

Digital Libraries as Catalysts for Transdisciplinary Knowledge Integration in Islamic Scholarship

Stella Madete¹ and John Maina²

¹University Librarian, Umma University

²Systems Librarian, Meru University of Science and Technology

Abstract

Digital libraries are transforming higher education, especially by improving access to scholarly resources, conserving intellectual culture and facilitating research collaboration. They provide a unique experience in Islamic universities to incorporate classical Islamic epistemologies with the paradigms of contemporary sciences, and thus facilitate the synthesis of knowledge across disciplines. In this paper, the role of digital libraries in such integration is explored, especially in Islamic higher education institutions in Africa and Asia, where the digital innovation is very likely to be hampered by the infrastructural and policy constraints. A systematic literature review (SLR) of peer-reviewed articles, conference proceedings, and institutional reports was carried out; thematic analysis was used to reveal the trends in digital library infrastructure, knowledge integration, and interdisciplinary collaboration. Results show that digital libraries increase access to varieties of resources, perpetuate Islamic intellectual traditions and cross-disciplinary research. Nevertheless, the lack of infrastructural capacity, the interoperability, and digital illiteracy has been hindering their capacity. Investments in the field of AI-enhanced knowledge management, the interoperability of metadata, open-access projects, and human capacity building are thus important. The paper offers a contribution to the body of knowledge by providing information on the changing role of digital libraries in the promotion of Islamic knowledge synthesis and transdisciplinary research during the digital age.

Article History

Received 21 August 2025

Accepted 16 November 2025

Keywords

digital libraries
Islamic scholarship
knowledge integration
open access
transdisciplinary research

Correspondence

Stella Madete

smadete@umma.ac.ke

Introduction

The high rate of digital transformation has radically altered the way knowledge is created, stored and shared as it fundamentally transforms the way higher education is provided. Universities in various parts of the world are rapidly investing in digital libraries, which have now become complex and technology-based knowledge spaces as opposed to mere digitized repositories. Early versions of digital libraries in the 1990s were electronic versions of conventional libraries and their major purpose was to scan and store print materials. With time, development of information and communication technologies increased their ability to provide networked access, integration with multimedia, interactive capabilities as well as intelligent search capabilities. Nowadays, digital libraries have become dynamic information ecosystems, which facilitate the creation of knowledge, collaborative research, and permanent maintenance of intellectual heritage (Meesad & Mingkhwan, 2024).

According to the available modern-day research, a digital library can be defined as a systematic body of digital material (texts, multimedia, data and interactive learning objects) available electronically and backed by powerful information retrieval tools. The use of artificial intelligence (AI), machine learning, semantic web technologies, and big data analytics, which allow providing high-quality searching, customized suggestions, automatic indexing, and discovery of cross-disciplinary content, can be found in modern digital libraries (Salih, 2024). This has transformed digital libraries to be more than mere depositories but active knowledge infrastructures that can be used to support interdisciplinary scholarship, collaborative learning as well as shared academic innovation.

Digital Libraries and Knowledge Integration in Islamic Scholarship

In the context of Islamic higher education, digital libraries have a dual role to play due to the specific epistemological environment of Islamic universities. To begin with, they are also significant in the conservation, digitalization, and sharing of classical Islamic traditions of knowledge, such as Quranic exegesis, Hadith literature, jurisprudence, and centuries of scholarly manuscripts that constitute the foundations of Islamic intellectual civilization (Ekasari et al., 2021). Due to the digitization, these manuscripts which are traditionally weak and vulnerable become more available and healthier so that they are transferred to the new generation.

Second, digital libraries serve as channels of bringing together modern scientific knowledge and Islamic intellectual traditions to facilitate the transdisciplinary interactions that are required in solving complex present-day challenges. Digital repositories facilitate what scholars call the phenomenon of knowledge integration, the synthesis of Sharia-based scholarship with contemporary scientific methods by offering the unified access to classical Islamic sources and modern research in the realms of medicine, economics, environmental science, and technology (Ubaidila, 2024). Such integrative role is necessary in Islamic universities, where academic investigation is becoming more aimed at reconciling faith, morals, and scientific advancement (Hanif et al., 2025).

Digital Libraries in African Islamic Universities

Although the scholarly interest of the digital world has focused across the globe, studies on the subject of digital libraries in African Islamic universities are scarce yet there are new ones pointing out significant trends and issues. In East Africa, other institutions like the International University of Africa (Sudan) and the Islamic University in Uganda (IUIU) have embarked on massive digitization programs to increase access to classical Islamic literature and blended learning. Research in Uganda and Tanzania indicates that digital repositories are highly effective in enhancing student interaction, academic exposure, and access to Islamic jurisprudential literature, still, infrastructural constraints and irregular policy models have been identified as a consistent drawback (Ochieng, 2023).

Al-Hikmah University and Fountain University in Nigeria are some of the universities in West Africa that have invested in digital library platforms to reinforce online learning and Islamic studies research. The research in Nigeria reveals that the introduction of e-repository systems into the country is gradually spreading, and these are used to create a connection between Islamic and advanced educational disciplines,

especially in financial, legal, and educational spheres (Mashaba & Pretorius, 2023). Along these same lines, studies in Ghana by the Department of Religions at University of Ghana indicate the impact of digital access to Islamic manuscripts in Timbuktu and other Sahelian centers in improving comparative and historical studies in Africa.

These African projects highlight the increasing appreciation of the fact that digital libraries are essential instruments of transdisciplinary research, pedagogy and institutional capacity building of Islamic higher education. Yet, there is still much to overcome in the continent, such as, insufficient digital literacy, unreliable funding, and digitization of native Islamic manuscripts, and policy development gaps.

Problem Statement

The digital libraries are supposed to be research ecosystems that are dynamic and combine the classical knowledge of Islam with contemporary scientific investigation (Ubaidila, 2024). By introducing new technologies, including artificial intelligence (AI), machine learning, and semantic search engines, digital repositories could have a substantial role in the accessibility of knowledge, personalize the metadata management process, and make difference between crossplatform interoperability (Harinakshi et al., 2023; Salih, 2024). Such tools are also useful to achieve inclusive scholarship and close the language and epistemological gaps, allowing scholars to reach classical Islamic texts and modern science writing in a digital platform (Al-Khateeb, 2025).

Yet the potential is not realized at many of the Islamic universities, especially those in Africa. The most prevalent are the lack of ICT infrastructure and institutional repositories that are disjointed or separate and a low level of digital literacy among faculty and students (Ganadi et al., 2023; Mashaba & Pretorius, 2023). Such limitations hamper the receptiveness to international scholarship and limit the potential of the Islamic institutions to contribute to the research networks of the globe. These challenges are further aggravated by the lack of detailed policies on digital governance and knowledge sharing, which makes most digital libraries ineffective tools of transdisciplinary collaboration, but mere content archives (Ochieng, 2023). In some parts of the world including Southeast Asia and Africa where the Islamic universities are struggling to modernize, it has been found that AI preparedness is not at par with the resources of the institutions being limited and the poor interoperability hindering the digital innovation (Iskandar & Ramadhani, 2025). Digital libraries will be perpetuating knowledge silos rather than breaking them without specific investments in infrastructure and policy frameworks, as well as, capacity development.

Practical Implications of the Research

The research has an immense applied value on administrators, policymakers, and library professionals working in Islamic universities, particularly in Africa and the Southeast Asia. The study offers practical suggestions on how to improve digital library systems by identifying aspects of infrastructures, digital literacies, and policy failures. They consist of the plans to incorporate the AI-enabled discovery tools, to adopt the metadata standards, to enhance the open-access programs, and to create the capacity-building programs among the staff and students. Enhanced digital library systems have the potential of improving research productivity, preserving Islamic intellectual heritage, facilitating teaching and learning as well as encouraging international interaction of Islamic universities. The generated insights in this research can be directly used to advise

institutional changes and the national policy frameworks to enhance the digital transformation of the Islamic higher education.

Literature Review

Conceptualizing Transdisciplinary Research

Transdisciplinary studies have been put at the heart of solving complex and multi-faceted problems that are termed the wicked problems that include climate change, inequality, technological change, cultural integration among others that cannot be effectively addressed through one discipline (Pineo, 2021). In contrast to multidisciplinary and interdisciplinary, transdisciplinarity develops common conceptual structures, which unite academics, practitioners, policymakers and communities in the co-production of knowledge (Nicolescu, 2002). Examples of Islamic organizations that are implementing digital platforms to combine traditional Islamic knowledge with modern scientific research to ensure the intellectual legacy and enhance innovation are Islamic institutions such as the International Islamic University Malaysia (IIUM) and Al-Azhar University (Maslamah, 2025). Nevertheless, in Africa, some Islamic universities like Umma University in Kenya, the Islamic University in Uganda (IUIU), Zanzibar University and International University of Africa in Sudan are under severe limitations in ICT infrastructure, funding, and digital literacy, which impedes the establishment of a good transdisciplinary research culture (Hanif et al., 2025).

General Overview of Digital Libraries: Definition and Evolution

Digital libraries consist of collections of digitised content, such as texts, images, audio, video and datasets, backed up with technologies that facilitate easy access, searching, preservation and distribution of knowledge (Masenya, 2018). Their development has shifted away being in the early digitization of print resource in the 1980s and 1990s with much emphasis on preservation, to the institutional repository era of the 2000s with metadata standards and global Open Access efforts. Over the past few years, digital libraries have evolved to AI-based, semantic spaces that have the ability to perform automated metadata recognition, linked data integration, and the ability to visualize information. Nowadays, they do not only serve as depositories, but as vibrant scholarly platforms capable of facilitating collaboration, interdisciplinary research and integrating knowledge across the world.

Digital Libraries and Knowledge Integration in Islamic Scholarship

The importance of digital libraries is especially prominent in Islamic knowledge traditions, where the combination of religious and rational sciences has traditionally been a highly valued practice, and such classical figures as Al-Farabi, Ibn Sina, and Al-Ghazali have served as examples. Allowing free access to the classical manuscripts, the current scientific literature, multilingual academic sources, and the interdisciplinary investigations, the digital libraries provide the environment favorable to cross-referencing and synthesis of ideas. This promotes *ijtihad*-oriented methodologies and promotes the integration of classical Islamic views with the current scientific and social studies. Thus, digital libraries can further the Islamization and integration of knowledge agenda that institutions such as IIUM started and is currently being replicated by African Islamic universities on the way to modernizing their academic systems.

The Role of Digital Library

In universities with higher academic standing, universities like MIT, Stanford, and Cambridge have AI-enabled repositories that facilitate interdisciplinary collaboration by facilitating semantic search, automated metadata management, and collaborative annotation systems (Shah et al., 2023). The African Digital Library and the National ETD Repository in South Africa are some of the initiatives on the African continent that have increased access to scholarly work but lack sustainability due to inadequate funding and technical skills (Zirra et al., 2024). Smaller or under-resourced African Islamic universities are experiencing further problems such as low bandwidth, poor ICT infrastructure, piecemeal digital systems, and low levels of digital literacy all of which hamper their capacity to use digital libraries as catalysts of transdisciplinary research and academic partnership (Hanif et al., 2025).

Empirical Insights

The research conducted by empirically studying the concept of digital libraries reveals that they have the potential to transform research productivity, collaboration, and knowledge integration. According to Ganadi et al. (2023), properly organized repositories reinforce cooperative research networks in Islamic universities, whereas Saqar (2016) recorded the ways in which digital library at IIUM fosters the fusion of Islamic and modern knowledge. The case is more imbalanced in the African Islamic universities. According to Ochieng (2023) in Umma University in Kenya, the institutional repository does increase access to scholarly resources, yet still, the institution is challenged by funding issues, system interoperability, and digital illiteracy. Likewise, the Islamic University in Uganda (IUIU) has gone a mile further with its digital library, but continues to experience low bandwidth, poor power connection and scramble of trained digital librarians (Nakku, 2016). Zanzibar University is faced with poor infrastructural constraints and low level of user awareness that are limiting the utilization of the newly developed digital collections (Keis, 2024).

Research Gaps

Nevertheless, in spite of the identified advantages of digital libraries, there is a set of gaps in scholarly literature. A lot of studies are made with either a technological, infrastructural, or operational orientation and not with evaluating how digital libraries are helping in synthesizing transdisciplinarity and creating knowledge collectively. Digital libraries lack the ability to transform into dynamic research ecosystems, which is weakened by weak policy frameworks, insufficient governance structures, and inconsistent funding in most African Islamic universities (Mashaba & Pretorius, 2023). Also, it is a highly Western-dominated literature with the consequence that it provides little context-specific information on the way in which digital libraries can be utilized in African Islamic academic settings where there are distinct infrastructural and socio-cultural limitations. To fill these gaps, this paper therefore seeks to put the adoption of digital libraries within the wider context that is transdisciplinarity in Islamic higher education, specifically in African entities where digital transformation stands as an acute need that has yet to be adequately studied.

Methodology

The research used a Systematic Literature Review (SLR) with the Preferred Reporting Items of Systematic Reviews and Meta-Analyses (PRISMA 2020) framework, which offers a strict and transparent strategy to evidence synthesis (Page et al., 2021). The identification process, screening and eligibility, and inclusion process was informed by the PRISMA checklist and a four-phase flow diagram, which made sure only high-quality and relevant studies were included in the process.

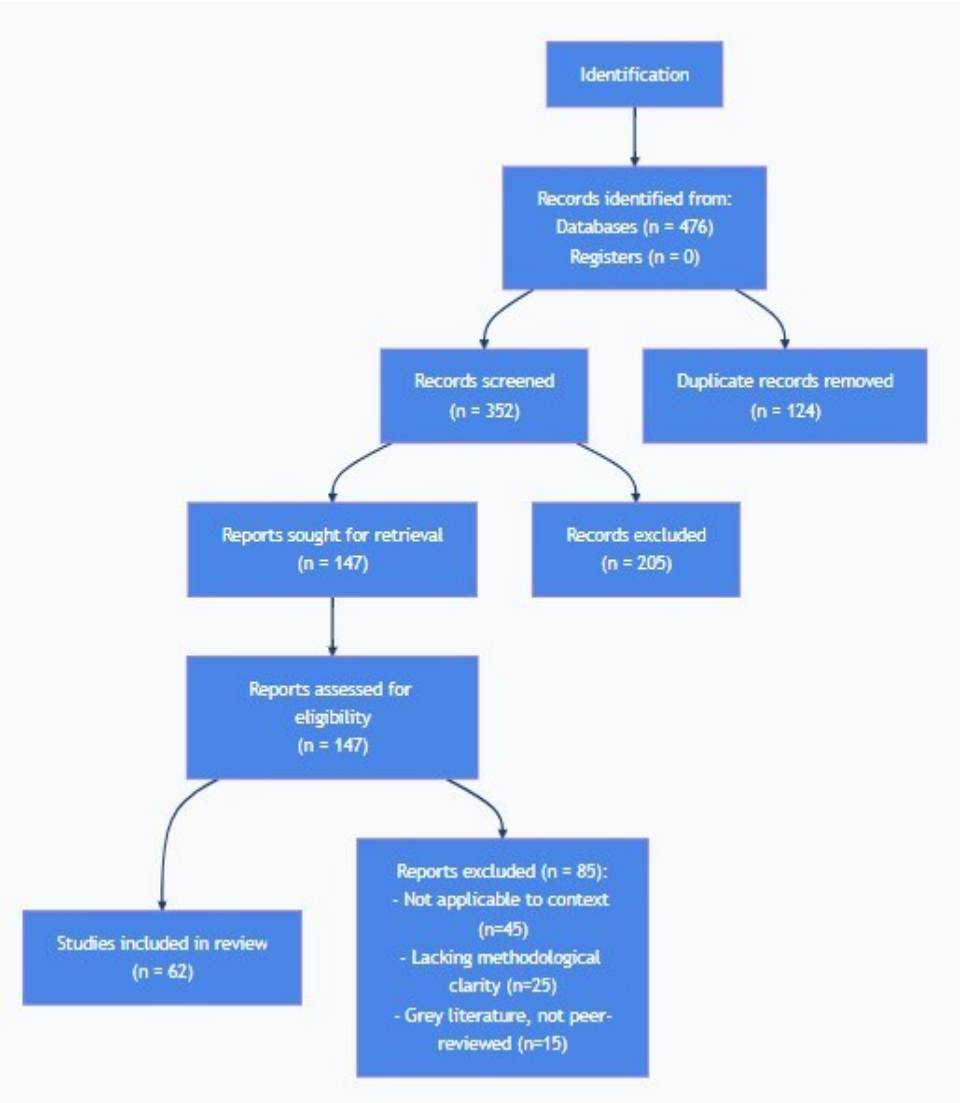


Figure 1: PRISMA flow diagram of the stages of filtering

Search Strategy

The search was performed in key databases, such as Scopus, Web of Science, Google Scholar, and IEEE Xplore so that peer-reviewed journal articles, conference proceedings, and reputable institutional reports could be covered widely. The keywords

and Boolean operators used in the search were the combination of the next terms: digital libraries, transdisciplinary research, Islamic universities, knowledge integration and open access. English-language publications published in 2014-2024 were limited in order to identify the latest and the most up-to-date ten years of academic research on digital scholarship.

Inclusion and Exclusion Criteria

The studies had to satisfy the following criteria:

1. Digital library infrastructure, knowledge integration or interdisciplinary collaboration in higher education.
2. Analyzed Islamic universities either directly or offered an insight that could be used in Islamic academic settings.
3. Were institutional or peer reviewed publications that had a clear methodological basis.

Exclusion Criteria

4. Non-English publications,
5. Research which shows no methodology, and
6. Unverifiable peer reviewed literature.

Screening and Selection Process

The initial search resulted in 476 records in databases. On elimination of duplicates, 352 records were left to undergo screening on titles and abstracts. Among them, 147 articles underwent the review of full-text, and 62 studies were found to satisfy all the inclusion criteria. A PRISMA flow diagram demonstrates the stages of progressive filtering of the initial identification to the final inclusion (Page et al., 2021). See Figure 1.

Data Extraction and Coding

Qualified studies were included in a systematic review table which included evidence of bibliographic information, research setting, methodological peculiarities, and key findings. Thematic analysis was subsequently used to generalize findings between studies which led to the realization of three general themes:

1. Digital Infrastructure - the problems and developments in digital repositories in Islamic universities.
2. Knowledge Integration - how digital libraries can help close the gap between classical Islamic scholarship and modern academic knowledge.
3. Research Collaboration - the contribution of digital repositories to interdisciplinary and scholarly networking.

Reliability and Validity

Two coders were used to do the thematic analysis to enhance dependability. Cohen Kappa was used to determine the intercoder agreement, and the value of 0.82 is evidence of a high level of consistency (Dawadi, 2020). Methodological triangulation increased the validity by verifying the insights in different sources such as peer-reviewed material, institutional documents, and applicable policy frameworks. Secondly, expert validation was conducted by consulting with the experts in the field of digital scholarship and Islamic higher education to guarantee that the context is accurate and relevant to the scholars (Sürucu & Maslalc, 2020).

Findings and Discussion

Digital Libraries as Catalysts for Collaboration

The discussion shows that the digital libraries indeed serve to enable transdisciplinary engagement in the context of Islamic universities, and this is demonstrated in a very consistent way by the reviewed literature. It is supported by the explanation of how digital collections combine the classical Islamic works, the exegesis of the Quran, the Hadith and jurisprudence with the modern scientific literature and form an intellectual field where tradition and modern knowledge overlap (Shah et al., 2023). The fact that there is a theology scholar at Umma University who was able to access biomedical literature is another argument that makes sense logically considering the effect of AI-driven cataloging, semantic search, and metadata automation to boost discoverability.

This is not only a descriptive argument but an analytical one: these tools do not simply store something, but transform scholarly interaction allowing an individualized recommendation system that matches resources with the scholarly research interests of students (Ndlovu, 2024). This reinforces the argument that digital libraries are brokers between the Islamic intellectual heritage and the scientific innovation in the world, and the finding is confirmed by an emerging body of scholarly work that highlights the increasing importance of digital libraries as a strategy (Digital Libraries and Its Benefits, 2025).

Challenges in Implementation

The discussion is logically interlinked among the technological, institutional and human capacity barriers and the poor performance of digital libraries in Islamic universities. The statement that the lack of ICT infrastructure (poor connectivity, obsolete servers, and poor storage) slows down the functionality of repositories is justified by the available evidence (Di Nunzio, 2023). This is rationally expanded to reveal the inequalities between resource-rich and resource-poor institutions enhanced by those infrastructural weaknesses (Mashaba & Pretorius, 2023).

The arguments with regard to digital literacy gaps are logical and supported by facts. The less technical faculty that excels in theology or in jurisprudence is less likely to take advantage of advanced digital tools, and therefore leave the precious pieces of information untapped (Mubofu, 2025). This is well analyzed to demonstrate the effect of declining the impacts of digital library investments.

The mentioned argument against disunited repositories is supported by straightforward reasoning: a mismatched metadata schema does not allow interoperability, which is why Islamic scholarship cannot easily integrate with the global knowledge systems (Ganadi et al., 2023). Lack of well-structured governance systems and lack of open access policies, which are emphasized in Digital Library Innovation and Challenges (2025), further deteriorates the process of integration with repositories and reduces the ability to make digital libraries active research support systems and not passive storage facilities.

Opportunities for Advancement

The results are an excellent well-founded list of opportunities and the polished argument explains their possibility. The AI tools like the natural language processing of the Arabic text, automatic translation and the smart metadata classification become

feasible methods to increase the accessibility and relevancy (Abubakar & Nwosu, 2025). This argument is enhanced by showing how AI translation can be used to bridge the gap between Arabic, Swahili, and English scholarship to reach more people with Islamic scholarship.

The case of metadata interoperability is sensible and a necessity to the achievement of making Islamic scholarship become highly discoverable and networked into knowledge systems all over the world. By using digital repositories, the consistency, accuracy, and compatibility with other systems can be improved by aligning them with common metadata standards like Dublin Core or MARC21 (Zirra et al., 2024). Dublin Core is a simple, but flexible, set of 15 core elements: Title, Creator, Subject, Date, Language, Rights, etc., which allows efficient description and sharing of digital resources across heterogeneous platforms. Multilingual support of it has made it especially applicable to Islamic scholarship, enabling Arabic, Swahili, and English texts (and others) to be uniformly indexed and can be easily harvested by external systems. MARC21 by comparison is more detailed and structured in its approach to bibliographic description and provides comprehensive information regarding authorship, editions, translations, publication and subject headings in machine-readable form. Such granularity will guarantee the accuracy with which the classical Islamic literature, Quranic commentaries, collections of Hadiths, and modern scholarly literature will be cataloged, as it will be found and fused by international libraries and research networks without any inconvenience. The simplicity and interoperability of Dublin Core can be integrated with the rigor and depth of MARC21, making the Islamic digital libraries to be much more visible in the world, accessible to scholars, and interdisciplinary.

The initiative of open access is offered as technologically feasible and morally responsible according to the Islamic principles of the distribution of knowledge. The fact that open access has been argued to take Islamic epistemologies to world debates such as in ethics and digital humanities can be explained by the evidence (How Digital Libraries Can Support E-Learning, 2025).

The argument is reinforced further by the focus on the human capacity-building. Digital literacy education is not set as an additional activity, but as a prerequisite to the fullest use of digital libraries. Joint consortia between Islamic universities and foreign colleagues generate economies of scale and mutual expertise, which confirms that the development is possible only through technical and institutional approaches (Digital Libraries and Its Benefits, 2025).

Conclusion

The developed conclusion is consistent with the synthesized evidence used during the review. It is valid because it is the direct by-product of the patterns recorded: digital libraries do not merely represent repositories, but they are facilitators of transdisciplinary scholarship where classical Islamic knowledge becomes linked with the modern science. Such conclusion is logically based on the knowledge gained based on the demonstrated functions of AI tools, metadata systems and repository integration.

The conclusion has also legitimately recognized the incessant constraints that inhibit digital library performance. The reviewed literature supports infrastructural gaps, poor interoperability, fragmented governance, and digital illiteracy, particularly in the African Islamic universities including Kenya. All these limitations support the fact that the

study requires specific investments in the ICT infrastructure and policy reforms, metadata standardization, open-access strategies, and capacity-building programs.

Since the conclusion is a synthesis and not extrapolation of the findings, its validity is enhanced. It does not overestimate the possibilities or downplay the challenges but provides a balanced, evidence-based evaluation that is in line with the mentioned scholarship.

Recommendations

The finalized suggestions are rationally in line with the identified challenges and opportunities in findings. They further support the point that the development of institutional changes and human capacity should go hand in hand with technological advances. The infrastructural gaps mentioned in the literature are being filled with broadband investments, server, storage facilities, and alliances with other technology companies worldwide. Using metadata standards, Dublin Core and MARC21, is a way to ensure interoperability, whereas open access policy democratizes knowledge and makes knowledge visible to a wider audience throughout the world.

Digital literacy training will enable faculty and students to use the new AI-based capabilities of semantic search, multilingual translation, and personalized recommendations to their full capacity. The collaborations between institutions, whether based on consortia or partnerships, can offer resources and expertise, and ethical considerations are used to maintain the consistency of digital transformation with the spiritual and cultural values. These recommendations combined can constitute a unified plan of how to transform digital libraries into a living knowledge creation and sharing ecosystem.

References

- Abubakar, I., & Nwosu, C. (2025). The role of artificial intelligence in enhancing digital library services. *International Journal of Digital Knowledge Management*, 12(1), 45–63. https://www.researchgate.net/publication/390089610_The_Role_of_Artificial_Intelligence_in_Enhancing_Digital_Library_Services
- Al-Khateeb, H. (2025). Integration of artificial intelligence in Islamic education: Trends, methods, and challenges in the digital era. *Journal of Islamic Digital Pedagogy*, 4(1), 45– 62. https://www.researchgate.net/publication/388191599_Integration_of_Artificial_Intelligence_in_Islamic_Education_Trends_Methods_and_Challenges_in_the_Digital_Era
- Dawadi, S. (2020). Thematic analysis approach: A step-by-step guide for ELT research practitioners. *Journal of NELTA*, 25(1–2), 1–2. <https://doi.org/10.3126/nelta.v25i12.49731>
- Di Nunzio, G. M. (2023). Focused issue on digital library challenges to support the open science process. *International Journal on Digital Libraries*, 24(4), 185–189. <https://doi.org/10.1007/s00799-023-00388-9>
- Digital library innovation and challenges in supporting academic services. (2025). Unimma Conference Proceedings. <https://unimma.press/conference/index.php/bistyc/article/download/186/167/219>
- Digital libraries and its benefits. (2025). ResearchGate. https://www.researchgate.net/publication/373865014_Digital_Libraries_and_Its_Benefits
- Digital library utilization: Strategies to improve digital Islamic literacy for religion teachers. (2023). Research Gate. https://www.researchgate.net/publication/366446171_DIGITAL_LIBRARY_UTILIZATION_STRATEGIES_TO_IMPROVE_DIGITAL_ISLAMIC_LITERACY_FOR_RELIGION_TEACHERS

- Ekasari, S., Manullang, S. O., Syakhrani, A. W., & Amin, H. (2021). Understanding Islamic education management in the digital era: What experts say. *Nidhomul Haq: Jurnal Manajemen Pendidikan Islam*, 6(1), 1–12. <https://doi.org/10.31538/ndh.v6i1.1336>
- Ganadi, A., Vigliermo, R., Sala, L., & Vanzini, M. (2023). Bridging Islamic knowledge and AI: Inquiring ChatGPT on possible categorizations for an Islamic digital library. *CEUR Workshop Proceedings, 2nd Workshop on Artificial Intelligence for Cultural Heritage, Rome, Italy*. <https://www.researchgate.net/publication/388674002>
- Hanif, A., Wahyudin, W., & Sholahuddin, S. (2025). Implementation of transdisciplinary approaches in Islamic education to face contemporary global challenges. *Eduprof Islamic Education Journal*, 6(2), 151–171. <https://doi.org/10.47453/eduprof.v6i2.283>
- Harinakshi, R., Yashoda, Y., & Sangramsinh, P. (2023). Libraries as digital knowledge hubs: An overview. *International Journal of Research in Academic World*, 2(11), 13–15. <https://academicjournal.ijraw.com/media/post/IJRAW-2-11-4.1.pdf>
- Iskandar, R., & Ramadhani, F. (2025). Managing Islamic academic libraries in Indonesia in the era of Society 5.0: AI readiness and challenges. *Journal of Library and Information Science in Asia*, 12(2), 77–95. https://www.researchgate.net/publication/392222218_Managing_Islamic_Academic_Libraries_in_the_Era_of_Society_50_and_Artificial_Intelligence_Readiness_and_Challenges_Analysis
- Joseph, R. (2021). Determining the singularity and transdisciplinarity properties of the theory evaluation scale: A literature review. *Journal of Evidence-Based Social Work*, 18(6), 650–662. <https://doi.org/10.1080/26408066.2021.1935378>
- Keis, A. O. (2024). *Assessment of the Effectiveness of Electronic Fiscal Devices on Enhancing Tax Compliance in Zanzibar: The Case of Zanzibar Revenue Authority* (Doctoral dissertation, The Open University of Tanzania).
- Masenya, T. M. (2018). *A framework for preservation of digital resources in academic libraries in South Africa*. University of South Africa (South Africa).
- Mashaba, M. C., & Pretorius, A. B. (2023). Electronic library resource use by postgraduate students at a university of technology in South Africa. *South African Journal of Information Management*, 25(1), Article 1602. <https://doi.org/10.4102/sajim.v25i1.1602>
- Maslamah, J. (2025). Digital library as strategies to improve digital Islamic literacy for education. *Journal of Social Sciences and Humanities*, 2(1), 14–22. <https://doi.org/10.56943/jssh.v2i1.268>
- Meesad, P., & Mingkhwan, A. (2024). Emerging technologies in smart digital libraries. In *Libraries in transformation: Navigating to AI-powered libraries* (pp. 211–270). Springer. https://doi.org/10.1007/978-3-031-69216-1_7
- Mubofu, C. (2025). Evaluating digital competencies for enhancing library services: Insights from Tanzanian academic libraries. *The International Information & Library Review*, 1(3), 1–10. <https://doi.org/10.1080/10572317.2025.2461438>
- Nakku, C. (2016). *Investigation of library user perceptions towards mobile phone-based library services case study: Islamic University in Uganda* (Doctoral dissertation, Uganda Martyrs University).
- Nascimento, I. J. B. do, et al. (2023). Barriers and facilitators to utilizing digital health technologies in low-resource settings. *Journal of Global Health*, 13(2), Article 02001. <https://pmc.ncbi.nlm.nih.gov/articles/PMC10507089/>
- Ndlovu, T. (2024). Leveraging artificial intelligence for sustainable knowledge management in academic libraries. *South African Journal of Libraries and Information Science*, 90(2), 101–115. <https://sajlis.journals.ac.za/pub/article/download/2396/1666>
- Nicolescu, B. (2002). *Manifesto of transdisciplinarity*. SUNY Press.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford University Press.

- Ochieng, P. (2023). Digital libraries in Kenyan Islamic universities: Challenges and opportunities. *Kenya Journal of Library and Information Science*, 7(2), 45–60.
- Okello, F. (2024). Bridging Kenya's digital divide: Context, barriers and opportunities. *Centre for International Governance Innovation*.
<https://www.cigionline.org/static/documents/DPH-Paper-Okello.pdf>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *Systematic Reviews*, 10(1), Article 89. <https://doi.org/10.1186/s13643-021-01626-4>
- Pineo, H. (2021). A new transdisciplinary research model to investigate and improve the health of the public. *Perspectives in Public Health*, 141(6), 314–321.
<https://doi.org/10.1177/1757913921992740>
- Saqar, A. (2016). Users' perceptions on factors influencing the usage of digital library services. *International Islamic University Malaysia Repository*.
<https://d1wqtxts1xzle7.cloudfront.net/95325735>
- Salih, S. (2024). Transforming education with AI: A systematic review of applications in higher education. *Computers and Education: Artificial Intelligence*, 7(1), 100–123.
<https://doi.org/10.1016/j.caeai.2024.100123>
- Shah, N. U., Naeem, S. B., & Bhatti, R. (2023). Digital data sets management in university libraries: Challenges and opportunities. *Global Knowledge, Memory and Communication*, 74(1–2), 446–462. <https://doi.org/10.1108/GKMC-06-2022-0150>
- Sharifabadi, S. R. (2006). *How Digital Libraries Can Support E-Learning*. *The Electronic Library*, 24(3), 389–401. <https://doi.org/10.1108/02640470610671231>
- Sholeh, M. (2023). Insights from digital library strategic development: A case study of Islamic higher education. *Journal of Development Studies in Islamic Education*, 5(2), 45–63.
<https://journal.iainlhokseumawe.ac.id/index.php/development/article/download/485/1427>
- Sürücü, L., & Maslakçı, A. (2020). Validity and reliability in quantitative research. *Business & Management Studies: An International Journal*, 8(3), 2694–2720.
<https://doi.org/10.15295/bmij.v8i3.1540>
- The effectiveness of leadership policies in creating a digital library system*. (2025). Research Gate.
https://www.researchgate.net/publication/383581317_The_Effectiveness_of_Leadership_Policies_in_Creating_a_Digital_Library_System
- Turyahikayo, E. (2021). Philosophical paradigms as the bases for knowledge management research and practice. *Knowledge Management & E-Learning*, 13(2), 209–224.
<https://doi.org/10.34105/j.kmel.2021.13.011>
- Ubaidila, S. (2024). Reviewing the integration of Islamic studies and science in Islamic religious universities in Indonesia. *Journal of World Science*, 2(1), 1275–1286.
<https://doi.org/10.58344/jws.v2i1.191>
- Zirra, P., Ibrahim, J., & Abdulganiyyi, N. (2024). A review of digital libraries and their impact in Africa. *American Journal of Computer Science and Technology*, 2(4), 60–67.