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Digital Literacy and Use of Artificial Intelligence Tools among Librarians in Academic Libraries

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Abstract

The study explored the digital literacy and the use of Artificial Intelligence (AI) tools by the librarians working in academic libraries. This study is based on Davis (1989) Technology Acceptance Model (TAM). The population under study was 10 Professional Librarians in Dame Patience Goodluck Automated Library. A census sampling technique was used to select 10 librarians for the sample size. A questionnaire with a structured template named “Digital Literacy and Use of Artificial Intelligence Tools Questionnaire (DLUAITQ)” was used for data gathering. The instrument was validated by the educators with respect to the Library and Information Science field, and the reliability was tested by applying the Cronbach Alpha method. The data gathered were analyzed by the use of mean and standard deviation to answer the research questions. The results showed that the librarians have a high level of digital literacy with a grand mean score of 3.18. The study also revealed that the librarians employ different AI technologies like AI search engines, automated cataloguing systems, chatbots and intelligent information retrieval systems, with a grand mean score of 2.88, respectively. Furthermore, the results revealed that the librarians in their daily library work have a moderate level of use of AI tools, with a grand mean equal to 2.70. The study brought to light that while librarians have good digital skills and are coming into contact with various AI technologies, the widespread use of AI tools in library work is still in the early stages. The study called for a regular digital literacy training program, providing more access to AI technologies and infrastructure and providing more institutional support for integration and utilisation of AI tools in academic libraries.

Keywords: Digital Literacy, Artificial Intelligence Tools, Librarians, Academic Libraries, Library Services.

Introduction

Digital technologies have been rapidly developing in recent years, and this has affected the ways information is produced, used, and handled in academic libraries. The use of Artificial Intelligence (AI) tools is one of the big trends impacting library operations and services. Hence, online literacy has emerged as an essential ability for librarians to access, evaluate and utilise digital information resources efficiently, and to adapt to new and developing systems that use AI (Ogunbodede and Ejitahab, 2026).

Online literacy in the academic library is no longer just about computer abilities. That is, to know and make use of AI tools, such as chatbots, automatic cataloguing systems, recommendation engines and data analytics platforms. These tools are being gradually added to library services to become efficient, to make the experience of using the library better and to facilitate the research process. Studies have revealed that librarians with high-level digital and AI literacy skills are more likely to adapt well to new technologies and provide better information services (Haruna et al., 2025). But many librarians still face challenges with their training, technical abilities, and awareness of advanced digital resources as AI becomes more important in libraries. Research has indicated that librarians have some degree of

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acquaintance with artificial intelligence (AI) technology, but there is a vast range of various uses and varying degrees of trust in employing these tools (Kotso et al., 2025). The detected gap points to the need for further professional development and structured training programs for building the AI capacity of library staff. In addition, the utilisation of AI in academic libraries raises significant ethical challenges about its use, data security, and the dependability of AI-generated material. In today's digital world, the evolution of libraries demands librarians to integrate AI tools in their workflows, as well as to analyse the results and notify users of responsible information usage (Lo, 2024).

Level of Online Literacy of Librarians in Academic Libraries.

Digital competency is a widely accepted qualification for all academic librarians in the current technologically evolving world. It is not only about computer skills, but also about competencies such as information evaluation, digital communication, data management and working with emerging technologies such as artificial intelligence systems. In the knowledge-based era, online literacy is a prerequisite in any professional environment that involves information and permits professionals to efficiently access and govern digital information resources (UNESCO, 2023). Recent research has demonstrated that electronic literacy of librarians is uneven. Many librarians are not particularly adept. The adequacy of the general skills of the librarians in academic libraries of Nigeria in the use of fundamental ICT operations such as the usage of the Internet, online databases and electronic catalogues was reported by Ukachi (2023) in a study conducted. The research also revealed deficiencies in higher-level digital skills, including data analytics, digital content creation, and automated systems utilisation.

Asogwa and Ugwuanyi (2024) also observed that digital proficiency is largely dependent on continual professional growth, availability of ICT facilities and institutional assistance. The results indicate that librarians with regular training and well-equipped libraries are more likely to be digitally literate than those in poorly equipped libraries. As can be seen, digital literacy is a characteristic of an individual as well as an outcome of the working environment. Besides, Adeleke and Olorunfemi (2025) found that librarians who possess a high level of digital literacy are better equipped to adjust to technological changes and incorporate new technologies into library services. They stated that one of the reasons the digital transformation is slow in many academic libraries is that the library staff are not sufficiently digitally literate. The literature shows that librarians possess the fundamental digital skills, but there is still a need for further development of their advanced digital competences in order to provide a full-service library in the current context.

Artificial Intelligence Tools Used by Librarians in Academic Libraries

With the advent of artificial Intelligence (AI), the service of academic libraries increasingly employ AI technology to enhance efficiency, precision, and user satisfaction. AI tools are intended to mimic human intelligence and execute tasks including data retrieval, categorisation, decision making and customer assistance. These tools are used in academic libraries and involve chatbots, automated cataloguing systems, recommendation engines, natural language search tools, and plagiarism detection software. The impact of AI on academic libraries was discussed, as it is reshaping the way libraries operate by taking over repetitive duties and enabling librarians to provide more user-centric services, as Lo (2024) explained. The study suggests that technology powered by artificial intelligence, like virtual assistants and clever search engines, is helping to make information more accessible and faster to obtain. This is especially relevant in large academic libraries where information is increasing at a rapid pace.

Asemi and Ko (2023), in another study, found that libraries are increasingly implementing systems that use machine learning for classification and indexing information resources. These are used to organise large amounts of data more efficiently than through conventional manual means. But the research team pointed out that the deployment of AI systems has yet to reach its full potential due to issues of cost, expertise, and infrastructure. Okorie and Nwafor (2024) noted that AI's use in academic libraries in the African context is still in its infancy. The most frequently used AI-powered tools in most libraries include plagiarism checking software (e.g., Turnitin), AI-powered discovery tools (e.g., AI search engines for academic resources), and AI-driven circulation management systems. Less sophisticated AI use cases like predictive analytics and intelligent decision support systems are not widely leveraged.

In addition, Chukwu and Ibrahim (2025) concluded that librarians find AI tools most convenient when they are directly related to academic honesty and the process of information retrieval rather than those that demand technical expertise.

This means that familiarity and ease of use are significant factors in what types of AI tools are used in academic libraries.

Extent of Use of AI Tools in Daily Library Activities

The level of awareness that librarians have about the use of AI tools in their daily duties holds significance in gauging the technological integration in academic libraries. The use of AI in libraries is expanding but not consistent across all aspects of a library's daily work, as it is tied to the availability of the tools, training, digital literacy and institutional policies. As revealed by Ifeanyi and Bello (2024), librarians often rely on AI-powered discovery systems and automated databases to facilitate information retrieval by users. These resources assist librarians in finding relevant research articles and enhance the service. The study noted, however, that the adoption of AI is primarily for simple tasks and not for more complex applications, like predictive user behavior analysis or automated decision-making systems.

This was echoed by Haruna et al. (2025), who reported that while the librarians know about the use of AI technologies, they use it at a superficial level. The study revealed that AI tools are typically used as complementary tools and not as complete parts of library services. Lack of training, inadequate ICT infrastructure, and low confidence in using advanced technologies were also found to be major challenges to the extent of using AI among librarians by Mensah and Adeyemi (2023). They said that although there are tools available, many librarians still don't like to use them because they are afraid to make a mistake or they are not technical enough to use them. This study is guided by the Technology Acceptance Model (TAM) by Davis (1989). TAM suggests that user acceptance of any technology is determined by two core factors, Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Perceived Usefulness (PU) is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance.” This, in the case of librarians, means their perception that AI would help them perform their jobs more effectively, for instance, finding information quickly, serving patrons more efficiently. Perceived ease of use refers to “the degree to which a person believes that using a particular system would be free of effort.” In this case, it refers to the perception that an AI tool would be easy to learn and use on a day-to-day basis. The TAM indicates that when individuals perceive technology to be both useful and easy to use, they develop a favourable attitude towards it, leading to usage. In the case of this study, digital literacy becomes very critical because it influences the perceptions of PU and PEOU of AI tools by the librarians. This model is applicable here in explaining why some librarians would embrace AI tools in academic libraries and why others would shy away from it.

Ukachi (2023) analysed the digital literacy skills of librarians working in academic libraries in South-West Nigeria. A descriptive survey design was adopted for the study. A population of 186 academic librarians in university libraries in the area was sampled. A stratified sampling technique was used to sample a total number of 120 librarians for the study. A structured questionnaire was employed to collect data, and data were analysed using mean and standard deviation. Results indicated that librarians' digital literacy skills were of average level, especially basic internet searching, information resource searching, and navigation of databases; however advanced digital literacy skills such as creating digital content, analysis of digital data, etc. The result concluded that academic librarians in South-West Nigeria did not have an adequate level of digital literacy skills needed to fully utilise the potential of advanced technologies in the library. He recommended regular in-service training for librarians in various aspects of ICT.

Asogwa and Ugwuanyi (2024) carried out an investigation on the influence of institutional support on digital literacy among librarians in public universities in South-Eastern Nigeria. The study employed a correlational survey research design. The population for the study was made up of 245 librarians from federal and state universities in South-Eastern Nigeria; a simple random sampling technique was used to draw a sample size of 150 librarians for the study. The instrument used for data collection was a validated questionnaire, while Pearson Product Moment Correlation was used to analyse the data. The study revealed that there is a significant influence of institutional support on the digital literacy of librarians in public universities in South-Eastern Nigeria. It concludes that institutional support is crucial for enhancing librarians' digital skills. The study suggests that the university management should endeavour to provide enough ICT infrastructure, and facilitate continuous professional development for librarians.

Lo (2024) examined the application of artificial intelligence in academic libraries worldwide. The research employed a qualitative research approach through a literature review and a case study analysis of 8 universities globally. The

population included approximately 60 peer-reviewed journal articles, reports and case studies from a variety of institutions in North America, Europe and Asia. The sampling technique applied for the literature review was purposeful selection of relevant and current sources, while for case studies it was based on identifying those institutions with advanced implementation or significant initiatives related to AI in libraries. The thematic approach was adopted for the analysis of data. Findings from the study indicate that various AI tools, such as chatbots, recommendation engines, automated indexing and classification systems, are being integrated into academic libraries worldwide to enhance services and operational efficiency, though wide adoption is still not a reality. The study concluded that AI can revolutionise academic library services if implemented correctly and strategically and recommended that academic libraries invest in the right technology and personnel to take advantage of these opportunities.

Okorie and Nwafor (2024) examined the adoption of artificial intelligence (AI) tools by librarians in Nigerian academic libraries. A descriptive survey design was used for the study. The population for the study consisted of 312 librarians in Nigerian federal university libraries, and a multistage sampling technique was used to select a sample size of 180 librarians. A questionnaire was used for data collection, and the data were analysed using frequency counts, percentages and mean. The study discovered that the adoption rate of AI tools among Nigerian academic librarians is low to moderate, with libraries mainly using Turnitin, Discovery platforms, among other tools. The findings conclude that the use of AI tools by Nigerian academic librarians is largely underexploited due to insufficient knowledge and infrastructure. It suggests capacity-building workshops, improvement of ICT facilities and policy development. Haruna et al. (2025) researched the librarians' use of artificial intelligence (AI) tools in academic libraries in West Africa. A mixed-method research design, which involves the administration of questionnaires and interview were adopted. The population for the study consists of 420 librarians from selected academic libraries across some West African Universities. The study used both purposive and simple random sampling techniques to select 210 librarians as the sample size. Descriptive statistics were used to analyse the quantitative data, while thematic analysis was used to analyse the qualitative data. Findings of the study indicated that though many librarians are aware of AI tools, their utilisation in library operations remains at low and moderate levels. The study identified a number of challenges including a lack of adequate training and infrastructure. The findings conclude that mere awareness of AI tools does not automatically translate into their efficient utilisation in library operations. The study recommended regular in-service training of librarians, improved funding for ICT infrastructure and the integration of AI literacy skills into Library and Information Science curriculum.

It is therefore important to study the relationship between online literacy and the employment of artificial intelligence tools among librarians in university libraries. It provides a window into how librarians might be better equipped to meet the needs of today's information environment and to communicate knowledge effectively in the digital era. Digital technologies and artificial intelligence (AI) tools are increasingly influencing the transformation of academic libraries to provide improved information services. Digital technologies and artificial intelligence (AI) tools are growing as a part of the transformation of academic libraries to provide increased information services. However, not all librarians have the online literacy skills to efficiently use information resources in their employment (Adebayo & Yusuf, 2025). That means, while some of these AI-driven solutions, such as automated cataloguing, chatbots and intelligent search tools, are still available in many academic libraries, they are not being fully employed. Research has shown that librarians' efficient use of AI tools is impeded by reasons such as insufficient training, infrastructure, and faith in the tools (Okonkwo et al., 2024). The gap between technology available and being used might affect the quality of library services and satisfaction levels. Hence, this paper investigates the online literacy of academic librarians and its impact on the adoption of AI tools.

This study intends to find out the level of online literacy and the use of artificial intelligence (AI) tools among academic librarians. The precise aims of the study are to

1. to evaluate the level of electronic literacy of librarians in university libraries
2. recognise the instruments of artificial intelligence utilised by librarians in university libraries
3. evaluate the level of use of AI tools by librarians in daily library work

The research questions that guide this project are:

1. What is the level of electronic literacy among librarians in university libraries?

2. What artificial intelligence tools are employed by librarians in university libraries?
3. What is the amount of use of artificial intelligence tools by librarians in their daily library activities?

Methodology

The study explored the level of digital literacy and use of artificial intelligence (AI) tools among librarians in academic libraries. This research adopted a descriptive survey design. The population for the study consisted of ten (10) professional librarians in Dame Patience Goodluck Automated Library. The sample size was ten (10) librarians. Census sampling technique was employed. The instrument used for data collection was a questionnaire titled 'Digital Literacy and Use of Artificial Intelligence Tools Questionnaire (DLUAITQ)'. The questionnaire was validated by two professional librarians/lecturers in the Library and Information Science field of study, while the reliability of the questionnaire was assessed using the Cronbach Alpha method. Data collected was analyzed using mean and standard deviation.

Results

Table 1: Summary of mean and standard deviation on the level of digital literacy among librarians in academic libraries (n=10)

S/N	Items	Mean	S/D	Decision
1	I can effectively use computers and digital devices for library operations.	3.40	0.70	Agreed
2	I can search and retrieve information efficiently using online databases and digital resources.	3.30	0.68	Agreed
3	I possess adequate skills in using library management software and digital platforms.	3.10	0.74	Agreed
4	I can evaluate and verify digital information from different online sources.	3.20	0.79	Agreed
5	I can adapt easily to newly introduced digital technologies in library services.	2.90	0.99	Agreed
Grand Mean/S/D		3.18	0.78	Agreed

Table 1 shows the mean score and standard deviation on the level of digital literacy among librarians in academic libraries. The results indicate that librarians can effectively use computers and digital devices for library operations (mean = 3.40, SD = 0.70) and can efficiently search and retrieve information using online databases and digital resources (mean = 3.30, SD = 0.68). The findings also show that librarians possess adequate skills in using library management software (mean = 3.10, SD = 0.74), can evaluate digital information from online sources (mean = 3.20, SD = 0.79), and can adapt to newly introduced digital technologies (mean = 2.90, SD = 0.99). The grand mean of 3.18 (SD = 0.78) indicates an overall high level of digital literacy among librarians in academic libraries.

Table 2: Summary of mean and standard deviation on the artificial intelligence tools used by librarians in academic libraries

S/N	Items	Mean	S/D	Decision
1	I use AI-powered search engines and discovery tools in library services.	3.20	0.79	Agreed
2	I use plagiarism detection tools such as Turnitin	2.10	1.00	Disagreed
3	I use automated cataloguing or classification tools in library operations.	3.00	1.00	Agreed
4	I use chatbots or virtual assistants to support users' information needs.	3.00	0.89	Agreed
5	I use recommendation systems or intelligent information retrieval tools in my library activities.	3.10	0.94	Agreed
Grand Mean/S/D		2.88	0.92	Agreed

Table 2 shows the mean score and standard deviation on the artificial intelligence tools used by librarians in academic libraries. The results indicate that librarians use AI-powered search engines and discovery tools (mean = 3.20, SD = 0.79), automated cataloguing or classification tools (mean = 3.00, SD = 1.00), chatbots or virtual assistants (mean = 3.00, SD = 0.89), and recommendation systems or intelligent information retrieval tools (mean = 3.10, SD = 0.94). However, the use of plagiarism detection tools such as Turnitin recorded a lower mean score (mean = 2.10, SD = 1.00), indicating disagreement among respondents. The grand mean of 2.88 (SD = 0.92) showed that librarians use various artificial intelligence tools in academic libraries.

Table 3: Summary of mean and standard deviation on the extent librarians use AI tools in their daily library activities

S/N	Items	SA	A	D	SD	Mean	S/D	Decision
1	I frequently use AI tools for information retrieval and reference services.	4	4	2	0	3.20	0.79	Agreed
2	I use AI tools regularly for cataloguing and organizing library resources.	1	3	4	2	2.30	0.95	Disagreed
3	AI tools are integrated into my daily professional activities in the library.	3	4	2	1	2.90	0.94	Agreed
4	I use AI technologies to improve efficiency and reduce workload in library operations.	4	3	2	1	3.00	1.00	Agreed
5	I depend on AI tools when providing services to library users.	1	2	4	3	2.10	1.00	Disagreed
Grand Mean/S/D						2.70	0.94	Agreed

Table 3 shows the mean score and standard deviation on the extent librarians use AI tools in their daily library activities. The results indicate that librarians frequently use AI tools for information retrieval and reference services (mean = 3.20, SD = 0.79), integrate AI tools into their daily professional activities (mean = 2.90, SD = 0.94), and use AI technologies to improve efficiency and reduce workload (mean = 3.00, SD = 1.00). However, respondents disagreed that they regularly use AI tools for cataloguing and organizing library resources (mean = 2.30, SD = 0.95) and depend on AI tools when providing services to library users (mean = 2.10, SD = 1.00). The grand mean of 2.70 (SD = 0.94) indicates that librarians use AI tools in their daily library activities to a moderate extent.

Discussion

The findings of this study indicate that librarians in academic libraries possess a high level of digital literacy, as shown by the grand mean of 3.18. This suggests that the librarians are generally competent in using computers, digital devices, online databases, library management software, and digital information resources. The highest mean score was recorded for the ability to use computers and digital devices for library operations (3.40), followed by searching and retrieving information from online databases (3.30). This finding is consistent with Ukachi (2023), who reported that academic librarians possess basic digital skills, particularly in internet searching, database use, and information retrieval. However, the relatively lower mean for adapting to newly introduced technologies (2.90) suggests that having basic digital skills does not necessarily mean that librarians are equally prepared for emerging technologies such as AI. This supports Adeleke and Olorunfemi (2025), who emphasized the importance of continuous professional development in helping librarians adapt to technological changes.

The study further revealed that librarians use a variety of AI tools, with a grand mean of 2.88. AI-powered search and discovery tools recorded the highest mean (3.20), indicating that information retrieval is one of the main areas where AI is currently applied in academic libraries. Automated cataloguing and classification tools, chatbots or virtual assistants, and intelligent information retrieval or recommendation systems also recorded relatively high mean scores. These findings agree with Lo (2024), who observed that AI applications such as chatbots, recommendation systems, automated indexing, and classification are increasingly being introduced into academic libraries to improve efficiency and information accessibility. Similarly, Okorie and Nwafor (2024) found that AI adoption in Nigerian academic libraries is concentrated around discovery and information-related applications. However, the low mean score for the

use of plagiarism detection tools such as Turnitin (2.10) suggests that the adoption of particular AI applications differs considerably among librarians and libraries. This may reflect differences in institutional access, training, infrastructure, and familiarity with specific technologies.

Regarding the extent of AI use in daily library activities, the study obtained a grand mean of 2.70, indicating a moderate level of utilization. Librarians reported relatively frequent use of AI for information retrieval and reference services (3.20), while AI was also used to improve efficiency and reduce workload (3.00). However, the respondents disagreed that they regularly use AI for cataloguing and organizing resources (2.30) and that they depend on AI tools when providing services to users (2.10). This finding suggests that AI is currently functioning mainly as a supporting technology rather than being fully integrated into routine library operations. The result is consistent with Haruna et al. (2025), who found that awareness of AI among librarians does not necessarily translate into extensive or sophisticated utilization. It also agrees with Okorie and Nwafor (2024), who reported that AI adoption in Nigerian academic libraries remains low to moderate because of inadequate infrastructure and insufficient knowledge.

The findings can also be explained using Davis's (1989) Technology Acceptance Model (TAM). The librarians' high digital literacy may increase their perceived ease of use of AI technologies, while their use of AI for information retrieval and workload reduction suggests that they recognize the usefulness of these technologies. Nevertheless, the moderate overall level of AI utilization indicates that perceived usefulness and ease of use alone may not be sufficient to achieve extensive adoption. Factors such as inadequate infrastructure, limited training, institutional support, cost, and access to appropriate AI systems may constrain actual usage. This interpretation is consistent with Asogwa and Ugwuanyi (2024), who found that institutional support significantly influences librarians' digital literacy, and with Mensah and Adeyemi (2023), who identified inadequate training, infrastructure, and confidence as important barriers to AI adoption.

The findings demonstrate that digital literacy provides a strong foundation for AI adoption, but it does not automatically result in extensive AI utilization. Librarians may possess the necessary basic digital competencies and be aware of several AI tools, yet their ability to integrate these technologies deeply into cataloguing, reference services, user support, and other professional activities remains limited. Therefore, regular AI-focused professional development, improved ICT infrastructure, access to relevant AI applications, and supportive institutional policies are necessary to move academic libraries from basic awareness and experimentation toward effective and sustainable AI integration.

Conclusion

This study examined digital literacy and the use of artificial intelligence (AI) tools among librarians in academic libraries. The findings revealed that librarians possess a relatively high level of digital literacy, demonstrating competence in the use of digital technologies and information resources required for effective library service delivery. The study also showed that librarians utilize various AI tools, particularly AI-powered search systems, automated tools, and intelligent information retrieval systems. The findings indicated that although librarians use AI tools in their daily activities, the extent of usage remains moderate, suggesting that the full benefits of AI technologies have not yet been completely realized in academic libraries. This may be attributed to factors such as limited technical skills, inadequate infrastructure, and insufficient training opportunities. The study concludes that while digital literacy among librarians provides a strong foundation for AI adoption, greater efforts are required to improve the integration and utilization of AI technologies in academic library operations for enhanced service delivery and improved user experience.

Recommendations

1. Academic library management should organize regular training programmes, workshops, and professional development activities to improve the digital literacy skills of librarians and enable them to effectively adapt to emerging technologies.
2. Academic libraries should provide access to relevant artificial intelligence tools and adequate technological infrastructure to encourage librarians' adoption and utilization of AI-based systems in library operations.

3. Librarians should be encouraged and supported to integrate artificial intelligence tools into their daily professional activities through continuous training, institutional support, and policies that promote technology-driven library services.

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