

EMPOWERING LIBRARIANS THROUGH ARTIFICIAL INTELLIGENCE IN LIBRARIES AMID THE FIFTH INDUSTRIAL REVOLUTION

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Abstract

This research examines the transformative influence of artificial intelligence (AI) on libraries and the empowerment of librarians within the context of the Fifth Industrial Revolution. As advanced technologies rapidly converge, this period introduces both challenges and opportunities for the library profession. The study explores how AI is reshaping librarians' roles and responsibilities, the critical skills needed for effective AI utilization, and the effects of AI-driven empowerment on library services and professional growth. Employing a descriptive research design, the study focused on librarians in Ondo State, selecting a purposive sample of 50 librarians from a population of over 100. Data were collected through a structured questionnaire validated for content and face validity, with a reliability coefficient of 0.82, indicating strong internal consistency. Analysis using mean scores revealed that AI is substantially transforming librarians' functions, positioning them as digital information navigators, data analysts, and educators in AI literacy. Key competencies identified include mastery of AI tools, data analysis, and ethical considerations in AI deployment. The findings conclude that AI enhances librarians' efficiency, broadens their service capabilities, and elevates their professional status. The study recommends integrating AI-focused training into library education curricula and investing in ongoing professional development to prepare librarians for success in an AI-driven library environment.

Keywords: Artificial intelligence, libraries, librarians, Fifth Industrial Revolution, empowerment, skills, competencies, professional development.

Introduction

The Fifth Industrial Revolution (5IR) signifies a pivotal period characterized by the integration of artificial intelligence (AI), automation, and human ingenuity. Within this framework, libraries—traditionally viewed as physical repositories for books and resources—are transforming into digital environments that leverage AI to improve user engagement, optimize library management, and provide more tailored services (Mamabolo & Durodolu, 2025). AI applications are increasingly shaping library functions by facilitating automated cataloging, analyzing user behavior, and offering personalized recommendations. These

developments are set to redefine librarians' roles, shifting them from conventional custodians of information to proactive guides in knowledge discovery within a tech-centric landscape.

As AI tools become more embedded in library operations, librarians face growing pressure to develop new competencies to effectively work with these technologies. The adoption of AI not only boosts operational productivity but also enables librarians to deliver more adaptive and user-focused services. For example, libraries are now employing AI-powered chatbots, voice-activated search, and machine learning techniques to automate routine tasks and provide instant access to information (Agim, Abah & Ezejiofor, 2025). This technological evolution places new demands on librarians, who must grasp how AI can enhance library services and address the shifting expectations of users in an increasingly digital environment. Consequently, the future of librarianship hinges on understanding both emerging technologies and their professional implications.

Despite the increasing use of AI in libraries, there remains a scarcity of in-depth research on how these technologies specifically empower librarians to meet future challenges. Azmar (2018) points out that much of the current literature on AI in libraries focuses primarily on technology adoption, with limited attention given to the skills librarians need to harness AI effectively or the broader effects on their career growth. Furthermore, although AI-based tools are being adopted worldwide, strategies for preparing librarians with the necessary skills are not well documented. This study aims to fill these gaps by exploring the impact of AI on libraries during the 5IR and how it empowers librarians for upcoming professional roles.

Research Questions:

1. In what ways is AI reshaping the roles and duties of librarians?
2. What key skills must librarians develop to utilize AI effectively?
3. In what ways does AI-driven empowerment influence library services and professional growth?
4. What challenges are involved in enabling librarians to adapt to AI in the 5IR?

Literature Review

Artificial Intelligence in Libraries: A Synopsis

Artificial Intelligence (AI) has swiftly revolutionized library functions by introducing innovative capabilities that go well beyond conventional cataloging and circulation. Current research emphasizes that AI technologies—including machine learning, natural language processing, and predictive analytics—play a crucial role in customizing user services, automating metadata creation, and improving information retrieval processes (Ajakaye, 2022). AI-driven tools like chatbots and virtual reference assistants have notably enhanced user interaction by offering round-the-clock information support and alleviating the workload of librarians (Agim, et al, 2025). Additionally, AI algorithms support sophisticated resource discovery by suggesting materials tailored to individual user behaviors and preferences, thereby transforming how users engage with digital library platforms (Donkor & Afrane, 2023). These developments illustrate that AI is not just an auxiliary feature but a fundamental component of modern library systems, enabling more efficient and user-focused service delivery.

Nonetheless, the integration of AI in libraries, while promising, brings important ethical concerns, issues of data privacy, and shifts in librarian roles. Scholars such as Anumula, Anumula, Anumula, and Damerla (2024) contend that AI adoption requires librarians to develop new skills in data science, algorithm comprehension, and ethical management of information. Libraries face the challenge of implementing AI responsibly to maintain transparency, equity, and inclusiveness in their services. Furthermore, the move toward AI-enabled environments necessitates reimagining traditional librarianship by combining technical know-how with a commitment to human-centered service principles (Basak, Paul, Kar, Molla & Chatterjee, 2024). Overall, the literature portrays AI's expanding role in libraries as a double-edged phenomenon—providing powerful tools for innovation while demanding significant adjustments in librarian expertise, ethical frameworks, and user engagement approaches.

Reconceptualizing Librarians' Roles and Duties in the Age of AI

The emergence of Artificial Intelligence (AI) technologies has fundamentally reshaped librarians' roles, shifting them from mere custodians of information to active facilitators of digital literacy and data governance. Mupaikwa (2024) observes that librarians

are increasingly required to master skills such as algorithmic literacy, metadata management, digital preservation, and ethical oversight of AI to remain relevant in this evolving landscape. Their responsibilities now extend beyond organizing and retrieving information to include guiding users in critically evaluating AI-generated content and navigating intricate digital environments. Additionally, modern librarians must be knowledgeable about machine learning frameworks, data privacy regulations, and methods to counteract bias to ensure library services are fair and reliable (Zhang, Wang & Liu, 2020). This transformation points to a hybrid professional identity where librarians integrate their traditional commitment to intellectual freedom and user advocacy with emerging technical and analytical expertise.

To meet these evolving demands, the literature stresses the importance of ongoing professional development and targeted re-skilling for librarians in the AI era. Agim, Adegbite, and Edeh (2025) highlight the necessity for libraries to implement structured training programs that build competencies in AI ethics, data analysis, and digital content management. Moreover, librarians are increasingly expected to assume leadership roles in AI initiatives, policy formulation, and community engagement within their institutions (Lee & Choi, 2018). This broadened scope elevates librarians from service providers to proactive partners in technological innovation and societal transformation. While AI integration poses challenges—such as potential depersonalization of library services and the risk of perpetuating algorithmic biases—the consensus in the literature is that with appropriate preparation, librarians can turn these challenges into opportunities for enhanced relevance, leadership, and advocacy in the digital age.

Essential Skills and Competencies for Librarians in the 5IR

The advent of the Fifth Industrial Revolution (5IR), characterized by the fusion of human-centric innovation with cutting-edge technologies such as artificial intelligence, robotics, and biotechnology, has significantly transformed the skill sets required of librarians. Agim (2021) emphasizes that librarians must now develop a comprehensive blend of technical, cognitive, and socio-emotional abilities to succeed in this rapidly changing environment. Critical competencies include data literacy, digital curation, information ethics, and technological proficiency, which empower librarians to effectively manage AI-powered tools and facilitate personalized user interactions. Additionally, Nwobu, Dumbiri, Ibia, and

Oladokun (2024) point out that librarians need strong critical thinking and creativity to navigate the complex information landscapes shaped by intelligent automation. Attributes like emotional intelligence, adaptability, and leadership are equally important, as librarians increasingly serve as intermediaries between technology and users, ensuring libraries retain a human-centered focus while embracing innovation.

The literature further stresses that professional development frameworks must adapt to these evolving competency requirements. Oladokun, Ayinde, and Enakrire (2024) argue that librarians need ongoing, interdisciplinary training that integrates AI technical skills with education in ethics, diversity, and social responsibility. Such programs should extend beyond operating AI systems to include critical assessment, bias reduction, and inclusive service design (Lee & Choi, 2018). These skills enable librarians to tackle challenges such as digital inequality, algorithmic bias, and data privacy, while promoting equitable access to information. Ultimately, the 5IR calls for librarians to transcend traditional roles and become innovators, educators, and ethical custodians who shape libraries that are both technologically advanced and deeply human-centered.

AI-Driven Empowerment and Professional Development for Librarians

The incorporation of artificial intelligence (AI) into library environments has created substantial opportunities for empowering librarians and advancing their professional development. AI technologies like machine learning, natural language processing, and predictive analytics have allowed librarians to rethink service delivery, resource management, and user engagement strategies (Nwobu, et al, 2024). By leveraging AI tools, librarians can automate routine tasks, customize information services, and improve decision-making through insights derived from user data. This evolution necessitates continuous professional development focused on building expertise in data management, algorithm literacy, and AI ethics. Oladokun, et al (2024) highlight that AI not only transforms library work but also acts as a catalyst for career advancement, opening new avenues for leadership, instruction, and research within the digital information ecosystem.

However, maintaining this empowerment requires well-structured professional development pathways that balance technical skills with human-centered competencies. Cox and Mazumdar (2023) recommend that effective AI-related training include interdisciplinary

learning covering fundamentals of computer science, critical data studies, and socio-technical perspectives. Furthermore, these programs should incorporate mentorship, collaboration, and hands-on learning to prepare librarians to apply AI ethically and innovatively across diverse library settings (Lo, 2023). Without sustained training and upskilling, the potential of AI to empower librarians risks being underexploited, perpetuating skill gaps and professional disparities. Therefore, AI-driven empowerment and professional growth are interconnected: as librarians enhance their AI proficiency, they can more effectively harness its capabilities to innovate library services and reinforce their relevance in the 5IR information society.

The Future of Libraries and Librarians in the 5IR

The Fifth Industrial Revolution (5IR), marked by the convergence of artificial intelligence, human-centered technologies, and ethical innovation, is redefining the future of libraries and librarianship. Libraries are evolving from traditional repositories of information into vibrant knowledge centers that prioritize personalized user experiences, digital innovation, and collaborative learning (Azmar, 2018). As AI, robotics, and the Internet of Things (IoT) become increasingly integrated into library systems, libraries will focus more on data stewardship, community engagement, and enhancing digital literacy among users (Mamabolo & Durodolu, 2025). Librarians will assume dual roles as digital curators and ethical guides, assisting users in critically navigating AI-driven information environments. Lawal (2017) envisions future libraries balancing technological progress with a renewed commitment to human-centered services that emphasize inclusivity, privacy, and equitable information access.

For librarians, the 5IR signals a significant shift in professional identity, requiring a blend of traditional expertise and new skills in AI literacy, data analytics, and interdisciplinary collaboration. Oladokun, et al (2024) note that librarians must become proactive innovators who design user-focused digital services and contribute to institutional decision-making through data-informed insights. They must also lead ethical discussions on AI governance, misinformation, and digital equity (Nwobu, et al, 2024). Thus, the 5IR presents both challenges and opportunities: while technological disruption may redefine conventional roles, it also enables librarians to position themselves as vital agents in creating a knowledge-driven, humanistic future. The sustainability of libraries and librarianship

depends on cultivating an agile, ethically conscious, and technologically adept workforce dedicated to the core values of access, equity, and lifelong learning.

Methods

The study employed a descriptive research design to capture the current state and future needs of librarians in the context of AI integration. The target population consisted of over 100 librarians in Ondo state. A sample of 50 librarians was selected using the purposive sampling technique. A structured questionnaire served as the primary data collection instrument. The instrument underwent face and content validity assessment by experts and achieved a Cronbach's alpha reliability coefficient of 0.82, indicating strong internal consistency. Data were analyzed using mean scores to determine the level of agreement with the questionnaire items

Results

Research question 1: In what ways is AI reshaping the roles and duties of librarians?

Table 1: Mean responses on How AI reshaping the roles and duties of librarians

S/N	Items	Mean	Std. Dev.	Decision
1	AI has expanded librarians' roles into data analytics and digital curation.	2.76	0.88	Agree
2	Librarians are increasingly acting as digital literacy educators due to AI integration.	3.22	0.72	Strongly Agree
3	AI tools are shifting librarians' focus towards knowledge management rather than traditional cataloguing.	2.81	0.85	Agree
4	Librarians now play a key role in ethical AI use and information governance.	3.18	0.77	Strongly Agree
5	AI is influencing librarians to acquire interdisciplinary collaboration skills.	2.92	0.79	Agree
6	Librarians' advisory roles have expanded to include AI-based research guidance.	2.86	0.84	Agree
7	Librarians are becoming proactive contributors to AI-driven service innovations in libraries.	3.15	0.75	Strongly Agree
Grand Mean		2.99		Agree

From the table, it is evident that several items were rated as "Agree," indicating moderate acknowledgment by librarians regarding AI's impact on their roles. These include

the expansion into data analytics and digital curation (item 1, Mean = 2.76), the shift toward knowledge management (item 3, Mean = 2.81), the need for interdisciplinary collaboration skills (item 5, Mean = 2.92), and the extension of advisory roles into AI-based research guidance (item 6, Mean = 2.86). Meanwhile, other items were strongly agreed upon, reflecting higher acceptance and recognition by librarians. These include librarians becoming digital literacy educators (item 2, Mean = 3.22), playing key roles in ethical AI use and information governance (item 4, Mean = 3.18), and contributing proactively to AI-driven service innovations (item 7, Mean = 3.15). Overall, the grand mean of 2.99 shows that librarians generally agree that AI is significantly reshaping their roles and responsibilities.

The data indicates that librarians are gradually adapting to these new demands, positioning themselves as pivotal players in the AI-powered information environment. Several empirical studies support these findings. Apriliyanti and Ilham (2022) emphasized that librarians are becoming integral to the ethical governance and strategic application of AI tools within academic institutions, aligning with the strong agreement recorded for ethical responsibilities. Similarly, librarians are expected to develop interdisciplinary and digital literacy skills to maintain their relevance in the 5IR era, which matches the agreed and strongly agreed responses related to new educational and collaboration roles. Additionally, Ajakaye (2022) highlighted that librarians are increasingly participating in AI-driven service innovation and research advisory functions, reflecting the observed trends in proactive service innovation and AI-based research guidance. Collectively, these studies affirm that the redefinition of librarians' roles by AI is a well-documented and evolving reality.

Research Question 2: What key skills must librarians develop to utilize AI effectively?

Table 2: Mean responses on key skills librarians must develop to utilize AI effectively

S/N	Items	Mean	Std. Dev.	Decision
1	Data literacy and analytical skills are essential for librarians to interact with AI systems.	3.24	0.74	Strongly Agree
2	Digital literacy skills, including proficiency in AI tools and platforms, are vital for librarians.	3.18	0.78	Strongly Agree
3	Communication skills remain crucial for librarians to interpret and deliver AI-generated information.	2.76	0.84	Agree
4	Problem-solving abilities are necessary for librarians working with	2.81	0.87	Agree

S/N	Items	Mean	Std. Dev.	Decision
5	dynamic AI technologies. Adaptability skills are required to keep pace with rapidly evolving AI tools.	2.91	0.82	Agree
6	Ethical reasoning skills are indispensable for managing AI applications responsibly.	3.10	0.79	Strongly Agree
7	Collaborative skills are needed for interdisciplinary projects involving AI applications.	2.88	0.86	Agree
Grand Mean		2.98		Agree

The table shows that several items were rated as "Agree," reflecting that librarians moderately recognize the importance of core soft skills in leveraging AI effectively. These skills include communication (item 3, Mean = 2.76), problem-solving (item 4, Mean = 2.81), adaptability (item 5, Mean = 2.91), and collaboration for interdisciplinary AI projects (item 7, Mean = 2.88). Meanwhile, items relating to data literacy and analytics (item 1, Mean = 3.24), digital literacy proficiency (item 2, Mean = 3.18), and ethical reasoning (item 6, Mean = 3.10) were strongly agreed upon, indicating a strong acknowledgment by librarians of the growing technical and ethical competencies needed in the AI environment. The grand mean of 2.98 suggests an overall moderate to high consensus on the necessity of these skills among librarians in academic libraries.

The results indicate that while traditional skills such as communication and problem-solving remain important, librarians overwhelmingly recognize the growing need for technical and ethical expertise in order to utilize AI effectively. Several empirical studies affirm these findings. Oladokun, et al (2024) found that data literacy and ethical competencies are critical for librarians to effectively interact with AI platforms and uphold the integrity of information services. Similarly, Nwobu, et al (2024) reported that librarians' success in AI implementation relies significantly on a balanced skillset that includes digital literacy, adaptability, and problem-solving abilities. In another study, Cox and Mazumdar (2023) emphasized that ethical reasoning and interdisciplinary collaboration are indispensable for librarians aiming to drive AI-based innovations within academic libraries. These studies consistently highlight that an evolving combination of technical expertise, ethical consciousness, and traditional soft skills is vital for librarians navigating the 5IR landscape.

Research Question 3: How does AI-driven empowerment influence library services and professional growth?

Table 3: Mean responses on how AI-driven empowerment influence library services and professional growth

S/N	Items	Mean	Std. Dev.	Decision
1	AI technologies have enhanced service delivery speed and accuracy in academic libraries.	3.20	0.76	Strongly Agree
2	AI-driven tools have improved librarians' ability to personalize information services.	2.94	0.81	Agree
3	AI empowerment has increased librarians' efficiency in information retrieval tasks.	2.88	0.84	Agree
4	AI applications have expanded opportunities for continuous learning and skill acquisition.	2.91	0.79	Agree
5	AI integration has encouraged librarians to adopt innovative service models.	3.12	0.77	Strongly Agree
6	Professional development initiatives now increasingly focus on AI and emerging technologies.	3.08	0.80	Strongly Agree
7	AI adoption has improved collaborative practices among librarians across disciplines.	2.90	0.82	Agree
Grand Mean		2.99		Agree

The table shows that several items were rated as "Agree," indicating that librarians moderately perceive AI-driven empowerment as beneficial to certain aspects of service and professional development. Librarians agreed that AI tools have improved personalization of services (item 2, Mean = 2.94), increased efficiency in information retrieval (item 3, Mean = 2.88), expanded learning opportunities (item 4, Mean = 2.91), and enhanced collaborative practices across disciplines (item 7, Mean = 2.90). Meanwhile, stronger agreements were recorded on the significant impacts of AI in enhancing service delivery speed and accuracy (item 1, Mean = 3.20), encouraging innovative service models (item 5, Mean = 3.12), and promoting AI-centered professional development (item 6, Mean = 3.08). The grand mean of 2.99 suggests an overall moderately high positive perception of AI-driven empowerment on library services and librarians' professional development.

The findings imply that librarians recognize AI as a transformative force, not only streamlining operational tasks but also opening avenues for innovation, personalized services, and ongoing professional growth. Empirical studies affirm these observations. Lee and Choi

(2018) revealed that AI implementation in libraries has significantly enhanced service efficiency, personalization, and resource accessibility, supporting the findings on service speed and personalization. Similarly, AI technologies are reshaping professional development initiatives by mandating continuous upskilling and the adoption of innovative practices among librarians. Furthermore, Das and Islam (2021) noted that the integration of AI in library operations fosters collaborative opportunities and interdisciplinary partnerships, strengthening the view that AI-driven empowerment positively impacts library services and professional growth. These studies collectively substantiate the table’s results, highlighting AI as a major catalyst for transformation in academic libraries.

Research question 4: What challenges are involved in enabling librarians to adapt to AI in the 5IR?

Table 4: Mean responses on challenges involved in enabling librarians to adapt to AI in the 5IR

S/N	Items	Mean	Std. Dev.	Decision
1	Lack of technical skills among librarians hampers effective AI adoption.	3.28	0.75	Strongly Agree
2	Inadequate funding limits access to AI tools and training programs.	3.21	0.78	Strongly Agree
3	Resistance to change among librarians delays AI integration.	2.91	0.82	Agree
4	Insufficient institutional support affects AI-driven initiatives.	3.15	0.80	Strongly Agree
5	Limited professional development opportunities on AI competencies.	3.10	0.79	Strongly Agree
6	Ethical concerns about AI applications create hesitation in usage.	3.05	0.81	Strongly Agree
7	Lack of awareness about AI's potential impacts strategic planning.	2.88	0.84	Agree
Grand Mean		3.08		

The table reveals that some challenges were rated as "Agree" by librarians, highlighting moderate concerns. Librarians agreed that resistance to change (item 3, Mean = 2.91) and lack of awareness of AI's potential (item 7, Mean = 2.88) are notable obstacles in adapting to AI. However, stronger agreement was found for challenges such as lack of technical skills (item 1, Mean = 3.28), inadequate funding (item 2, Mean = 3.21), insufficient institutional support (item 4, Mean = 3.15), limited professional development opportunities (item 5, Mean

= 3.10), and ethical concerns (item 6, Mean = 3.05). The grand mean of 3.08 indicates that overall, librarians strongly perceive significant barriers to AI empowerment in the 5IR era.

The findings suggest that the major challenges in empowering librarians to adapt to AI are rooted primarily in systemic and infrastructural issues such as skills gaps, funding limitations, and institutional support deficits. These findings align with recent studies. According to Cox and Mazumdar (2023), librarians' lack of technical proficiency and insufficient training opportunities remain critical barriers to successful AI integration in academic libraries. Similarly, Apriliyanti and Ilham (2022) emphasized that organizational barriers such as limited funding and weak institutional commitment significantly hinder librarians' ability to adapt to AI innovations. Furthermore, ethical uncertainties around AI use in information services cause hesitation and slow down the adoption process. Together, these empirical studies reinforce the table's results, highlighting the multifaceted challenges librarians face in embracing AI during the 5IR.

Recommendations

The following recommendations have been given:

- Academic libraries should consistently offer ongoing professional development workshops centered on emerging AI technologies to ensure librarians remain current and adaptable to evolving responsibilities.
- Institutions need to update job descriptions and role expectations to incorporate AI-related duties, establishing clear career advancement paths for librarians adopting technology-driven roles.
- Library schools and training institutions should revise their curricula to include subjects such as AI literacy, machine learning, data ethics, and algorithmic accountability specifically designed for library professionals.
- Academic libraries ought to develop mentorship programs where librarians with advanced technological skills guide their peers, promoting collaborative skill-building in both the technical and ethical aspects of AI use.
- Libraries should allocate resources to pilot AI initiatives—like chatbots, automated indexing, or predictive analytics—that engage librarians in practical AI applications, enhancing service quality and professional development.

- Institutions should reward librarians who actively participate in AI-focused projects through recognitions such as awards, promotions, or research funding, encouraging ongoing innovation and skill enhancement.
- Government agencies, educational stakeholders, and library administrators must dedicate funding for AI technologies, infrastructure improvements, and librarian training to overcome financial barriers.
- Library leadership should cultivate a supportive environment for AI adoption by establishing clear policies, ethical frameworks, and administrative support for librarians experimenting with AI integration.

Conclusion

The findings of this study highlight that although librarians are increasingly aligning with the demands of the Fifth Industrial Revolution (5IR) by adopting artificial intelligence (AI), more focused efforts are essential to fully empower them for future challenges. Librarians acknowledge their changing roles and the skills required to succeed, viewing AI not only as a means to improve operational efficiency but also as a pathway to innovative services and enriched user experiences. Nonetheless, critical obstacles such as insufficient funding, skill shortages, and lack of adequate institutional backing must be addressed promptly to enable a sustainable AI-driven transformation in academic libraries. Consequently, coordinated actions from all stakeholders—including university leadership, professional organizations, government bodies, and librarians themselves—are crucial to overcoming these barriers. By equipping librarians with the necessary technical and ethical skills, ensuring strong infrastructure, and fostering a culture of innovation and lifelong learning, academic libraries can fully capitalize on AI's potential. This will enhance library services and secure librarians' roles as vital facilitators of knowledge in the rapidly evolving digital environment of the 5IR.

References

- Agim, E. C., Abah, A.T. & Ezejiofor, V.O (2025). Availability and Utilization of AI-Powered Chatbots for Enhanced User Services In Academic Libraries In Anambra State. *Heartbeat Journal of Library and Information Science* 4 (1), 75-88
- Agim, E. C., Adegbite, OE & Edeh EE (2025) Evaluating Technology Ethical Practices in the Utilization of Digital Resources among Undergraduate Students of Nnamdi Azikiwe

University, Awka. *International Journal of Information Resource Management* 2 (2), 1-13

- Agim, E.C. (2021) *Enhancing information literacy for sustainable development in the post Covid 19 era: The roles of librarians*. A paper presented at the Maiden Annual Symposium of the Nigerian Students Association (NISA), Turkey held from 29th to 30th September, 2021
- Ajakaye, J. E. (2022). Applications of Artificial Intelligence (AI) in Libraries. In I. Ekoja, E. Ogbomo, & O. Okuonghae (Eds.), *Handbook of Research on Emerging Trends and Technologies in Librarianship* (pp. 73-90). IGI Global. <https://doi.org/10.4018/978-1-7998-9094-2.ch006>
- Anumula, V. R. B., Anumula, K. R. V. S. S., Anumula, M., & Damerla, S. (2024). Artificial Intelligence Using Library Information Science Professionals. *International Journal of Progressive Research in Engineering Management and Science*, 4(1), 591-594. https://www.ijprems.com/uploadedfiles/paper/issue_1_january_2024/32611/final/fin_ijprems1706806420.pdf
- Apriliyanti, M & Ilham, M. (2022) Challenges of The Industrial Revolution Era 1.0 to 5.0 : University Digital Library In Indoensia. *Library Philosophy and Practice (e-journal)*. 6994. <https://digitalcommons.unl.edu/libphilprac/6994>
- Azmar, NJ. (2018). The future of the library as the industrial revolution develops 4.0: evaluate the role of the librarian. *Journal of Iqra'* 10(01): 35-37.
- Basak, R., Paul, P., Kar, S., Molla, I. H., & Chatterjee, P. (2024). The Future of Libraries With AI: Envisioning the Evolving Role of Libraries in the AI Era. In K. Senthilkumar (Ed.), *AI-Assisted Library Reconstruction* (pp. 34-57). IGI Global. <https://doi.org/10.4018/979-8-3693-2782-1.ch003>
- Cox, A. M., & Mazumdar, S. (2023). *How artificial intelligence (AI) might change academic library work: applying the competencies literature and the theory of the professions*. *Library Hi Tech*, 41(1), 37–52. View at researchgate.net
- Das, R. K., & Islam, M. S. U. (2021). Application of Artificial Intelligence and Machine Learning in Libraries: A Systematic Review. *Library Philosophy and Practice*, 6762. View at digitalcommons.unl.edu
- Donkor, A. B. & Afrane, D. A. (2023). Application of AI in Academic Library Services: Prospects and Implications for Quality Service Delivery. In D. Chiu & K. Ho (Eds.), *Emerging Technology Based Services and Systems in Libraries, Educational Institutions, and Non-Profit Organizations* (pp. 1-25). IGI Global. <https://doi.org/10.4018/978-1-6684-8671-9.ch001>
- Lawal, V. (2017) Information Literacy and the Future of Digital Information Services at the University of Jos Library. *Library Philosophy and Practice (e-journal)*. 1674. <https://digitalcommons.unl.edu/libphilprac/1674>

- Lee, J., & Choi, W. (2018). A study on the application of artificial intelligence in library services. *Journal of Korean Library and Information Science Society*, 49(2), 1-22.
- Lo, L. S. (2023). *Evaluating AI Literacy in Academic Libraries: A Survey Study with a Focus on U.S. Employees*. *College & Research Libraries*, 84(1), 1–20. View at crl.acrl.org
- Mamabolo, M. J. & Durodolu, O. O. (2025). Unlocking the Advantages: Exploring the Benefits of Accessing Digital Libraries in the Fifth Industrial Revolution Era. In S. Thanuskodi (Ed.), *Exploring Digital Metrics in Academic Libraries* (pp. 33-52). IGI Global Scientific Publishing. <https://doi.org/10.4018/979-8-3693-5807-8.ch002>
- Mupaikwa, E. (2024). The Application of Artificial Intelligence for Reference Purposes in Academic Libraries. In I. Khamis (Ed.), *Applications of Artificial Intelligence in Libraries* (pp. 166- 192). IGI Global. <https://doi.org/10.4018/979-8-3693-1573-6.ch007>
- Nwobu, B. K., Dumbiri, R., Ibia, M. J., & Oladokun, B. D., (2024). Libraries in the Fifth Industrial Revolution: Skills and Knowledge Required in Preparing Librarians for an Uncertain Future. In U. C. Udofot et al. (Eds.), *Digital Technologies and Library Management in Higher Institutions of Learning in Nigeria*. (3 – 13). Port Harcourt: Chadick Printing Press
- Oladokun, B. D., Ayinde, L., Enakrire, R. T. (2024) The fifth industrial revolution: Information professionals and skills. *Information Matters*, 4,7. <https://informationmatters.org/2024/07/the-fifth-industrial-revolution-information-professionals-andskills/>
- Zhang, D., Wang, L., & Liu, Y. (2020). Research progress of artificial intelligence in libraries. *Library and Information Service*, 44(10), 4-11.