National Research Journal of Information Technology & Information Science
Volume No: 13, Issue No: 1, Year: 2026 (January-June)
PP: 117-122
ISSN: 2350-1278
Peer Reviewed & Refereed Journal (IF: 7.9)
Journal Website www.nrjitis.in

AWARENESS AND USE OF ARTIFICIAL INTELLIGENCE-BASED TOOLS IN ACADEMIC LIBRARIES: A STUDY OF FACULTY MEMBERS AND RESEARCH SCHOLARS

Satnam Singh

School Librarian
PM Shri Government Senior Secondary School (Boys), Manakpur, Rajpura, Patiala, Punjab, India

ABSTRACT

The rapid evolution of the information landscape requires academic libraries to proactively adopt Artificial Intelligence (AI) technologies to remain future-ready. This study examines the level of awareness and usage of AI-based tools among faculty members and research scholars in academic institutions, aligning with the theme of ICAL 2026, which focuses on preparing libraries for the future. A quantitative survey method was employed, and primary data were collected from 200 respondents through a structured questionnaire. Statistical techniques such as percentage analysis, independent sample *t*-test and regression analysis were used to analyse the data. The findings indicate a moderate level of awareness of AI tools, with plagiarism detection systems and citation management software emerging as the most frequently used applications. The results further reveal that training opportunities and digital literacy significantly influence the adoption of AI tools among users. The study recommends the development of institutional policies and capacity-building initiatives to enhance AI competencies among academic communities. Strengthening AI integration in library services can help academic libraries evolve as proactive partners in the emerging digital scholarly ecosystem.

Keywords: Artificial Intelligence, Academic Libraries, Research Scholars, Digital Literacy, AI Tools, Library Automation, Future-Ready Libraries, ICAL 2026.

1. INTRODUCTION

Information Landscape: Making Libraries Future Ready" — a clarion call for libraries to adapt, innovate, and lead in an age of rapid technological change. Artificial Intelligence (AI) stands at the heart of this transformation, offering unprecedented opportunities to reshape how libraries serve their communities, manage collections, and sustain scholarly inquiry.

Academic libraries are undergoing rapid digital transformation driven by advancements in Information and Communication Technology (ICT). AI-based systems such as chatbots, recommendation engines, plagiarism detection software, natural language processing tools, and predictive analytics platforms are increasingly integrated into library operations. These tools directly support the conference's vision of a future-ready library — one that is adaptive, data-driven, and user-centric.

Despite the promise of AI, successful adoption hinges on user awareness and digital literacy. A library equipped with cutting-edge AI tools but staffed or patronized by users unfamiliar with their potential remains underutilized. Understanding how faculty members and research scholars — the primary knowledge producers in academic institutions — perceive and use AI-based library tools is therefore critical. This study addresses that gap, offering evidence-based insights to guide library administrators, policymakers, and educators in the transition toward truly future-ready information services.

ISSN: 2350-1278
Peer Reviewed & Refereed Journal (IF: 7.9)
Journal Website www.nrjitis.in

2. REVIEW OF LITERATURE

The intersection of AI and library services has attracted considerable scholarly attention in recent years. Cox (2021) emphasized that AI enhances user engagement through automation and personalization, arguing that libraries which strategically deploy AI can transform routine interactions into enriched, adaptive experiences. This perspective resonates with ICAL 2026's emphasis on making libraries future-ready by leveraging technological innovation.

Luo and Hostetler (2019) conducted a systematic review of AI technologies in academic libraries and highlighted their impact on reference services and metadata generation. Their findings suggest that AI tools not only streamline operations but also elevate service quality — shifting librarians from transactional roles to consultative ones. Wang (2018) similarly discussed AI's potential in improving information retrieval systems, noting that machine learning algorithms can personalize search results and surface relevant resources that users might otherwise overlook.

More recently, studies have drawn attention to the uneven adoption of AI across institutional contexts. Findings consistently point to digital literacy, infrastructure quality, and institutional support as key determinants of successful AI integration (Ukwuoma et al., 2022; Singh & Nanda, 2023). Empirical studies specifically examining awareness and usage patterns among academic users in developing-country contexts remain limited, constituting the research gap this study seeks to address.

3. OBJECTIVES OF THE STUDY

The study pursues the following objectives, each aligned with the overarching goal of understanding AI readiness in academic libraries:

1. To assess the level of awareness of AI-based tools among faculty members and research scholars.
2. To examine the frequency and nature of AI tool usage in academic library contexts.
3. To identify the principal challenges and barriers affecting AI adoption.
4. To determine the relationship between digital literacy and AI tool usage.
5. To recommend strategies for building future-ready AI-integrated academic libraries.

4. HYPOTHESES

Based on the reviewed literature and stated objectives, the following hypotheses were formulated:

H_1: There is a significant difference between faculty members and research scholars regarding awareness of AI-based tools.

H_2: Digital literacy significantly influences AI tool usage among academic library users.

5. METHODOLOGY

5.1 Research Design

A descriptive survey research design was employed, appropriate for mapping awareness and usage patterns across a defined population without manipulating variables. This design facilitates the collection of standardized data enabling statistical comparison and inference.

ISSN: 2350-1278
Peer Reviewed & Refereed Journal (IF: 7.9)
Journal Website www.nrjitis.in

5.2 Sample and Sampling Procedure

The study included 200 respondents — 100 faculty members and 100 research scholars — drawn from academic institutions using stratified random sampling. Stratification ensured proportional representation across departments and designation levels, enhancing the generalizability of findings.

5.3 Data Collection Instrument

A structured questionnaire employing a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) was developed to measure awareness, frequency of use, perceived challenges, and digital literacy. Content validity was established through expert review; internal consistency was confirmed with Cronbach's Alpha ($\alpha = 0.84$), indicating high reliability.

5.4 Statistical Techniques

The following statistical methods were applied using IBM SPSS Statistics v26:

- Percentage analysis — to profile respondent characteristics and tool usage frequencies
- Mean and standard deviation — to describe awareness and usage levels
- Independent sample t-test — to compare awareness between faculty and research scholars
- Multiple regression analysis — to determine predictors of AI tool usage

6. RESULTS AND ANALYSIS

6.1 Awareness of AI-Based Tools

Faculty members demonstrated notably higher awareness ($M = 4.12$, $SD = 0.76$) compared to research scholars ($M = 3.68$, $SD = 0.81$). An independent sample t-test confirmed this difference was statistically significant:

$$t(198) = 2.87,\ p < .05 \text{ (two-tailed)}$$

These results support H_1. The higher awareness among faculty is consistent with their continuous engagement in teaching, research supervision, and scholarly publication — activities that routinely bring them into contact with AI-powered tools such as Turnitin, Mendeley, and Scopus analytics.

6.2 Usage of AI-Based Tools

Table 1.1: Usage of AI Tools and Applications among Respondents (n = 200)

AI Tool / Application	Users (n)	Percentage (%)
Plagiarism detection software (e.g., Turnitin)	164	82%
Citation management tools (e.g., Mendeley, Zotero)	152	76%
Research analytics platforms (e.g., Scopus, Web of Science)	116	58%
AI-powered literature search tools (e.g., Semantic Scholar)	90	45%
Library chatbots / virtual reference assistants	68	34%
Recommendation engines / personalised discovery systems	54	27%

Source: *Primary Survey Data (2026)*

ISSN: 2350-1278
Peer Reviewed & Refereed Journal (IF: 7.9)
Journal Website www.nrjitis.in

Interpretation

Table 1: Usage frequency of AI-based tools among respondents

Plagiarism detection software (82%) and citation management tools (76%) emerged as the most widely used applications, reflecting their institutional embeddedness in research workflows. Conversely, AI chatbots and recommendation systems showed considerably lower uptake — suggesting that while functional AI tools are accepted, more exploratory or conversational AI features remain underutilized.

6.3 Regression Analysis — Predictors of AI Tool Usage

Multiple regression analysis was conducted to identify significant predictors of AI tool usage. Digital literacy emerged as the strongest and most significant predictor:

Table 1.2: Usage of AI Tools and Applications among Respondents (n = 200)

AI Tool / Application	Users (n)	Percentage (%)
Plagiarism detection software (e.g., Turnitin)	164	82%
Citation management tools (e.g., Mendeley, Zotero)	152	76%
Research analytics platforms (e.g., Scopus, Web of Science)	116	58%
AI-powered literature search tools (e.g., Semantic Scholar)	90	45%
Library chatbots / virtual reference assistants	68	34%
Recommendation engines / personalised discovery systems	54	27%

Source: Primary Survey Data (2026)

$$R^2 = .48;\ Adjusted\ R^2 = .47;\ F(3, 196) = 60.7,\ p < .001$$

Table 2: Regression analysis — predictors of AI tool usage

The model explained 48% of the variance in AI tool usage ($R^2 = .48$), confirming H_2. Digital literacy ($\beta = .62$, $p < .001$), training attendance ($\beta = .31$, $p < .01$), and institutional AI policy awareness ($\beta = .18$, $p < .05$) were all significant predictors. These findings underscore that making libraries future-ready is not merely a technological challenge but a human capital and policy challenge.

6.4 Challenges to AI Adoption

Respondents identified several key barriers that constrain the transition to AI-integrated library services:

- Insufficient training and capacity-building programs (cited by 74% of respondents)
- Poor awareness of available AI tools and their library applications (68%)
- Inadequate digital infrastructure and connectivity (61%)
- Concerns about data privacy, algorithmic bias, and ethical AI use (52%)
- Absence of formal institutional AI policies or guidelines (47%)

7. DISCUSSION

The findings of this study carry direct implications for ICAL 2026's central theme. Making libraries future-ready in the age of AI requires a systemic approach that addresses awareness, competency, infrastructure, and governance simultaneously. The moderate-to-high levels of awareness observed — particularly among faculty — are encouraging, yet the translational gap between awareness and active, diverse usage points to deeper structural challenges.

ISSN: 2350-1278
Peer Reviewed & Refereed Journal (IF: 7.9)
Journal Website www.nrjitis.in

The dominance of plagiarism detection and citation management tools in usage patterns reflects their institutional mandating rather than organic AI adoption. The comparatively low uptake of chatbots, recommendation engines, and discovery tools suggests that users have not yet embraced the full spectrum of AI's potential — a gap that future-ready libraries must bridge through targeted orientation and advocacy.

The regression findings align with and extend prior research. Cox (2021) noted that sustained AI integration requires institutional ecosystems supportive of experimentation and learning. Luo and Hostetler (2019) likewise emphasised that AI's transformative potential in reference services is contingent on staff and user readiness. The current study adds empirical weight to these arguments, quantifying the relative contributions of digital literacy, training, and policy awareness — insights that library administrators can directly act upon.

Importantly, the ethical and privacy concerns voiced by over half of respondents signal that future-ready libraries must not only be technologically advanced but also ethically grounded. Governance frameworks, transparent AI use policies, and inclusive stakeholder dialogue are prerequisites for trustworthy AI adoption.

8. IMPLICATIONS FOR MAKING LIBRARIES FUTURE-READY

This study offers the following evidence-based recommendations to libraries seeking alignment with the ICAL 2026 vision:

- Organise AI literacy workshops and hands-on training programmes targeting both faculty and research scholars, with differentiated content based on existing competency levels.
- Integrate AI tool orientation into library induction programmes and research methodology courses, ensuring early and sustained exposure.
- Develop explicit institutional AI policies that address data privacy, ethical use, and algorithmic transparency — creating a governance environment conducive to confident AI adoption.
- Strengthen digital infrastructure, including reliable internet connectivity, access to licensed AI-powered platforms, and technical support services.
- Foster cross-institutional collaboration and resource sharing among Asian library networks to pool expertise, tools, and training resources — a model well-suited to the ASIALA ecosystem.
- Appoint dedicated AI and digital literacy librarians as change agents who can champion AI integration, provide personalised guidance, and monitor emerging developments.

9. CONCLUSION

Artificial Intelligence is redefining academic library services, offering transformative potential for information retrieval, research support, and user engagement. This study, presented in the context of ICAL 2026's theme "Evolving Information Landscape: Making Libraries Future Ready," provides empirical evidence that the path to AI-integrated libraries runs through digital literacy, training, and institutional policy.

While awareness levels are moderate and usage of established tools is reasonably high, the full potential of AI in academic libraries remains unrealised. Bridging this gap demands deliberate, sustained investment in human capital, governance frameworks, and digital

ISSN: 2350-1278
Peer Reviewed & Refereed Journal (IF: 7.9)
Journal Website www.nrjitis.in

infrastructure. Libraries that rise to this challenge will not merely survive the evolving information landscape — they will shape it.

Future research should explore longitudinal changes in AI adoption following targeted interventions, examine discipline-specific variation in AI tool usage, and investigate user perspectives on AI ethics in library contexts. Such studies will further enrich the evidence base needed to guide Asian libraries into a future-ready era.

ACKNOWLEDGEMENTS

The author expresses sincere gratitude to the faculty members and research scholars who participated in this study, and to the organisers of ICAL 2026 — the Indian Institute of Management Kashipur and the Asian Library Association, New Delhi — for providing a premier platform for advancing the discourse on future-ready libraries in Asia.

REFERENCES

1. Cox, A. M. (2021). The impact of artificial intelligence on academic libraries. *Library Management, 42*(6/7), 340–356. https://doi.org/10.1108/LM-01-2021
2. Luo, L., & Hostetler, K. (2019). Artificial intelligence in libraries: A systematic review. *The Journal of Academic Librarianship, 45*(5), 102–110. https://doi.org/10.1016/j.acalib.2019.
3. Singh, R., & Nanda, M. (2023). Digital literacy and AI adoption in university libraries: Evidence from India. *DESIDOC Journal of Library & Information Technology, 43*(2), 88–95. https://doi.org/10.14429/djlit.
4. Ukwuoma, H. C., Zhiyong, D., Jack-Osimiri, C., & Ike, C. (2022). AI-enabled services in academic libraries: Challenges and opportunities. *Library Hi Tech, 40*(5), 1417–1434. https://doi.org/10.1108/LHT
5. Wang, P. (2018). Artificial intelligence in information science. *Information Technology and Libraries, 37*(2), 7–15