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**ADOPTION OF ARTIFICIAL INTELLIGENCE TO IMPROVE
LIBRARY SERVICE DELIVERY IN ACADEMIC LIBRARIES IN
KWARA STATE, NIGERIA**

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Abstract

Due to the increasing presence of artificial intelligence (AI) in developed countries, this paper examines the adoption of AI for effective library services in academic libraries in Nigeria. The paper defines artificial intelligence while chronicling its history. He also identified the advantages of adopting artificial intelligence in academic libraries, which include ease of use, endless functionality, and the ability to perform complex work, among others, and the challenges faced by library management towards adopting artificial intelligence, which include financial uncertainty, job loss, and technological defects, among others. The paper concluded that adoption of AI in academic libraries sets a new level of efficient and effective library service delivery, but adoption in developing countries such as Nigeria is low due to some identified challenges. The paper recommended that government and library management should come together to suggest the way forward for academic libraries in terms of meeting the latest standard for the use of AI in libraries; library staff must undergo training and retraining in the use of artificial intelligence in providing library services, among other things.

Keywords: artificial intelligence, academic libraries, library services, adoption

Introduction

Artificial intelligence (AI) technologies are becoming globally recognized as indispensable tools for improving organizational efficiency and productivity. Therefore, suffice it to say that AI technologies have strongly influenced the world of work in the 21st century. In the library setting, the adoption of AI can improve library services and provide access to accurate information that can drive growth and development in this information age. Artificial intelligence technologies are now being employed in libraries to enable organic reader-library interaction. Through this, readers interact on the same platform and track and acquire users' personal needs and information so that users can access accurate information and human services at a low cost and rationally use library resources. Tella (2020) emphasized that libraries in developed countries have accepted and used AI technologies in almost all spheres of life, while those in developing countries are still struggling to find their feet.

In higher education institutions, the four main infrastructures are laboratories, equipment, teachers/classrooms, and libraries that contain rich and balanced information resources that can support teaching, learning, and research work (Tiemo & Ateboh, 2016). Libraries are the nerve center of the educational institution and the place where information is provided to serve all the beneficiaries, regardless of their age, political and moral backgrounds, religion, gender, etc. The transition of media materials from book collections to audio tape collections, video collections, databases, digitization of information materials, library automation, and now the adoption of artificial intelligence in library operations (Vijayakumar & Vijan, 2011) This means that one of the motives for adopting artificial intelligence technologies in university libraries is to meet the needs of users.

Artificial intelligence is a vast and complex field of study, and it can be difficult for non-professionals to understand. However, its ultimate goal is to create computer systems that rival human intelligence, and this clearly has major implications for libraries (Asemi & Asemi, 2018). There are various applications of artificial intelligence in the library system, such as descriptive cataloging, technical services, and collection development; subject indexing; reference services; database search; and delivery of documents. Some papers deal with the basic design issues of knowledge representation and natural language processing. Several authors have previously provided in-depth overviews of AI technologies.

Sivrajah et al. (2017) note that the use of AI in academic libraries allows for better analysis of data sets, especially large data sets used for analysis across multiple data sets. It also helps get rid of repetitive and boring tasks. This means that the application of AI to library operations helps libraries develop capabilities that can exceed those of the human mind. Libraries, including university libraries in developing countries such as Nigeria, fail to adopt digital technologies and also show resistance to change in the use of technologies in different library operations (Wheatley & Hervieux, 2019).

The origin of artificial intelligence (AI) can be traced back to the research of John McCarthy in 1955, with the assumption that every aspect of learning and other forms of intelligence can be induced through the use of a machine (Wang, 2018). Scientists have defined the concept of artificial intelligence (AI). According to Benhamou and Janin (2018), AI includes a set of technologies that enable machines to operate at a very high level of intelligence, like humans. The Merriam-Webster English Dictionary (2018) states that artificial intelligence is "the part of computer science that deals with giving machines the ability to appear as if they possess normal human intelligence." These human capabilities of artificial intelligence are improved by learning

from experience and adaptation over time. As an aspect of computer science, AI includes expert systems, fuzzy logic, artificial neural networks, evolutionary algorithms, case-based inference, image processing, natural language processing, speech recognition, and robotics (Kushal et al., 2012). Tredinnick (2017) described artificial intelligence as a combination of technologies and various approaches to computing science for making flexible and rational decisions in line with unpredictable environmental conditions. However, this trend can be linked to process automation, the Internet of Things, data processing, concrete robots, conversational interactions, and decision support.

In the library, AI can also be used to develop programs for efficient reference services, good textbook scanning, and appropriate subject categories. Moreover, AI technologies can help library users locate library materials through smart teaching systems and automated library services. Therefore, the adoption and use of artificial intelligence in libraries will allow better processing of information and, at the same time, better search for information, which will excite both library staff and users as there will be easier and faster access to information.

Presently, the University of Lagos is the only institution in Nigeria that has introduced the use of artificial intelligence in some of the library services and operations. The level of awareness among library professionals about the use of AI for library services and processes is low. Therefore, the study tends to look at the adoption of artificial intelligence for effective library service delivery in academic libraries in Nigeria.

Advantages of Adopting AI for Effective Library Services in Academic

Libraries Artificial intelligence (AI) has made it possible to provide solutions to pressing challenges facing libraries, such as bookshelves, other library materials, cataloging, and the acquisition of library materials, among others. Thus, library services can be done in more effective and efficient ways to improve user satisfaction. Therefore, library users can access accurate and timely information quickly.

Fernandez (2016) indicated that the use of AI in academic libraries will help in analyzing big data, creating metadata, and improving search translation. This means that the use of artificial intelligence in academic libraries will make library materials more accessible and available and allow staff to answer user inquiries about the use of artificial intelligence. Tella (2020) stressed the need for academic libraries to change their position to take advantage of the relative potential of artificial intelligence by improving the quality of library services in this information age. Talley (2016) also emphasized the need for university librarians to adopt AI technologies to provide better services to researchers and other library users. Grant and Camp (2018) note that many academic libraries, particularly in developed countries, have adopted AI in various library operations, such as distribution and reference services.

According to Sagarjit and colleagues (2001), the adoption and application of artificial intelligence have boosted user engagement in many industrialized countries throughout the world. Timely information can only be accessed in situations where AI is used to guide and support while at the same time being user-friendly, particularly in searching for information. For example, friendly AI technology will help users search for information easily, retrieve information across different combinations, and assist with users' queries.

Asefeh and Asemi (2018), for example, identify many ways in which AI technology might be utilized to improve library services, such as distribution services, bookshelves, and the categorization of library resources. AI technology can also be used to map metadata and assist with non-text searches. Fernandez (2016) points out potential opportunities for AI in library operations, particularly in big data analysis, metadata generation, translation of search items, and integration of search items across contents.

Divayana et al. (2015) recognized certain benefits of AI in library operations, including the potential to fulfill library chores more effectively. Using AI processes, libraries can perform tasks very quickly, compared to what humans do. Artificial intelligence can be used to find previously unknown concepts, such as outer space, and to reduce human errors in library operations. Liu (2011) argued that academic libraries can develop library AI by using expert systems in the reference section to recommend library materials to users to satisfy their inquiries.

Mughali (2015) also identified some advantages of AI, including

- It can perform cumbersome and complex work that humans may or may not be able to do.
- 2. completing tasks faster than a human being can.
- 3. the discovery of unexplored things, that is, outer space;
- 4. fewer errors and defects;
- 5. It can help to easily access search jobs in any part of the world.
- 6. The function is infinite.

Challenges of Adopting AI in Academic Libraries

Despite all the potential of AI in libraries, academic libraries in Nigeria have not yet embraced and implemented AI. Perhaps due to the low level of awareness and adoption of the importance of AI in libraries, research linking artificial intelligence (AI) and librarianship is still relatively low. While the use of AI is growing exponentially in other fields, this has not been the case in library and information science. The challenges facing libraries today pose a significant threat to the traditional role of libraries. Libraries now struggle with operational inefficiencies, technological deficiencies, difficulty maintaining existing audiences and engaging new audiences, and an inability to demonstrate value and benefits to all stakeholders.

Korinek and Stiglitz (2017) assert that advances in AI technologies can lead to job loss or job polarization. The adoption of AI can lead to a significant rise in inequality due to automation. The World Bank (2016) asserted that developing countries may be more reluctant to adopt AI because it will lead to a higher rate of job loss. The report also states that 69% of job losses will occur in India through the adoption of AI, 72% in Thailand, 77% in China, and 85% in Ethiopia. All of these studies indicate that AI can lead to job losses and potentially job destruction in a significant way.

The International Labor Organization (2018) also confirmed that with the current trend of technological change based on the adoption of AI in various organizations, including libraries, the adoption of AI has created widespread fears of job loss and a significant rise in inequality.

Other obstacles to AI deployment in academic libraries include:

- ❖ **Financial uncertainty:** When government funds shrink and political or economic changes take place, cultural institutions are often the first to suffer cuts. In many ways, the struggle to obtain institutional or government funding is a lot like a chicken-and-egg problem. Libraries are expected to show value for money and showcase cost-effective practices, but they cannot do so without incorporating new technologies to upgrade their physical spaces, offer new services, and improve the user experience for patrons today, all of which require more funding (Tella, 2020). Consequently, today's libraries often find themselves in financial straits, unable to show value without additional funding.
- ❖ **Merging skills gaps:** information digitalization has had an impact on both library operations and systems. Today, the digital world is just as important as the physical realm, making it imperative for libraries to develop new skills to not only stay competent but also to better serve patrons in the digital age. These services require new competencies, such as higher levels of digital fluency, the ability to provide the most relevant resources at a much faster pace, and support for hands-on creative activities to maximize the learning experiences of the recipient.
- ❖ **Competing with Existing Alternative Information Sources:** According to a 2017 Horizon report, a survey found that 68% of college students start their research with Google and Wikipedia. These free providers of information, along with the emerging open access trend in academic publishing methods, are emboldening libraries to rethink their distribution of quality information in the context of retaining a significant presence in the new information world.

- ❖ Attracting new and varied audiences: In order to attract and engage new audiences, libraries must provide services that satisfy the expectations of a new generation of highly educated people. connected patrons. This involves rethinking the traditional physical space of a library, moving from a quiet space filled with bookshelves for reading and reflective writing to something completely different. To remain relevant, the library must become a vibrant space for collaboration and innovative activities, along with a quiet space for reflective study.

Conclusion

The adoption of artificial intelligence technology in academic libraries sets a new level of efficiency and effectiveness in providing library services. Accreditation also gives libraries the opportunity to provide improved and dynamic services to their beneficiaries. Artificial intelligence is used to direct and support the activities of the library and, at the same time, is easy to use, especially in searching for information. These are among the benefits derived from the adoption of AI in libraries. However, despite the benefits associated with the adoption of AI in libraries, some challenges, such as financial uncertainty, emerging skills gaps, job losses, a lack of adequate infrastructure, and an irregular power supply, still hinder the smooth adoption of AI in many countries. Academic libraries in Africa.

Recommendations

Some suggested recommendations include

- ✓ Government and library management should come together to propose the way forward for academic libraries in terms of meeting the latest standards for the use of AI in libraries.
- ✓ Library staff should undergo training and retraining in the use of AI in the delivery of library services in order to achieve improved operational efficiency in libraries where the technology is already being adopted.
- ✓ There should be appropriate policy formulation and implementation before, during, and after the adoption of AI in African academic libraries.

- ✓ Libraries of higher institutions should intensify efforts to adopt artificial intelligence in providing library services to library users to obtain very high levels of satisfaction.
- ✓ The government and relevant agencies should provide appropriate artificial intelligence hardware and software to help provide library services to users.

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