

Artificial Intelligence Adoption in Library and Information Science Research: Opportunity or Extinction

Hamza ABBA

Department of Library and Information
Science,

Ahmadu Bello University, Zaria
Zaria, Nigeria

abbahamza2017@gmail.com

Rukkayya Yunusa MOHAMMED

Bilya Sanda Library, Al-Qalam
University, Katsina State

Katsina, Nigeria

rmylofty@gmail.com

Abdullahi HUSSAINI

Distance Learning Center,
Ahmadu Bello University, Zaria
Zaria, Nigeria

marxisdul@gmail.com

Abstract - The rapid proliferation of artificial intelligence (AI) technologies presents Library and Information Science (LIS) with a fundamental paradox and extraordinary opportunities for innovation alongside existential challenges to traditional practice. This paper examines the transformative impact of AI adoption in LIS research, analyzing both the revolutionary benefits and potential abuses that could reshape the profession's future. Through comprehensive analysis of current literature, this study reveals that AI integration offers substantial advantages including enhanced information retrieval, automated cataloging, intelligent recommendation systems, and sophisticated research analytics capabilities. However, significant concerns emerge regarding algorithmic bias, privacy violations, job displacement, intellectual property issues, and the erosion of human expertise in information mediation. The paper argues that LIS professionals stand at a critical juncture where strategic AI adoption can amplify human capabilities and democratize information access, but unreflective implementation risks undermining core professional values and competencies. Rather than facing extinction, the LIS profession must embrace AI as a collaborative tool while maintaining essential human judgment, ethical oversight, and information literacy guidance. The study concludes with strategic recommendations emphasizing responsible AI integration, professional development, and the evolution of LIS roles toward AI-augmented information stewardship that preserves human agency in knowledge creation and dissemination.

Keywords: Artificial intelligence, ethics, information science, library science, professional development.

I. INTRODUCTION

In an era when artificial intelligence can generate human-like text, curate personalized content, and process vast datasets within seconds, library and information science professionals find themselves questioning whether they are witnessing the dawn of unprecedented opportunity or the twilight of their profession's relevance. The integration of artificial intelligence into Library and Information Science (LIS) research represents one of the most significant paradigms shifts in the field's history, fundamentally challenging traditional approaches to information organization, retrieval, and dissemination while simultaneously offering

transformative possibilities for enhancing scholarly inquiry and professional practice. Recent systematic literature reviews have revealed that technological challenges, skills and knowledge barriers, financial challenges, organizational and cultural barriers represent significant obstacles for librarians seeking to adopt AI applications in libraries, highlighting the complex nature of this technological transition [7; 14].

Library and Information Science research has traditionally relied on human expertise, manual processes, and established methodological frameworks to address information organization, user behavior analysis, and knowledge management challenges. However, the emergence of sophisticated AI technologies is revolutionizing these foundational research processes, offering unique capabilities for data access, data collection, data analysis, pattern recognition, and automated content processing [12]. AI integration improves user satisfaction by streamlining access to resources and providing librarians with tools for collection management, information retrieval, and data-driven decision-making, enabling analysis of user behavior and trends while optimizing resource allocation and collection development [7]. This technological transformation extends beyond mere tool adoption to encompass fundamental changes in how LIS researchers conceptualize problems, gather evidence, and generate knowledge within the discipline [11].

The current landscape of LIS research demonstrates increasing recognition of AI's potential to enhance scholarly productivity and research quality across multiple domains [14]. This growing body of literature reveals that AI applications in LIS research span diverse areas including bibliometric analysis, user behavior prediction, automated metadata generation, intelligent search systems, and predictive modeling for collection development. The sophistication of these applications suggests that AI is not merely augmenting existing research processes but creating entirely new ways of conducting research and investigative possibilities within the field of LIS especially in research context [9; 4]

However, the rapid integration of AI into LIS research raises profound questions about the profession's future identity and core competencies. AI-driven tools will empower researchers with sophisticated analysis capabilities, with libraries developing into fully integrated e-learning environments that

provide citation analysis, intelligent search capabilities, and aid with literature reviews [4]. While these capabilities represent significant advances in research efficiency and analytical power, they also challenge traditional notions of librarians' expertise, professional jurisdiction, and the unique value proposition that LIS professionals bring to information environments. The central question facing the field is whether AI adoption represents an evolutionary opportunity that enhances professional capabilities or a disruptive force that threatens to render traditional LIS competencies obsolete, ultimately determining whether the profession embraces transformation or faces potential extinction in an increasingly automated information landscape [4].

II. OBJECTIVES OF THE STUDY

The following are the objectives of the paper:

1. To identify the Impact and Benefits of Artificial Intelligence Adoption in libraries and information science research
2. To find out the abuses/misuse of Artificial Intelligence Adoption in libraries and information science research

III. LITERATURE REVIEW

The following reviews were based on the objectives:

A. Impact and Benefits of Artificial Intelligence Adoption in Libraries and Information Science Research

The integration of artificial intelligence into Library and Information Science research has generated substantial benefits across multiple operational and research domains, fundamentally transforming how information professionals' approach scholarly inquiry and service delivery. Bibliometric analysis reveals that AI research in academic libraries has experienced significant growth, with the period from 2011 to 2020 recording the highest citation rates of 550.9 cited references per year, and the years 2021-2023 showing continued expansion with 770 and 256.6 cited references respectively [5]. This proliferation of research activity demonstrates the field's recognition of AI's transformative potential and the growing scholarly engagement with AI applications in library contexts.

AI-powered research tools have revolutionized information retrieval and discovery processes, enabling LIS researchers to conduct more comprehensive and sophisticated analyses of information behaviors and patterns [5; 1]. Cataloging and research represent major areas in librarianship where artificial intelligence can automate processes and potentially improve outcomes, though librarians continue grappling with AI's impact on fundamental professional roles, user privacy, and information literacy [1]. The automation capabilities of AI systems allow researchers to process vast datasets, identify emerging trends, and generate insights that would be impossible through traditional manual analysis methods,

significantly enhancing the scope and depth of LIS research investigations [1; 14].

Artificial intelligence has also transformed user experience research within library and information science, providing sophisticated tools for analyzing user behavior, preferences, and satisfaction patterns [7]. The integration of Artificial Intelligence into Library and Information Science services has brought about significant transformations in how libraries operate and serve their communities [6]. These transformations include personalized recommendation systems, intelligent chatbots for reference services, and predictive analytics that help libraries anticipate and meet evolving user needs more effectively [2; 11].

Research processes innovations enabled by AI have expanded the analytical capabilities available to LIS researchers, allowing for more sophisticated quantitative and qualitative research approaches. Advanced machine learning algorithms enable researchers to identify patterns in large-scale bibliographic data, conduct sentiment analysis of user feedback, perform automated content analysis of textual materials, and develop predictive models for various library and information science phenomena. These methodological enhancements have elevated the rigor and scope of LIS research while providing new tools for addressing complex research questions that were previously difficult or impossible to investigate systematically [4]

B. Abuses and Misuse of Artificial Intelligence Adoption in Libraries and Information Science Research

Despite the numerous benefits of AI integration, significant concerns have emerged regarding the potential abuses and misuses of artificial intelligence in Library and Information Science research, raising critical questions about ethics, accuracy, and professional integrity. Libraries appear prepared to adopt AI and offer training on intellectual property protection, but face serious challenges regarding transparency, data security, plagiarism detection, and concerns about job losses, with no major ethical policies currently in place [6; 17]. These ethical gaps create vulnerabilities that could undermine the integrity of LIS research and professional practice if not adequately addressed.

Algorithmic bias represents one of the most serious concerns regarding AI misuse in LIS research, potentially perpetuating or amplifying existing inequalities in information access and representation. Central issues that librarians face with AI services include algorithmic bias, where AI systems can inherit biases present in the data used to train them, requiring caution about potential biases in datasets [9; 12]. This bias can manifest in recommendation systems that favor certain demographic groups, search algorithms that marginalize specific communities, or research tools that reflect historical prejudices embedded in training data, ultimately compromising the objectivity and inclusivity that are fundamental to LIS professional values [6].

Privacy violations and data security concerns present significant risks when AI systems are improperly

implemented or inadequately governed in library research contexts. A scoping review reveals that risks associated with AI technologies in academic libraries may include privacy violations, algorithmic bias caused by bad data, reduction of transparency and accountability, and job losses [15; 16]. These privacy concerns are particularly acute in research contexts where sensitive user data, browsing patterns, and personal information may be processed by AI systems without adequate consent or security protections.

The phenomenon of AI hallucinations and misinformation generation poses serious threats to research integrity and information accuracy in LIS contexts. Issues like AI "hallucinations" that generate false information can mislead users, as demonstrated in legal and academic contexts, with libraries facing challenges from AI-generated false citations that affect research and academic integrity (Robinson, 2018). These inaccuracies can propagate through research databases, contaminate scholarly literature, and undermine the reliability of information resources that libraries are responsible for maintaining and curating [16].

Professional displacement and the erosion of human expertise represent long-term risks associated with over-reliance on AI systems in LIS research and practice. Research findings indicate that institutions face serious challenges regarding transparency, data security, plagiarism detection, and concerns about job losses related to AI implementation [9; 3]. The risk extends beyond job displacement to include the potential loss of critical thinking skills, information literacy competencies, and the nuanced judgment that human information professionals bring to complex research and service situations [8].

Ethical considerations regarding transparency and accountability in AI-driven research processes present ongoing challenges for maintaining professional standards and user trust. Librarians deploying AI-powered recommendation systems must address ethical considerations including transparency in how recommendations are generated and mitigating biases that may inadvertently affect suggestions, ensure user trust while implement bias mitigation strategies [10; 3]. The lack of transparency in AI decision-making processes can undermine the principles of intellectual freedom, equal access, and informed consent that are central to LIS professional ethics and research integrity.

IV. CONCLUSION

The examination of artificial intelligence adoption in Library and Information Science research reveals that rather than facing extinction, the LIS profession stands at a critical evolutionary juncture where strategic AI integration can amplify human capabilities and expand professional impact while preserving essential human judgment and ethical oversight. While AI technologies offer extraordinary capabilities for data access, data collection, data analysis, information retrieval, and research automation that can significantly advance scholarly productivity, documented concerns regarding algorithmic bias, privacy violations, and professional displacement underscore the imperative for thoughtful, ethical implementation that maintains human

agency in information stewardship. The path forward requires LIS professionals to embrace AI as a collaborative tool rather than replacement technology, developing new competencies that leverage AI capabilities while preserving core professional values of intellectual freedom, information literacy, and equitable access. Through establishing robust ethical frameworks, investing in professional development, and maintaining focus on human-centered information services, Library and Information Science can transform the AI revolution from a potential threat into a catalyst for professional renewal and expanded societal impact, with the profession's survival depending on adaptive leadership, ethical practice, and the continued relevance of human expertise in an increasingly automated information environment.

V. SUGGESTIONS/WAY FORWARDS

1. Academic programs in Library and Information Science must incorporate comprehensive AI education into their curricula, ensuring that future professionals graduate with both technical competency and critical understanding of AI applications, limitations, and ethical implications in information environments.
2. LIS Professional organizations (IFLA, LRCN and NLA) in collaboration with Library and Information Science institutions should develop field-wide and robust ethical standards and governance structures that will guide responsible AI adoption while preserving core LIS values of intellectual freedom, equal access, and integrity in research contexts.
3. Comprehensive training programs should be provided by the concerned authorities including professional bodies to enhance AI literacy among LIS professionals, covering both technical understanding and ethical implications of AI technologies. These programs should include hands-on experience with AI tools, critical evaluation of AI outputs, understanding of algorithmic bias, and strategies for human-AI collaboration.
4. The professional bodies should engage actively in policy development processes at institutional, professional, and governmental levels to ensure that AI regulations and standards reflect the unique needs, values, and responsibilities of the library and information science profession while protecting user rights and professional autonomy.
5. Professional associations, library schools and educational institutions should create formal networks for sharing AI experiences, best practices, challenges, and solutions across the LIS community, these networks should facilitate peer learning, collaborative problem-solving, and the development of shared resources for AI implementation while building collective capacity for addressing common challenges and advancing field-wide knowledge about effective AI integration in library and information science research and practice.

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