



UTILISATION OF ARTIFICIAL INTELLIGENCE FOR BIBLIOGRAPHIC CONTROL: A SYSTEMATIC LITERATURE REVIEW

Ifeyinwa. J. Udumukwu, PhD, CLN

Donald Ekong Library, University Of Port Harcourt Rivers State

ifeyinwaudumukwu@gmail.com

Victoria Chukwu Nwali PhD, CLN

Ebonyi State University Abakaliki Ebonyi State

Victoriachukwunwali@gmail.com

Abstract

Artificial Intelligence (AI) is reshaping bibliographic control practice in academic libraries worldwide, yet its diffusion across university libraries remains uneven and under-examined. This paper presents a systematic review of the literature on the utilisation of AI for bibliographic control in university libraries. Guided by the Technology Acceptance Model (TAM), the review synthesises empirical and conceptual studies published between 2019 and 2025 on four discrete dimensions: librarians' awareness of AI tools for bibliographic control; the technical capability and actual utilisation of AI in cataloguing operations; the perceived benefits of AI adoption for bibliographic quality and efficiency; and the institutional policy and governance challenges that shape AI integration. The review finds a recurring pattern across the literature in which awareness of AI consistently outpaces utilisation, a gap attributable less to professional resistance than to structural constraints in funding, infrastructure, training, and policy. The paper argues that closing this gap requires coordinated action by university management, national higher-education regulatory bodies, and library professional associations on capacity building, infrastructure investment, and the development of governance frameworks for AI-enabled cataloguing. The paper concludes by identifying specific gaps in the literature and proposing a research agenda for future empirical work.

Keywords: Artificial Intelligence, Bibliographic Control, Cataloguing, Technology Acceptance Model, Systematic Review

Introduction

Bibliographic control is the systematic process by which library and information professionals describe, classify, and provide standardised access points to recorded knowledge, enabling users to locate, identify, and retrieve materials regardless of format or location (Taylor & Joudrey, 2018). For decades, this function has relied on internationally codified standards — the Anglo-American Cataloguing Rules (AACR2), Resource Description and Access (RDA), the MACHine-Readable Cataloguing (MARC21) format, and the Library of Congress Subject Headings (LCSH) — applied through the professional judgement of trained cataloguers (Taylor & Joudrey, 2018). The emergence of Artificial Intelligence (AI) encompassing machine learning,



natural language processing, expert systems, and robotic process automation has introduced new possibilities for automating elements of this work, including metadata generation, subject heading assignment, authority control, and quality assurance (Singh, Kirad & Arya, 2023; Russell & Norvig, 2020).

Internationally, the uptake of AI in bibliographic control has moved from experimentation to operational deployment. The Library of Congress has piloted machine learning models for metadata enrichment (Allen, 2023), OCLC has embedded AI features into WorldShare for cataloguing and authority work (OCLC WorldShare AI, 2024), and generative AI tools such as ChatGPT have been tested for drafting subject headings on electronic theses and dissertations (Chow, Kao & Li, 2024). The International Federation of Library Associations and Institutions (IFLA) has likewise convened sessions specifically examining the implications of AI and machine learning for cataloguing practice (IFLA, 2023). These developments signal that AI is no longer a peripheral curiosity in bibliographic work but an emerging feature of mainstream cataloguing infrastructure in well-resourced library systems.

Within Africa, however, the picture is markedly more uneven. Masenya and Ngulube (2021) found that AI-supported digital preservation in South African academic libraries remains constrained by infrastructural and funding limitations, while a broader scoping review by Kulkanjanapiban et al. (2025) identified a shift in the global literature from conceptual discussion toward practical AI deployment, but noted that this shift has been slower and less documented in African contexts. In Nigeria, Idiodi and Urhiewhu (2023) examined AI adoption across the reference, readers' services, cataloguing, and serial control units of academic libraries and identified technical knowledge gaps, inadequate funding, and weak government support as the dominant constraints. Studies focused on specific Nigerian university libraries similarly report that librarians often equate AI proficiency with general computer literacy rather than with cataloguing-specific competence (Achugbue, 2024), and that LIS professionals demonstrate high awareness of AI-powered tools for research-related tasks but lack the institutional support needed to apply them in practice (Akwang & Ebiwolate, 2024).

A close reading of this literature reveals a recurring and unresolved tension: studies consistently report that librarians in academic libraries are aware of AI and its potential applications, yet actual utilisation of AI for core bibliographic functions cataloguing,



classification, authority control, and metadata enrichment remains marginal (Nwafor, 2025; Akpukpu & Osawe, 2024; Idiodi & Urhiewhu, 2023). What is less clear from the existing literature is why this awareness-utilisation gap persists, whether it stems primarily from technical capability deficits, from the absence of institutional policy and governance structures, or from a combination of both, and what each of these dimensions implies for intervention. Existing studies tend to treat awareness, capability, benefits, and institutional barriers as a single undifferentiated cluster of "challenges," which obscures the distinct policy responses each dimension requires. This paper addresses that gap by systematically reviewing the literature on AI utilisation for bibliographic control in university libraries across four discrete and separately examined dimensions: awareness of AI tools, technical capability and utilisation, perceived benefits, and institutional policy and governance.

Objectives of the Study

This study is guided by the following specific objectives:

1. Examine the level of awareness of AI tools for bibliographic control among librarians in university libraries.
2. Assess the technical capability for, and extent of, AI utilisation in cataloguing and bibliographic control operations in university libraries.
3. Evaluate the perceived benefits of AI adoption for bibliographic control in university libraries, drawing on evidence across the literature.
4. Examine the institutional policy and governance challenges that shape and currently constrain AI integration into bibliographic control in university libraries.

Methodology

This paper adopts a systematic literature review (SLR) approach, following the general principles of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework adapted for a conceptual, library and information science context (Page et al., 2021). Literature was identified through structured searches of Google Scholar, African Journals Online (AJOL), and institutional repositories, using combinations of the search terms "artificial intelligence," "bibliographic control," "cataloguing," "academic libraries," and "university



libraries." The search was restricted to publications between 2019 and 2025 to capture the period of accelerated global AI adoption in libraries following advances in generative AI and machine learning. Sources were included if they addressed AI applications in cataloguing, bibliographic control, or related technical services in academic library settings, with priority given to studies offering empirical evidence from university library contexts, supplemented by globally influential studies that establish the technical and conceptual baseline for AI in cataloguing. Editorial pieces, non-peer-reviewed blog content unrelated to institutional AI initiatives, and studies focused exclusively on AI in reference or instructional services (rather than bibliographic control) were excluded. A total of 10 sources met the inclusion criteria and form the basis of this review, summarised in Table 1.

Table 1: Summary of Reviewed Studies on AI and Bibliographic Control

Author(s) & Year	Geographic Context	Focus of Study	Key Finding
Idiodi & Urhiewhu (2023)	Nigeria (national)	AI adoption across reference, readers' services, cataloguing, and serial control units	Technical knowledge gaps, funding constraints, and weak government support hinder AI adoption
Nwafor (2025)	South-East Nigeria	Cataloguers' motivation toward AI utilization in cataloguing	High awareness of AI in the cataloguing room, but adoption had not yet occurred
Achugbue (2024)	South-South Nigeria	AI competencies among university librarians	AI proficiency associated with basic computing rather than cataloguing-specific expertise
Akpukpu & Osawe (2024)	Edo State, Nigeria	AI adoption for library service delivery	Funding and training deficits limit AI adoption to anecdotal, non-systematic use
Akwang & Ebiwolate (2024)	South-South Nigeria	Awareness, competencies, and institutional support for AI-powered research writing tools	High awareness but low competency and weak institutional support among LIS professionals
Enakrire & Oladokun (2024)	African university libraries (multi-country)	AI as enabler of future library services and librarian readiness	AI could perform key library routines, but librarian readiness is constrained by skills gaps
Masenya & Ngulube (2021)	South Africa	AI and digital preservation in academic libraries	Infrastructural and funding limitations constrain AI-



Author(s) & Year	Geographic Context	Focus of Study	Key Finding
			supported preservation work
Breeding (2023)	North America / Europe (global)	AI applications in library systems and cataloguing platforms	AI tools (e.g., OCLC, ExLibris) improve cataloguing accuracy, consistency, and processing speed
Brzustowicz (2023)	United States	Generative AI (ChatGPT/CatGPT) in library cataloguing	Generative AI can assist in drafting catalogue entries but requires human oversight for accuracy
Kulkanjanapiban et al. (2025)	Global (scoping review, 2015–2025)	AI-driven metadata enrichment and interoperability	Shift from conceptual exploration to practical AI deployment, with growing attention to ethics and readiness

Source: *Compiled by the author(s) from reviewed literature*

Theoretical Framework

This review is anchored in the Technology Acceptance Model (TAM), originally proposed by Davis (1989) and extended by Davis and Venkatesh (1996). TAM posits that the adoption of a new technology is shaped by two core constructs: Perceived Usefulness (PU), the degree to which a person believes a technology will enhance their work performance, and Perceived Ease of Use (PEOU), the degree to which a person believes the technology will be free of effort to use. Both constructs shape attitudes toward the technology, which in turn influence behavioural intention and, ultimately, actual use. TAM has been widely applied in library and information science research to explain technology adoption behaviours among information professionals.

Figure 1 illustrates how TAM is applied in this review. Perceived Usefulness corresponds to the benefits dimension examined in this paper the extent to which AI is seen to improve accuracy, speed, and metadata quality in bibliographic work. Perceived Ease of Use corresponds to the technical capability dimension whether librarians have the training, familiarity, and technical support needed to use AI tools confidently. Both constructs are shaped by external variables, which in this review correspond to the institutional policy and governance dimension funding, infrastructure, institutional policy, and power supply. The model predicts that even where Perceived Usefulness is high, weak Perceived Ease of Use and unfavourable external variables



will suppress actual utilisation a prediction that, as the following sections demonstrate, is consistently borne out in the literature reviewed.

Figure 1: Conceptual Application of the Technology Acceptance Model to AI Utilisation for Bibliographic Control

Perceived Usefulness of AI for bibliographic tasks (accuracy, speed, metadata quality)	→ Attitude Toward AI Adoption →	Behavioural Intention to Use AI in Cataloguing Operations
Perceived Ease of Use of AI tools (training, interface familiarity, technical support)	↑ Moderated by enabling conditions ↑	Actual AI Utilization in Bibliographic Control
External Variables: funding, infrastructure, institutional policy, training availability, power supply		

Source: Adapted from Davis (1989) and Davis & Venkatesh (1996), as applied by the author(s).

Thematic Synthesis of the Literature

Awareness of AI Tools for Bibliographic Control

The reviewed literature consistently reports moderate-to-high awareness of AI and its potential applications among academic librarians, even where such awareness has not translated into use. Akwang and Ebiwolate (2024), surveying LIS professionals, found high awareness of AI-powered tools, particularly those associated with research writing and general productivity, though awareness of cataloguing-specific AI applications — such as automated MARC record generation or AI-assisted authority control — was less consistently documented. Achugbue (2024) similarly found that librarians were familiar with AI as a general concept but tended to associate it with basic computing literacy rather than with professional cataloguing applications, suggesting that awareness in this context is broad but not deep: librarians know AI exists and has relevance to their work in general terms, without necessarily knowing which specific tools apply to bibliographic control or how those tools function.

This pattern of broad-but-shallow awareness recurs in Idiodi and Urhiewhu’s (2023) national survey, which found that while AI was a recognised topic of professional discussion, in-depth knowledge of AI applications specific to cataloguing and serial control was limited. Taken together, these studies suggest that awareness-raising efforts — through professional conferences,



library association activities, and continuing education — have succeeded in establishing AI as part of the professional conversation, but have not yet produced the tool-specific literacy that would allow librarians to identify, evaluate, and select AI applications appropriate for their cataloguing workflows.

Technical Capability and Utilisation of AI in Cataloguing Operations

In contrast to the moderate awareness documented above, the literature on actual AI utilisation and technical capability in academic libraries presents a far more constrained picture. Nwafor (2025), studying cataloguers in public university libraries, found that despite awareness of AI tools relevant to the cataloguing room, actual adoption had simply not occurred at the time of the study. Akpukpu and Osawe (2024) similarly found that in the academic libraries studied, whatever AI use existed was anecdotal and individual rather than systematic or institutionally supported — librarians might experiment informally with generative AI tools, but no library had integrated AI into its formal cataloguing workflow.

This contrasts sharply with the global examples discussed earlier, where AI is embedded in operational cataloguing platforms (Breeding, 2023; OCLC WorldShare AI, 2024). The gap is best understood as a capability gap rather than simply an attitudinal one: technical capability requires not only awareness that AI tools exist, but also access to AI-enabled library management systems, technical staff able to configure and maintain such systems, reliable computing infrastructure, and hands-on training in specific tools. None of the reviewed studies report the presence of all these conditions simultaneously in any institution. Enakrire and Oladokun (2024), reviewing African university libraries more broadly, reached a parallel conclusion: AI could in principle perform a range of library routines, but librarian readiness — understood as the practical, hands-on capability to operate AI tools — remained the binding constraint.

Perceived Benefits of AI Adoption for Bibliographic Control

Where the literature is most consistent is on the benefits that AI is expected, or has been demonstrated, to deliver for bibliographic control. From the global literature, Breeding (2023) documents measurable gains in cataloguing accuracy, consistency, and processing speed where AI-enabled systems have been deployed, while the OCLC WorldShare AI (2024) initiative reports improvements in metadata quality control through automated consistency checking. Chow, Kao



and Li (2024) demonstrate that generative AI tools can produce usable draft subject headings for electronic theses and dissertations, reducing the initial workload on cataloguers, albeit with a continuing need for professional review.

Within the broader literature on AI in academic libraries, the benefits dimension is often discussed in anticipatory rather than demonstrated terms: librarians and library administrators recognise, in principle, that AI could reduce cataloguing backlogs, improve the consistency of subject headings, and accelerate the processing of new acquisitions (Akinyemi, 2023; Idiodi & Urhiewhu, 2023), but where actual utilisation remains low, these benefits have not yet been empirically realised or measured within the institutions studied. This creates an important asymmetry: the perceived-benefits literature is dominated by findings from well-resourced systems abroad, while studies of less-resourced contexts largely report expectations rather than outcomes. This asymmetry itself constitutes a gap that future empirical work should address — namely, whether the benefits documented in better-resourced contexts would materialise similarly in less-resourced settings if the technical capability and governance constraints discussed in the following sections were addressed.

Institutional Policy and Governance Challenges

The fourth and final dimension examined in this review concerns institutional policy and governance — a distinct conceptual category from technical capability, even though the two are often conflated in the literature. Technical capability concerns whether the tools, infrastructure, and trained personnel exist; institutional policy and governance concerns whether the organisation has formally decided to adopt AI, allocated responsibility for its use, and established rules, standards, or oversight mechanisms governing that use. Enakrire and Oladokun (2024) found that formal policy frameworks for AI integration are largely absent across African university libraries, meaning that even where pockets of technical capability exist, there is no institutional mandate or governance structure directing their use toward bibliographic control specifically.

In the Nigerian context specifically, Idiodi and Urhiewhu (2023) point to the absence of government-level policy direction as a structural barrier operating above the level of individual institutions: without national guidance from higher-education regulatory bodies, individual university libraries have little incentive or mandate to develop their own AI governance frameworks. At the institutional level, this manifests as an absence of AI committees, the lack of



designated responsibility for AI-related decisions within library management structures, and the absence of guidelines on data governance, quality assurance, or ethical use of AI-generated bibliographic data — concerns that Kulkanjanapiban et al. (2025) identify as an emerging theme in the global literature but one that remains largely unaddressed in the contexts reviewed here. The governance gap is therefore not merely a subset of the funding or infrastructure problem; it is a distinct organisational deficit that would persist even if funding and infrastructure constraints were resolved, because no institution in the reviewed literature reports having decided, as a matter of policy, how AI should be governed within its bibliographic control function.

Conclusion

This review has examined the literature on AI utilisation for bibliographic control in university libraries across four distinct dimensions: awareness, technical capability and utilisation, perceived benefits, and institutional policy and governance. Across these dimensions, a consistent picture emerges. Librarians in the contexts reviewed possess broad general awareness of AI but limited tool-specific knowledge relevant to cataloguing; technical capability for AI-enabled bibliographic work is minimal, with whatever use exists being individual and informal rather than institutional; benefits are widely anticipated based on evidence from better-resourced systems but have not been locally demonstrated in less-resourced settings; and institutional governance frameworks for AI in library operations are, with rare exception, absent altogether. Within the Technology Acceptance Model framework adopted in this review, these findings indicate that the persistent awareness-utilisation gap documented across the literature is best explained by deficits in Perceived Ease of Use and in the external variables — infrastructure, training access, and institutional policy — that shape both core TAM constructs, rather than by any deficit in Perceived Usefulness. Closing this gap will therefore require coordinated, differentiated action: continuing professional education led by library associations and library schools to deepen tool-specific AI literacy; capital investment by university management in AI-enabled library management systems and supporting digital infrastructure; the formal establishment of institutional AI governance structures, including designated committees and data-quality policies; and the development, by national higher-education regulatory bodies, of policy frameworks providing direction and minimum standards for AI integration in university library bibliographic control functions. Future research would be best directed toward institution-level case studies of AI governance readiness



and toward comparative evaluations of whether AI-driven cataloguing benefits documented elsewhere are realisable under less-resourced conditions once capability and governance constraints are addressed.

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