Exploring the Role of Generative Artificial Intelligence in Enhancing Information Retrieval and Knowledge Discovery in Academic Libraries

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ABSTRACT: *This article explores the role of Generative Artificial Intelligence (GAI) in enhancing information retrieval and knowledge discovery in libraries by analyzing the significant advantages GAI offers. Its aim is on expanding the understanding of the potentials of GAI and how it reshapes information retrieval, accessibility and Knowledge discovery in academic libraries in a rapidly evolving digital landscape. The research adopted a mixed-method approach; Systematic review and longitudinal approaches as its methodologies. It posited the role of GAI in enhancing information retrieval and knowledge discovery in academic libraries in aspects like collection development and management, cataloging and classification, Indexing, library data analysis and unique search engines. The paper also identified some challenges limiting the usage GAI in academic libraries like GAI's potential for inaccuracies, staff training and development, rigid educational structures and human relations and emotive connections. By way of conclusion and recommendation, the researchers suggested that academic libraries should intensify investments in training and re-training of staff because professional technological development for staff will ensure effective management and use of AI technologies.*
KEYWORDS: generative artificial intelligence, information retrieval, knowledge discovery and academic libraries.

INTRODUCTION

Historically, the field of Library and Information Science (LIS) has served as the custodian and repository of the world's intellectual heritage by organizing, disseminating, and providing access

to information resources that contributes to the advancement of knowledge. It has housed different categories of ancient scrolls, books, manuscripts etc. However, in the present era, it is characterized by rapid technological advancement, steering profound transformation in the role of libraries and information institutions in organizing, disseminating and providing access to information resources. The rapid application of the latest technology advancements in Artificial Intelligence (AI) has revolutionized various sectors and libraries are not exempted as it is has proved to be very important for the growth of the learning space and marks as highly relevant in the era of digitization. Eiriemiokhale and Sulyman (2023) clarified this position by observing that technological advancements have ushered a pulsating paradigm shift in all dimensions of the daily activities of humans. The wind of the changes blowing around human nature does not leave libraries behind and has challenged all types of libraries to be striving towards responding to the trending practices. This advent of generative artificial intelligence (AI) marked a paradigm shift that began a transformative era in technological advancement, reshaping our perception, interaction and integration with technology. With advancements like artificial intelligence, machine learning, and natural language processing, libraries are evolving to offer more personalized services, improved search capabilities, and enhanced user experiences. Researchers have been exploring how these technologies influence information literacy, digital inclusion, privacy concerns, and the role of librarians in facilitating access to diverse and reliable information sources. Additionally, investigating the challenges and opportunities posed by big data management, digital preservation, and the shifting landscape of scholarly communication in the digital age may also be fruitful avenues of inquiry in contemporary library and information science research. Beyond enhancing traditional functions, generative AI instills a significant transformation in libraries (Leiker et al., 2023). This transformation redefines traditional methodologies, paving the way for an era where human/AI collaboration blurs the line between technological aid and human inventiveness (Mello et al., 2023). Yan et al. (2023) submits that these changes brought forth are multidimensional – technological, cultural, ethical, and operational – necessitating a comprehensive, multidisciplinary approach to fully leverage generative AI's potential in our everyday and professional lives. In the library and information field, it is about reimagining the role of libraries in our increasingly digitalized context. This progression enriches user experience and empowers libraries to manage resources more effectively, making valuable academic materials accessible to researchers and students (Narayanan, 2024). This justifies the positive response by libraries on AI around the globe since it is evident that it a tool that is increasingly playing a critical role in transforming interaction with users and service delivery by libraries and librarians, thereby evolving into effective and personalized medium of knowledge and discovery.

In academic settings, generative AI redefines the nature of learning and teaching. It extends beyond being a sophisticated tool, offering tailored educational experiences that adapt to individual learning needs (Chan & Hu, 2023). Mello et al. (2023) added that generative AI is pivotal in academic research, revolutionizing traditional research methodologies. It is an efficient digital assistant, swiftly reviewing, analyzing, and summarizing a broad range of literature. They concluded that generative AI accelerates the research process and encourages interdisciplinary collaboration, expanding the scope and depth of academic research. Massis (2018) averred that

while AI may be seen as a threat to traditional institutions like libraries, it also has the potential to enhance library services greatly.

On the impact of artificial intelligence (AI) on libraries and the institution of librarianship, Johnson (2018) opined that AI will change the way we seek information and make decisions and that machines will become better at tasks that used to require human intelligence. The author argues that as AI becomes more advanced, people may rely on it more and not seek information from libraries or librarians. He however added that libraries and public universities may play an essential role in the AI revolution by supporting open source AI projects and promoting information literacy because advanced AI genre is celebrated for its ability to create novel content and innovative solutions, catalyzes a revolution in diverse sectors. Its influence is particularly pronounced in domains reliant on information processing and dissemination, such as libraries, educational systems, and research. Thus, generative AI transcends its role as a mere tool; it signifies a paradigm shift, fundamentally altering the landscape of knowledge creation, access, and engagement (Leiker et al., 2023; Yanet al., 2023). Therefore, it will be important for academic libraries to keep pace with the latest developments and adapt their services accordingly (Bubinger & Dinneen, 2021) because the advent of AI has made the functions of libraries more complicated in which future librarians might need more complex, critical, innovative, and imaginative thinking, as well as emotional involvement to design and execute effective library services (Huang, 2022). These assertions show that the role of the academic library is not only changing but growing. Today, academic libraries are not only places to access books or curriculum-based information but also abode for community-building tools as well and librarians must be in the front rows of that change and growth.

Presently, many academic libraries around the globe, especially in low and middle income countries (LMICs) like Nigeria, are doing their best to ensure that they include AI enabled technologies for the sake of information accessibility, retrieval and utilization so as to be beneficiaries of the enormous benefits that the AI technology is bringing to table irrespective of some obvious challenges of AI especially on the aspect of ethics in accessing and usage of scholarly works. This is buttressed by Eiriemiokhale and Sulyman (2023) who opined that AI is still in its early stages of development, and many challenges need to be addressed before it can be fully integrated into libraries and information services. These challenges include privacy, security and ethical considerations. Despite this, academic libraries interest on AI have developed over time because in as much as they use various information management systems for organizing, packaging, and repackaging services, the reliability and effectiveness of these services is largely influenced by several factors like; increase in the number of users, a shift in the caliber of library users, i.e. more of Gen Z users, limited information resources, modern decentralized learning pattern and the emergence of digital resources. In the quest to serve the users better and keeping the library relevant to them, the benefits that AI technologies offer to libraries remains a welcomed development. As observed by Bakiri, Mbembati and Tinabo (2023), some of these benefits include; cost-effective operations, improved services and timely analyses. Memela (2023) also added that AI seems to be the new hope for academic libraries to provide more of the automated

services to their users because it is one of the technologies that has arisen and will play a major role in the 5th Industrial Revolution (5IR).

This article explores the role of generative artificial intelligence in enhancing information retrieval and knowledge discovery in libraries by analyzing the significant advantages GAI offers, which includes enhanced information accessibility, retrieval and personalized learning experiences, while also addressing its limitations and ethical considerations when used by library users.

RESEARCH OBJECTIVES AND METHODOLOGY

The general aim of the paper is on expanding the understanding of the potentials of generative AI and how it reshapes information retrieval, accessibility and Knowledge discovery in academic libraries in a rapidly evolving digital landscape. The primary objectives are to:
  i.   Provide a comprehensive overview of the applications of GAI academic libraries.
 ii.   Explore the role of GAI in enhancing information retrieval and knowledge discovery in academic libraries.
iii.   Identify the challenges and involved in implementing these technologies in Nigerian academic libraries.

To achieve these objectives, this research paper employed a mixed-method approach. It involved a systematic review of the existing literature on GAI in LIS, using case studies and scholarly analyses. Additionally, in our frameworks and submissions relating to GAI and academic libraries, we employed longitudinal approach to justify the assertions made based on our observations. Through this comprehensive research methods, the researchers presented insights that can guide academic libraries, librarians or information professionals, researchers, and policymakers in their endeavors to leverage GAI for the advancement of library and information services (LIS).

Conceptual Perspectives and Clarifications

Academic Libraries

Academic libraries are primarily pertinent for the good of every stakeholder involved in the educational sector which include the learners, teachers, and educational authorities. Their objective is to extensively make available informational services to support the learners and support for researchers. Oakleaf (2010) stated that these types libraries are generally attached to the Higher Learning Institutions (HLI) with the target of providing research materials and supporting the curriculum.

Presently, most academic libraries in Nigerian HLI are either digitally automated or in still at one stage or the other in the automation. They are invested in this process because a digitally automated library facilitates the accessibility of library information services, digital materials, and resources online, thereby providing easier platforms for users to easily access a wide range of information through text, video, and other digital resources. The medium has also made some digitally efficient academic libraries more popular due to their advantage over others that are still neck deep on the traditional physical libraries that are based on paper and other related materials alone. As observed

by Asemi, Ko and Nowkarizi (2020), some of the advantages of intelligent libraries are information security, high speed, and reduced cost of services.

Information Retrieval

The term "information retrieval" was first coined by Mooers in 1950. Amarel (1970) stated that Information retrieval may be used in the following senses:

a. Reference retrieval-retrieval of either a document surrogate, e.g. an abstract, or the document itself which may contain information relevant to a question (also called literature searching, document retrieval).
b. Fact retrieval-retrieval of an item embedded in text, e.g. a sentence or paragraph, which will satisfy a questioner.
c. Question-answering-reply to a question requiring inference from material presented in text.
d. Data retrieval-retrieval of individual or related items from a table. Kochen has suggested that the central problem of an information retrieval system is to produce an appropriate response to a need for information. A response could in theory take any of the above forms, depending on the expressed need.

Based on the outlined above, some selection mechanism is required in all retrieval systems. This means that the information retrieval system must use the standard given by the requester to decide on resources desired and not desired. Most times, the quality of the information retrieved is also based on the information retrieval literacy of the requester. The uniqueness among the different kinds of information retrieval patterns suggest substantial differences in the degree of comprehending the language required by a requester to satisfy each of the retrieval requirements, because they differ; while data retrieval may require no language competence, question-answering may require extensive grammatic competence because all Information Retrieval (IR) systems may be viewed as "question-answering" in the sense IR respond to a communicated need for information on the part of the requester.

Artificial Intelligence (AI)

Generative Artificial Intelligence (GAI),

Intelligence is the ability to think and observe facts and skills and use them when required. Naturally, the ability to recognize, reason/think and behave is inherent in all humans. It develops as they grow in experience from different endeavours in life. Mali and Deshmukh (2021) opined that introduction of AI has built a new era in revolutionizing both technical and user services in libraries. Self-learning and self-doing performing capability of AI can be used in libraries for better interaction among machine-automated intelligent technologies of all library services. Tracing the roots of Artificial Intelligence (AI) brings us back to 1956 when the formal inception of AI as an academic discipline occurred at the Dartmouth conference, marking the birth of AI as a field of study (Zhang, 2022). From the mid-20th century, a period marked by rapid growth and interest in machine capabilities and their capacity to imitate human intelligence. Audibert, Lemos, Avelar, Tavares, and Lamb (2022) stated that Alan Turing was among the early pioneers whose immense contributions served as the foundation for modern computer science and AI.

Artificial Intelligence (AI) is a suitable attempt to replace human power with the machine (Mali and Deshmukh, 2021). Nwakunor (2021) asserted that Artificial Intelligence (AI) is the computer controlled robots that think intelligently like human beings. These robots are controlled electronically with the aid of the computer by mimicking the competences of the human. AI involves the use of algorithms and computational models to simulate intelligent behavior, allowing machines to learn from data and make decisions. This technology has a wide range of applications in various industries, including libraries (Balasubramanian and Tamilselvan, 2023). Some major areas of AI are expert systems, natural language processing (nlp, pattern recognition, robotics, machine learning, deep learning and chatbots. On the part of Generative Artificial Intelligence (AI) which is categorized under chatbots, particularly exemplified by tools like OpenAI's ChatGPT, it represents a significant achievement in the realm of AI because it is reshaping the way humans interact with and utilize technology to a maximum advantage. Narayanan (2024) defined Generative AI, or Generative Artificial Intelligence as a branch of AI that focuses on creating new and original content, such as text, images, designs, and even deep fakes. Generative AIs works by starting with a prompt in the form of text, an image, a video, or other input, and then various AI algorithms generate new content in response to the prompt. Its content includes essays, solutions to problems, or realistic fakes created from pictures or audio of a person. According to Olga et al. (2023), ChatGPT has garnered attention for its ability to generate coherent and contextually relevant text, signaling a new era in AI-driven communication and content creation after its launch in November 2022. Falling under the umbrella of Generative AI, the technology extends beyond text generation to include a wide array of digitized media, revolutionizing various sectors, especially in the education sector (AL-Smadi, 2023). Worthy of note in the place of AIs is the Large Language Models (LLMs), both are closely related technologies. Though their development traces back several years, with its foundation traced to 2014, LLMs have been central in the surge of generative AI in 2023. Narayanan (2024) asserts that LLMs are complex AI systems leveraging deep learning on extensive datasets to comprehend and produce new textual content.

Advances in model architectures are the key to several factors that have increased the evolution of Large Language Models (LLMs). Today, LLMs are shaping the landscape of natural language processing and influencing the design of future models as a result of the availability of extensive textual data and growing computational resources. Good examples of some of them are GPT-3, GPT-3.5, GPT-4 (as at the time of this research, it is the most advanced and extensive model in the GPT series), Google BERT; Bidirectional Encoder Representations from Transformers, Google BARD (Biological Application Resource Discovery) corpora, Llama, Claude, Galactica, Falcon 40B, Cohere, Ernie, Lamda etc.

Generative Artificial Intelligence (GAI) in Education and Academic Library
Education
The potential of artificial intelligence (AI) to transform education is immense, impacting various aspects of the educational landscape (Narayanan, 2024). After the release of one of the most prominent GAIs (ChatGPT) in 2022, November to be precise, it massive criticism especially from the academic world because of its alarming ability to enhance cheating on different academic exercises like tests and essays. Many universities/institutions in western developed countries like

University of Oxford and University of Cambridge saw that brand of GAI, ChatGPT, as a medium that ridicules and waters down dictates and policies academic integrity. Using ChatGPT as a student or researcher meant you were dishonest. As a result, restriction were placed; institutions developed ways of identifying GAI-generated content such works such as plagiarism detection softwares, so as to mate out sanction. One of the greatest criticism against ChatGPT was that it lacked the ability to engage/promote critical thinking, creative thinking and problem-solving skills that are very essential for academic success.

With time, clarity on GAIs began to take shape; the negation of the academic world began to shift places as some progressive scholars started identify seaming pertinent benefits of GAIs and its inculcation in the educational system. These progressives validly recognized the fact that GAIs make learning more interactive, thereby reducing a lot burdens on teachers in terms of preparing learning materials, enhancing media literacy and its ability to generate personalized learning lesson plans according to each student's capacity and pace. Thus :

- GAI has the ability to improve on the collaboration between teachers and students. The leverage extends to its helping students identify their weak areas, thereafter, provide such students with unique and personalized learning recommendations to better their performance in the process of learning. This means that GAI has the potential to help educators identify their students' strengths, weaknesses, and individual learning patterns.
- With GAI, teachers are also able to adjust their classroom environment in other to support the students better as they learn.
- GAI also helps teachers and students get relatedness in variables of research topics / areas so as to better position their objectives. GAIs are good at easily blending the nexus needed in such instances in a simple and not so complex ways. This helps students especially approach their task with better confidence. This means that GAI is also patterned to encourage students to fact-check information and responses to get the needed clarity.

This position is supported by AL-Smadi (2023) who posited that AI-driven adaptive learning systems analyze student performance to offer customized courses, adjusting curriculum speed, material, and complexity based on individual achievements. He added that this personalized approach ensures that students learn at their own pace, which can help them better retain information and improve their academic performance. The academic progressives however cautioned that there is the need to educate students on the responsible use of GAIs so as not to abuse its enormous potentials and benefits to the academia.

Academic Library
The evolution of AI and its integration into library operations has evolved through several phases. According to Kalisdha (2024), understanding the following historical context of AI and libraries is essential to appreciate their current significance and future potential:
- *Early Automation (1950s-1980s):* The earliest application of automation in libraries began with the introduction of computerized library systems. These systems aimed to replace

manual cataloging processes, with early library automation projects focusing on tasks like catalog card production and circulation management.

- *MARC Format and Bibliographic Databases (1960s-1970s):* The development of Machine-readable cataloging (MARC) formats facilitated the standardization and exchange of bibliographic data. This innovation laid the foundation for the creation of large-scale bibliographic databases that became
- *Online Public Access Catalogs (OPACs) (1980s):* The 1980s witnessed the advent of Online Public Access Catalogs (OPACs), which marked a significant leap in making library resources accessible to users. OPACs allowed users to search and access catalog records electronically, making the retrieval process more efficient.
- *Integrated Library Systems (ILS) (1990s):* Integrated Library Systems emerged, integrating various library functions such as cataloging, acquisitions, circulation, and online catalog access into a single system. This integration streamlined library operations.
- *Discovery Services (2000s):* The 2000s saw the development of discovery services, which used federated search technology to allow users to search across multiple library databases simultaneously. This improved the search experience and access to a broader range of resources.

In recent years, significant attention has been on different technological advancements in the library. One such technology that has gained grounds in library services is chatbots; GAI. It has been applied in various library services, its leverage and potential benefits have been identified in many studies; Kaushal and Yadav (2022) found that AI-powered chatbots can help reduce the workload of library staff and improve users experience while Tait and Pierson (2022) found that AI-based recommendation systems can improve user satisfaction and engagement with library services. Traditionally, metadata of library resources are manually added by catalogers. With the use of GAI, it automatically extracts algorithms and enriches metadata like author's information, subject keywords, publisher and publication dates from electronic information resources. Not only does it save time, it also enhances the accuracy of catalog entries by the librarian. This aim here is to enhance the work of the cataloger not that the work of the cataloger is inaccurate. In agreement with this assertion is a study by Li et' al (2019) as cited by Balasubramanian and Tamilselvan (2023) which proved that AI-based classification systems can significantly reduce the time required for cataloging and improve the quality of metadata. Thus, academic libraries are increasingly embracing this technology to augment their services and better user satisfaction. The deductions from the studies mentioned show that GAIs can provide the following:

a. Better analysis of user behavior based on available information/quarries by users
b. Virtual instant assistants to users by directly answering their questions and pointing them to information relevant resources.
c. Automation of routine tasks like cataloging and classification. By automating responses to routine queries by users, GAI tools can effectively enhance the efficiency and accuracy of reference services, thereby, improving user experience by offering prompt and reliable

assistance. This feat alone is a potential imminent revolution in library reference services already spreading beyond average speed.

d. The use of GAI saves librarians' time and improve the probability of accuracy and consistency of metadata , enabling librarians to focus on more complex, nuanced inquiries

e. In Research, GAI generate relevant and engaging content, providing potential solutions to various challenges, that is, it operates beyond content generation, it also covers complex problem-solving in different fields and areas. More importantly, it can help researchers comprehend the connections in their research areas or better problem-solving capacities as long as their study is concerned. It does this by revealing several connecting perspectives of the study in progress. However, when researchers depend on GAI (ChatGPT) to do the work entirely, the outputs are usually not well formatted in line with academic specifications. The intentional capacity to posit and defend the positions made is mostly almost and that is what we call the "spirit" of the study.

These realities substantiate the fact that GAIs have ushered in a deeper paradigm shift in the information management and dissemination. The amazing but yet a daunting aspect is that the technology's potential to revolutionize library operations spans various aspects of library, from the traditional library operations to enhancing user interaction and automating administrative processes.

However, in the Nigerian context, academic libraries are aware of the integration of AI systems in libraries and how it is now being adopted and used in many academic libraries around the globe. Sadly, this is not so in the Nigerian situation as librarians have mixed feelings about the readiness of academic libraries to integrate AI systems into library operations and services, especially with the older generation librarians who are not very open to changes. Based on the librarian perception, it implies that the integration of AI in library operation and services will take the library to the next level by reducing human errors due to repetitiveness in library tasks, and if care is not taken, AI system might take their job role (Yusuf, Ajani, Khadijah, and Firdausi, 2022). .

Role of GAI in Enhancing Information Retrieval and Knowledge Discovery in Academic Libraries
The intersection of these two rapidly evolving fields; AI and LIS is inviting and challenging at the same time. With the advent of AI technologies such as machine learning, natural language processing, and semantic analysis, there is a growing interest in how these tools can be leveraged to improve various aspects of library services, including cataloging, indexing, recommendation systems, and user interfaces.

Having discussed on the realities of GAI in education and libraries, it shows that he role of Generative Artificial Intelligence (GAI) on library services is significant and far reaching, with the ability to provide interesting opportunities to improve users library experience, the efficiency and effectiveness of library services and also transform the operational capacities of libraries in terms

of management. In enhancing information retrieval and knowledge discovery in libraries, the following are some of the roles GAI effectively play:

I.   *Collection Development and Management:*
In the selection and acquisition of information resources, GAI can assist by analyzing the usage data by users. In doing so, it will identify popular resources being used and predict/project prospective demand of such resources based on data usage collated. Informed decisions about which resources to purchase and how to allocate resources more efficiently can be made by the library based on this.

II.   *Improved cataloging and classification:*
In cataloging and classification of library materials, GAI can also help by reducing the time and efforts required to process and organize collections. It brings precision and ease to the table, enabling a faster process of cataloging and classification.

III.   Indexing:
This is another unique area in the academic library where the development of GAI is apt. The indexing of library resources, particularly periodicals, are pertinent to users because indexing is the foundation for document retrieval. Adopting or Developing an AI based indexing will go a long way in simplifying the process for users.

IV.   *Improved Unique Search Engines:*
Search engines powered GAI e.g. ChatGPT, can help users find unique relevant resources primarily related to their query more easily and quickly. It is unique in the sense that it may not give the same output if asked the same question the second time; their content may be similar, but it cannot be the same. Based on the user search behavior, GAI can analyze, identify patterns and suggest resources that a user may likely be interested in. it does this in real time with responsive service delivery.

V.   *Library Data Analysis:*
With circulation statistical data, user need and behavior based on resource usage, GAI can be used to identify user patterns, needs and preferences and subsequently used to analyze the data after which informed decisions can be made based on the data presented to GAI. Findings of such analyses are used by library management to improve on service delivery.

There is no gain saying that where all the above roles of GAI are placed in the library, benefits of such roles will be naturally follow. Some of such benefits include; enhanced user convenient experience, increased efficiency in traditional routine tasks such as cataloging and classification, improved search and discovery, better informed decisions on resource acquisition and allocation, improved resource accessibility of library resources for all categories of users to access. Thus, Generative Artificial intelligence (GAI) has the potential to transform many aspects of library services to a modern and more efficient and easier ways.

Challenges limiting the usage GAI in Academic libraries
This advancement of GAI indicates a positive stride towards access to better information access and retrieval in academic libraries, ensuring better evaluations, timely and quality information resources. However, there are several challenges impeding on the effective utilisation of GAI in academic libraries. The following are some of the observed limitations:

Potential for inaccuracies:
Because GAI is powered by computer programing, it might not always give the user the needed guidance. Sometime, if not checked, it has the ability to dish out inaccuracies and inherent biases. This makes critical thinking and scrutiny necessary on the part of the user so as to be cautious in approach the use of the application and its output; a user needs to properly evaluate the information from it to make sure it is sound by all academic standards to prevent a situation where the user becomes a victim of biased algorithms, exhibiting unprofessionalism.

Regular Staff training and development:
Integrating GAI in academic library services requires that librarians and library para professionals staff be trained and re-trained at interval on how to use the specialized skills and knowledge they are taught to the interest of the users. the need for re=training is emphasized because the digital age is always inventing and changing, meaning that technological advancement is dynamic in nature.

Cost Implication / Limited Resources:
Subscribing to GAI in academic libraries in LMICs like Nigeria, is not a very easy ground that any academic library can easily walk pass. The foremost reality is that such technologies are expensive to subscribe to because it mostly requires enormous investment in technological infrastructure and software. As a result, academic libraries may be hesitant or careful in evaluating the cost, benefits and implications of inculcating GAI in their services. This also translates to the limited availability of the technological resources needed for use.

Ethical Consideration and Data privacy:
For GAI to function maximally, relies on huge data to train and improve its algorithms. As a result, there is a glaring concern on data privacy and security of scholarly works since any misuse/unprofessional use or mishandling of scholars information can result in identity theft and privacy breaches on the part of GAI and the user by extension.

Rigid Educational Structures:
Integrating GAI effectively into the Nigerian educational system, especially in academic libraries, is an enormous challenge, especially as structure and pattern of our educational system is one that will also have impact in academic library institutions from the aspects of bureaucratic bottlenecks, rigid traditional operational patterns in the system, controlled mostly by such staff that are indifferent or doubtful about technological innovations.

Human Relations and emotive connections:
When librarians relate with users, there is usually some level of understanding from the place of emotions and surroundings. Because of the edge of emotions as a human, the librarians are superior to the artificial intelligence. An observant librarian can give a user support in not just information resources but also emotional support; in the sense that the approach in which such librarian is coming from will calm the user and give such user hope. Because of GAI's efficiency, it is very possible that it will decrease human creativity, intensive thinking and empathy. This may lead to

a time in future when humans' relations in academic library's connection to its community and unique human traits is reduced and scarce.

CONCLUSION /RECOMMENDATION

There are many areas filled with unprecedented opportunities for future research in the use of AI as far as library services is concerned. However, one pertinent aspect academic libraries must intensify efforts is on the need for academic library management to invest in training and re-training of staff. This area is very pertinent because professional technological development for staff to ensure they can effectively manage and use AI technologies is the heartbeat of the whole AI-compliant-academic library. Staff with outstanding knowledge on GAIs must have been trained on notable ways to ameliorate the challenges academic libraries may like face in using it and help develop unique strategies for addressing these issues as it pertains different academic libraries, they are also well placed to educate colleagues to understand reasons why they have to tag along. Users also get quality services from such staff, thereby making the library remain an important place of information resource access and usage to the users. the emphases on training and retraining is so because AI technologies continue to evolve, which makes it imperative for librarians to be up-to-date on the latest developments and to explore new and innovative ways to leverage GAI in the service of library users.

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