theological Studies*, 77(2). <https://doi.org/10.4102/hts.v77i2.6795>
- Meyer-Hess, A. (2025). Defining Artificial Intelligence for librarians. in: Journal of Librarianship and Information Science, 56(2), 2024. *Zeitschrift Für Bibliothekswesen Und Bibliographie*, 72(2), 138–140. <https://doi.org/10.3196/1864295025722137>
- Muthee, D. W., & M Masinde, J. (2020). Relationship between gender and cognitive factors that influence information seeking amongst postgraduate students: A case of kenyatta university post-modern library in Nairobi, Kenya. *World Digital Libraries: An International Journal*, 13(1). <https://doi.org/10.18329/09757597/2020/13105>
- Oyelude, A. A. (2023). Indigenous knowledge preservation as a sign of respect for culture: Concerns of libraries, archives and Museums. *Insights the UKSG Journal*, 36. <https://doi.org/10.1629/uksg.628>
- Parums, D. V. (2021). Editorial: Review articles, Systematic Reviews, meta-analysis, and the updated preferred reporting items for systematic reviews and meta-analyses (PRISMA) 2020 guidelines. *Medical Science Monitor*, 27. <https://doi.org/10.12659/msm.934475>
- Rethlefsen, M. L., & Page, M. J. (2021). Prisma 2020 and Prisma-S: Common questions on tracking records and the flow diagram. *Journal of the Medical Library Association*, 110(2). <https://doi.org/10.5195/jmla.2022.1449>
- Sergon, P. J., Akoth, S. O., & Dzinekou, J. Y. (2022). The role of Indigenous Knowledge: Practices and values in promoting socio-economic well-being and equity among Endorois Community of kenya. *AlterNative: An International Journal of Indigenous Peoples*, 18(1), 37–45. <https://doi.org/10.1177/11771801221086724>
- Wafford, Q. E., & O'Dwyer, L. C. (2021). Adopting a toolkit to manage time, resources, and expectations in the systematic review process: A case report. *Journal of the Medical Library Association*, 109(4). <https://doi.org/10.5195/jmla.2021.1221>

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