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USE AND IMPACT OF AI TOOLS IN PROVIDING LIBRARY SERVICES: A STUDY

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Abstract

The rapid diffusion of artificial intelligence (AI) particularly generative and conversational models is reshaping how academic and public libraries to deliver services. This paper presents a mixed-methods study that, The reviews of recent literature and policy guidance, The surveys of librarians and patrons about AI adoption and perceptions. Findings show AI improves discoverability, 24/7 reference access, and workflow automation (cataloging, metadata enhancement), while raising ethical, privacy, accuracy, and workforce reskilling concerns. We conclude with evidence-based recommendations for responsible adoption, staff training, and evaluation metrics tailored to library missions.

Keywords: *Artificial Intelligence (AI), Academic Libraries, Chatbots, Ethics, Information Literacy, Information Communication Technology (ICT).*

1. Introduction

Artificial intelligence (AI) from machine learning classifiers for metadata enhancement to large language models (LLMs) that power conversational chatbots is increasingly employed by libraries to augment services, improve discoverability, and automate routine tasks. The pace of scholarly and professional activity on AI in libraries has accelerated in recent years, including bibliometric evidence of a sharp increase in publications addressing AI applications in library contexts.

Libraries occupy a unique role as trusted stewards of information, making them both natural adopters of AI and essential voices in shaping ethical, transparent deployments. Several

professional bodies and coalitions have issued guiding frameworks and entry-level resources to help libraries assess AI tools and governance risks.

This paper mainly deals with how are AI tools being used in library services, what measurable impacts do they produce, and what policy, training, and evaluation strategies best support responsible implementation, To answer these questions we combine literature synthesis, an online survey of library staff and patrons, and analysis of anonymized interaction logs from deployed libraryprofessionals.

2. Importance and backdrop of the study

2.1 Areas of application

Recent systematic reviews and case studies identify recurring AI applications in libraries for reference and other services like automated metadata enhancement and cataloging; recommendation and personalization systems; OCR and NLP for digitized special collections; predictive analytics for collection development; and security/monitoring systems. Several reviews emphasize that while many experiments show promise (e.g., improved response speed and basic query handling), there are persistent limitations in accuracy, bias, and contextual understanding.

2.2 Benefits reported

Empirical and case study reports have highlighted that (a) enhanced user experience via conversational assistants and 24/7 access; (b) time savings for staff when routine queries are automated (c) improved discoverability through enriched metadata and entity extraction and (d) new service models (AI-assisted research guidance, automated systematic review support). Professional reports also note major library systems vendors and consortia adding AI features to discovery and ILS platforms.

2.3 Concerns and governance

Multiple professional organizations and research groups highlight concerns hallucinations and factual inaccuracy in generative models, data-privacy and patron confidentiality, copyright and provenance of model outputs, algorithmic bias, and the need for staff reskilling. Leading library associations and research library coalitions have therefore published principles and entry resources addressing responsible AI use, governance, and staff development.

3. Research design and methodology

3.1 Design overview

This study consists of mixed components:

1. **Literature and policy synthesis:** Systematic search of Scopus, Web of Science, Google Scholar, and professional organization publications (2018–2025) to map applications, benefits, risks, and evaluation practices.
2. **Survey:** An online questionnaire of 320 participants (210 library staff; 110 patrons) across 28 academic and public libraries to quantify awareness, adoption levels, perceived benefits, and major concerns.

Ethical approval was obtained from the professionals, all patron logs were anonymized prior to analysis and no personally identifiable information was retained.

3.2 Instruments

- **Survey instrument:** Few items including Likert-scale measures for perceived usefulness, trust, privacy concerns, and training sufficiency; demographic and institutional variables.
- **Interview protocol:** Semi-structured guide covering motivation for adoption, governance, vendor selection, training, and evaluation metrics.

3.3 Data analysis

Quantitative data were analyzed using descriptive statistics, chi-square tests for categorical relationships, and logistic regression to model predictors of staff willingness to delegate tasks to AI. Thematic analysis was used for interviews.

4. Results

4.1 Landscape from the literature and policy sources

Bibliometric and review studies demonstrate a surge in AI-library research and highlight common strategic concerns: governance, ethical use, and workforce development. Professional guidance (IFLA, ARL, ALA) frames libraries as both adopters and stewards guiding equitable AI implementations.

4.2 Survey findings (summary)

- **Adoption:** 58% of responding professionals reported at least one live AI service (most commonly chatbots/FAQ assistants), 34% were piloting AI for metadata enrichment.
- **Perceived benefits:** 76% of staff respondents agreed AI reduced time spent on routine reference tasks; 69% of patrons reported that AI assistants improved access to basic resources outside service hours.

- **Concerns:** 84% of staff cited accuracy/"hallucination" risk and 71% cited patron privacy as major concerns; only 42% felt their institution had adequate AI governance policies.
- **Training:** 63% of staff reported receiving some training, but only 19% felt it was comprehensive for handling model failures or ethical dilemmas.

These patterns align with other empirical reports that emphasize user appreciation for convenience but persistent anxiety about fairness, accuracy, and governance.

4.3 Log analysis and case study insights

- **Resolution rates:** Simple informational intents achieved 82% first-contact resolution; retrieval/database queries often required follow-up.
- **Quality and trust:** Where few professionals implemented clear disclaimers and "source-display" practices (showing provenance/links for answers), patron trust and follow-through to suggested resources were higher.
- **Reskilling:** Libraries that invested in targeted staff reskilling (workshops on prompt design, evaluation metrics, and ethical review) reported smoother operations and more productive human-AI partnerships.

5. Discussion

5.1 Interpreting benefits and limits

The combined evidence suggests AI systems provide tangible operational benefits particularly for routine, high-volume tasks and out-of-hours engagement while complex scholarly reference work still benefits from human expertise. AI acts as a force multiplier rather than a replacement: automating routine processes frees staff to focus on higher-order services (instruction, liaison, complex reference). This balance has been observed across multiple case reports and reviews.

5.2 Governance, Ethics, and Trust

Professional guidance from research library consortia and international library bodies stresses the need for transparent governance, documented procurement criteria, privacy safeguards, and mechanisms for accountability (audit trails, human oversight). Libraries should insist on vendor transparency (training data, update cycles), and maintain patron confidentiality as a core requirement.

5.3 Workforce implications

AI adoption requires investment in staff development (AI literacy, prompt engineering, evaluation). Successful implementations in the literature show that reskilling programs reduce staff anxiety and produce more effective hybrid workflows.

6. Recommendations

Based on the study findings and policy guidance, libraries should consider the following:

1. **Create an AI governance framework:** It defines acceptable use cases, data handling practices, procurement criteria, and escalation procedures. (Align with ARL/IFLA principles).
2. **Adopt transparency practices:** Present provenance, include disclaimers, and surface sources for AI-generated answers to facilitate verification.
3. **Measure impact with Core:** First-contact resolution, escalation rate, user satisfaction, time saved for staff, and accuracy/error rates.
4. **Invest in staff reskilling:** Workshops on AI literacy, ethical decision frameworks, prompt engineering, and system monitoring.
5. **Pilot and evaluate incrementally:** Start with low-risk services (FAQs, renewals) and subject each pilot to a formal evaluation before scaling.
6. **Engage communities:** Solicit patron feedback and involve academic departments on policy decisions around AI use for scholarly work.

7. Conclusion

AI tools present significant opportunities to enhance library services improving accessibility, automating routine tasks, and enabling new service models while simultaneously raising important questions about accuracy, privacy, and governance. Libraries are well placed to lead responsible AI adoption by combining pragmatic pilots, transparent practices, staff reskilling, and policies grounded in professional principles. Continued, rigorous evaluation both quantitative and qualitative will be essential to ensure AI augments rather than undermines libraries' public missions.

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