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HARNESSING ARTIFICIAL INTELLIGENCE FOR ENHANCED CATALOGUING EFFICIENCY: A COMPARATIVE STUDY OF GODFREY OKOYE UNIVERSITY LIBRARY AND EVANGEL UNIVERSITY LIBRARY, NIGERIA

BY

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Abstract

Purpose: This study harnesses Artificial intelligence for enhanced cataloguing efficiency. It compared the extent of AI adoption in cataloguing practices at Godfrey Okoye University Library and Evangel University Library, both private university libraries in South-East Nigeria.

Design/Methodology/Approach:This study adopted a comparative case-study design, relying on structured institutional observation and documentation of both libraries cataloguing infrastructure.

Findings: Findings of the study show that Godfrey Okoye University Library operates the Mandarin Library Automation Software, an online integrated cataloguing system, and has adopted AI-supported cataloguing functions such as automated metadata generation, intelligent classification, authority control and AI-enhanced Online Public Access Catalogue (OPAC) search to a very high extent. In contrast, Evangel University Library does not operate any online cataloguing system and has not adopted AI in its cataloguing practices in any form. Findings further revealed that cataloguing in Evangel University Library remains largely manual.

Implication: The study has practical implications for university library management and funding agencies by demonstrating that AI-supported cataloguing can enhance the speed, accuracy, consistency, and retrievability of bibliographic records, while also highlighting the need for sustained investment in automation infrastructure, staff training, system maintenance, and reliable power supply.

Originality/value: the originality of the study lie in its comparative case-study approach, which provides direct institutional evidence by contrasting a library with very high AI adoption against one without an online cataloguing system, thereby offering a practical basis for understanding the relationship between AI adoption and cataloguing efficiency in Nigerian university libraries.

Keywords: Artificial Intelligence, Cataloguing Efficiency, Library Automation, AI Adoption. Online Public Access Catalogue (OPAC), University Libraries.

Introduction

Cataloguing is one of the oldest and most fundamental technical services performed in libraries irrespective of type. It involves the process of describing, organizing and representing library materials in a manner that makes them easy to locate and retrieve. Oso (2024) noted that for decades, cataloguing in

Nigerian academic libraries was carried out manually, using card catalogues and printed classification schemes, a process that was slow, labour-intensive and prone to human error.

However, the emergence of library automation, and more recently Artificial Intelligence (AI) has begun to reshape how cataloguing is done in libraries around the world. According to Cheng (2026), Artificial Intelligence (AI) refers to computer systems that perform tasks that would ordinarily require human intelligence, such as pattern recognition, classification, language processing and decision-making. In the library environment, Reshi, et al. (2026) noted that AI applications support cataloguing through functions such as automated metadata generation, intelligent subject classification, duplicate detection, authority control and AI-enhanced search in the Online Public Access Catalogue (OPAC). A recent study in the Journal of Library Metadata (2025) observed that AI has the capacity to transform cataloguing operations and improve access to information in academic libraries in Nigeria, thereby positioning these libraries as effective knowledge hubs in the digital age.

Despite this global trend, the level of AI adoption among many academic libraries in Nigeria remains uneven. Studies such as Ansari (2026) and Mala (2026) noted that while some academic libraries have integrated automation software with AI-supported features into their cataloguing workflow, many others, particularly libraries in smaller or newly established private universities, continue to rely on manual methods. This unevenness provides a useful basis for comparative investigation, as it allows researchers to examine, side by side, what a library with a high level of AI adoption looks like in practice compared with one that has not adopted AI at all.

Godfrey Okoye University Library, Enugu State, operates the Mandarin Library Automation Software, an online integrated library system that supports AI-assisted cataloguing, circulation and information retrieval. Evangel University Library, Ebonyi State, on the other hand, is yet to operate an online cataloguing system, and cataloguing there is performed through traditional manual methods. This study was therefore designed to compare the two libraries in order to understand how differences in AI adoption translate into differences in cataloguing efficiency.

Statement of the Problem

Despite the growing literature on AI in academic libraries, there remains

limited empirical evidence showing how differences in the level of AI adoption translate into differences in actual cataloguing efficiency within specific Nigerian university libraries. Recent Nigerian studies have generally examined AI adoption broadly across library services or discussed its potential benefits and challenges, rather than providing direct institutional comparisons of libraries operating at markedly different levels of AI-supported cataloguing. For example, recent research on Nigerian academic libraries identifies AI-powered cataloguing and classification as promising applications, but also emphasizes the fragmented nature of adoption and the importance of infrastructure, staff capacity, funding, and institutional support. Furthermore, a recent review of AI in library cataloguing noted that although the literature generally reports positive prospects for AI-assisted metadata creation and maintenance, stronger empirical evidence is still needed to establish performance differences between human-only and AI-assisted cataloguing. This gap makes it necessary to comparatively examine institutions with different levels of AI adoption. Therefore, this study investigates and compares AI-supported cataloguing practices at Godfrey Okoye University Library and Evangel University Library, Nigeria, with particular attention to the extent of AI adoption and its implications for cataloguing efficiency

Objectives of the Study

The following specific objectives guided the study:

1. to determine the level of AI adoption in the cataloguing practices of Godfrey Okoye University Library and Evangel University Library;
2. to compare the cataloguing efficiency in relation to the level of AI adoption in Godfrey Okoye University Library and Evangel University Library;
3. to identify the challenges affecting AI adoption in cataloguing practices in Godfrey Okoye University Library and Evangel University Library

Research Questions

1. What is the level of AI adoption in the cataloguing practices of Godfrey Okoye University Library and Evangel University Library?
2. How does the level of AI adoption in Godfrey Okoye University Library and Evangel University Library affect their cataloguing efficiency?
3. What challenges affect AI adoption in cataloguing practices in Godfrey Okoye

University Library and Evangel University Library?

Methodology

This study adopted a comparative case study design. This design was considered appropriate because the study specifically intended to make an in-depth, side-by-side comparison of two university libraries that differ on the extent of Artificial Intelligence (AI) adoption in cataloguing. This design therefore allows the researcher to examine how the presence or absence of AI-supported cataloguing systems influences cataloguing efficiency within Godfrey Okoye University Library, and Evangel University Library. The study was carried out in Enugu State and Ebonyi State.

The population of the study comprised two selected private university libraries in South-East Nigeria which is Godfrey Okoye University Library, Enugu State, and Evangel University Library, Ebonyi State. The two libraries were purposively chosen because they represent contrasting cases on the variable under investigation. No sampling was made.

Data for the study were obtained through a structured institutional profile of each library's cataloguing infrastructure, drawing on direct knowledge of the two libraries' cataloguing operations. This profile was converted into a structured comparative checklist covering eight standard AI-supported cataloguing indicators commonly reported in the library automation literature: machine-assisted copy cataloguing, automated metadata generation, intelligent classification, bibliographic authority control, AI-enhanced OPAC search, barcode/RFID-linked records, availability of an OPAC, and retrieval/duplication-checking intelligence. Each indicator was rated for each library on a four-point descriptive scale: Not Available, Low, Moderate, and High, culminating in an overall rating of the extent of AI adoption ranging from None to Very High. This procedure allowed the qualitative institutional information available on the two libraries to be systematically compared.

Data were analyzed descriptively. Ratings for the two libraries were compared indicator by indicator, and the pattern of differences was interpreted in relation to cataloguing efficiency, including speed of processing new materials, accuracy of bibliographic records, and ease of retrieval. Because the study is a two case comparison rather than a large sample survey, the findings are presented as an in-depth institutional comparison rather than as statistically generalizable results, consistent with

standard practice in comparative case-study research.

Presentation and Analysis of Results

Institutional Profile of the Two Libraries

Table 1: General institutional profile of Godfrey Okoye University Library and Evangel University Library.

Feature	Godfrey Okoye University Library	Evangel University Library
Location	Ugwuomu-Nike, Enugu State	Akaeze, Ebonyi State
Ownership	Private, faith-based university	Private, faith-based university
Online Cataloguing System	Available – Mandarin Library Automation Software	Not available
General Level of AI Adoption in Cataloguing	Very High	Not Adopted (None)

As shown in Table 1, both institutions are private, faith-based universities in South-East Nigeria, making them broadly comparable in institutional character. However, they differ sharply on the central variable of the study which is Godfrey Okoye University Library operates the Mandarin Library Automation Software as its online cataloguing system, and has adopted AI in its cataloguing practices to a very high extent. In contrast, Evangel University Library has no online cataloguing system, and consequently has not adopted AI in its cataloguing practices at all.

Comparative Assessment of AI-Driven Cataloguing Indicators

Research Question 1: What is the level of AI adoption in the cataloguing practices of Godfrey Okoye University Library and Evangel University Library?

Table 2: ***Comparison on the level of AI adoption in cataloguing practices***

AI-Driven Cataloguing Indicator	Godfrey Okoye University Library	Evangel University Library
Machine-assisted copy cataloguing	High	Not Available
Automated metadata/record generation	High	Not Available
Intelligent classification / subject suggestion	High	Not Available
Bibliographic authority control	Moderate High	Not Available
OPAC with AI-enhanced search	High	Not Available
Barcode/RFID-linked catalogue records	High	Not Available
Online Public Access Catalogue (OPAC)	Available	Not Available
Retrieval/duplication-checking intelligence	High	Not Available
Overall extent of AI adoption	Very High	None

Table 2 indicated a consistent pattern for all eight indicators. Godfrey Okoye University Library, with the assistance of the Mandarin Library Automation Software, scored Moderate-High to High in all AI-assisted cataloging functions evaluated. These functions include automated generation of metadata, intelligent classification, authority control, AI-powered OPAC search, and catalog records connected with RFID. This finding is consistent with Tella, Odunola and Lawal (2023) who found that AI-driven cataloging improves metadata generation, automatic classification, authority control and retrieval accuracy while reducing processing time and cataloging errors.

Contrarily, Evangel University Library was rated Not Available on all the indicators as it lacks an online cataloging system that can be supported by AI functions. This finding is consistent with Ajani et al. (2022) who reported that many Nigerian academic libraries are still at low levels of AI implementation due to inadequate funding, insufficient digital infrastructure and limited technical expertise. Also, Igbo et al. (2024) supported this by identifying digital infrastructure as a prerequisite for AI adoption in academic libraries.

Overall, Godfrey Okoye University Library has adopted AI in cataloguing to a very high extent, whereas Evangel University Library has not adopted AI in cataloguing at all.

Implications for Cataloguing Efficiency

Research Question 2: How does the level of AI adoption in Godfrey Okoye University Library and Evangel University Library affect their cataloguing efficiency?

The utilization of the Mandarin Library Automation Software at Godfrey Okoye University Library offers a platform to catalog newly acquired materials through machine aided copy cataloging and automated metadata generation, thus decreasing the time lag between acquisition and shelf availability considerably. Moreover, the AI-assisted authority control reduces the repetition of subject headings and author entries, thus enhancing the consistency of records. The AI-empowered OPAC enables users to retrieve the materials more quickly through intelligent search suggestions. This is in line with Ayinde et al. (2022) in their systematic review who reported that AI applications in academic libraries help to improve metadata creation, automation of workflow and efficiency in information retrieval.

At Evangel University Library, cataloging is done manually due to the absence of an online cataloging system.

New materials are manually classified, described and recorded. It is slower, prone to errors in subject headings and classification numbers and difficult for users to search as there is no OPAC. This finding is consistent with Ajani et al. (2022) who noted that many Nigerian academic libraries are still poorly prepared for AI integration due to limited automation infrastructure, funding challenges and lack of technical expertise. Therefore, the disparity in AI adoption identified in Table 2 results in a corresponding disparity in cataloging speed, accuracy, consistency and retrievability between the two libraries.

Challenges Affecting AI Adoption

Research Question 3: What challenges affect AI adoption in cataloguing practices in Godfrey Okoye University Library and Evangel University Library?

Godfrey Okoye University Library has adopted artificial intelligence to a very high extent but to sustain this level of adoption, constant financial and institutional support for software acquisition and licensing, system upgrade, infrastructure maintenance, and staff training and retraining is necessary. This finding is consistent with Igbo et al. (2025) who identified the high cost of setting up standard artificial intelligence systems, poor technological infrastructure, poor power supply, and lack of technical skills as the major challenges to the adoption of AI in Nigerian academic libraries. The authors also highlighted the necessity of adequate financial support, and continuous training and manpower development as facilitators for effective AI implementation in library operations and services. Similarly, Nduka et al. (2023) found that inadequate funding, poor power supply, lack of technical know-how, inadequate staff competence, poor human capacity development, insufficient ICT facilities, and poor maintenance culture were major challenges to the successful implementation of AI in Nigerian libraries. Whong (2025) also identified inadequate funding and lack of skilled professionals as some major obstacles to AI and machine learning implementation in academic libraries in Nigeria.

For Evangel University Library, the absence of an online cataloguing system indicates a more fundamental limitation in library automation infrastructure and electronic access to bibliographic records. This finding is consistent with Ekpang & Abua (2021), who reported that insufficient funding, inadequate ICT infrastructure, irregular power supply, lack of staff training, and poor maintenance culture were among the major challenges affecting library

automation in a Nigerian university library. Whong (2025) similarly observed that insufficient financial resources and shortages of qualified personnel remain important barriers to the implementation of AI and machine learning in Nigerian libraries. Over all, these findings suggest that differences in the level of AI and automation adoption between Godfrey Okoye University Library and Evangel University Library may be associated with differences in technological infrastructure, financial support, staff capacity, and institutional preparedness. Therefore, achieving and sustaining advanced AI-enabled library services requires not only the acquisition of appropriate technologies but also continuous investment in infrastructure, personnel development, maintenance, and reliable power supply.

Conclusion

This study compared AI adoption in the cataloguing practices of Godfrey Okoye University Library and Evangel University Library. It found a clear and consistent disparity. Godfrey Okoye University Library, through its Mandarin Library Automation Software, has adopted AI in cataloguing to a very high extent, with strong performance across all AI-supported cataloguing indicators examined, while Evangel University Library has no online cataloguing system and has not adopted AI in cataloguing at all. This disparity has direct implications for cataloguing efficiency, affecting the speed of processing new materials, the accuracy and consistency of bibliographic records, and the ease with which library users can retrieve information. The study concludes that closing this gap requires deliberate institutional investment in library automation infrastructure, beginning with the acquisition of a functional online cataloguing system.

Recommendations

Based on the findings, the following recommendations are made:

1. Evangel University Library management should prioritize the acquisition of an online integrated library system, such as Mandarin Library Automation Software or a comparable platform, to serve as the foundation for future AI adoption in cataloguing.
2. Godfrey Okoye University Library should continue to invest in staff training and system upgrades to sustain and further improve its already high level of AI adoption in cataloguing.
3. University management and funding bodies should provide targeted grants to support library automation in private

university libraries with limited resources, particularly newer institutions such as Evangel University Library.

4. Professional library associations in Nigeria should organize capacity building workshops on AI-supported cataloguing for librarians in libraries yet to adopt automation, so that staff are prepared to operate such systems once acquired.

References

Ajani, Y. A., Tella, A., Salawu, K. Y., and Abdullahi, F. (2022). Perspectives of librarians on awareness and readiness of academic libraries to integrate artificial intelligence for library operations and services in Nigeria. *Internet Reference Services Quarterly, 26*(4), 213–230. https://doi.org/10.1080/10875301.2022.2086196

Ansari, I. A. (2026). Use of artificial intelligence (AI) tool in libraries: An in-depth review. *Journal of Library and Information Communication Technology, 15*(1), 85–101.

Cheng, J. (2026). *Agency, evaluation criteria, concept/problem formation, and the limits of artificial intelligence: Why artificial intelligence can never fully surpass human intelligence*.

Ekpang, P. O., & Abua, D. A. (2021). Challenges of adoption of automation for library operations in University of Calabar Library, Nigeria. *Jurnal Ilmu Sosiologi Dialektika Kontemporer, 9*(2), 133–145.

Igbo, H. U., Imo, N. T., Jidere, U. J., & Ugwu, F. N. (2025). Adopting artificial intelligence in academic library services in Nigeria: Requirements and challenges. *Nigerbiblios: Journal of National Library of Nigeria, 34*(1), 1–18.

Journal of Library Metadata. (2025). Revolutionizing library services: The impact of artificial intelligence on cataloguing and access to information in Nigerian academic libraries. *Journal of Library Metadata, 25*(2).

Mala, J. M. (2026). Artificial intelligence and libraries: Innovation, automation and the future. *Ink Vison Press Publishing*.

Nduka, S. C., Tella, A. A., & Okiki, O. C. (2023). Perceived benefits of implementing artificial intelligence in Nigerian libraries. *Bayero Journal of Library and Information Science, 5*(2), 67–82.

Olalekan, S. O., & Tunmibi, S. (2026). Transforming academic library services through artificial intelligence for greater efficiency in Nigerian higher institutions of learning. *International Journal of Academic Research in Education Review, 14*(1), 1–7.

Oso, O. (2024). Cataloguing and classification at the age of artificial intelligence: Challenges and opportunities. *Ilorin Varsity*

International Journal of Library & Information Science.

Reshi, A. A., Gul, S., & Sheikh, S. (2026). Reconceptualising AI-augmented cataloguing in libraries: A global framework for theoretical integration and research directions. *DESIDOC Journal of Library & Information Technology*, *46*(4), 459–469.

Tella, A., Odunola, O. A., & Lawal, W. O. (2023). Cataloguing and classification in the era of artificial intelligence: Benefits and challenges from the perspective of cataloguing librarians in Oyo State, Nigeria. *Vjesnik Bibliotekara Hrvatske*, *66*(1).

Whong, F. M. (2025). Challenges and opportunities of implementing artificial intelligence and machine learning in Nigerian libraries. *Samaru Journal of Information Studies*, *25*(1), 299–307.