

Awareness Of Artificial Intelligence Among Library And Information Science Professionals: A Study

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Abstract

The present research focuses on the level of awareness, perception, and implementation of AI tools by library and information science professionals in the colleges affiliated to the University of Mumbai. By applying a simple random sampling method, 103 LIS professionals have been selected. Descriptive analysis has been used to determine awareness levels of respondents, the incorporation of AI tools in library services, as well as the barriers to the adoption of AI technologies. In light of the research objectives, a survey has been employed to collect data with regard to the knowledge, perceptions, and barriers associated with AI adoption in the LIS community. The findings of this study indicate that most LIS professionals are aware of the AI technologies available; however, the application of AI technology in library services is lagging behind primarily due to a lack of sufficient resources, a lack of training, and a lack of an appropriate infrastructure. Consequently, this article suggests that enhancing AI awareness and implementation in the LIS community can be accomplished by providing targeted training programs and increasing institutional support. The limitations of this study include its focus on LIS professionals employed

at colleges within the Konkan Region, which are part of the University of Mumbai, Maharashtra. As such, the findings from this study provide insight into issues that LIS professionals should consider when deciding whether or how to implement AI in their libraries.

Keywords

Artificial Intelligence; LIS Professionals; AI Awareness; Academic Libraries; Technology Adoption; University of Mumbai.

1. Introduction

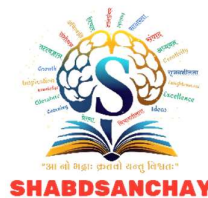
Technological advances have significantly influenced various fields, especially education alongwith library and information services. Among these, artificial intelligence has drawn significant attention for its ability to transform information management and service delivery (Cox et al., 2023; Kalbande et al., 2024). Since libraries are being considered as a knowledge hub, they are adopting AI tools in library operations, such as automated cataloguing, resource discovery, and improved reference services (Mallikarjuna, 2024). Huang and others have rightly pointed out that in the present digital era, LIS professionals need to understand and implement AI technologies, which have become essential to stay updated and improve service efficiency (Huang, Cox & Cox, 2023).

Academic institutions are expected to ensure that their users can quickly and easily retrieve information and services, as well as ensure the demand for efficient management of digital resources. This means that AI is an essential tool to satisfy the users' needs. The perception of LIS professionals toward AI is crucial for the development of library services because libraries and information centres are important for knowledge dissemination and academic support (Appleton, 2024).

Despite of the significant benefits of AI, its application depends on various aspects, including the availability of technological infrastructure, professional expertise, institutional support, and openness to innovation (Asim et al., 2023). The present research study assesses LIS professionals' knowledge towards AI, assesses their preparedness for AI adoption, and highlights the challenges and opportunities associated with integrating AI technologies into library operations and services. This study aims to contribute to the general discussion about AI in library services and operations by providing insights into the willingness of LIS professionals and proposing strategies to advance AI adoption in academic libraries.

2. Literature Review

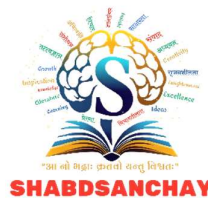
Omame, I. M., & Alex-Nmecha, J. C. (2019) identified that AI can help libraries to improve their services and operations, making them more relevant in the digital age.



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Though, they also express fears about possibility of the job losses among librarians. **Yoon, Andrews, & Ward (2021)** identified that library and information science professionals of public libraries have more positive perceptions of AI related technologies, and 67% believe that they will transform library functions, with 68% interested in training for AI and related technologies. **Hervieux & Wheatley (2021)** studied how academic libraries in the U. S. and Canada deal with Artificial Intelligence. The findings reveal that most libraries are unaware of AI trends. However, few libraries have started creating AI programme. **Andersdotter (2023)** study revealed that a learning circle for librarians in Sweden increased their AI knowledge and confidence, with a mainly positive view on AI making library collections more accessible and easier to manage, but concerns about AI's impact on the media landscape and user impact. **Eiriemiokhale & Sulyman (2023)** Found that LIS professionals *in Kwara State, Nigeria, are aware of AI technologies, including Chatbots and Dynamed, perceive them positively, and believe that they can enhance university library services, but face challenges such as poor internet connectivity and lack of expertise.* **Huang, Y., Cox, A. M., & Cox, J. (2023)** compared AI usage in academic libraries in UK and China. The study also found that AI is rarely mentioned in UK university strategies, while it is more commonly included in the goal of Chinese Universities, indicating regional differences in AI adoption. **Muhammad, A., Muhammad, A., Muhammad, R., & Rafiq, A. (2023)** investigated the applications of AI in the university libraries of Pakistan. The study revealed that Pakistani university libraries are using limited AI based services. **Akwang & Ebiwolate (2024)** revealed that South-South Nigerian university libraries

show low awareness and high competencies in AI-powered tools, but low institutional support and limited application in research writing. **Ali & Naeem (2024)** show that AI-based services were starting to be introduced in Pakistani university libraries, with private libraries using more tools than public ones, but robotics is rarely used due to high IT skills and financial investment. **Harisanty, Anna, Putri, Firdaus, & Azizi (2024)** found that Indonesian academic libraries have a favorable, open, and encouraging view on AI implementation, with sufficient awareness to begin AI initiatives. **Lulu-Pokubo & Okwu (2024)** identified that librarians in Nigeria are highly aware of the use of AI technologies in library services and operations, but face challenges such as human contact and potential job loss. **Alam, Mvula & Tiwary (2024)** explored that Zambian librarians have a solid understanding of AI fundamentals and positive attitudes towards its potential benefits in library services, but face challenges like enhanced expertise, resistance to change, and budget constraints. **Dettman (2024)** found that LIS professionals in Zambia believe



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AI can enhance library services, but face barriers like a lack of skills and budget constraints. **Moiseeva, N. (2024)** found that artificial intelligence technologies in library and information services contribute to the formation of national intellectual libraries, computerization of daily services, and the creation of innovative academic digital spaces for their users. **Safana & Fari (2024)** revealed that the LIS professionals in Katsina State University are aware of AI's potential in information services and have positive perceptions, but need proper preparation and resources for effective implementation. **Subaveerapandiyan & Gozali (2024)** revealed that Indian LIS professionals are aware of AI's potential benefits in library operations and services, believe it can enhance library activities, but have concerns about AI replacing human intelligence and ethical considerations. **Tor-Akwer et al. (2024)** revealed that librarians' awareness of AI is moderately high, but positively correlated with their digital competence. The study suggested the need for training programs to improve digital skills. **Lo, L. S. (2024)** suggested that the university administration needs to encourage library and information science professionals to do more research on AI and formulate a policy to guide its applicability. **Mallikarjuna, C. (2024)** identified the applications and usages of artificial intelligence to enhance library operations and services. The study also identified important challenges, such as ethical issues, the need for staff training, and the essential role of teamwork, to achieve the successful implementation of AI in libraries. **Vasishta, P., Dhingra, N., & Vasishta, S. (2024)** emphasized that the AI in libraries is an emerging field. The study highlights the need for further research in areas such as digital humanities, machine learning, robotics, data mining, and big data in academic libraries. **Kalbande D. et al. (2024)** the study found that Indian librarians show cautious optimism towards AI integration in academic libraries, recognizing its potential benefits but balancing concerns about employment and resource allocation.

3. Objectives of the Study

The following are the main objectives of the study

- To assess the level of awareness of AI tools among library and information science professionals.
- To determine the extent to which the technologies are being used in library operations by library and information science professionals.
- To identify the challenges faced by library and information science professionals in adopting AI technologies in libraries.
- To explore the preparedness of LIS professionals to adopt AI technologies in library operations.

- To identify the types of AI tools that LIS professionals are familiar with
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- To assess the interest of LIS professionals in receiving training and professional development related to AI technologies.

4. Methodology

4.1. Research Design

This study investigates the level of awareness and practical understanding of artificial intelligence among library and information science professionals in the Konkan region. The researchers used a descriptive survey design to precisely record and measure AI awareness, adoption levels, and the challenges faced by LIS professionals in aided colleges.

4.2. Sample

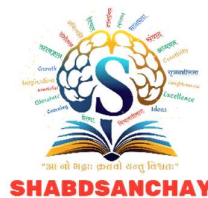
The sample population was Library and Information Science (LIS) professionals from 178 aided colleges affiliated to the University of Mumbai, which comprised the districts of Mumbai city, Mumbai Suburban, Thane, Raigad, Palghar, Ratnagiri, and Sindhudurg. From this group, 122 institutions were chosen, aiming to select not only according to the answers of the participants, but also to maintain a balanced representation of arts, commerce, and science institutions, as it tends to maintain a similar academic background. Two institutions - a law college and the B.Ed. college, were excluded to restrict the scope to the general education context. The survey questionnaire was sent to the 122 selected LIS professionals through e-mail and WhatsApp. A total of 103 questionnaires (out of 122) were returned from the respondents. This strategy of focused sampling is expected to provide information that will be especially relevant to LIS professionals working in the colleges of arts, commerce, and science, so that the findings of this study represent the dominant educational disciplines of the Konkan region.

The researchers used a five-point Likert scale ranging from 1, strongly disagree, to 5, strongly agree, to assess the awareness, perceptions, and attitudes of LIS professionals. The questionnaire consists of three sections, including demographic information, AI awareness, and challenges in adoption.

4.3. Data Collection Procedure

The researchers used a structured questionnaire as a tool for data collection and to gather comprehensive information on the following areas:

- **Awareness of AI:** To determine whether there is an adequate awareness about AI and how much LIS professionals know about AI technologies before this research.
- **AI Usage and Adoption:** To assess the level of awareness at which Artificial Intelligence is applied to the library operations, such as cataloguing, information retrieval, and resource management.



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Challenges in AI Adoption: An analysis of social, technological, and human capital constraints to the adoption of AI by LIS professionals.

The questionnaire was sent to the selected LIS professionals through email and WhatsApp to ensure accessibility and timely responses from participants.

5. Data Analysis

To identify trends and levels of AI awareness, usage, and challenges among LIS professionals the collected data were analyzed using descriptive statistics, including frequency distributions, means, and standard deviations. This quantitative approach allows for a clear overview of AI awareness levels across various districts within the Konkan region.

Results

Table No. 1

Distribution of LIS professionals according to gender

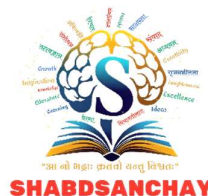
Sr. No.	Gender	Total
1	Male	74
2	Female	29
Total		103

The above table shows that out of a total of 103 LIS professionals, 74 (72%) were male and 29(28%) were female, which indicates a significant gender bias among library and information science professionals in the total population.

Table No. 2

LIS professionals by gender and age

Sr. No.	Gender	Age Group	Total
1	Male	30-35	05
		36-40	14
		41-45	17
		46-50	16
		51-55	17
		56-60	05
			74
2	Female	30-35	02
		36-40	05
		41-45	05
		46-50	04
		51-55	07



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	56-60	06
		29

The data shows that there were total of 103 LIS professionals. Out of that, 74 were male, and 29 were female LIS professionals. The majority of male LIS professionals belong to the 41-55 age group, while female professionals were spread across age groups, with a slight concentration in the 51-60 age group. Only two females are in the 30-35 age group, which indicates low young female participation. Overall, the LIS profession is male dominated and largely consists of middle aged individuals. It suggests a need to attract younger professionals and promote gender balance.

Table No. 3

Educational qualifications of LIS professionals

Sr. No.	Educational Qualification	Total
1	M. Lib.	11
2	NET/SET	48
3	M. Phil.	06
4	Ph. D.	38
Total		103

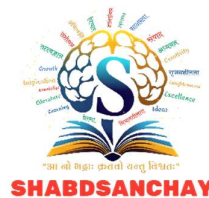
The above table provides information regarding the educational qualifications of 103 LIS professionals. Forty-eight LIS professionals have passed the NET/SET, confirming they are appropriate for teaching and academic employment. Over a third, or 38, of the experts are Ph.D.

holders, demonstrating advanced research skills. Eleven people work in this field with their M. Lib. as their top degree, but just six have an M.Phil. It looks as though the LIS professionals included in the research are mainly well-trained and emphasize having academic and research qualifications.

Table No. 4

Experience of LIS professionals

Sr. No.	Experience in years	Total Number of LIS professionals
1	0-5	01
2	6-10	18
3	11-15	25
4	16-20	19
5	Over 20 years	40
Total		103



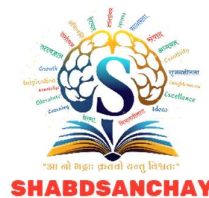
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The majority of LIS specialists have a long and extensive work background. More than 40 respondents have worked for over 20 years, 25 have 11 to 15 years of experience, and 19 professionals have 16 to 20 years of service. Because of this, it appears most LIS professionals have more than 10 years of experience. Alternatively, only a few have worked six years or fewer, suggesting that early-career LIS professionals have mostly avoided the field.

Table No. 5
AI awareness among LIS professionals

Statement	S	A	N	D	S	Tot	Mea	Std.
	A				D	al	n	Deviati
								on
I Am aware of the concept Artificial Intelligence	37	54	04	00	08	103	4.08	3.7
I have read or heard about AI tools relevant to libraries (e.g. chatbots, machine learning, recommendation systems)	20	63	14	03	03	103	3.91	3.47
I understand how AI can applied in the library operations (e. g. cataloguing, information retrieval)	20	61	14	03	05	103	3.85	3.44
I feel confident in my understanding of how AI could transform library services	23	48	22	05	05	103	3.76	3.38

The above table confirms that LIS professionals are familiar with Artificial Intelligence. Ninety-one out of 103 LIS professionals understood basic terms about AI, with a high mean score of 4.08. Likewise, 83 respondents said they had experience with AI tools for libraries, like chatbots and machine learning, with a mean of 3.91. Respondents also agreed that their understanding of AI uses in the library is very strong, with 81 choosing either agreement or strong agreement. Surprisingly, just 71 respondents felt confident about using AI to translate library services, as their mean score was 3.76. Most LIS professionals feel good about AI in



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libraries, but a few still require assistance to feel more confident using these technologies.

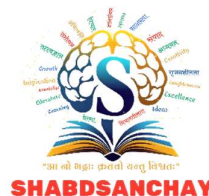
Table No. 6
Institutional Support

Statement	S A	A	N	D	S D	Tot al	Mea n	Std. Deviati on
My institution has provided training on AI technologies in the context of library services	10	25	16	42	10	103	2.83	2.56
There is a lack of institutional support for integrating AI technologies in library workflows	08	32	32	24	07	103	3.06	2.75

The above table shows that most LIS professionals find enough training on AI topics at their institutions. Out of 103 LIS professionals, 35 professionals agreed or strongly agreed regarding the training, compared to 52 who disagreed or strongly disagreed. This shows a big difference between what people know and the skills they require. About 40 percent of LIS professionals agreed that they are not getting enough support, but only 31 percent disagreed. It found that most professionals didn't get enough support to use AI in their workplace. Overall, it shows that improved guidance and increased institutional support will help LIS professionals to work with AI.

Table No. 7
Usage of AI in library operations and services

Statement	S A	A	N	D	S D	Tot al	Mea n	Std. Deviati on
I have used AI tools such as chatbots for reference services in the library	16	37	17	28	05	103	3.30	2.99
I experience using automated cataloguing systems powered by AI	08	26	23	37	09	103	2.87	2.57
My library uses AI-based	09	21	24	40	09	103	2.81	2.52



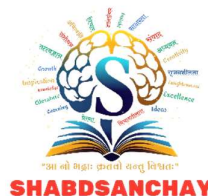
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recommendation systems to enhance users services								
AI tools have significantly improved the efficiency of library operations in my workplace	12	39	29	17	06	103	3.33	2.98
I regularly explore new AI tools or technologies to enhance library services	15	51	21	13	03	103	3.60	3.21

The above table highlights the uses of AI in library services and operations. A total of 53 participants use chatbots for reference purposes, whereas 28 have not tried using them. So far, few sites rely on AI for organization and recommendation systems. Around thirty percent of respondents admitted they hadn't tried them. According to the survey, fifty-one respondents think AI tools have improved the efficiency of library services. The majority of respondents were interested in learning about using different AI tools. Sixty-six respondents of the 103 interviewed claimed they use the service often. It means that libraries are not using AI tools in their daily operations. However, LIS professionals are prepared to learn about and try out new technologies to increase their services.

Table No. 8
Challenges in AI adoption

Statement	S	A	N	D	S	Tot	Mea	Std.
	A				D	al	n	Devia
								on
Lack of technical knowledge prevents me from using AI tools in in my library operations.	04	46	21	21	11	103	3.10	2.78
My institution lacks of technological infrastructure needed to support AI adoption.	08	41	27	18	09	103	3.20	2.87
I am concerned that AI will replace human jobs in library services.	05	15	30	36	17	103	2.56	2.27
I believe AI is too complex for me to implement in my	03	24	33	32	11	103	2.76	2.43



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day-to day library operations.									
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The above table highlights that LIS professionals show concerns regarding the application of AI in providing library services. Nearly fifty of the individuals felt that they lacked technical knowledge. Some 21 members had different opinions about this. In addition, 49 respondents from the LIS field say their institutions do not have the technological systems for implementing AI in libraries. Still, most applicants do not appear worried about losing their job. Fifty-three LIS professionals disagreed with the statement that AI would replace jobs. The thirty-six participants seemed willing to learn since they didn't think AI was too complicated. Overall, building technical skills and infrastructure continues to be a big challenge. LIS professionals are not concerned about their jobs and seem willing to acquire new skills and adapt to modern technological changes.

Table No. 9
LIS professionals' perception of AI in libraries

Statement	S	A	N	D	S	Tot	Mea	Std.
	A				D	al	n	Deviati
								on
AI has potential to greatly improve library services.	25	60	14	03	01	103	4.01	3.56
I am willing to undergo training to improve my understanding and use of AI in library.	38	57	06	01	01	103	4.26	3.79

The above table shows that LIS professionals have a positive attitude toward using artificial intelligence in libraries. The 85 respondents either strongly agreed or agreed with how AI might support better library services. A total of 95 out of the 103 also said they were interested in training in order to become more capable in artificial intelligence. The high middle scores (over 4) back up a positive impression of the team. Overall, this study indicates that LIS professionals know the value of AI and are ready to develop their abilities for future library operations and services.

6. Discussion

The result of the present study shows that the awareness of artificial intelligence among library and information science professionals is increasing, but the implementation of artificial intelligence tools in the library environment is still limited. The majority of LIS professionals know the potential of AI; however, they face challenges related to training, resources, and support from institutions. The

results of this research are in line with previous studies by Patel and Johnson (Patel, 2021; Johnson, 2020). These studies show that organizations should organize a training programme for LIS professionals to use AI in libraries.

6.1 Training and Professional Development

The main challenge that LIS professionals working in colleges affiliated to the University of Mumbai are facing is a lack of training on artificial intelligence. Current LIS curricula usually do not include AI as an integral component, and most LIS practitioners do not have hands-on training opportunities. The findings suggest the need for including artificial intelligence in ongoing education and professional development programs for LIS professionals.

6.1. Institutional Support and Investment

The inadequacy of technological infrastructure is a major constraint. The libraries are supposed to have an IT structure that can be used to serve artificial intelligence applications, including high-performance servers, cloud computing platforms, and exclusive access to AI software. The institutions should also promote an innovative culture by encouraging LIS professionals to test AI tools and to get in touch with the experts in technology.

7. Conclusions

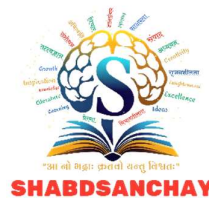
The present research study highlights that the awareness of artificial intelligence among LIS professionals is increasing. Moreover, it also found significant gaps in its practical application and adoption in library operations and services. The study also shows that the majority of the library and information science professionals are aware of the advantages of AI, but the lack of formal training and the unavailability of appropriate resources limit their capacity to effectively use AI in libraries. To overcome these barriers, the organization must organize professional development programs, provide institutional support, and make strategic investments in ICT, which will help LIS professionals to promote the future adoption and long-term use of AI in libraries.

8. Recommendations

The following are the recommendations

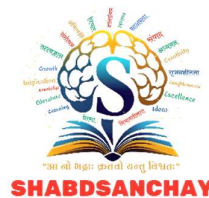
- AI focused modules should be included in LIS education and training programs.
- Organize workshops, seminars, conferences, and conduct hands-on training for library and information science professionals to gain practical experience with AI tools.
- The organizations should invest in ICT infrastructure to support AI adoption in libraries.

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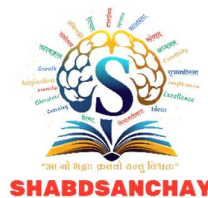
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