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THE FUTURE OF CATALOGUING AND CLASSIFICATION IN NIGERIAN ACADEMIC LIBRARIES: OPPORTUNITIES AND CHALLENGES OF ARTIFICIAL INTELLIGENCE

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Abstract

The emergence of Artificial Intelligence (AI) has transformed information management practices across various sectors, including academic libraries. This study examines the future of cataloguing and classification in Nigerian academic libraries with emphasis on the opportunities and challenges associated with the adoption of AI technologies. The paper adopts a descriptive and analytical approach through the review of relevant literature on AI-driven cataloguing systems, metadata automation, machine learning, and digital library transformation. Findings revealed that AI technologies improve cataloguing efficiency, metadata consistency, information retrieval, and user access to digital resources. The study also identified several challenges affecting AI implementation in Nigerian academic libraries, including inadequate funding, poor infrastructure, unstable electricity supply, insufficient technical expertise, resistance to technological change, and lack of policy frameworks. The study concludes that although AI possesses the capacity to revolutionize cataloguing and classification practices in Nigerian academic libraries, successful implementation depends on strategic investment in infrastructure, staff training, and institutional support. The paper recommends continuous professional development for librarians, increased funding for library automation, and the adoption of hybrid cataloguing systems that combine human expertise with AI technologies.

Keywords: Artificial Intelligence, Cataloguing, Classification, Academic Libraries, Metadata, Library Automation, Nigeria

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Introduction

Cataloguing and classification are fundamental technical services in libraries that ensure effective organization, retrieval, and accessibility of information resources. Traditionally, cataloguing and classification processes in Nigerian academic libraries have relied heavily on manual procedures and conventional library automation systems. However, the rapid growth of digital information resources and technological advancement has increased the need for more intelligent and automated systems capable of handling large volumes of bibliographic data efficiently.

Artificial Intelligence (AI) refers to computer systems designed to perform tasks that normally require human intelligence, such as learning, reasoning, problem-solving, and decision-making. In libraries, AI technologies are increasingly being applied in metadata generation, automated indexing, cataloguing, information retrieval, natural language processing, and digital resource management (Cox, Pinfield, & Rutter, 2019). AI-driven cataloguing systems are capable of reducing repetitive manual tasks, improving bibliographic accuracy, and enhancing user access to information resources.

Globally, academic libraries are gradually integrating AI technologies into technical services to improve operational efficiency and service delivery. Nigerian academic libraries are also beginning to explore AI applications despite numerous infrastructural and technological challenges. Studies have shown that AI technologies can significantly improve cataloguing and classification services by automating metadata extraction, subject indexing, and bibliographic organization (Mahmud, 2024).

The future of cataloguing and classification in Nigerian academic libraries therefore depends largely on the extent to which AI technologies can be effectively adopted and integrated into library operations. This paper examines the opportunities presented by AI in cataloguing and classification as well as the major challenges hindering its implementation in Nigerian academic libraries.

Concept of Artificial Intelligence in Libraries

Artificial Intelligence involves the development of intelligent computer systems capable of simulating human cognitive processes. AI technologies include machine learning, robotics, expert systems, natural language processing, and deep learning. In academic libraries, AI applications are increasingly used for automated cataloguing, digital reference services, metadata generation, collection management, and user support services.

According to Asemi and Asemi (2018), AI technologies have transformed library systems through intelligent information retrieval, automated indexing, and smart library services. Similarly, Das and Islam (2021) observed that AI-based cataloguing systems improve efficiency and accuracy in metadata management, especially in digital libraries.

In Nigerian academic libraries, AI adoption remains at an emerging stage. However, there is growing awareness among librarians regarding the importance of intelligent systems in enhancing technical and user services. Studies indicate that AI can support cataloguers in performing repetitive tasks while allowing librarians to focus on more specialized professional responsibilities.

Opportunities of Artificial Intelligence in Cataloguing and Classification

Improved Cataloguing Speed and Efficiency

One of the major opportunities provided by AI is the automation of repetitive cataloguing tasks. AI-driven

systems can automatically generate bibliographic records, assign subject headings, and classify information resources within a shorter time compared to traditional methods. This significantly improves operational efficiency in academic libraries.

Mahmud (2024) noted that AI technologies enhance cataloguing productivity by automating metadata extraction and bibliographic organization. Similarly, Ogungbenro et al. (2025) found that machine learning and natural language processing improve metadata consistency and information retrieval in Nigerian academic libraries.

Enhanced Information Retrieval

AI technologies improve search precision and user access to information resources through intelligent retrieval systems. AI-powered catalogues can understand user search behavior, predict information needs, and provide personalized recommendations. This enhances user satisfaction and research efficiency in academic libraries.

Cox et al. (2019) explained that intelligent library systems support semantic search and advanced discovery tools capable of improving user experience. AI applications also enable multilingual search capabilities and contextual information retrieval.

Automated Metadata Generation

AI systems can automatically generate metadata from digital resources such as e-books, journals, audio files, and multimedia materials. This reduces the workload of cataloguing librarians and ensures consistency in bibliographic records.

Studies have shown that AI technologies such as machine learning and natural language processing improve metadata quality and reduce human errors in cataloguing operations (Tella & Oluwole, 2023).

Improved Digital Resource Management

The increasing growth of digital libraries requires efficient management of electronic resources. AI technologies support automated indexing, digital preservation, and content organization in institutional repositories and digital libraries.

AI-driven cataloguing systems also facilitate interoperability between library databases and improve access to scholarly information resources across institutions.

Support for Research and Academic Activities

AI technologies can support research activities by improving access to scholarly materials and enhancing bibliographic control. Raju and Schoombee (2013) emphasized that digital transformation in academic libraries enhances research support services and knowledge dissemination.

Challenges of Artificial Intelligence in Nigerian Academic Libraries

Inadequate Funding

One of the major barriers to AI implementation in Nigerian academic libraries is inadequate funding. Many academic institutions lack sufficient financial resources to acquire modern AI technologies, digital infrastructure, and automation tools.

Studies have consistently identified poor funding as a major obstacle to library automation and technological innovation in Nigeria (Onuoha, 2006).

Poor Technological Infrastructure

AI systems require stable internet connectivity, reliable electricity supply, high-performance computers, and digital networks. Unfortunately, many Nigerian academic libraries still struggle with poor

ICT infrastructure and unstable electricity.

This infrastructural deficiency limits the effective implementation of AI-driven cataloguing and classification systems.

Lack of Technical Expertise

The successful adoption of AI technologies depends on the availability of skilled librarians and ICT professionals. However, many librarians in Nigerian academic libraries lack adequate AI knowledge and technical competencies required for operating intelligent systems.

Research indicates that continuous staff training and professional development are necessary for effective AI integration in libraries.

Resistance to Technological Change

Some librarians perceive AI technologies as a threat to traditional library practices and professional roles. Resistance to change therefore affects the adoption of intelligent systems in cataloguing and classification units. Eromosele, P. O. & Obande, B. O., (2026). revealed that AI technologies improve cataloguing speed, metadata generation, and bibliographic accuracy in Nigerian academic libraries, although challenges such as poor funding, inadequate skilled personnel, and unstable electricity remain major barriers to implementation

Tella and Oluwole (2023) observed that fear of job displacement and lack of awareness contribute to resistance toward AI technologies among cataloguing librarians.

Ethical and Data Management Issues

AI systems raise concerns regarding data privacy, algorithmic bias, intellectual property rights, and ethical use of information. Academic libraries must therefore develop policies and ethical frameworks guiding AI implementation and digital data management.

The Future of Cataloguing and Classification in Nigerian Academic Libraries

The future of cataloguing and classification in Nigerian academic libraries is likely to involve hybrid systems combining traditional cataloguing expertise with AI-driven technologies. Human cataloguers will continue to play important roles in quality control, contextual interpretation, and decision-making, while AI systems automate repetitive technical processes.

Emerging AI technologies such as machine learning, semantic web technologies, linked data, and natural language processing are expected to transform bibliographic control and metadata management in academic libraries. AI-powered catalogues may also improve interoperability among Nigerian academic libraries and enhance access to global scholarly information resources.

Furthermore, the future of library technical services will require librarians to acquire new digital competencies in AI applications, data analytics, and information technology. Library schools and professional associations must therefore revise curricula and training programs to meet the demands of emerging intelligent library systems.

Conclusion

Artificial Intelligence has the potential to revolutionize cataloguing and classification practices in Nigerian academic libraries through automation, improved metadata management, enhanced information retrieval, and efficient digital resource organization. Despite the enormous opportunities associated with AI technologies, several challenges including inadequate funding, poor infrastructure, insufficient technical expertise, and resistance to technological change continue to hinder effective implementation.

The study concludes that the future of cataloguing and classification in Nigerian academic libraries depends on strategic investment in digital infrastructure, continuous librarian training, supportive institutional policies, and sustainable technological development. AI should therefore be viewed as a complementary tool that supports librarians rather than replacing human expertise in technical services.

Recommendations

1. Academic institutions should increase funding for library automation and AI infrastructure.
2. Librarians should receive regular training on AI technologies and digital cataloguing systems.
3. Nigerian academic libraries should adopt hybrid cataloguing systems that combine human expertise with AI technologies.
4. Government and institutional authorities should improve electricity supply and internet connectivity in academic institutions.
5. Library schools should incorporate AI and digital librarianship courses into their curricula.
6. Professional library associations should organize workshops and conferences on AI applications in libraries.

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