

# CHANGING ROLE OF LIBRARIANS IN 21<sup>ST</sup> CENTURY

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## ABSTRACT

The role of librarians has significantly evolved in the 21st century due to advancements in information and communication technology (ICT), the rise of digital libraries, and changing user expectations. Traditionally seen as custodians of books, librarians now serve as digital curators, educators, and technology specialists, facilitating access to vast online repositories and guiding users in digital literacy. Modern libraries function as community hubs, offering internet access, job training, and research support. The transition from physical to digital resources has necessitated new skills, including data management, AI integration, and cybersecurity awareness. Despite these advancements, challenges such as funding limitations, digital divides, and evolving technological landscapes persist. Libraries must continuously adapt by integrating emerging technologies and fostering collaboration among educators, researchers, and policymakers. The future of librarianship hinges on their ability to bridge knowledge gaps, ensure equitable access to information, and remain relevant in an increasingly digitized world. By embracing innovation, librarians will continue to serve as essential facilitators of learning and knowledge dissemination in the 21st century.

**Keywords:** Librarian, Digital Libraries, Information Technology, AI

## 1. INTRODUCTION

Libraries are service entities that offer people, organisations, and communities unrestricted access to vast amounts of information. Libraries are assemblages of books and other informational resources compiled for reading, research, and reference. Academic libraries exist to assist their academic communities; hence, their growth is intrinsically linked to the advancement of the institution. The education system and academic institutions have undergone significant transformation due to the revolution in information and communication technologies (ICTs). Academic libraries cannot remain unaffected by this transformation. They must adapt appropriately. The paradigm of book-oriented librarianship has been supplanted by user-centered librarianship. Academic libraries are established to support the missions of their parent institutions, which aim to generate knowledge and cultivate individuals equipped with that knowledge

to serve society and enhance the well-being of humanity. The primary role of academic libraries is to facilitate the purpose, vision, and goals of their parent institutions. Academic libraries are therefore tasked with supporting the three primary institutional activities: teaching, learning, and research, for their academic community including staff, students, and researchers. [Perrone \(2000\)](#)

The function of librarians has always been pivotal in our interaction with knowledge; yet, in the 21st century, this function has transformed in ways that few could have anticipated only a few decades before. Traditionally, librarians were mostly responsible for the organisation and cataloguing of physical collections, including books, periodicals, and other materials. They served as custodians of knowledge, assisting others in finding the information required inside the confines of their libraries. As technology has progressed, the function of the librarian has evolved; contemporary librarians are now not just custodians of books but also guides, instructors, technological specialists, and community leaders. [Mader and Gibson \(2019\)](#)

The transition from print to digital resources, the emergence of the internet, and the abundance of information have all significantly transformed the roles of librarians. In the contemporary landscape, librarians are not just responsible for overseeing physical resources; they are also charged with collecting and sustaining extensive digital collections, including e-books, online journals, and multimedia information. The proliferation of databases, digital repositories, and online archives has enabled access to information from almost any location globally. In this context, librarians have evolved into digital curators, assisting users in navigating the vast information landscape, assuring its accuracy, accessibility, and organisation for the benefit of the community. [Enweani and Eke \(2018\)](#)

A notable transformation has occurred in the manner in which librarians interact with technology. As libraries progressively adopt digital technologies, librarians now use software systems, digital platforms, and artificial intelligence to enhance resource accessibility and optimise library administration. Libraries have transitioned from using card catalogues and physical shelf systems to relying on intricate digital infrastructures and the internet for real-time information accessibility. Librarians are crucial in overseeing technological shifts, facilitating the smooth navigation of the new digital terrain for both libraries and their clients.

Librarians have become educators in the 21st century, assisting users in the search, evaluation, and use of information. They have evolved from mere book lending facilities to dynamic community centers, providing services that address diverse populations' needs. Contemporary libraries serve as gateways to digital technology, offering services like internet access, training in emerging technologies, and support for job searches or school progression. Librarians are also actively engaged in tackling social concerns like digital inclusion and equality, facilitating connections between those with access to technology and those without. [Momoh and Folorunso \(2019\)](#)

The 21st-century librarian is a versatile professional required to adapt to emerging technology, innovative teaching approaches, and evolving social demands. They are no longer just the individuals at the circulation desk or responsible for antiquated bookshelves. They serve as vital navigators in an era of information saturation, helping individuals locate necessary resources and understand their application in significant ways. As society evolves, the function of the librarian will also change, presenting an opportunity to examine how librarians are reshaping our perceptions of knowledge and community. [Singh \(2022\)](#)

## 2. CONCEPTUAL FRAMEWORK

Various interpretations exist about the word or notion of a library. The notion may be seen from many perspectives: a library as a physical structure or a library as an institution. The two viewpoints are interconnected and intertwined. Traditionally, a library was regarded as a repository for the preservation of informational contents. [Adeniran \(2017\)](#) said that the advent of ICT, which introduced new information forms, has redefined the notion of a library. She described a library as: "a location where information resources are accessed and information services are provided by professionals adept at identifying, collecting, organising, processing information sources, and interpreting information needs." [Momoh and Folorunso \(2019\)](#) She, however, observed that the term "place" may denote either a constructed edifice or an assemblage. A library is fundamentally a facility that contains informational resources (both print and electronic) and provides access to a specific audience for personal utilisation of these contents. Access to this content may be restricted or unrestricted. Consequently, some libraries need a membership for access. Libraries serve as venues for the generation and dissemination of knowledge. They serve as storage facilities and reservoirs of information in various mediums (print and electronic). The function of every existing library is to provide information to a certain audience. However, this audience differs across various environments. [Kar and Rath \(2019\)](#)

The rationale for the existence of libraries in various environments remains a focal focus of discourse, particularly among those without direct connections to the library and information science profession. This has engendered two divergent perspectives. One institution advocates for the development of libraries, whilst the other institution rejects it. In the academic and research milieu, libraries serve to provide contemporary informational resources to its patrons. Additionally, they aid users in locating pertinent informational resources for their use. In the social context, libraries function as conduits for the establishment of knowledge reservoirs and the enhancement of human cognitive abilities. This is achieved by providing pertinent and up-to-date knowledge resources that may alleviate illiteracy and enrich the human intellect. Many individuals have contested the relevance of libraries owing to the advent of the internet, social media, and search engines like Google and Yahoo. The significance of libraries and librarians in any community cannot be overstated. [Mandal and Dasgupta \(2019\)](#)

The responsibilities of the 21st century librarian are substantial. A multitude of researchers contend that, given the prevailing trends and the use of information technology in library operations, it is necessary for librarians to acquire certain skills to maintain their relevance. [Ugwu and Ezeani \(2012\)](#) have listed some of these skills to include the following:

- Information technology skills
- Managerial skills
- Personal entrepreneurial skills
- Technical skills
- Information literacy skills

### 3. THE EVOLUTION OF LIBRARIES TO THE 21ST CENTURY

Table 1

Table 1 Here is a Table Summarizing the Key Developments in Libraries Over Time: [Ubogu \(2021\)](#)

| Year/Period | Milestone                    | Key Development   |
|-------------|------------------------------|---|
| 600 BCE     | First Library                | Assyrian ruler Ashurbanipal organized 30,000 cuneiform tablets; Library of Alexandria housed 700,000 documents. |
| Mid-1800s   | Public Libraries Expand      | First tax-supported library in the U.S.   |
| Year/Period | Milestone                    | Key Development   |
|             |                              | (1833); fundraising groups and Andrew Carnegie supported more libraries.  |
| 1876        | Library Organization         | Formation of the American Library Association; introduction of the Dewey Decimal System.                        |
| 1890s       | Children's Libraries         | First children's reading room opened at Brookline Public Library.   |
| 1932        | Electric Checkouts           | Gaylord's brothers introduced the first electrically operated book-charging machine.                            |
| 1940s       | High-Tech Distribution       | Libraries adopted pneumatic tubes and dumbwaiters for faster book delivery.                                     |
| 1970s       | Computerized Catalogs        | MARC (Machine-Readable Cataloging) became the global standard for library records.                              |
| 1980s       | Digital Content Begins       | Library of Congress started digitizing collections; website launched in 1993.                                   |
| 1991        | First Digital Library        | Carnegie Mellon University introduced the Mercury Electronic Library.   |
| Late 1990s  | Library Architecture Evolves | Shift from traditional book storage to open, community-oriented library spaces.                                 |
| 2000        | RFID Checkouts               | RFID self-checkout kiosks introduced for patron convenience.  |
| Early 2000s | Digital Newsstands           | Libraries started offering digital news platforms like PressReader.   |
| Late 2000s  | Expanded Offerings           | Libraries began lending non-book items like board games, hiking gear, and technology.                           |
| 2010s-now   | Creative Spaces              | Libraries transformed into digital media hubs with maker studios, podcast booths, and video editing software.   |

In recent years, artificial intelligence has emerged as a major driver of the evolution of public libraries on a number of fronts. For example: [Kaur and Sharma \(2018\)](#)

- AI-powered search engines and recommendation systems can help library staff and patrons find relevant resources more efficiently.
- AI and machine-learning algorithms can assist in the curation and management of library collections through data-driven decision-making.
- AI chatbots can handle routine inquiries and provide basic assistance to patrons, freeing up librarians to focus on more complex tasks while also providing service to users outside of regular operating hours.

The evolution of public libraries will continue, of course, but wherever the future takes us, it's key to note that the 21st century librarian has never been just a guardian of books. They're researchers, data analysts, information analysts, database managers, social media managers...and the evolution of technology over the past decades has only made their multi-faceted role and immeasurable value clearer. [Huseynova \(2022\)](#)

#### 4. TRADITIONAL VERSUS 21ST CENTURY ACADEMIC LIBRARIES

In the nascent phase of the academic library, acquisition, cataloguing, circulation, reference, serials, and interlibrary loans were conducted manually, which, according to [Asamoah-Hassan \(1998\)](#), is no longer an effective method of service delivery today. Historically, libraries were seen as repositories for both used and unused books, serving to safeguard them from theft or harm [Momoh and Folorunso \(2019\)](#). Additionally, many students at tertiary educational institutions, as seen by [Momoh \(2018\)](#), used the library as study spaces during examinations. This was based on the belief that people saw them as a location free from distractions, which might, over time, facilitate faster comprehension and retention during studies. Academic librarians were seen as simply custodians overseeing books and documents. [Momoh and Folorunso \(2019\)](#) assert that "historically, a library was regarded as a venue for the preservation of informational materials." Libraries are recognised as repositories for the preservation of records and cultural materials/artefacts. Therefore, it can be said that until now, academic libraries have concentrated on the selection and maintenance of physical contents. Research by [Somi and De Jager \(2005\)](#) reveals that libraries engage users in programs designed to cultivate critical thinking, problem-solving abilities, and effective information retrieval skills. Academic librarians assisted library users in accessing, storing, retrieving, and using material, as well as in performing cross-referencing and proper citation [Omeluzor et al. \(2013\)](#).

Academic libraries cater to educational institutions, including their students, faculty, and staff. Larger organisations may own many on-site libraries dedicated to certain disciplines, such as law and science, so providing academic librarianship with a unique opportunity to leverage topic expertise [Association of College and Research Libraries. \(2017\)](#). Twenty-first century academic libraries are dynamic, technology-driven, and user-centred institutions that are essential in facilitating teaching, learning, and research at universities and colleges. They adjust to the changing requirements of their communities while maintaining their historic functions as guardians of information and promoters of intellectual development. [Tikekar \(2009\)](#) asserts that alterations in undergraduate and postgraduate education, examination reforms, innovative pedagogical methods, interdisciplinary research, the integration of educational technology, faculty development initiatives, distance education, open universities, IT-based education, institutional autonomy, and partnerships with foreign universities have significantly enhanced the academic library in the twenty-first century. [Omeluzor et al. \(2013\)](#)

Academic libraries have evolved significantly in recent years, with their roles now encompassing researchers, lecturers, and information managers. Some libraries have integrated technology into their operations to cater to 21st-century patrons, as per a 2019 study by Momoh and Folorunso. Advancements in Information and Communication Technology (ICT) have made print materials insufficient for data storage, transforming the role of academic libraries into a growing organism. Album ROM databases, electronic record transmission,



automated indexing, distribution systems, and online public access catalogues (OPAC) have grown prevalent [Emezie and Nwaohiri \(2013\)](#). [Eguavoen \(2011\)](#), [Citing Ostrow \(1998\)](#), acknowledges that the advent of the web, digitisation, and the ability to access library and research resources remotely had significantly transformed the landscape by the close of the twentieth century. [Rahman et al. \(2004\)](#) asserts that advancements such as expert frameworks, remote networks, virtual collections, interactive web interfaces, virtual reference services, and personalised online interfaces have led to significant transformations since the onset of the new millennium. [Allen and Taylor \(2017\)](#)

The significance of academic libraries in the twenty-first century cannot be satisfactorily elucidated. [Omeluzor et al. \(2013\)](#) similarly said that the significance of a library cannot be encapsulated in a few pages of text. [Omeluzor et al. \(2013\)](#) said that the advent of data and communication technology (ICT) as a tool for information accessibility and dissemination did not diminish the importance of libraries; rather, it enhanced their image. [Adeniran \(2017\)](#) posits that the integration of ICT into library operations has redefined the concept of a library. [Adeniran \(2017\)](#) defined a library as a location where information resources are accessible and information services are provided by specialists skilled in identifying, collecting, organising, processing information sources, and interpreting information demands. [Momoh and Folorunso \(2019\)](#) said that "libraries exist within the academic and research environment to furnish clients with current informational materials." Additionally, they aid users in locating pertinent informational resources for their use. These substantial modifications impact acquisition; inventory management; documentation; reference workspace; outreach initiatives; asset accessibility; exceptional collections; and innovation administration [Kurt De \(2013\)](#).

In the digital era, storage infrastructure and delivery mechanisms are crucial for academic libraries. Stacks provide immediate access to materials, and their historical relevance and structural stability are defended by architectural historians and engineers. Sharing assets or systems administration is essential for academic libraries in the 21st century. Consortias are a syndication game plan that enables libraries to cooperate more effectively and efficiently. [Tikekar \(2009\)](#) suggests joining a consortium to expand library capacity and provide users with access to a wide range of journals from other sources, enhancing asset sharing and enabling users to access a wide range of materials.

[Ezeani \(2010\)](#) said that computerized distributing advances and worldwide systems administration have offered ascend to the improvement of wide assortment of advanced libraries everywhere throughout the world. [Ezeani \(2010\)](#) further noticed that the creation, sharing and use of advanced substances and administrations are far more noteworthy in this age than any time in recent memory. [Omeluzor et al. \(2013\)](#) in their paper referred to a study conducted by the Nigerian Library

Association (NLA) on current trends in the library profession regarding networking and resources sharing, had users commenting as follows:

"Library services improve the sharing of resources, making learning easier by providing books and non-books to supporters. They also serve as information sharing centers, offering assistance in data collection and interpretation. Libraries also serve social and academic roles by uniting individuals and ideas, allowing them to collaborate in a larger and broader information space. They help interact with different analysts, increasing the value of library services. Libraries also provide resources for research and facilitate the distribution of research findings. Academic

librarians can assist researchers in finding the most suitable journal or distributor to distribute their work.” [Ezeani \(2010\)](#) emphasizes that the creation, sharing, and usage of digital content and services are more significant in the 21st century than ever before.

## 5. ROLE OF 21ST CENTURY LIBRARIAN

Education and professional endeavours are the primary means of combating social isolation. In this regard, we refer to literary and media education at the elementary school level, and technology information at advanced educational levels. A vast range of such activities is accessible at the libraries. The library disseminates knowledge to society in need, facilitating advancements in science, business, culture, and education. Consequently, libraries were instrumental in the co-creation of the information society far before it became linked to certain societal notions. [Seal \(2015\)](#)

The majority of library-related procedures are now automated. Owing to technology advancements, accessing necessary information promptly on a global scale has become effortless. It has transformed communication techniques, hence modifying the responsibilities of contemporary libraries. Modern libraries should provide a widely recognised educational activity to facilitate user engagement with humanity's cultural legacy, therefore mitigating cultural homogenisation in the period of globalisation. The advent of new technology facilitates collaboration across libraries, with the information resources in contemporary libraries representing a substantial enhancement to the informative capacity of society. Twenty-first century libraries significantly depart from the conventional paradigm. Their predominant components have been altered. [Idiegbeyan-Ose and Ilo \(2013\)](#)

**Table 2**

| <b>Table 2</b> |                                       |                                  |
|----------------|---------------------------------------|----------------------------------|
| <b>S. No.</b>  | <b>Traditional Library Collection</b> | <b>Modern Library Collection</b> |
| 1              | Book                                  | E-Books                          |
| 2              | Journals                              | E-Journals                       |
| 3              | Bound Volume                          | Journal Archival                 |
| 4              | Reference Collection                  | Digital Tools                    |
| 5              | Slides                                | Images                           |
| 6              | Scientific Movies                     | DVDs                             |
| 7              | Photo Album                           | Image Collection                 |
| 8              | Newspaper Clippings                   | E-Newspaper clipping             |

The role of a librarian has not become obsolete due to the rise of electronic information sources and the internet, as modern libraries provide automated information retrieval processes. However, the speed and volume of data in the world and on the Internet make it difficult to locate, select, verify, and disseminate information. The expertise of an information specialist, such as a librarian, is necessary for accessing material and understanding users' demands. The tools and resources used to provide information have evolved, but the librarian's duty remains constant. In the age of the information society, contemporary libraries can be likened to information malls, but navigability can be challenging. Library anxiety is a common issue, particularly in higher education institutions, where individuals may feel uncomfortable with their information proficiency. A lack of

computer skills can lead to shallow and incomplete searches, causing discomfort and diminished confidence in the environment. Therefore, the librarian is an essential component in the information retrieval process. In a self-service library with a remote information section and a cyber librarian, the librarian indirectly contributes to the construction of a new society. [John \(2016\)](#)

Librarians play a crucial role in modern libraries, not just passing books but also in winning new readers. They are seen as a necessary link for users to fulfill their advanced information needs, evoking a sense of importance and professionalism. In a consumption-oriented world, information plays an equal importance as any other need in a contemporary individual's life. Librarians must comfort and support users, helping them overcome their fears about being in the library. To create a user-friendly image, libraries should adopt individual approaches to different types of customers, including special needs and elderly users. The knowledge of psychology related to customer service is essential in the process of librarians' in-service training. In conclusion, librarians play a vital role in promoting knowledge and understanding among modern readers. [Stephens \(2016\)](#)

## 6. THE EVOLVING ROLES OF LIBRARIES AND LIBRARIANS IN THE 21ST CENTURY

Libraries and librarians have undergone a significant transformation in the 21st century, adapting to technological advancements, changing information needs, and evolving societal roles. In India, where digitalization and knowledge dissemination are growing at an unprecedented pace, libraries are no longer just repositories of books but dynamic centers for learning, innovation, and digital access. This evolution is reshaping the role of librarians, who now act as information curators, digital literacy educators, and community facilitators. Comprehensive data on the number of librarians in India from 2019 to 2024 is not readily available. However, we can provide information on the number of public libraries during this period, which offers some insight into the infrastructure supporting librarianship in India. [Bundy \(2003\)](#)

### 6.1. NUMBER OF PUBLIC LIBRARIES IN INDIA (2019-2024):

#### Year Number of Public Libraries

2019 27,682

2023 46,768

**Source** Raja Rammohun Roy Library Foundation, Union Ministry of Culture

This data indicates a significant increase in the number of public libraries, from 27,682 in 2019 to 46,768 in 2023. This growth reflects the nation's commitment to enhancing educational resources and promoting literacy. While specific statistics on the number of librarians are limited, it's important to note that the expansion of public libraries suggests a corresponding increase in the demand for qualified library professionals. However, challenges persist, such as the need for more dynamic and qualified librarians to manage these institutions effectively. According to UDISEPlus data, only 32,762 out of nearly 1.5 million schools in India have digital libraries, highlighting the need for further development in this area. In the 21st century, Indian librarianship faces challenges that necessitate rethinking, redesigning, rejuvenating, and rebuilding to stay relevant in the digital age. The profession must adapt to technological advancements and changing user expectations to remain effective. [Kalu \(2021\)](#)



## 6.2. DIGITAL TRANSFORMATION OF LIBRARIES

The integration of technology has revolutionized library services across India. The National Digital Library of India (NDLI), launched by the Ministry of Education, offers a vast collection of academic resources, making knowledge accessible to students, researchers, and professionals nationwide. Libraries at institutions like the Indian Institute of Science (IISc) and Jawaharlal Nehru University (JNU) have digitized their archives, enabling remote access to research materials. Public libraries, such as the Anna Centenary Library in Chennai, have also embraced digital platforms, offering e-books, online catalogs, and virtual study spaces. [Pawlowsky and Ryan \(2016\)](#)

## 6.3. THE EXPANDING ROLE OF LIBRARIANS

Librarians are no longer limited to managing book collections; they now serve as digital literacy educators and knowledge navigators. With the rise of misinformation, librarians play a crucial role in guiding users to credible sources and promoting media literacy. Initiatives like the Delhi Public Library's digital literacy programs help citizens, especially senior citizens and underprivileged students, understand online resources, e-governance services, and cyber safety. [Bundy \(2003\)](#)

## 6.4. LIBRARIES AS COMMUNITY HUBS

Modern Indian libraries are evolving into community centers that offer skill development, cultural programs, and social engagement. The Connemara Public Library in Chennai and the State Central Library in Hyderabad regularly host workshops on entrepreneurship, career guidance, and creative writing. The British Council Library in Delhi organizes book clubs, TEDstyle talks, and networking events, attracting young professionals and lifelong learners.

## 6.5. BRIDGING THE RURAL-URBAN DIVIDE

In rural India, where access to quality education remains a challenge, innovative library models are emerging. The 'Village Library Movement' in Kerala, initiated by the state government, has set up over 500 local libraries with internet access to bridge the digital divide. Similarly, the 'BookWorm Trust' in Goa runs mobile libraries that reach underserved children, ensuring that learning is not restricted by geography.

## 6.6. LIBRARIES IN HIGHER EDUCATION AND RESEARCH

University and research libraries are incorporating artificial intelligence, big data, and openaccess platforms to enhance academic inquiry. The IIT Madras Central Library has adopted AIpowered search tools that help researchers find relevant materials efficiently. Additionally, the Shodhganga initiative by INFLIBNET provides a national repository of Ph.D. theses, democratizing access to scholarly research.

## 6.7. CHALLENGES AND THE ROAD AHEAD

Despite these advancements, Indian libraries face challenges such as inadequate funding, infrastructure constraints, and a lack of skilled digital librarians. Addressing these issues requires greater government investment, public-private partnerships, and continued professional development programs for librarians. Libraries and librarians in India are at the forefront of the knowledge revolution, adapting to the digital age while preserving their core mission of education and information dissemination. As they continue to evolve, they will remain essential pillars of an informed and empowered society, bridging gaps in education, technology, and community development. [Gunapala et al. \(2020\)](#)

## 7. ADAPTING TO NEW TECHNOLOGIES: ARTIFICIAL INTELLIGENCE AND BIG DATA

As technology progresses swiftly, librarians are adopting new tools and ideas to address the changing requirements of their users. Two of the most consequential technical advancements in recent years are Artificial Intelligence (AI) and Big Data. Although these concepts may seem as mere buzzwords to others, for librarians, they signify promising prospects to improve the organisation, accessibility, and use of information. AI and Big Data are significantly altering the library scene, enabling librarians to provide more personalised, efficient, and dynamic services to their communities. [Khan \(2017\)](#)

Artificial Intelligence has created new opportunities for automating operations that were previously laborious and time intensive. Libraries already use AI-driven systems for cataloguing resources, analysing information, and aiding patrons in their searches. AI-powered chatbots assist consumers in swiftly locating information, posing enquiries, and navigating digital resources. Users may engage with these virtual assistants at any time, obtaining immediate solutions to their enquiries, rather than waiting in line at the circulation desk. Artificial intelligence is used to provide suggestions to customers based on their surfing history or tastes, similar to the algorithms employed by streaming services such as Netflix or Spotify. These customised recommendations assist users in uncovering books, articles, and other resources they would not have otherwise encountered, so fostering a more customised and user-centric experience. [Nutefall and Chadwell \(2012\)](#)

Simultaneously, Big Data—the huge volume of information produced daily from digital interactions—has emerged as an indispensable resource for libraries. By examining trends in user information-seeking behaviour, borrowing habits, and resource engagement, librarians may implement data-informed strategies to enhance services and collections. Libraries may use data analytics to ascertain the most popular books or themes, enabling them to enhance their holdings and effectively address the requirements of their communities. They may also monitor use trends to pinpoint regions with service deficiencies or where supplementary resources are required. [Prentice \(2010\)](#)

Big Data significantly influences the research and academic sectors, with libraries using data to enhance scholarly endeavours. Librarians are becoming indispensable collaborators in the realm of data science by assisting academics in analysing extensive databases and identifying significant research patterns. They are now responsible for aiding in data curation, guaranteeing that research data is appropriately saved, disseminated, and conserved for future use. As research

increasingly depends on extensive datasets, the librarian's role in storing and understanding this data is becoming more vital. [Rahman et al. \(2004\)](#)

Nonetheless, like any emerging technology, AI and Big Data present hurdles. The use of AI in libraries prompts apprehensions over privacy and data security, particularly in relation to sensitive user information. Librarians must reconcile the advantages of personalised services with the need to safeguard consumers' privacy. Furthermore, since data increasingly underpins library operations, librarians must possess the requisite skills and expertise to analyse and understand this data proficiently. Librarians must constantly adapt to emerging technology, engaging in training to remain current with the newest tools and best practices in data management and artificial intelligence. [Adeyoyin et al. \(2012\)](#)

Notwithstanding these hurdles, the incorporation of AI and Big Data into libraries has significant potential to enhance library services and the user experience. By adopting these technologies, librarians may provide more efficient and tailored services, enhance resource accessibility and discovery, and actively assist research and academic communities. Adapting to new technology enhances the function of librarians in the digital era and establishes libraries as progressive organisations that change with contemporary advancements. The future of libraries, influenced by AI and Big Data, will render knowledge more accessible, personalised, and potent. [Emezie and Nwaohiri \(2013\)](#)

## 8. CHALLENGES AND FUTURE DIRECTIONS

Libraries are facing numerous challenges in the 21st century, including keeping up with rapid technological advances, ensuring equitable access to resources, and balancing traditional roles with new skills in cybersecurity, data management, and digital literacy. One of the most pressing challenges is keeping up with the digital divide, which creates barriers to learning and personal development for not everyone. Librarians play a key role in addressing this by offering digital literacy programs and providing free access to technology in libraries. However, the gap between those who have easy access to digital tools and those who don't remains a challenge. Privacy and data security are also growing concerns, especially as libraries increasingly rely on digital platforms and personalized services. Librarians must balance offering convenient, tailored services with protecting user privacy, while maintaining transparency with patrons about how their data is being used. This balance is crucial for maintaining the trust of their communities. [Emezie and Nwaohiri \(2013\)](#)

Looking ahead, libraries will become even more integral to society as digital technologies continue to shape the way we learn, work, and communicate. The future may bring more immersive experiences with virtual reality (VR) or artificial intelligence, making library spaces more interactive and engaging. Libraries could become hubs of innovation, where people can collaborate on projects, learn coding, or explore new technologies. Librarians will continue to play a vital role in the future of libraries, as they will continue to be essential in providing access to information, fostering education, and supporting community growth. They will continue to be the trusted guides in an increasingly complex information world, ensuring that libraries evolve to meet the needs of all people, no matter what the future holds.

The role of librarians in the 21st century is more dynamic and critical than ever before. As technological advancements, digital resources, and societal changes shape the way we access and interact with information, librarians have adapted to meet new demands. From embracing digital tools like AI and Big Data to promoting

information literacy and community engagement, librarians are evolving into multifaceted professionals who guide, educate, and connect individuals with the resources they need. While there are challenges—such as keeping up with rapid technological change, addressing digital divides, and ensuring privacy—librarians have proven their resilience and ability to innovate. Looking to the future, libraries will continue to be essential hubs for education, access to information, and community building. By staying at the forefront of these changes, librarians will continue to serve as valuable guides, helping individuals navigate the ever-expanding digital landscape and ensuring libraries remain relevant, inclusive, and vital in an increasingly complex world.

### **CONFLICT OF INTERESTS**

None.

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None.

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