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USER SATISFACTION WITH AI-ENABLED LIBRARY SERVICES IN INDIAN INSTITUTES OF TECHNOLOGY

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Abstract: This paper investigates library users' awareness, usage, and satisfaction with AI-enabled services across 23 Indian Institutes of Technology (IITs). A structured questionnaire was administered to 412 users (students, faculty, and researchers) covering demographics, AI awareness and usage, satisfaction, and perceptions of AI-enabled services. Results show that less than half (46.6%) of users reported being aware that AI is integrated into their library's services, and 47.8% had personally used AI-powered library tools. Satisfaction with AI services was moderate: most users were neutral (52.9%) or satisfied (30.8%), with only 10.0% very satisfied. The most used AI tools were plagiarism checkers (39.56% of respondents), grammar checkers (30.58%), AI chatbots (e.g. ChatGPT or Gemini, 29.37%) and automated checkout/renewal systems (26.30%), (Table 4). The Respondents reported several benefits of AI (enhanced search accuracy, time savings) but also noted concerns about accuracy and privacy (echoing findings in the literature. These findings are discussed in the context of global and Indian trends in library AI adoption. The study concludes that while Indian academic library users recognize the value of AI in improving efficiency and access, there are opportunities to expand AI services and address usability and ethical issues.

Keywords: Artificial intelligence, User satisfaction, Academic libraries, AI tools, India, IIT

Introduction:

Artificial intelligence (AI) is rapidly transforming many sectors, and libraries are no exception. AI-driven technologies are being explored to improve information discovery, automate routine tasks, and personalize user experiences. For example, modern libraries use AI for intelligent search algorithms, recommendation systems, chatbots, and automated checkout machines, aiming to enhance efficiency and user service. Globally, libraries have long adopted new technologies to reach broader audiences, and AI promises to further this tradition by making interactions more dynamic and accessible. In India, experts and conference speakers have noted that AI can make academic libraries more efficient and inclusive, but have also cautioned about accuracy, privacy, and ethical concerns. Despite this interest, empirical data on library users' satisfaction with AI-based services in India are scarce.

This paper investigates how users at the premier technical institutes of India (23 IITs) perceive and use AI in their library services. We administered a comprehensive survey to 412 library users across all IIT campuses, covering demographics; awareness of AI integration; usage of specific AI tools (e.g. chatbots, smart search); satisfaction with AI services; perceived benefits; and concerns (usability, privacy, accuracy). This represents one of the first multi-institution studies of AI in Indian academic libraries from the user perspective. We present descriptive statistics of the survey data and relate findings to the literature on AI adoption in libraries (Indian and global). In doing so, we highlight the current status of AI services in IIT libraries, users' satisfaction levels, and areas for improvement.

Literature Review

Artificial intelligence (AI) and related technologies have been increasingly used in libraries, both locally and around the world. Previous research shows that AI can help libraries evolve from passive storage places to engaged knowledge sites, focusing on the user experience. A few common uses of AI in libraries, and not limited to, include natural-language searching, virtual assistants and chatbots, automated metadata generation or editing of existing metadata, and personalized recommendations to user questions. These technologies can additionally assist or automate many of the everyday tasks that are performed to minimize and address tasks related to a specific user, cataloguing, reference services, and social media activities while increasing resource discovery and accessibility.

For example, Vasishta, Dhingra, and Vasishta (2024) demonstrated that AI-based search and recommendation systems can improve user satisfaction and resource discoverability within Indian academic libraries. Likewise, reports of more recent examinations of AI chatbots reported high user satisfaction with a specific emphasis on their accuracy, ease of use, and quick responses from the bots. The users also appreciated faster responses and improved access to resources (Zhao, Yan, & Mazumdar, 2025; Mogambi, Otieno, & Njoroge, 2025). These perspectives align with U.S. trends noted in public-library surveys regarding AI initiatives; for example, libraries are increasingly investing in AI literacy programs and pilot operations, as well as many libraries claiming that they will continue user training and expand AI-based programs (Bairagi & Lihitkar, 2025).

Library professionals in India have generally expressed either positive views or cautiously optimistic views regarding AI. Recently conducted library professionals' surveys suggest that the majority of librarians can

envision ways AI can improve the efficiency and accessibility of library resources and services, even as they seek to prioritize the privacy of users and the potential for replacement of the human librarian. Subaveerapandiyan and Gozali (2024) surveyed and reported that 386 Indian academic librarians believe AI-driven tools could support and improve libraries' work; however, many expressed varying degrees of concern about ethical concerns and changes in the workforce (Subaveerapandiyan & Gozali, 2024). Similarly, Kalbande et al. (2024) noted cautious optimism: librarians expressed some level of confidence that AI could improve library services; however, librarians indicated AI implementation would require better training, funding, and clearer guidelines for ethical use. National initiatives, including the Indian Library Mission, have encouraged librarians in India to embrace advanced technology; however, budget considerations and skill gaps in both librarians and library assistants complicate broader adoption.

Several studies have also explored library users' perspectives on AI. Zhao, Yan, and Mazumdar (2025), in a systematic review of library chatbots, observed that most systems remain in early stages—offering guided text interactions but lacking sophisticated natural language understanding and personalization. Wang (2025) discussed broader AI adoption, noting that ChatGPT-style assistants are increasingly piloted to augment reference services, though users still express caution about accuracy and trust. In a qualitative case study, Kim (2025) showed how generative AI is reshaping academic libraries into proactive knowledge facilitators, with users expecting more personalized, anticipatory information services.

These findings underline a consistent theme: AI has the potential to enhance library services and user satisfaction, but its success depends heavily on usability, system reliability, personalization, and addressing user trust and privacy concerns. Our survey of IIT users builds on this by offering empirical insight from Indian academic settings.

Methodology

Survey design: We designed a structured questionnaire for library users at IITs, drawing on previous studies of AI in libraries. The questionnaire included sections on (a) demographics (role, gender, age group, education level, years at IIT); (b) AI awareness (awareness of any AI-integrated services in their library); (c) AI usage (frequency of library visits and use of specific AI tools); (d) satisfaction and attitudes (Likert-scale ratings of overall satisfaction with AI services, ease of use, belief in AI benefits); and (e) perceived usefulness and concerns (impact on research, desired additional AI features, privacy/usability concerns). Some items were single-choice (Yes/No), others multiple-choice (e.g. select AI tools used or desired), and several used 5-point scales (e.g. satisfaction, agree/disagree statements). The English-language questionnaire was pilot-tested with a small group for clarity.

Data collection: The survey was disseminated via email and web links to library user lists at each of the 23 IITs during 2024–2025. Respondents (students, faculty, researchers) answered voluntarily; no identifying information was collected. A total of 412 valid responses were received (no incomplete records were included). The sample represents a broad cross-section of IIT library users: 49.03% students (n = 202), 41.75% researchers (n = 172), and 9.22% faculty (n = 38). For analysis, we aggregated the data across all IITs. Descriptive statistics (frequencies

and percentages) were computed for each survey item. Where applicable, responses on multi-item scales or multi-select questions were tabulated to show usage patterns.

Data analysis: We prepared tables for key variables using standard categories (e.g. age groups, satisfaction ratings) and calculated percentages of total respondents. For multi-select questions (e.g. "Which AI services have you used?"), We counted each respondent once per listed item to identify the most commonly used AI tools. These descriptive results are presented below in the Results section.

Results

Respondent Profile

Table 1 summarizes the demographic characteristics of the 412 respondents. Nearly half were students (49.03%), with the remainder comprising researchers (41.75%) and faculty members (9.22%). A majority were male (71.60%), and most were between 26 and 30 years of age (44.17%), while 30.34% were younger than 25. more than half of the respondents held postgraduate degrees (52.7%), while nearly one-third had a doctorate (31.6%). Most respondents were relatively new to their IITs: 76.0% reported being affiliated for 1–4 years, 20.2% for 5–10 years, and only about 4% had more than 10 years of association. Participants represented all 23 IITs, with no single institution dominating the sample.

Table 1. Demographic characteristics of respondents (N=412).

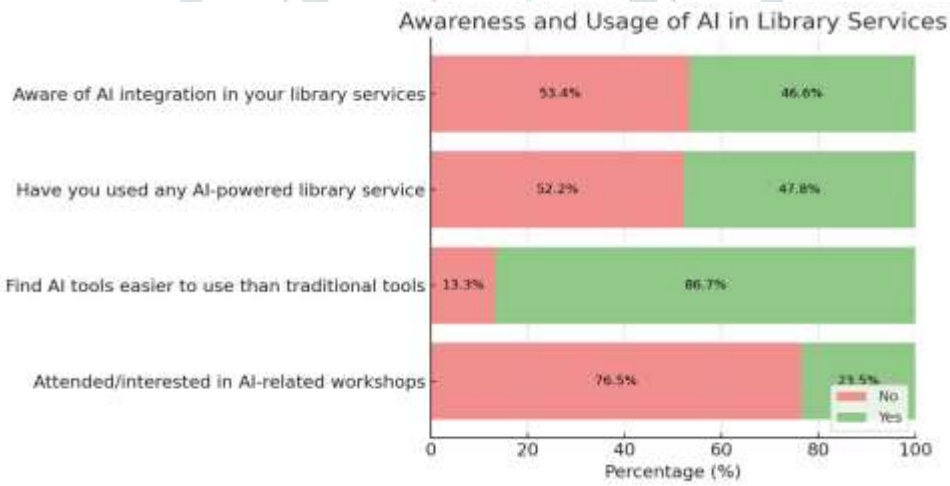
Demographic Category	Group	n	% of respondents
Role at IIT	Faculty	38	9.22%
	Researcher	172	41.75%
	Student	202	49.03%
Gender	Male	295	71.60%
	Female	117	28.40%
Age group	<25	125	30.34%
	26–30	182	44.17%
	31-35	62	15.05%
	36-40	23	5.58%
	41-45	7	1.70%
	>46	13	3.16%
Highest qualification	Undergraduate	65	15.78%
	Postgraduate	217	52.67%
	Doctorate	130	31.55%
Years at IIT	1–4 years	313	75.97%
	5–10 years	83	20.15%
	11–15 years	9	2.18%
	>15 years	7	1.70%

Awareness and Use of AI Services

Table 2 shows respondents' awareness and usage of AI-enabled library services. Less than half (46.6%) of users reported being aware that AI is integrated into their library's services, while 53.4% were not aware. Approximately 47.8% had personally used at least one AI-powered library tool or feature, leaving 52.2% who had not (Table 2). Most respondents (86.7%) agreed that AI-based tools are easier to use than traditional tools, indicating a favourable perception of AI usability. Only 13.3% disagreed. Relatively few had engaged in related training: only 23.5% had attended or expressed interest in AI-related workshops or sessions.

Table 2. Awareness and usage of AI services (N=412).

Variable	Yes (n, %)	No (n, %)
Aware of AI integration in your library services	192 (46.6%)	220 (53.4%)
Have you used any AI-powered library service	197 (47.8%)	215 (52.2%)
Find AI tools easier to use than traditional tools	357 (86.7%)	55 (13.3%)
Attended/interested in AI-related workshops	97 (23.5%)	315 (76.5%)



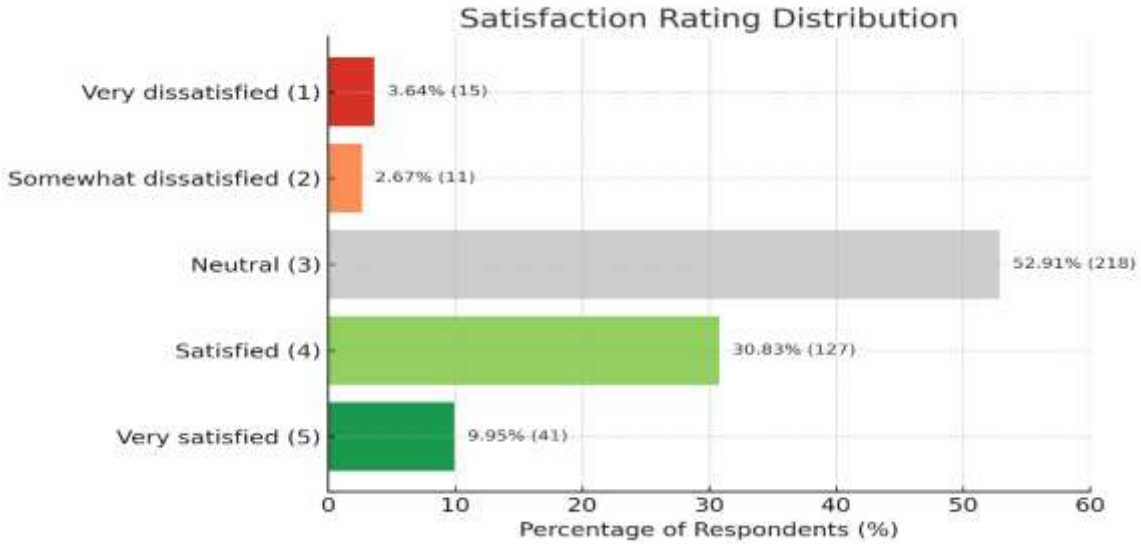
In terms of general library use, 59.7% reported using library services at least weekly (32.5% weekly, 17.2% daily) and 38.6% at least monthly.

Satisfaction with AI-Enabled Services

Respondents rated their overall satisfaction with AI-integrated library services on a 5-point scale (1=very dissatisfied, 5=very satisfied). As shown in Table 3, the modal response was neutral (218 users, 52.9%). About 41 users (10.0%) were very satisfied and 127 (30.8%) were satisfied, while 26 users (6.3%) were dissatisfied (15 very dissatisfied, 11 somewhat dissatisfied). Thus, roughly 40.8% expressed some level of satisfaction versus 6.3% dissatisfaction. This suggests that, on balance, users feel neutrally or positively about AI services at present.

Table 3. Overall satisfaction with AI-enhanced library services (N=412).

Satisfaction rating	n	% of respondents
Very dissatisfied (1)	15	3.64%
Somewhat dissatisfied (2)	11	2.67%
Neutral (3)	218	52.91%
Satisfied (4)	127	30.83%
Very satisfied (5)	41	09.95%



Respondents also rated specific aspects of AI services. For example, 197 users (47.8%) agreed (rating 4) and 107 (26.0%) strongly agreed (rating 5) that AI-powered services *enhance information access* in the library, while only 20 (4.8%) disagreed (ratings 1–2). Similarly, 171 (41.5%) agreed and 37 (9.0%) strongly agreed that AI services have had a positive impact on their research or study experience, while 25 (6.1%) disagreed. These findings suggest that the majority perceive concrete benefits from AI, particularly in terms of search accuracy and efficiency. In fact, on statements about specific benefits (e.g. "AI saves time in finding resources" or "AI provides better search accuracy"), over 70% of respondents selected high agreement (scores 4 or 5).

However, some concerns emerged. Although 51.5% (212 users) believed AI tools have made library staff more accessible and efficient, a large group (40.2%, 166 users) reported being unsure about staff impacts. About 47.8% of respondents felt AI tools were meeting their personal needs to a good or great extent. Concerns such as privacy of user data, the accuracy of AI outputs, and the potential for over-reliance on automation were noted by a significant minority, mirroring issues raised in the literature. In open comments, some users asked for clearer privacy assurances and improvements in AI recommendation accuracy.

Most-Used AI Tools and Services

Among users who had experience with AI-enabled services (n = 197), the most commonly used tools are summarized in Table 4. The largest share reported using plagiarism-detection software (163 users; 39.6% of all respondents), followed by AI-powered grammar and spell checkers (126; 30.6%), AI chatbots such as ChatGPT,

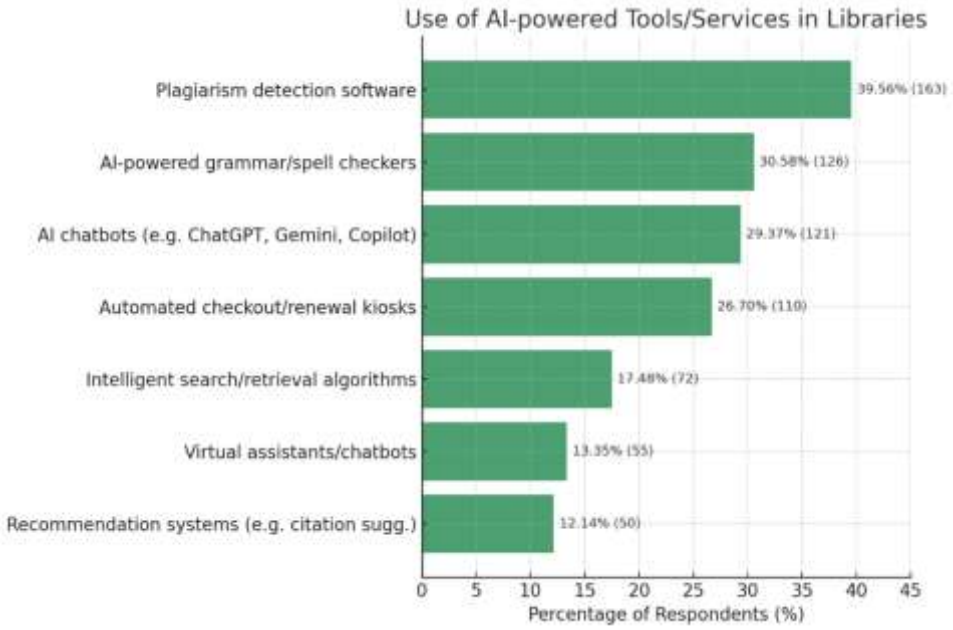
Gemini, or Copilot (121; 29.4%), and automated checkout/renewal kiosks (110; 26.7%). Other widely used features included intelligent search/retrieval algorithms (72; 17.5%), virtual assistants/chatbots (55; 13.4%), and recommendation systems such as citation suggestions (50; 12.1%). Lower-ranked services included virtual tours, VR interfaces, and smart shelf systems.

These findings show that AI in IIT libraries is most visible in academic workflow tools (plagiarism and writing aids) and backend process automation (self-service kiosks, search engines) rather than novel stand-alone library platforms.

Table 4. Top AI-based library tools used by respondents (n of respondents who used, and % of all respondents).

AI-powered tool/service	n	% of respondents
Plagiarism detection software	163	39.56%
AI-powered grammar/spell checkers	126	30.58%
AI chatbots (e.g. ChatGPT, Gemini, Copilot)	121	29.37%
Automated checkout/renewal kiosks	110	26.70%
Intelligent search/retrieval algorithms	72	17.48%
Virtual assistants/chatbots	55	13.35%
Recommendation systems (e.g. citation sugg.)	50	12.14%
(Other tools ranked lower: virtual tours, VR, smart shelves, etc.)	—	—

Note: Respondents could select multiple tools; percentages are out of 412 total respondents.



Discussion

The findings from the survey revealed that library users at the IIT are somewhat engaged with the AI-enabled services and generally very positive about their experience. Although just 46.6% of respondents were even aware

that AI was embedded in library services, nearly half (47.8%) had used at least one AI-enabled service feature. The demographic profile suggests a young, technology-comfortable user base (three-quarters had been at their IIT for ≤4 years and 74% were under age 35), which likely contributed to 86.7% agreeing that AI tools were easier to use than traditional tools. These results align with previous research discovering that younger academic users particularly valued AI with an intuitive interface for using. seamless integration of AI into their digital workflows (Zhao, Yan, & Mazumdar, 2025).

The patterns of engagement with AI across IIT libraries point to two areas of use: (a) academic writing and research support and (b) library tasks. The most commonly used tools were plagiarism detection tools (39.6%), and AI-enabled grammar/spelling checkers (30.6%), suggesting that many users are using AI through writing and academic integrity platforms. For library services, "in-library" tools include automated checkout/renewal kiosks (26.7%), and smart search and retrieval algorithms (17.5%). Chatbots and virtual assistants reached just under ~29% of respondents. These patterns are in line with findings around the world demonstrating that AI first infiltrates libraries through process automation behind the scenes and targeting writing to support academic integrity, rather than developing entirely new stand-alone platforms for users (Kim, 2025; Wang, 2025).

Overall, satisfaction levels were neutral to positive; only a small percentage of users (about 6%) were dissatisfied with the use of AI, while a majority of users agreed that AI makes searching more accurate and saves time. These results align with those of Mogambi, Otieno, & Njoroge (2025) which reported generally high levels of satisfaction with AI chatbot prototypes in academic libraries related to accuracy and response times, and agree with the findings of Vasishta, Dhingra, & Vasishta (2024) indicating that AI-driven discovery and recommendations can greatly improve the user experience when searching for resources and discovering resources in academic libraries in India.

Despite the insights from the mentoring sessions, there is still some uneasiness about the AI development. Approximately 40% of the users were uncertain, or doubtful, about how AI would impact access for staff members and a not insignificant minority lacked faith in AI working appropriately and accurately. The same findings are emerging in studies in India and globally, such as Kalbande et al. (2024), and the systematic review of reviews by Kulkanjanapiban, Sirisathitkul, & Zhang, (2025) show a need for transparency in AI, to protect user information and protect against bias in algorithms. Another gap is staff training, as a large portion (76.5%) of the respondents indicated that they had never participated in workshops related to AI (although a majority, as it seemed, had an interest in those). This reflects the experience in public libraries in various contexts, where the roll out of AI technology preceded training of users (for example, public libraries in the U.S. planned to educate on AI, but cited the skill gap from staff; Bairagi & Lihitkar, 2025).

Overall, users of the IIT library are cautiously optimistic. They perceive the practical possibilities associated with the use of AI for information retrieval, personalized assistance and operational efficiencies, but require transparency, trust and capacity-building associated with its use. The fact that nearly half of participants already use some AI service, with most reporting that it is easy to use, is a strong signal for technology adoption. As one participant reported: "AI should be working for us, not us working for it." Therefore, libraries should be

encouraged to continue inquiry into expanding AI's use in education, particularly chatbots, smart search, and systems for recommendations, while providing user training and privacy protections.

These results are in line with the global literature regarding AI in libraries. Indian research indicates that librarians are willing to employ AI with some level of ethical caution (Kalbande et al., 2024), supporting our perspective on end-users who also have similar expectations about AI from students, researchers, and faculty. We believe that, when implemented with care after the necessary training, while maintaining transparency, and taking all necessary protections in regards to privacy, AI will significantly improve user satisfaction and service quality in IIT libraries.

Conclusion:

This study examined the awareness and use of AI-based library services by library users across 412 students and faculty members across 23 IITs. Overall, users appeared supportive of AI applications within the library, and awareness and use of AI among participants appeared to be moderate. However, computer- and tech-dependent youths appeared to adopt and use AI-based tools at higher rates than older populations. Respondents and the majority of young users who reported using AI tools indicated that they found AI-based applications easy to use and valued their ease of use, efficiency, accuracy of research results, and time savings.

The AI-based tools that were most used fell into the area of existing digital workflows have specific applications, such as plagiarism detection software, grammar and spell-checking tools, automated checkout and renewal kiosks, and chatbots that are designed to assist users with struggles or challenges they've faced with library materials. Therefore, the integration of AI-based services in IIT libraries appears to extend existing or normal digital workflows rather than replacing or creating entirely new interfaces. Overall experiences and satisfaction with specific AI tools were favourable to very favourable, with minority populations raising concerns about accuracy, transparency, and perceived privacy; nevertheless, experiences were positive overall.

On the whole, these findings contribute to the literature on understanding AI in Indian academic libraries, but most prominently the user perspective, since the majority of prior research has focused on librarians' perspectives. It appears that the successful integration of AI into libraries will not only consist of development and technical functionalities, but also of the ability to foster trust and confidence in library users. Libraries should therefore communicate clearly how AI systems work, protect user data, and offer user training to bridge knowledge gaps. Future research could explore differences among user groups (faculty vs. students vs. researchers) and explore the user experience over time and way-finding satisfaction as specific libraries integrate an AI-based library service.

Recommendations

Based on the findings, the following actions are recommended for IIT libraries—and academic libraries more broadly:

1. **Expand AI Literacy Training:**

   Participation in AI-focused workshops was low (only 23.5% had attended or expressed interest), despite clear user curiosity. Therefore, libraries should offer continued professional learning for example on AI tools, ethical usage, and ICT literacy. This would also mean an orientation with students and faculty at the start of the semester. As noted by users in the several surveys we performed, we should consider some tutorial, for example, teaching students to use a chatbot for search or information retrieval purposes, and even an awareness program around privacy and algorithms bias potential in the use of AI. Similar strategies have been adopted internationally, where libraries plan AI education programs to prepare users for emerging tools (Bairagi & Lihitkar, 2025).

2. **Enhance Privacy and Transparency:**

   Concerns about accuracy and data privacy emerged in the survey. Libraries should clearly communicate what data AI systems collect, how it is processed, and how recommendations or personalization work. Giving users control over personal data (e.g., opt-in features) can build trust. These actions respond to the concerns noted by Indian professionals (Kalbande et al., 2024) and align with global calls for ethical AI governance in libraries.

3. **Improve Accuracy and Usability:**

   While most users found AI easy to use (86.7%), satisfaction with accuracy was only moderate. Libraries should periodically evaluate and fine-tune AI tools (e.g., search relevance, chatbot responses) and establish user feedback loops to detect errors early. Improving user interfaces, ensuring AI suggestions are explainable, and involving librarians in system testing can strengthen both usability and trust.

4. **Broaden AI Service Offerings:**

   Usage patterns show strong engagement with plagiarism detection and writing support tools, but less with innovative library-centered AI applications. Libraries could collaborate with IIT computer science or data science departments to pilot new AI-driven services such as advanced recommendation engines, personalized research dashboards, or virtual reference assistants. This would leverage in-house technical expertise to innovate beyond existing commercial tools.

5. **Monitor User Feedback Continuously:**

   Libraries could set up regular surveys for satisfaction, suggestions and focus groups regularly to indicate how perceptions are shifting as the maturity of the AI service grows. Users' satisfaction data should ideally be compared against any other or global studies where possible (e.g., Mogambi et al., 2025) to attract, deliberate and adaptive improvement strategies over time, while also enabling AI to function with their users.

With these recommendations, IIT libraries may capture positive attitudes toward AI, quell concerns about accuracy and privacy concerns, and nurture trust among the user group, while enhancing experiences or

richness with their engagement. Collectively, these can proactively grow their stature among colleges as an innovative and user-centred knowledge forest for their students and faculty in a world that can include more AR/AI engagement.

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