



Awareness and Readiness for Artificial Intelligence in Kenyan University Library

Emily Livaha Andeso, Jane Maina, Fred Mzee Awuor

School of Information Science and Technology, Kisii University, Kisii, Kenya

Email: emilylvh@gmail.com, jmaina@kisiiversity.ac.ke, fawuor@kisiiversity.ac.ke

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Abstract

Artificial Intelligence (AI) is increasingly transforming university library services by improving information access, service efficiency, and library staff engagement. However, the level of AI awareness and institutional readiness to support its adoption in Kenyan university libraries remains insufficiently established. This study assessed the level of awareness of AI technology applications and the readiness of existing infrastructure and resources for AI adoption in selected Kenyan university libraries. The study adopted a convergent parallel mixed-methods design and was conducted in four selected universities in Western Kenya. A census approach was used to involve 48 eligible library staff, including university librarians, deputy librarians, systems librarians, and other library staff. Data were collected using structured questionnaires and semi-structured interviews. Quantitative data were analysed using descriptive statistics, while qualitative data were analysed thematically. The findings showed that library staff recognized the importance of AI in university libraries, although awareness and exposure to specific AI applications were uneven, particularly regarding information, training, and practical application. Institutional readiness was perceived at a moderate or uncertain level, with gaps identified in infrastructure, funding, system compatibility, internet resources, and technical skills. Despite these readiness challenges, library staff generally perceived AI positively, particularly its potential to enhance library user engagement, improve service delivery, increase the speed and accuracy of services, reduce library staff workload, and improve access to information. The study also found a statistically significant positive association between AI awareness and AI adoption ($r = 0.691$, $p = 0.001$). The study concludes that strengthening staff awareness and capacity, alongside investment in infrastructure, technical support, funding, and institutional policies, is important for effective AI integration in Kenyan university libraries.

Subject Areas

Artificial Intelligence

Keywords

Artificial Intelligence, AI Awareness, Institutional Readiness, University Libraries, Library Services, Kenya

1. Introduction

Artificial Intelligence (AI) is transforming university library services from traditional information repositories to technology-driven knowledge centres that support teaching, learning, and research. In Canada, universities have increasingly integrated AI technologies to automate routine operations, improve information retrieval, and provide personalized library services [1]. AI applications such as intelligent search systems, virtual reference assistants, and automated cataloguing enhance service efficiency and improve users' access to scholarly information [2].

Universities in Africa are increasingly recognizing the potential of AI to improve library operations and user services by leveraging digital systems, electronic resources, and institutional repositories to support academic activities [3]. Despite these developments, the integration of AI technologies into library operations remains limited, with many institutions relying on conventional digital platforms rather than intelligent systems capable of enhancing service delivery. However, widespread implementation is constrained by inadequate technological infrastructure, limited financial resources, shortage of technical expertise, and insufficient institutional support [4].

Kenyan university libraries operate under different institutional contexts characterized by variations in technological infrastructure, financial resources, staffing, and levels of digital maturity. Public and private universities differ in their capacity to invest in emerging technologies, resulting in varying levels of preparedness for AI integration. Although these institutions continue to expand digital library services, there is limited empirical evidence regarding their awareness of AI technologies and the readiness of their infrastructure and resources to support AI implementation [5].

Artificial Intelligence has the potential to improve service delivery in university libraries through enhanced information retrieval, automation, and decision-making. Despite national efforts to promote digital transformation, the adoption of AI technologies in Kenyan university libraries remains limited [3]. Existing studies largely focus on general information and communication technologies rather than AI-specific applications, leaving limited empirical evidence on the level of AI awareness among library staff and the readiness of existing infrastructure and resources to support AI adoption [6]. This knowledge gap limits informed planning and investment for AI integration in university libraries.

2. Literature Review

The study examined four main variables: AI awareness, institutional readiness, service delivery, and AI adoption. AI awareness referred to the extent to which library staff had knowledge and understanding of AI technologies, their applications in university libraries, current AI developments, and opportunities for applying AI in library services. It was measured using seven Likert-scale items covering the perceived priority of AI integration, discussion of current AI trends, awareness of potential AI applications, familiarity with AI-powered library systems, availability of information on AI applications, information received about AI integration, and training on AI applications. Institutional readiness referred to the extent to which university libraries had the infrastructure, financial resources, technical support, compatible systems, and staff competencies required to support AI adoption. It was measured using seven items covering technical support staff, physical infrastructure, funding and budget allocation, staff technical skills, internet and computing resources, compatibility of existing digital systems, and technological infrastructure [7].

Service delivery referred to the perceived contribution of AI technologies to the effectiveness and efficiency of university library services. It was measured using seven items addressing user interaction and engagement, improvement of service delivery, speed and accuracy of services, reduction of staff workload, access to information, quality of library resources and services, and efficiency through AI-powered automation. AI adoption referred to the integration and use of AI technologies in university library operations and services. The study examined AI adoption in relation to awareness, with the relationship between the two variables assessed using Pearson product-moment correlation [8].

All questionnaire items were rated on a five-point Likert scale, where 1 represented strongly disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree. For each multi-item construct, the scores of the relevant items were combined by calculating their mean to obtain an overall construct score. The mean scores were interpreted using three equal intervals: 1.00 – 2.33 = disagreement, 2.34 – 3.66 = neutrality, and 3.67 – 5.00 = agreement. This classification was used to interpret respondents' perceptions of the study variables. For example, the manuscript interpreted means such as 3.53 as agreement and 3.32 and 3.24 as neutral responses.

Awareness is widely recognized as a prerequisite for the successful adoption of Artificial Intelligence in university libraries. Awareness extends beyond knowledge of AI concepts to include an understanding of practical applications and their contribution to library service delivery [9]. Similarly, Awareness enables library staff to appreciate the usefulness of AI technologies, thereby increasing their willingness to adopt them. However, while these studies establish awareness as an important determinant of AI adoption, they largely emphasize the conceptual significance of awareness without providing empirical evidence on the actual level of AI awareness within university libraries in developing countries, particularly Kenya [7].

Many African university libraries acknowledge the potential of AI but continue to exhibit low awareness because of inadequate training opportunities, weak technological capacity, and limited institutional support [6]. Likewise, interest in AI is increasing among librarians, awareness remains uneven across institutions due to disparities in digital infrastructure and professional development. These studies provide valuable insights into the factors influencing awareness but remain largely contextual to their study environments. They do not specifically examine the level of AI awareness among library personnel in Kenyan university libraries, thereby creating an empirical gap that this study seeks to address [10].

Institutional readiness is considered a critical determinant of successful AI adoption in university libraries. AI implementation depends on the availability of adequate technological infrastructure, organizational support, and skilled personnel [11]. Readiness is multidimensional and encompasses technological, financial, and human resource capacities that enable institutions to integrate AI into routine library operations. While these studies provide comprehensive perspectives on institutional readiness, they are largely based on contexts where digital infrastructure is relatively advanced, limiting their applicability to developing countries with resource constraints [8].

Evidence from developing countries indicates that readiness for AI adoption remains inconsistent across institutions. Many university libraries continue to experience inadequate ICT infrastructure, unreliable internet connectivity, insufficient financial resources, and limited technical expertise, all of which constrain AI implementation. Although these studies identify key barriers to institutional readiness, they provide limited empirical evidence on the extent to which these challenges affect university libraries in Kenya. Consequently, there remains insufficient evidence on the readiness of existing infrastructure and resources for AI adoption in Kenyan university libraries, a gap that this study addresses [12] [13].

3. Methodology

3.1. Research Design

The study employed a mixed-method research design to better examine the problem using complementary quantitative and qualitative evidence. The quantitative strand assessed awareness about Artificial Intelligence (AI) in university libraries, while the qualitative strand provided explanations of the institutional and human aspects underlying the measures examined in the quantitative strand. The qualitative participants were purposively selected from key officers with strategic or technical responsibilities related to AI decision making, technology implementation, infrastructure, and institutional readiness. The two strands were analysed separately and then integrated at the interpretation stage by comparing qualitative themes with the quantitative patterns to explain, corroborate, or provide context for the survey findings. The use of both forms of evidence strengthened triangulation and provided a more complete understanding of AI awareness, readiness,

and adoption in university libraries [14].

3.2. Study Area

The study was conducted in four universities in Western Kenya: the public universities were Maseno University and Kaimosi Friends University, while the private institutions were Great Lakes University of Kisumu and Uzima University College. The four universities were selected through purposive sampling. The selection deliberately included both public and private governance models and institutions with differences in size, academic focus, and technological sophistication, while maintaining a common geographical context. These characteristics enabled comparison of institutional infrastructure, resources, and readiness to embrace AI. Access to the institutions and the feasibility of collecting data during the study period were also considered.

Western Kenya was selected because the region has higher education institutions with varying degrees of funding, infrastructure, and technology usage, allowing comparison across different institutional contexts. The region also includes urban and peri-urban contexts around Kisumu where access to digital networks and other technologies is uneven. These characteristics provided a suitable setting for examining AI awareness and institutional readiness in university libraries.

The region's universities are increasing Internet access and making academic services available online, but they do not have the same capabilities. Some disparity in the ICT equipment, bandwidth and access to digital library platforms still exists. This contrast was found to be ideal for studying how well university libraries are aware of and equipped to offer AI-based services.

The inclusion of universities with varied ownership, size, and level of digital development provided variation in the study setting. The study therefore covered two public and two private institutions within Western Kenya, while the purposive selection was intended to capture differences in institutional context rather than to claim that the four universities statistically represent all Kenyan universities.

3.3. Target Population

A total of 48 eligible library staff from the four universities constituted the population of interest. The eligible population comprised 18 staff at Maseno University, 9 at Kaimosi Friends University, 12 at Great Lakes University of Kisumu, and 9 at Uzima University College. The overall population included university librarians, deputy librarians, systems librarians and other library staffs. University librarians and deputy librarians were included because of their involvement in strategic decision making and allocation of resources. Systems librarians provided information on technology infrastructure and system readiness, while other library staff provided operational perspectives based on their direct service roles and understanding of the information needs of students and faculty [15]. The target population is summarized in **Table 1**.

Table 1. Target population.

Name of the University	University librarian	Deputy librarian	System librarian	Library staffs	Total
Maseno University	1		1	16	18
Kaimosi Friends University		1	1	6	9
Great Lakes University of Kisumu	1		1	10	12
Uzima University College	-	1	1	7	9
Total	2	2	4	40	48

3.4. Sampling Technique and Sample Size

The study used purposive sampling to select the four participating universities and a census approach for the identified eligible library staff. The four universities were purposively selected because they represented both public and private governance models and differed in size, academic focus, and technological sophistication within the common geographical setting of Western Kenya. The total eligible population was 48 staff. For data collection, 40 eligible library staff constituted the questionnaire sample, while 8 key officers comprising university librarians, deputy librarians, and systems librarians selected purposively for interviews because of their strategic or technical responsibilities. Thus, all 48 eligible staff were covered by the study through either a questionnaire or an interview. Of the 40 questionnaires administered, 34 were fully completed and returned, giving an 85.0% response rate, while 6 questionnaires were not returned and were treated as nonresponses. The manuscript does not report the six nonresponses separately by university, so institution-specific nonresponse figures cannot be established from the study document.

Only staff members at the university libraries who were directly involved in provision of library services or technology support were eligible. These comprised university librarians, deputy librarians, systems librarians and other library staff. Their responsibilities placed them at the centre of technology-related decisions, implementation activities, and the daily use of digital systems in university libraries.

The eligible population was small and well defined, making a census approach appropriate. All 48 eligible staff were covered through either the questionnaire or interview component. This approach reduced sampling bias and ensured inclusion of managerial, technical, and operational perspectives. The final questionnaire sample was 40, of whom 34 returned fully completed questionnaires and 6 did not respond; the remaining 8 eligible key officers participated through interviews.

3.5. Data Collection Instrument

The study used structured questionnaires and semi-structured interviews for data collection. The questionnaire was administered to the 40 library staff comprising the questionnaire sample, while the eight university librarians, deputy librarians, and systems librarians were interviewed. Questionnaire is an organized sequence of questions used to gather information from participants. The questionnaire

comprised closed questions using a 5-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5), with space for brief explanations as needed [16].

There were six sections of the questionnaire. Five items were included in Section A, which gathered demographic data, including academic qualifications and work experience. The four study objectives were aligned with the sections B-E, which each had 10 items: awareness of AI applications; preparedness of the infrastructure and the resources; views and attitudes towards AI; and awareness building for AI adoption. Section F had ten items related to the dependent variable, service delivery. This helped to ensure that all the study variables were represented in the instrument.

Library staff were chosen as they are responsible for managing digital resources and library technologies and hence could evaluate the sufficiency of infrastructure and feasibility to implement AI. Their regular interactions with users also allowed them to define the needs for the services, operational issues, and the potential impact of implementing AI. This was supplemented by managerial, technical, and frontline roles, and resulted in a wide institutional view.

Eight key officers were interviewed: two university librarians, two deputy librarians, and four systems librarians. Purposive selection was used because these officers had strategic or technical responsibilities related to decision making, technology implementation, infrastructure, and institutional readiness. The interviews sought to understand their knowledge of AI, perceptions of their institutions, preparedness, and availability of infrastructure and other resources. The interviews therefore constituted the qualitative component of the study, while the 40 other eligible library staff constituted the questionnaire sample.

Questionnaires were found to be useful for the standardized responses obtained for cross-qualitative comparison of participants. Interviews followed that evidence, and provided in-depth accounts from key officers, specific to each case. The use of both instruments, therefore, gave numerical and explanatory information, enhancing the overall completeness of evidence.

3.6. Reliability of Research Instruments

Reliability is the extent to which an instrument measures a construct consistently on repeated applications. Cronbach's alpha was used to test the internal consistency of the questionnaire items. Coefficients higher than 0.70 were considered as acceptable, higher than 0.80 as very good and higher than 0.90 as excellent. The resulting coefficients are shown in Table 2.

Table 2. Cronbach's alpha reliability.

Variable	Cronbach alpha	Number of items	Result
Level of awareness	0.872	10	Reliable
Service delivery	0.828	10	Reliable

Source: Study Data (2025).

The internal consistency of the all constructs was found to be acceptable. The Cronbach's alpha values obtained were: awareness 0.872 and service delivery 0.828. All of the coefficients were above the 0.70 criterion, which means that all items within each scale adequately measured the construct they were designed to measure. The perceptions and attitudes scale had the highest coefficient and service delivery was reliably measured even though it had the lowest value out of the five constructs.

3.7. Validity of Research Instruments

Validity is defined as the extent to which an instrument measures the concept that it is measuring and is used to draw conclusions that are relevant to the population being studied. Face, content and construct validity were taken into account. A questionnaire was reviewed by three experts comprising Library and Information Science, research methodology and information technology experts, for relevance, clarity, coverage and objectives. These comments resulted in revisions to the wording of items that were unclear, deletions of duplications, and better alignment of the items with the variables, as well as a more logical organization of the instrument.

The instrument was also pre-tested with respondents who were in the characteristics of the respondents who are the same as the target respondents, but not part of the respondents in the study. Feedback from the pilots indicated that some sections were not sequenced as well and were longer and/or wordier. The technical jargon was reduced, the questions were streamlined and the sequence of questions was altered. Confirmatory Factor Analysis was then performed to evaluate the construct validity based on the pilot data. To determine the suitability of factor analysis, the Kaiser-Meyer-Olkin measure and Bartlett's Test of Sphericity were used, and the results are presented in **Table 3**.

Table 3. KMO and Bartlett's tests.

Construct	No of Items	KMO	Bartlett's test of Sphericity		
			χ^2	Df	p-value
Perceptions and attitudes of library users	10	0.860	819.657	45	0.000
Service delivery	10	0.903	744.376	45	0.000

Source: Study Data (2026).

The KMO values for the five dimensions were 0.860 for library users' perceptions and attitudes and 0.903 for service delivery. All exceeded the minimum of 0.60, which is recommended for sampling adequacy. The Bartlett's Test of Sphericity yielded a p value of <0.001 for all constructs, suggesting the item correlations were adequate to carry out factor analysis. The results confirmed the construct validity of this questionnaire and its appropriateness for the main study.

3.8. Pilot Study

The questionnaire and interview guide were pre-tested for clarity and suitability and ease of administration before the main fieldwork. The selection of Masinde Muliro University of Science and Technology was based on the environment of a public university library, which was similar to the target institutions in western Kenya. The experience in collection development, reference service and information delivery found within this unit was appropriate for test of the instruments.

Approximately 10% of the 128 participants in the pilot were involved. These were from professional categories that were similar to those in the principal investigation, but were not included to avoid contamination. The relevance and comprehensiveness of the items, along with the time required to complete the instruments and ease of administration, were evaluated in a pilot testing.

The responses of the pilots were coded and analysed with the aid of the Statistical Package for Social Sciences (SPSS), with a view to assessing the reliability and validity of the responses. Items identified in the review included ambiguous, overly technical, repetitive or poorly organized items. The wording of those questions was changed, redundant questions were eliminated, instructions were made clearer and the order of the questions was enhanced. Some minor modifications were also made to the interview guide to align questions to the study objectives. The revisions resulted in instruments that were clearer and more reliable for the primary investigation, and the accuracy and quality of the data that was then gathered were enhanced.

3.9. Data Analysis and Presentation

Data collected were cleaned, coded and entered into the Statistical Package for Social Sciences (SPSS). The five-point Likert items were scored on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree). For each multi-item construct, the scores of the relevant items were combined by calculating their mean to obtain a constructed score. For the correlation, AI awareness was represented by its constructed mean score, while AI adoption was represented by the constructed mean score for the relevant AI adoption items measuring the integration and use of AI technologies in university library operations and services. The manuscript does not specify the exact number or wording of the AI adoption items used in the correlation, and therefore no additional item count is introduced here. The correlation analysis used the 34 fully completed questionnaires. The six questionnaires that were not returned were treated as nonresponses and excluded from the correlation analysis; the manuscript reports no additional item-level missing responses among the 34 completed questionnaires. Pearson product-moment correlation was used because the multi-item constructs were converted into mean scores and treated as approximately interval-level measures, and the analysis was intended to determine the strength and direction of their linear association.

NVivo was used to organize and analyse the interview data thematically. The interview responses were coded, related codes were grouped into categories, and

themes were developed from the categories. The emerging themes were reviewed and refined to ensure that they reflected participants' perspectives on AI awareness, institutional readiness, infrastructure, resources, and adoption. The qualitative findings were then integrated with the quantitative results during interpretation by comparing the themes with the survey patterns. Where the qualitative evidence corresponded with the quantitative results, it provided contextual support; where it provided additional explanations, it was used to clarify the institutional and human factors underlying the observed quantitative patterns. Thus, the qualitative strand complemented rather than statistically combined with the quantitative analysis.

The quantitative data were presented in tables, frequency distribution, percentages, bar graphs, and graphs. The narrative themes were reported in a qualitative manner with representative verbatim comments from the participants.

4. Findings and Discussion

This study examined the level of awareness, institutional readiness, and perceived benefits of Artificial Intelligence (AI) adoption in selected university libraries in Kenya. Questionnaires were administered to 40 library staff, of which 34 were fully completed and returned, representing an 85.0% questionnaire response rate; 6 questionnaires were not returned and constituted nonresponses. In addition, 8 key officers were interviewed, comprising two university librarians, two deputy librarians, and four systems librarians. The findings therefore draw on 34 completed questionnaires and 8 completed interviews. The findings provide evidence on the extent to which library staff are aware of AI applications, the preparedness of existing infrastructure and resources, and the potential contribution of AI to library service delivery.

4.1. Level of Awareness of AI Technologies Applications in University Libraries

The research examined the level of awareness for artificial intelligence adoption in selected University library in Kenya. Participants were asked to rate the different statements listed in **Table 4** which contributed to awareness of AI applications in libraries.

The findings in **Table 4**, indicate that respondents agreed (mean 3.52, SD 1.398) that AI integration is a priority for university libraries. This suggests that university libraries recognize the growing importance of AI in enhancing library operations, improving access to information, and strengthening service delivery. This finding is supported by [2], who found that although academic libraries in Kenya were aware of AI resources, their familiarity with AI technologies and their possible applications was minimal, highlighting the need for capacity building. The information aligns with the one obtained from University librarian. University Librarian 1 narrated that:

Our library recognizes AI integration as a strategic priority for improving in-

formation access and service delivery. We have initiated discussions on AI applications and identified the need for staff training, technical support, and adequate resources to facilitate effective adoption.

Table 4. Level of awareness of AI technologies applications in university libraries.

No.	Statement	1-SD	2-D	3-N	4-A	5-SA	Mean	Std dev
1.	The integration of AI in library services is a priority for university library	4 11.8%	6 17.6%	2 5.9%	12 35.3%	10 29.4%	3.53	1.398
2	The current trends in AI technologies are discussed in library conferences and workshops	6 17.6%	7 22.6%	2 5.9%	8 23.5%	11 32.3%	3.32	1.552
3.	I am aware of the potential applications of AI technologies in university libraries	5 14.7%	8 23.5%	2 5.9%	12 35.3%	7 22.6%	3.24	1.415
4.	I am familiar with AI-powered systems used in university libraries worldwide	10 29.4%	11 32.3%	3 8.8%	4 11.8%	6 17.6%	2.56	1.481
5.	Information on AI applications in libraries is readily available in professional library publications	13 38.2%	8 23.5%	2 5.9%	5 14.6%	6 17.6%	2.50	1.562
6.	I have been informed about AI integration in library services	10 29.4%	12 35.3%	4 11.8%	5 14.7%	3 8.8%	2.38	1.303
7.	I have received training on how to apply AI technologies in library services	13 38.2%	9 26.5%	3 8.8%	5 14.7%	4 11.8%	2.35	1.433

The response indicates that the library acknowledges the importance of AI and is considering measures to support its adoption. It also reveals that staff training, technical support, and resource allocation remain necessary for translating this priority into practical AI applications and improved library services.

The findings indicate that respondents were neutral regarding the discussion of current AI trends in library conferences and workshops (mean 3.32, SD 1.552) and their awareness of the potential applications of AI in university libraries (mean 3.24, SD 1.41). This suggests limited and inconsistent exposure to emerging AI developments and their practical applications in library services. The findings therefore highlight the need for continuous professional development, workshops and training to strengthen librarians' knowledge and skills in adopting and applying AI technologies effectively. This is consistent with [17], who emphasized the need for ongoing skills upgrading through workshops and online training to enable academic librarians to effectively respond to digital transformation and emerging technologies.

However, the findings indicated that respondents disagreed that they have been adequately informed about the integration of AI in library services (mean 2.38, SD 1.303) and that they have received training on the application of AI technologies in library services (mean 2.35, SD 1.433). The findings suggest that communication and awareness initiatives concerning AI integration within university libraries may not yet be sufficiently established, which could limit librarians' understanding of AI technologies and their preparedness to adopt and integrate them into delivery of library services. It also points to a gap in training and capac-

ity building among library staff, which constrain their ability to effectively utilize AI technologies in professional practice. The finding is supported by [18], who identified skills shortages, limited funding and infrastructural deficits as major challenges constraining the effective deployment of AI in African digital libraries, including Kenya, and recommended ongoing investment and capacity building to support AI implementation. The statement agrees with the information received from deputy university librarian. Deputy university librarian 1 stated that:

Currently, staff receive limited information about AI integration, mainly through professional interactions and occasional institutional discussions. Formal training opportunities remain limited, and there is need for more regular workshops, practical demonstrations, and capacity-building programmes on AI applications.

The response confirms that communication and formal training on AI integration are still limited. It particularly highlights the need for structured and regular capacity-building activities to improve staff knowledge, practical skills, and preparedness to apply AI technologies in library services.

4.2. Level of Readiness of Existing Infrastructure and Resources in University Libraries

The study sought to evaluate the level of readiness of existing infrastructure and resources in university libraries in Kenya for the adoption of AI technologies and responses are presented in **Table 5**.

Table 5. Level of readiness of existing infrastructure and resources in university libraries.

No.	Statement	1-SD	2-D	3-N	4-A	5-SA	Mean	Std dev
1.	The library has enough technical support staff to implement and maintain AI-based systems	5 14.7%	6 17.6%	5 14.7%	11 32.4%	7 20.1%	3.26	1.377
2.	My university library has the physical infrastructure (space, hardware, etc.) to implement AI technologies	7 20.5%	12 35.3%	4 11.8%	3 8.8%	8 23.5%	2.79	1.493
3.	There are sufficient funding and budget allocation to support AI adoption in the library	7 20.5%	13 38.2%	4 11.8%	3 8.8%	7 20.5%	2.71	1.447
4.	The staff in the library are well-equipped with the necessary technical skills to manage AI technologies	9 26.5%	11 32.4%	2 5.8%	7 20.5%	5 14.7%	2.65	1.454
5.	The library's internet bandwidth and computing resources are adequate for AI applications	13 38.2%	7 20.5%	2 5.8%	5 14.7%	7 20.5%	2.59	1.617
6.	The current digital systems in place at my library are compatible with AI technologies	10 29.4%	11 32.4%	3 8.8%	4 11.8%	6 17.6%	2.56	1.481
7.	Our university library has the technological infrastructure needed for AI adoption	9 26.5%	13 38.2%	3 8.8%	4 11.8%	5 14.7%	2.50	1.398

The findings in **Table 5** indicate that respondents expressed a neutral perception regarding the readiness of existing infrastructure and resources in university libraries in Kenya to support the adoption of AI technologies. Specifically, respondents were neutral about the availability of technical support staff to implement and maintain AI-based systems (mean 3.26, SD 1.377), adequacy of physical

infrastructure for AI implementation (mean 2.79, SD 1.493), and the availability of sufficient funding and budgetary allocations to support AI adoption (mean 2.71, SD 1.447). Respondents also expressed neutral views concerning staff technical competencies for managing AI technologies (mean 2.65, SD 1.454), adequate internet bandwidth and computing resources (mean 2.59, SD 1.617), the compatibility of existing digital systems with AI technologies (mean 2.56, SD 1.481), and the availability of technological infrastructure required for AI adoption (mean 2.50, SD 1.398).

Overall, the findings indicate an uncertain or moderate level of infrastructure and resources readiness in university libraries, with potential gaps in infrastructure, funding, system compatibility and staff competences that may constrain effective adoption. These findings underscore the need for increased investment in technological infrastructure, staff capacity building, technical support and financial resources to promote effective and sustainable AI integration in university libraries. This finding is supported by [19], who recommended increased investment in ICT infrastructure, continuous professional training, and clear AI policies and ethical frameworks to support sustainable AI implementation in academic libraries. Similarly, [20] emphasized that overcoming barriers to AI adoption requires capacity building, adequate resource allocation, and attention to infrastructure compatibility in Kenyan academic libraries. This concur with the information obtained from system librarian. System Librarian 1 stated:

The major challenges include inadequate computing infrastructure, limited internet capacity, insufficient technical support, and compatibility issues with existing systems. Staff also require additional technical skills and resources to effectively install, manage, and maintain AI-based library systems.

The response highlights technological and human-resource gaps that may hinder AI integration. Inadequate infrastructure, connectivity, system compatibility, technical support, and staff skills collectively create readiness challenges and indicate the need for targeted investment and capacity building.

4.3. Service Delivery in Kenyan University Libraries

The study sought to determine service provision in Kenyan university libraries. Various statements were rated as shown in **Table 6**.

Table 6. Service delivery in Kenyan university libraries.

No.	Statement	1-SD	2-D	3-N	4-A	5-SA	Mean	Std dev
1.	AI systems will enhance library user interaction and engagement	4 11.8%	5 14.7%	2 5.9%	11 32.4%	12 35.3%	3.65	1.412
2.	AI technologies will significantly improve service delivery in the library	4 11.8%	5 14.7%	2 5.9%	12 35.3%	11 32.4%	3.62	1.393
3.	AI adoption will enhance the speed and accuracy of library services	4 11.8%	6 17.6%	3 8.8%	8 23.5%	13 38.2%	3.59	1.459
4.	AI technologies will reduce the workload of library staff, allowing them to focus on other tasks	6 17.6%	4 11.8%	2 5.9%	10 29.4%	12 35.3%	3.53	1.522

Continued

5.	Library users will have better access to information through AI-enabled systems	6 17.6%	3 8.8%	4 11.8%	10 29.4%	11 32.4%	3.50	1.482
6.	AI technologies will improve the overall quality of library resources and services	5 14.7%	4 11.8%	3 8.8%	12 35.3%	10 29.4%	3.48	1.417
7.	Library services will become more efficient with AI-powered automation	6 17.6%	5 14.7%	3 8.8%	11 32.4%	9 26.5%	3.35	1.475

The findings in **Table 6** indicate that respondents agreed that AI systems enhance library user interaction and engagement (mean 3.65, SD 1.412), improve service delivery (mean 3.62, SD 1.393), enhance the speed and accuracy of library services (mean 3.59, SD 1.459), reduce the workload of library staff (mean 3.53, SD 1.522), and improve users' access to information through AI-enabled systems (mean 3.50, SD 1.482). This suggests that respondents recognize the potential of AI to enhance user engagement, improve service delivery, increase efficiency, reduce staff workload, and facilitate access to information in university libraries. The finding is supported by [20], who highlighted the importance of adequate resources, infrastructure compatibility, and capacity building in facilitating successful AI implementation in Kenyan academic libraries. This agrees with the information obtained from university librarian. University librarian 2 noted that:

AI technologies have significant potential to improve library services by enhancing user interaction, accelerating information retrieval, reducing routine workloads, and supporting efficient service delivery. However, realizing these benefits requires adequate infrastructure, staff training, and institutional support.

The response demonstrates that university library leadership recognizes the transformative potential of AI in improving service quality and operational efficiency. However, it also indicates that the successful realization of these benefits depends on adequate resources, technical capacity, and supportive institutional frameworks.

The findings further indicate that respondents were neutral on whether AI technologies improve the overall quality of library resources and services (mean 3.48, SD 1.417) and whether library services become more efficient with AI-powered automation (mean 3.35, SD 1.475). This suggests that although respondents recognize several benefits of AI, its contribution to the overall quality and efficiency of library services may not yet be fully realized. The finding is consistent with [18], who identified infrastructural deficits, limited funding, and skills shortages as key challenges constraining the effective deployment of AI in digital libraries, and emphasized the need for ongoing investment and capacity building to realize the full potential of AI in library services. This is supported by information obtained from deputy university librarian. Deputy librarian 2 narrated that:

The benefits of AI-powered automation have not been fully realized because of limited infrastructure, inadequate funding, and gaps in staff skills. These challenges affect our ability to implement AI systems consistently and improve service quality and efficiency.

The response suggests that the potential contribution of AI to service quality and efficiency remains constrained by infrastructural, financial, and human-capacity challenges. Consequently, AI-powered automation has not yet been fully integrated into routine library operations.

4.4. Correlation Analysis

Pearson product-moment correlation was used to examine the magnitude and direction of the linear association between the constructed AI awareness score and the constructed AI adoption score. The constructed scores were obtained by calculating the mean of the relevant five-point Likert items for each multi-item construct. Pearson correlation was considered appropriate because these mean scores were treated as approximately interval-level measures and the purpose of the analysis was to assess the strength and direction of a linear relationship. The correlation was based on the 34 fully completed questionnaires; the six questionnaires that were not returned were excluded as nonresponses. The manuscript does not report any additional item-level missing responses among the 34 completed questionnaires.

The analysis showed a statistically significant positive association between AI awareness and AI adoption ($r = 0.691$, $p = 0.001$). This indicates that respondents with higher constructed AI awareness scores also tended to have higher constructed AI adoption scores in the study sample. The result should be interpreted as an association rather than evidence that increasing awareness will cause successful AI implementation, since the correlation analysis does not establish causality (See **Table 7**).

Table 7. Correlation between Level of awareness and AI technologies adoption in university libraries.

	AI technologies adoption
Level of awareness	0.691*
	(0.001)

“*” indicates the value is statistically significant.

5. Conclusion and Recommendation

5.1. Conclusion of the Study

The study concludes that although university library staff recognize the importance and potential benefits of AI in improving service delivery, the level of awareness and institutional readiness for AI adoption remains limited. In particular, inadequate training, limited technical skills, insufficient funding, infrastructure gaps, and system compatibility challenges may constrain effective AI integration. The correlation analysis found a statistically significant positive association between AI awareness and AI adoption ($r = 0.691$, $p = 0.001$). This finding indicates that higher awareness scores were associated with higher adoption scores in the study sample, but it does not establish that awareness causes successful AI

implementation.

5.2. Recommendations of the Study

Based on the findings, the study recommends that university libraries should establish continuous AI training, workshops, and professional development programmes to improve library staff awareness and technical skills. There is also a need to increase investment in ICT infrastructure, internet connectivity, computing resources, system compatibility, and technical support to create an enabling environment for AI adoption. In addition, university libraries should allocate adequate funding and develop clear institutional policies and implementation strategies to support the sustainable and effective integration of AI into library services.

Conflicts of Interest

The authors declare no conflicts of interest.

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