

Role of Artificial Intelligence in Improving Academic Library Services.

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Abstract

Artificial Intelligence (AI) has emerged as an important technological development capable of transforming the functioning of academic libraries. The integration of AI into library services can facilitate intelligent information retrieval, automated reference assistance, personalized recommendations, digital resource discovery, user support, cataloguing, classification and routine administrative activities. The present study examines the perceived role of Artificial Intelligence in improving academic library services at Govt. Pt. Shyamacharan Shukla College, Dharsiwa, Raipur. The study adopts a descriptive survey method with a proposed sample of 200 library users. Data are presented through frequency and percentage analysis. The study focuses on users' awareness of AI, perceived usefulness, application areas, AI-based reference assistance, information searching, personalized services, digital resource access, library automation, user education and major challenges associated with AI adoption. The model findings indicate that a substantial proportion of respondents perceive AI as useful for improving the speed, accessibility and personalization of academic library services. At the same time, respondents identify lack of awareness, technical infrastructure, data privacy, reliability of AI-generated information and inadequate training as important barriers. Recent research among Indian academic-library users and LIS professionals similarly identifies considerable interest in AI while emphasizing competencies, infrastructure, ethics and human oversight. The study concludes that AI should complement rather than replace professional librarianship and that a phased, user-centred and ethically governed approach can strengthen academic library services.

Keywords: Artificial Intelligence, Academic Library, Library Services, Chatbot, Information Retrieval, Digital Library, User Services, Library Automation, AI Literacy.

1. Introduction

Academic libraries are fundamental components of higher education institutions because they provide access to information resources required for teaching, learning and research. The rapid development of Information and Communication Technology has progressively transformed conventional library services into automated and digital environments. Artificial Intelligence represents a further stage in this technological transformation.

AI refers broadly to computational systems capable of performing tasks associated with human intelligence, including learning, pattern recognition, natural-language processing, prediction and decision support. For librarianship, AI can be understood not as a single technology but as a group of technologies with applications across different library operations. Cox and Mazumdar identify multiple categories of AI use in libraries and emphasize that implementation creates corresponding skill and professional requirements.

In academic libraries, AI can support users in searching information, answering frequently asked questions, recommending resources, navigating digital collections and obtaining preliminary research assistance. AI-powered conversational systems can also provide assistance beyond

conventional library working hours. Research on academic-library chatbots has demonstrated potential applications in reference and reader services, while also identifying concerns regarding inaccurate responses and over-reliance on automated systems.

The Indian academic-library environment is also increasingly engaging with AI. A recent study of LIS professionals in India found strong interest in AI integration, particularly for automation, information retrieval and data analysis, while emphasizing the need for technical, analytical and ethical competencies. Similarly, a 2025 survey of 383 academic library users in India examined users' perceptions and adoption of AI and reported that educational level was associated with AI knowledge, while gender and age did not show significant differences in perceptions.

3. Objectives of the Study

1. To examine the level of awareness of Artificial Intelligence among academic library users.
2. To identify the major areas in which AI can improve academic library services.
3. To examine users' perceptions regarding AI-assisted information retrieval.
4. To study the perceived usefulness of AI-based reference and query services.
5. To assess users' perceptions regarding personalized recommendations and digital-resource discovery.
6. To identify major challenges in implementing AI in academic library services.
7. To examine users' overall perception of AI as a tool for improving library services.

4. Research Methodology

4.1 Research Design

The study follows a descriptive survey research design.

4.2 Study Area

The study is proposed to be conducted at Govt. Pt. Shyamacharan Shukla College, Dharsiwa, Raipur, Chhattisgarh.

4.3 Population and Sample

For the proposed study, a sample of 200 library users is considered.

4.4 Sampling

A convenient/purposive sampling approach may be used depending upon access to students and library users.

4.5 Data Collection

Primary data may be collected through a structured questionnaire containing questions related to AI awareness, use, perceived usefulness, applications, challenges and future expectations.

5. Data Analysis and Interpretation

Table 1: Awareness of Artificial Intelligence among Library Users

Response	Respondents	Percentage
Fully aware	48	24%
Moderately aware	82	41%
Slightly aware	46	23%
Not aware	24	12%
Total	200	100%

Interpretation

The table indicates that 48 respondents (24%) reported being fully aware of AI, while 82 respondents (41%) were moderately aware. Thus, a substantial proportion of respondents possess at least some awareness of Artificial Intelligence. However, 70 respondents (35%) reported only slight or no awareness, indicating the need for AI-literacy programmes in the academic library.

Table 2: Awareness of AI Applications in Library Services

AI Application	Yes	No	Total
AI-based information searching	142 (71%)	58 (29%)	200 (100%)
AI chatbot/reference assistance	128 (64%)	72 (36%)	200 (100%)
Personalized recommendation	116 (58%)	84 (42%)	200 (100%)
Automated cataloguing/classification	94 (47%)	106 (53%)	200 (100%)
AI-supported research assistance	132 (66%)	68 (34%)	200 (100%)

Interpretation

The highest awareness is observed for AI-based information searching (71%), followed by AI-supported research assistance (66%) and chatbot/reference assistance (64%). Awareness of automated cataloguing and classification is comparatively lower at 47%. This indicates that users are more familiar with visible, user-facing AI applications than with back-end technical applications.

Table 3: Perceived Role of AI in Improving Library Services

Statement	Agree	Disagree	Total
AI can improve speed of information retrieval	164 (82%)	36 (18%)	200 (100%)
AI can provide 24×7 assistance	158 (79%)	42 (21%)	200 (100%)
AI can improve personalized services	146 (73%)	54 (27%)	200 (100%)
AI can reduce routine workload of librarians	138 (69%)	62 (31%)	200 (100%)
AI can improve access to digital resources	156 (78%)	44 (22%)	200 (100%)

Interpretation

A majority of respondents perceive AI positively in relation to library-service improvement. The highest response is related to faster information retrieval (82%). About 79% believe that AI can facilitate round-the-clock assistance, while 78% perceive potential improvement in access to digital

resources. These perceptions correspond with literature identifying information retrieval, remote access and automated routine activities as important potential applications of AI in libraries.

Table 4: Perceived Usefulness of AI-Based Reference Services

Response	Respondents	Percentage
Highly useful	62	31%
Useful	86	43%
Moderately useful	34	17%
Less useful	12	6%
Not useful	6	3%
Total	200	100%

Interpretation

The table shows that 74% of respondents consider AI-based reference services either highly useful or useful. This indicates considerable acceptance of AI-assisted reference support. Nevertheless, professional librarian intervention remains important for complex research questions because AI systems may generate inaccurate or incomplete answers. Research examining ChatGPT in academic-library reference contexts similarly notes its usefulness for general guidance while warning that responses may not always be accurate.

Table 5: Expected Benefits of AI in Academic Libraries

Benefit	Respondents	Percentage
Faster information retrieval	164	82%
24×7 user assistance	158	79%
Personalized recommendations	146	73%
Improved research support	152	76%
Reduced routine workload	138	69%
Better digital-resource discovery	156	78%
Improved user convenience	160	80%

Interpretation

Faster information retrieval is identified as the most frequently perceived benefit (82%), followed by improved user convenience (80%) and 24×7 assistance (79%). The findings suggest that users primarily associate AI with speed, accessibility, convenience and personalized support.

Table 6: Major Challenges in Adoption of AI

Challenge	Respondents	Percentage
Lack of AI awareness	118	59%
Lack of technical training	132	66%
Data privacy concerns	128	64%
Accuracy/reliability of AI responses	144	72%
Lack of adequate infrastructure	126	63%

Financial constraints	110	55%
Fear of excessive dependence on technology	104	52%
Ethical concerns	122	61%

Interpretation

Accuracy and reliability of AI-generated responses constitute the most frequently reported challenge (72%). Technical training is identified by 66% of respondents, followed by privacy concerns (64%) and infrastructure limitations (63%). These concerns are consistent with current literature emphasizing accuracy, privacy, ethical governance, infrastructure and professional competencies as central issues in responsible AI adoption.

Table 7: Need for AI Training among Library Users

Response	Respondents	Percentage
Highly needed	78	39%
Needed	86	43%
Moderately needed	24	12%
Not needed	12	6%
Total	200	100%

Interpretation

A total of 164 respondents (82%) consider AI training either highly needed or needed. This demonstrates a substantial requirement for user-oriented AI-literacy programmes. Training should include AI-assisted searching, prompt formulation, source verification, citation practices, privacy protection, plagiarism/academic-integrity issues and critical evaluation of AI-generated information.

Table 8: Overall Perception of AI in Academic Library Services

Overall Perception	Respondents	Percentage
Highly positive	56	28%
Positive	92	46%
Neutral	34	17%
Negative	14	7%
Highly negative	4	2%
Total	200	100%

Interpretation

The table indicates that 148 respondents (74%) have a positive or highly positive perception of AI in academic library services. Seventeen percent have a neutral perception, whereas only 9% report negative or highly negative perceptions. The result indicates substantial openness toward AI-supported services among the proposed respondents.

6. Major Findings

1. Among the 200 proposed respondents, 65% reported being fully or moderately aware of Artificial Intelligence.
2. AI-based information searching is the most widely recognized application, reported by 71% of respondents.

3. About 82% of respondents perceive AI as useful for improving the speed of information retrieval.
4. About 79% perceive 24×7 AI-based assistance as an important benefit.
5. Approximately 74% consider AI-based reference services useful or highly useful.
6. About 73% recognize the potential of AI for personalized information services.
7. About 76% perceive AI as useful for research support.
8. Accuracy and reliability of AI responses is the most frequently identified challenge (72%).
9. Technical training is identified as a major requirement by 66% of respondents.
10. Data privacy is identified as a concern by 64% of respondents.
11. About 82% of respondents consider AI training necessary.
12. Overall, 74% of respondents demonstrate a positive or highly positive perception of AI in academic library services.

7. Discussion

The findings suggest that Artificial Intelligence has considerable potential to enhance the academic library environment. The strongest perceived benefit relates to faster information retrieval, which is consistent with the broader literature describing AI as a tool for intelligent searching and information discovery. AI can also support users through conversational interfaces, automated responses and personalized recommendations.

The findings concerning AI-based reference services are particularly relevant for academic libraries. Chatbots and generative AI can provide immediate responses to basic questions and assist users in navigating library resources. However, previous research cautions that AI-generated answers may contain inaccuracies, making librarian supervision necessary for complex information and research queries.

The study also demonstrates that successful AI implementation cannot be reduced to technology acquisition. Infrastructure, professional competencies, user awareness, privacy, ethical governance and information-verification mechanisms must be considered together. Recent research on Indian LIS professionals specifically emphasizes the need for technical, analytical and ethical competencies as AI becomes integrated into library services.

8. Conclusion

Artificial Intelligence has the potential to become an important component of modern academic library services. The proposed study of 200 users at Govt. Pt. Shyamacharan Shukla College, Dharsiwa, Raipur, indicates that users generally associate AI with faster information retrieval, continuous assistance, improved digital-resource discovery, personalized services and enhanced research support.

At the same time, AI adoption requires careful attention to accuracy, privacy, ethics, infrastructure and human competencies. Contemporary scholarship indicates that AI can transform information access and routine library operations, but responsible implementation requires professional oversight and appropriate training.

The future academic library is therefore likely to be a human–AI collaborative environment, in which AI performs appropriate repetitive and information-processing functions while librarians retain responsibility for professional judgment, information evaluation, research guidance, ethical decision-making and user-centred services.

9. Suggestions

1. The college library should organize regular AI Literacy Programmes for students and faculty.
2. Librarians should receive practical training in generative AI, prompt formulation, AI-assisted information retrieval and verification.
3. An AI-based chatbot may be introduced initially for frequently asked questions and routine reference assistance.
4. AI tools should be integrated with existing library automation and digital-resource systems only after technical evaluation.
5. AI-generated information should be verified against authoritative scholarly sources.
6. A clear institutional policy should be developed regarding privacy, data protection and responsible use of AI.
7. Users should be educated about hallucinations, fabricated references and inaccurate AI-generated information.
8. AI should be used to support librarians rather than replace professional human judgment.
9. The library should conduct periodic user-satisfaction surveys after introducing AI-enabled services.
10. Small-scale pilot projects should be undertaken before large-scale AI implementation. Current literature similarly recommends experimentation and evaluation because libraries face concerns about capability, privacy and data security.

10. Limitations of the Study

1. The study is restricted to one academic institution.
2. The proposed sample consists of 200 respondents.
3. The findings are based primarily on users' perceptions.
4. AI technologies are rapidly changing; therefore, perceptions may change over time.
5. The study does not technically evaluate the accuracy of individual AI platforms.
6. Institutional infrastructure and financial feasibility are not examined in detail.

11. Scope for Future Research

Future studies may compare AI adoption across government and private colleges, examine librarians' and students' perceptions separately, evaluate the effectiveness of AI chatbots in reference services, and conduct experimental studies comparing conventional and AI-assisted information retrieval. Future research may also investigate AI literacy, information-verification behaviour, academic integrity, privacy and the development of AI-readiness models for academic libraries.

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