

A Case for Ethical Artificial Intelligence Use in Tanzania's Academic Libraries

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Abstract

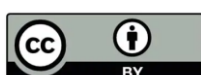
This study explored the need for guidelines to enhance ethical use of Artificial Intelligence in academic libraries. Three objectives guided the study: first, to determine awareness of ethical challenges; second, to identify ethical challenges associated with the use of AI; and third, to explore the need for guidelines to enhance the ethical use of AI in academic libraries. The study was conducted at universities; librarians completed the questionnaire, and library directors were involved in the interviews. The findings show that librarians are aware of the ethical challenges associated with the use of AI in service provision. Ethical challenges identified include biases, discrimination, inequality in information access, digital divides, exclusion, misinformation, violations of privacy, lack of accountability, violations of dignity, violations of human rights, and gender inequality. Findings also show that directors and most librarians noted a need for guidelines. Ethical aspects to be considered in the guideline include the integrity of information, confidentiality, privacy, control of misinformation, transparency, accountability, respect, human rights, and human dignity. The study concludes that to meet the challenges associated with AI use, mechanisms are needed to monitor and guide the ethical use of AI technologies in academic libraries. The study recommends that universities develop ethical guidelines to enhance the ethical use of AI in library service provision.

Keywords: Ethical Guidelines, Artificial Intelligence Use, Academic Libraries.

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Introduction

Artificial Intelligence (AI) can be defined from different perspectives: Adetayo (2023) defines AI as fundamentally transforming human interactions, key processes and systems that underpin modern society, from decision-making mechanisms to information flows, economic structures, and international relations. While its potential is broad, AI introduces significant risks, including reduced human autonomy, algorithmic bias, data privacy threats, and challenges to accountability for algorithmic harm. Ajakaye (2022) comments that emerging technologies such as embodied AI and large language models exacerbate these risks, affecting human-machine interactions and raising concerns about environmental sustainability and human rights across the AI value chain. Ali et al. (2020) opine that, in response to the far-reaching societal impacts of AI, policymakers are increasingly adopting a human rights lens for AI governance. However, the regulatory landscape remains fragmented, characterised by institution-led initiatives and inconsistent enforcement. Bakiri et al. (2023) warn that a



binding policy or guideline is urgently needed at the institutional or national level to address AI challenges and limitations.

In developing countries like Tanzania, Artificial intelligence (AI) is one of the technologies emerging very quickly. Barki (2022) has noted that AI has been associated with sectors such as business, defence, health, education, and others. Huang (2022) points out that AI in higher learning institutions will foster intelligent decisions and innovation. King (2024) observes that in developed countries, AI is widely used in library services and has transformed the best services in information technology. On the other hand, Lund et al. (2020) clarify that libraries are regarded as service-oriented organisations that have been transformed by advanced information technologies (ITs). The growing demands of their clientele have forced librarians to modify their service delivery mechanisms (Hussain, 2022). These new technologies have changed research, teaching and learning attitudes. As a result, the latest digital technology-driven service innovation has promoted new paradigms in teaching and research (Walter & Lankes, 2023). As a result, librarians have been compelled to seek new and innovative technologies to maintain users' competence and experiences of their library service provision through AI tools.

Examining AI and its potential uses in library settings, Banerjee (2023) sees AI as a professional tool for activities such as acquisition, indexing, and reference services. He also highlights its benefits and drawbacks. Likewise, Barki (2022) explores the revolutionary potential of AI in libraries. He talks about the application of virtual reality to facilitate immersive learning experiences, intelligent systems for reference services, and robots for book research and shelf maintenance. However, worries are raised that AI could push library employees further distant from their patrons. According to Barki (2022), incorporating AI can help libraries go beyond their conventional functions, improving the breadth and quality of their offerings. Finally, integrating AI into library operations and services may significantly enhance libraries' value in a society that is increasingly digitally dependent. In a similar vein, Cox et al. (2019) noted that AI is a crucial field that warrants serious consideration across all fields of education, including libraries.

Librarians, like any other professionals, are change agents of modern and advanced technologies. They have also long been responding to technological advances that improve their services. Mathar et al (2021) comment that libraries are increasingly using technology to improve their services and customer experiences. Artificial intelligence is one technology that has received significant attention in recent years. Library automation and digitisation were initially two components that expanded library workflows and services (Hussain, 2022). The past two decades have witnessed tremendous changes in library services, and in this context, the role of artificial intelligence has remained remarkable. Hussain (2023) notes that AI has become an indispensable tool for improving organisational efficiency and productivity. It is astounding that AI technologies have strongly influenced trades in the current century, including libraries. Artificial intelligence has received significant attention in recent years. This technology has a wide range of applications in many industries, including the education sector (Okunlaya, 2022). AI has the potential to improve education through library services by providing more tailored user experiences, increasing library operational efficiency and boosting resource availability.

Other scholars, Soltani & Nikou (2020) and Barki (2022), state that the use of AI in libraries helps patrons review disinformation and privacy and ethics in relation to human dignity. AI can also help patrons locate print books on the shelves and assist them in finding the right



book in the correct place. A chatbot or AI conversational agent can provide virtual reference services to better guide users. It was also emphasised that, in the age of AI, librarians are known as virtual storytellers or reader-advisory humans (Saibakumo, 2021). To meet library patrons' needs, AI chatbots are bringing positive changes to library services. Many libraries in both developed and developing countries have had GPS systems integrated with their websites for the past few years (Hussain, 2022). Hussain (2023) also argued that modern social media applications such as Twitter, Snapchat, Facebook, and Instagram use AI. Many libraries have transformed their social media services to attract patrons. According to Yoon et al. (2022), users can store and manage their relevant information through AI applications that use AI to manage and store data, thereby maintaining control over large volumes of data.

To enhance quality education through library services, UNGA (2024) recommends that universities invest in and promote digital, media, and information literacy skills to strengthen critical thinking and the competencies needed to understand the use and implications of AI systems. The purpose is to mitigate and counter disinformation, misinformation, and any form of malpractice arising from the use of AI. Likewise, UNESCO (2021) emphasises that higher learning institutions should develop ethical guidelines through their programmes and standards, AI ethics curricula for all levels, and promote cross-collaboration between AI technical skills education and the humanistic, moral, and social aspects of AI education. According to Peters (2022), ICT facilities, online courses, and digital resources for AI ethics education should be developed to meet the needs of all stakeholders, particularly students and instructors, in the service they provide. UNESCO (2022) also emphasises that understanding the impact of AI on human rights and ethical concerns requires analysing it not only through the lens of its practical use, but also by establishing guidelines to assess or monitor its ethical use. Impacts are multifaceted and can emerge through various channels, including the context of use of an AI system and its technological characteristics. Lund *et al.* (2020) suggest that *institutions must have a reliable, more robust mechanism in place to monitor the adoption and use of AI in their service provision or production.* This complexity means that AI can influence virtually all areas of human rights and ethics and, depending on its use case, intersect with other areas of international law and policy.

Statement of the problem

Librarians are involved in processes of acquiring, managing, and disseminating information to information seekers. Soltani and Nikou (2020) argue that library service also involves mechanisms for organising, packaging, and repackaging information from diverse sources in a way that is easily accessible and retrievable by library users. On the other hand, academic libraries specifically play essential roles in supporting teaching, learning, and research activities (Mathar et al., 2021). Indeed, due to advances in science and technology, libraries have incorporated digital means, including Artificial Intelligence technologies, to supplement traditional service provision (Beile et al., 2020). Nowadays, many academic libraries are doing their best to incorporate AI-enabled technologies to harness their benefits (Harisanty et al., 2023). However, there are several challenges associated with AI use, ranging from a lack of awareness and policies to ethical and technological perspectives.

Libraries use various information management systems to organise, package, and repack information services. The reliability of library services is highly affected by several factors, including increases in user numbers, limited resources, decentralised learning, and the emergence of digital resources. Okunlaya et al. (2022) underscore that, given the benefits AI technologies offer to libraries, including cost-effective operations, improved services, and

timely analyses, research into awareness and prospects has been conducted in various countries. In their study, which investigated the level of understanding and prospects for AI adoption in Tanzanian academic university libraries, Bakiri et al. (2023) provided new insights for librarians, HLIs' management, and policymakers on the trend of AI adoption in academic libraries. The findings reported in their study can be used by librarians and management to align their AI adoption plans to improve service delivery. It is known that there are several challenges associated with AI use: technological, economic, educational and other social factors. Therefore, this study aims to explore the need for guidelines to enhance the ethical use of AI in academic libraries in the Tanzanian context.

Related Literature

The development of artificial intelligence (AI) is fundamentally revolutionising human life, impacting individuals, communities, and society. Once confined to computer science, AI now influences a wide range of sectors from agriculture, healthcare, and finance to cybersecurity, law enforcement, public administration, and urban planning, among others. Fukuda-Parr & Gibbons (2021) opine that as AI systems become increasingly pervasive, they also push the boundaries of innovation in fields such as medicine, psychology, and robotics. This growing presence, while transformative, raises complex questions about privacy, human autonomy, and nondiscrimination. Kriebitz et al (2024) point out that AI systems are increasingly integrated into high-stakes decisions in emergency responses, education, healthcare, and even armed conflicts. Yu and Carroll (2022) observe that, beyond the often-discussed concerns about privacy, bias, and transparency, there are more contentious concerns about the use of AI in areas such as education, national security, and cyber espionage. Wall et al. (2021) posit that concrete examples of AI use include the deployment of robots at international borders and other service-provision sites. UNGA (2024) observes that marginalised or underrepresented groups, including women, refugees and individuals with special needs or neurodivergence, are particularly affected by AI's potential for harm in different settings, including the education sector.

Scholars such as Verma & Gupta (2022), Scott (2022), and Saibakumo (2021) note that libraries are increasingly using technology to enhance their services and customer experiences. Artificial intelligence is one such technology that has received significant attention in recent years. Rahaman (2022) and Hussain (2023) similarly comment that AI technology has a wide range of applications in many industries, including libraries. Harisanty et al (2023) note that AI has the potential to improve library services by providing more tailored user experiences, increasing library operational efficiency, and boosting resource availability. For instance, AI-powered chatbots can assist library patrons twenty-four hours a day, seven days a week, by answering frequently asked queries and guiding them to relevant resources. Similarly, Bornali (2024) opines that AI systems assist librarians in evaluating user activity, discovering patterns, and making personalised recommendations. Barki (2022) points out that AI can also automate repetitive processes such as cataloguing, giving librarians more time to work on more complex assignments. The adoption of AI in Tanzania is like that in other developing countries. However, mechanisms need to be put in place to monitor its ethical use.

Many scholars (e.g., Bao et al., 2020; Casillas, 2024; Copeland, 2024) note difficulties in incorporating AI into library services, despite its advantages. Some of the issues that must be resolved include privacy and ethical concerns, as well as the need for specialised expertise.



UNGA (2024) observes that ethical questions regarding AI systems pertain to all stages of the AI system life cycle, ranging from research, design and development to deployment and use, including maintenance, operation, trade, financing, monitoring and evaluation, validation, end-of-use, disassembly and termination.

Elsevier (2024a) and Elsevier (2024b) note that human rights and fundamental freedoms among students and instructors must be respected, protected and promoted throughout the life cycle of AI systems. Huang (2022) recommends that universities and libraries, in particular, must respect human rights and ethical values in their interventions in the life-cycle processes of AI systems. Okunlaya et al. (2022) argue that new technologies must provide new means to advocate for, defend, and exercise human rights, rather than infringe on them. Rahaman et al. (2022) suggest that AI actors should make all reasonable efforts to minimise and avoid reinforcing or perpetuating discriminatory or biased applications and outcomes throughout the life cycle of the AI system to ensure the fairness of such systems. Scott (2022) and Yu & Carroll (2022) insist that effective remedies, such as the establishment of policies or guidelines, should be implemented to address discrimination and biased algorithmic decision-making in library service provision through AI use.

Bornali (2024) notes that the future of AI in libraries holds great promise, poised to revolutionise their operations and service delivery. Advancements in AI enable libraries to automate various processes, enhance user experiences, and improve access to information. Barsha & Munshi (2023) envisage that, with AI, libraries can offer personalised recommendations, streamline information searches, and automate routine tasks like cataloguing and indexing. Additionally, AI-powered chatbots can assist users by answering common queries and providing support. Ajakaye (2022) reminds information professionals that, while challenges and ethical considerations remain, the transformative potential of AI can empower libraries to serve their communities better, making them more efficient, accessible, and user-focused.

Yusuf (2022) insists that artificial intelligence (AI) technology is drastically changing how libraries function and interact with users, and that AI applications in research and education are becoming increasingly important. Other scholars (Yoon, 2022; Verma & Gupta, 2022) argue that in modern libraries, products are enhanced, user behaviour is forecast, inventory is monitored, and AI is used to analyse large datasets. Soltani & Nikou (2020) also argue that AI agents are employed to improve the performance of search engines and mobile devices. On the other hand, Scott (2022) opines that recognising that ethical values and principles can help develop and implement rights-based policy measures and legal norms, by guiding with a view to the fast pace of technological development. However, there are specific challenges in incorporating AI into library services, despite its potential advantages. Saibakumo (2021) and Kriebitz & Lütge (2020) suggest, from different perspectives, that among the issues that must be resolved are privacy and ethical concerns, as well as the need for specialised expertise. The UNGA (2024) made it clear that the complexity of the moral issues surrounding AI necessitates cooperation among multiple stakeholders to address challenges associated with AI use in service provision. Existing literature offers a wealth of research on the design, deployment, and evaluation of AI-driven systems in education. However, the challenges posed by the growing influence of AI in society call for revisiting the research foundations of AI in education and library services, particularly to inform policy decision-making and guide future research.

Fukuda-Parr and Gibbons (2021) note that unwanted harms, such as safety and security risks and vulnerabilities to attack, should be avoided and addressed throughout the life cycle of AI

systems to ensure human and ecosystem safety and security. UNESCO (2022) opines that safe and secure AI will be enabled by the development of sustainable, privacy-protective data access guidelines that foster better training and validation of AI models utilising quality data. Hussain (2023) proposes that universities should introduce policies and guidelines for impact assessments, such as ethical impact assessments, to identify and assess the benefits, concerns, and risks of AI systems, and to establish appropriate monitoring measures and assurance mechanisms. Huang (2022) also suggests that proper oversight, impact assessment, audit, and due diligence mechanisms, including protections for whistleblowers, should be developed to ensure accountability for AI systems and their impact throughout service provision.

Transparency in academic settings is essential for all parties to observe, as it ensures they are on the same page and in agreement. Casillas, J. (2024) note that the transparency and explainability of AI systems are often essential preconditions for ensuring the respect, protection, and promotion of human rights, fundamental freedoms, and ethical principles. Cohen & Slottje (2024) insist that transparency is necessary for relevant institutional liability regimes to work effectively. Copeland (2024) concludes that the lack of transparency could also undermine the ability to effectively challenge decisions based on outcomes produced by AI systems, thereby infringing the right to a fair trial and effective remedy and limiting the areas in which these systems can be legally used. Several studies have highlighted that transparency, integrity, confidentiality, accountability, and honesty are fundamental to professionals' ethical practices in service provision.

Theoretical Support

This study aimed to explore the need for guidelines towards enhancing the ethical use of Artificial Intelligence in academic libraries. Findings of the present study showed a high level of awareness of AI use. This aligns with the Technological Acceptance Model (TAM), which emphasises perceived usefulness, the librarian's awareness of AI use, and the potential for AI to enhance library services and teaching quality, improve student engagement, and reduce costs. As a result, librarians are more likely to perceive AI as applicable in their service provisions. Generally, TAM offers several advantages for understanding user acceptance of new technologies, such as AI, in the Tanzanian context. It is a relatively concise and straightforward model that helps predict user behaviour by focusing on perceived usefulness and ease of use. This allows for library management interventions to improve adoption and use rates. TAM also provides a foundation for understanding the causal relationships among beliefs, attitudes, and intentions regarding technology use among academic library stakeholders in Tanzania.

Since this study focuses on establishing guidelines for the ethical use of AI in academic libraries in Tanzania, a developing country, it is relevant to other studies conducted in other developing countries. While many scholars have applied various theories, such as the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Diffusion of Innovations (DOI), these studies are predominantly based in developed countries such as the USA, UK, and Germany. DOI offers several advantages for understanding how new ideas, products, or practices spread through a population. It helps explain why some innovations are adopted rapidly while others face resistance, and it provides a framework for developing effective strategies to promote adoption. Key advantages include its ability to predict adoption rates, identify key adopter categories, and guide the development of targeted communication strategies. The theory is highly relevant to academic libraries in Tanzania, as they vary in



levels of AI adoption and use due to several challenges related to technological skills, facility acquisition, and ethical considerations. The model used in this study is straightforward and suitable for librarians in developing countries such as Tanzania, providing a solid rationale for establishing future guidelines for the ethical use of AI. Therefore, this model must incorporate modern technologies to enhance service delivery and client satisfaction.

Methodology and Procedures

The present study is based on survey research, a method commonly used to study large groups' preferences, practices, concerns, settings, attitudes, and behaviour. Several researchers employed this research design to assess professionals' attitudes towards Information and Communication Technologies (ICTs) in universities (Ramzan et al., 2021; Ramzan & Singh, 2010). The study population included university librarians. As per the Tanzania Commission for Universities website, under university statistics 2024, there are 11 full-fledged public universities and 22 full-fledged private universities, for a total of 33 full-fledged universities. There are seven public university colleges and eight private university colleges, for a total of 15. Therefore, 48 academic libraries are found in both full-fledged and university colleges. Convenience sampling was used to recruit librarians from both private and public universities, with the main criteria being a bachelor's degree or higher and a job designation of assistant librarian or higher. A total of 40 respondents completed the questionnaire, representing 83.3 per cent of the planned sample size of 48. Purposive sampling was used to recruit directors from academic libraries at five full-fledged universities in Dar es Salaam to ensure representation from different regions. The questionnaire was developed in Google Forms, an online data collection tool. The questionnaire assessed awareness of the ethical challenges posed by AI use, the benefits and challenges of AI use, and the need for guidelines to enhance the ethical use of AI in academic libraries at universities. The questionnaire link was shared with the identified respondents via multiple channels, including WhatsApp and personal email.

The survey remained open from 14th to 25th April 2025. A face-to-face interview was used to collect data from five library directors at five full-fledged universities: Kampala International University, Aga Khan University, Ardhi University, University of Dar es Salaam, and Dar es Salaam Tumaini University. The interview was from 21st to 25th April 2025. The interview had only three questions: the first assessed awareness of ethical challenges arising from AI use in academic libraries; the second assessed understanding of the ethical challenges associated with AI use; and the last determined the need to establish guidelines for monitoring the ethical use of AI in academic libraries. Google Data Analytics tools and technologies were used to collect, analyse, and interpret data, generating insights and informing decision-making. It involves a range of techniques, including data collection, cleaning, and analysis, for each question related to the three objectives. Data are presented in tables and figures. Content analysis was used to analyse qualitative data collected through interviews.

Findings and Discussion

Findings cover the three objectives of the study: first, to examine awareness of the ethical challenges towards AI use in academic libraries at universities. Second, to determine the ethical challenges that arise from the use of AI in academic libraries. Third, to explore the need for the establishment of guidelines to enhance the ethical use of AI in academic libraries at higher learning institutions.

Demographic Information of Respondents

The first part of the findings aimed to obtain demographic information about the respondents, particularly librarians. Three main aspects were considered: education level, designation/title and experience as librarians in academic libraries at their universities. Table 1 presents a summary of demographic information of librarians involved in this study:

Table 1: Demographic Information of Respondents N=40

Demographics	Characteristics	Frequency	Percent
Education level	Bachelor degree	12	30
	Masters	18	45
	PhD	10	25
Designation/title	Chief librarian	10	25
	Librarian	18	45
	Assistant librarian	12	30
Experience as academic librarians	0 to 5 years	12	30
	6 to 10 years	18	45
	11 to 15 years	7	17.5
	16 and above	3	7.5

Source: Field Data (2025)

As Table 1 illustrates, the majority (18, 45%) were librarians with a master's degree and 6-10 years of experience. From the data above, one can conclude that academic libraries in Tanzania have qualified, experienced staff who deliver effective day-to-day services. In connection with the study undertaken through their experience and education level, there is a clear understanding that AI use in their services is familiar. A few respondents (3, 7.5%) indicate that they are more experienced in academic libraries, which aligns with the comment that most academic librarians are middle-aged. Having a team of middle-aged individuals means that the flexibility in adopting, using, and managing AI in their libraries can be achieved effectively and efficiently.

Awareness of Ethical Challenges of AI Use in Academic Libraries

The first objective of the study was to determine awareness of ethical challenges related to the use of Artificial Intelligence in academic libraries. Three questions guided the objective; the first aimed to assess librarians' awareness of the challenges they face when using AI in their libraries. The second question was planned to identify AI tools used in libraries. The third question aimed to determine the ethical benefits of using AI in academic libraries in Tanzanian universities.

Awareness of ethical challenges towards AI use in libraries



The first question aimed to determine whether respondents were aware of ethical challenges associated with AI use in academic libraries. It was an objective question; their answers should be affirmative or non-affirmative. Figure 1 summarises their responses:

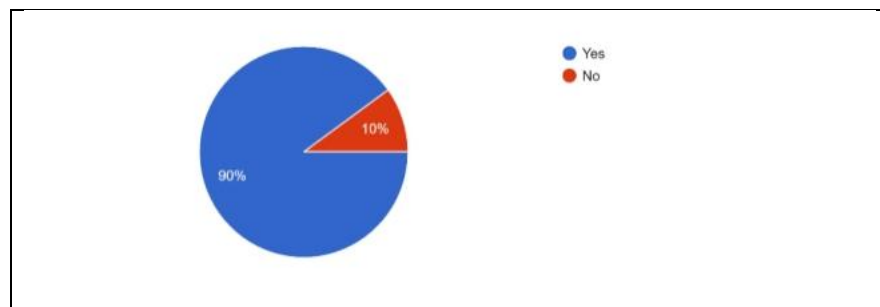


Figure 1: Awareness of Ethical Challenges of AI Use

Findings from Figure 1 indicate that librarians, assistant librarians, and chief librarians are aware that the majority (90%) face ethical challenges due to AI use in academic libraries. Similarly, all directors of the academic libraries at the universities surveyed said they are aware that their users and, at times, library staff face ethical challenges posed by AI. Hussain (2022) notes that AI technologies have changed attitudes toward teaching and learning and research practices; accordingly, the latest digital technology-driven service innovation has introduced several challenges to educational service provision, including academic libraries.

AI tools frequently used in academic libraries

The second question of this objective aimed to identify the AI tools most frequently used by academic library users and librarians in higher education institutions in Tanzania. The questionnaire listed proposed tools, such as ChatGPT, Virtual Assistants and Chatbots, digital Archives and Preservation, User Experience and Personalisation, Predictive Analytics, and Natural Language Processing (NLP) for Search and Automated Information Retrieval. Others are Text and Data Mining, Language Translation, Recommendation Systems, Cataloguing and Metadata and customer service recommendation. Respondents were asked to choose which services they frequently use in their service provision as librarians. Figure 2 below has a summary of their responses:

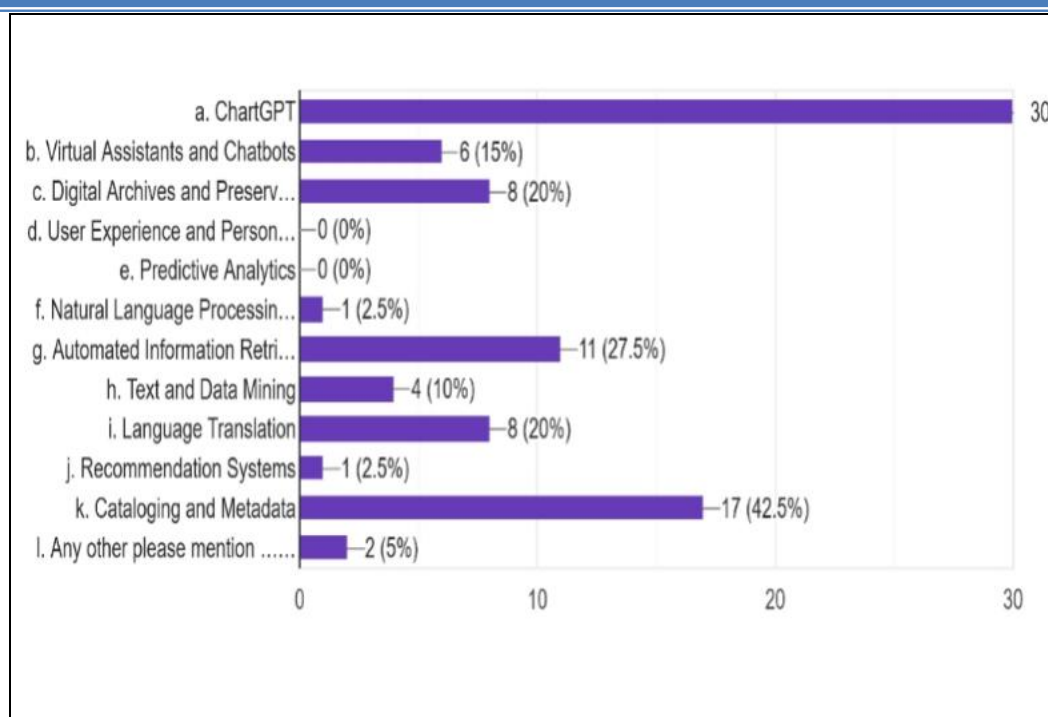


Figure 2: AI tools frequently used in academic libraries

From Figure 2 above, one could comment that ChartGPT is frequently used by 30 (75%) stakeholders of academic libraries in Tanzania. Scholars have pointed out that ChatGPT is commonly used in essay writing, research papers and sometimes dissertations. Academic dishonesty is one of the most common forms of malpractice in the educational sector. If academic libraries and universities fail to know how to detect, then they could be awarding high scores to the wrong candidates/students. It is the role of academic libraries through librarians to ensure that ethical conduct in the use of AI is monitored.

Unfortunately, academic libraries do not utilise a widely used customer service tool used in marketing and branding services. Other tools that are not used at all include user experience, personalisation, and predictive analytics. Natural language processing and text and data mining are rarely adopted. All of these are very important in library settings, but in a developing country like Tanzania, they are not fully utilised. It is a call for academic libraries and universities at large to begin training in AI. Scholars (Maghsudi et al., 2021; Kriebitz et al., 2020) suggest that higher education institutions should encourage training and research initiatives on the responsible and ethical use of AI technologies in teaching, teacher training, and e-learning, among other areas, and work to mitigate the associated challenges and risks.

Ethical benefits of using AI in academic libraries

The third question under this objective was designed to assess the ethical benefits of using AI in academic libraries at Tanzanian universities. The respondents were required to select among the following benefits, as applied in their universities: improved organisation of knowledge, personalised user experience, improved access and accessibility to information, increased inclusion of information, enhanced research support, efficient resource management, and increased information service provision. Figure 3 summarises the responses, showing the frequency and percentage of each option selected:



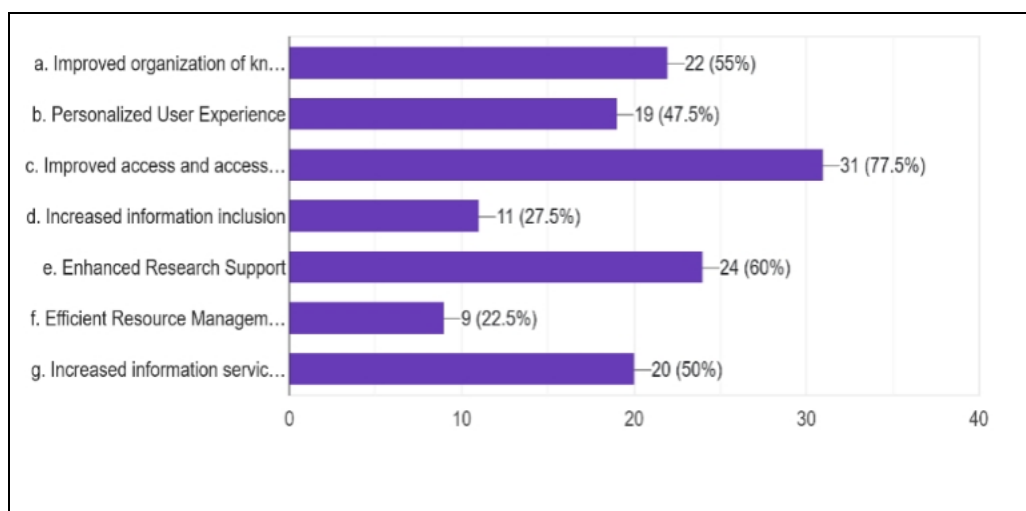


Figure 3: Benefits of using AI in Libraries

The findings in Figure 3 clearly show that the majority, 31 (77.5%) of the respondents, pointed out that the ethical use of AI improves access to and accessibility of information in academic libraries at universities. The idea is supported by Routledge et al. (2024), who argue that, with the advent of digital technologies and the widespread use of data and the internet, AI has become increasingly relevant in domains critical to human rights, fairness in control, and improved access to information. Other benefits, noted by the majority of respondents (24, 60%), include enhanced research support. Another advantage is improved knowledge organisation (22%, 55%). None of these can be achieved unless universities invest more in understanding AI's importance. The United Nations General Assembly (2024) underscores the need for university management to promote the acquisition of “prerequisite skills” for AI education. Skills include basic literacy, numeracy, coding and digital skills, media and information literacy, critical and creative thinking, teamwork, communication, socio-emotional skills, and AI ethics. All these efforts are required by academic libraries in universities to ensure that stakeholders, particularly students, can benefit from AI use without ethical impact.

Ethical Challenges to AI Application in Academic Libraries

The second objective of this study was to determine ethical challenges that might arise towards the use of AI in academic libraries. Respondents were asked to identify ethical challenges they face when using AI in service delivery. Various ethical challenges were listed in the questionnaire: the propagation of biases, discrimination among users, inequality in information access, digital divides among library stakeholders, exclusion of services among users, misinformation, violations of privacy, lack of accountability, violations of dignity, violations of human rights, and gender inequality. The summary of identified challenges is summarised in Figure 4:

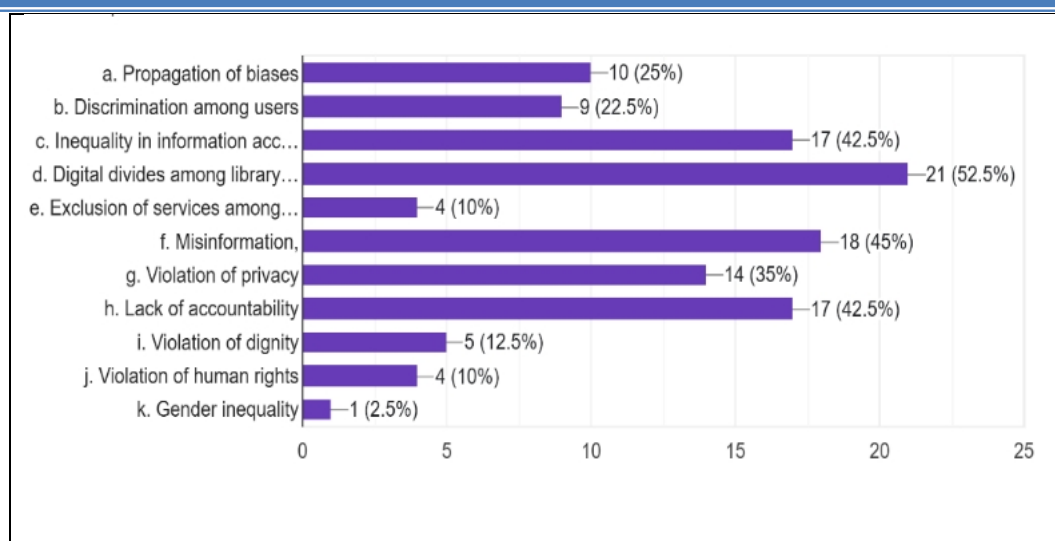


Figure 4: Ethical challenges towards the use of AI

Upon critically examining the data presented above, one notes that only 21 (52.5%) of respondents emphasised that digital divides among library stakeholders are the main ethical challenge to the use of AI in academic libraries. In developed countries, researchers have identified several ethical challenges at higher ranks, including misinformation, violations of human rights, violations of dignity and privacy, and inadequate access to information among library users. The findings show that the level of awareness towards AI use and its impact is low among librarians in Tanzania. In practice, insufficient knowledge of AI adoption and use in service provision is a challenge. Batoon (2022) argued that, to enhance the ethical use of AI across all services provided by universities, there is a need to promote general awareness programmes about AI developments. The promotion of AI should include data, the opportunities and challenges brought about by AI technologies, and the impact of AI systems on human rights.

More training is needed to enhance awareness of the effective use of AI in academic libraries and to address potential ethical challenges. On the other hand, more research and publications are required. According to Yu & Carroll (2022), education is concerned with preparing people to navigate complex futures. This will involve active engagement and collaboration with AI experts to provide education on the proper and effective adoption and use of AI in service provision. On the other hand, UNESCO (2021) insists that universities should foster new research at the intersection of AI and intellectual property (IP), for example, to determine whether and how to protect AI-generated works with IP rights. Faculties should also assess how AI technologies affect the rights or interests of intellectual property owners whose works are used to research, develop, train, or implement AI applications.

Need for Guidelines on Ethical Use of AI at Universities

The third objective of this study was to assess the need for guidelines to oversee the ethical use of AI in academic libraries at universities. The objective was guided by the following question: first, whether an ethical guideline is necessary. The second question examines whether they are familiar with the ethical considerations in the guidelines. The following subsequent sections present the findings.



Determination of the need for ethical guidelines in academic libraries

The first question under this objective aimed to determine this need, asking respondents whether such guidelines are necessary. The majority (96%) of respondents indicated a need for guidelines. The same question was posed to academic library directors, all of whom, from different perspectives, agreed on the necessity of specific guidelines addressing ethical considerations in the utilisation of artificial intelligence. Some respondents mentioned that a few cases have already been reported, complaining about the impact of AI use in service provision. Figure 5 summarises the responses from librarians:

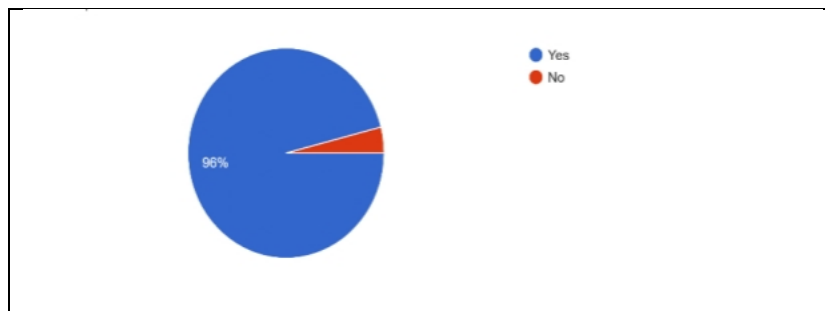


Figure 5: Need for ethical guidelines towards AI use

Figure 5 depicts the real situation, which librarians understand as there are ethical challenges towards the use of AI in service provision. Other studies, such as UNESCO (2021), make it clear that governments have a role in safeguarding peace and should promote and support universities in conducting AI research. Similarly, Yu and Carroll (2022) suggest that research contributes significantly to the further development and improvement of AI technologies, with a view to promoting national and international law, values, and guiding principles. The government should also publicly promote the best practices of, and cooperation with, researchers and companies who ethically develop AI. UNGA (2024) proposes that universities should ensure that AI researchers are trained in research ethics and require them to incorporate ethical considerations into their designs, products, and publications.

Ethical aspects to consider in the guidelines towards the usage of AI

The second question asked librarians whether they are familiar with the ethical considerations to be addressed in guidelines for the ethical use of Artificial Intelligence in their service provision. Figure 5 below summarises the responses:

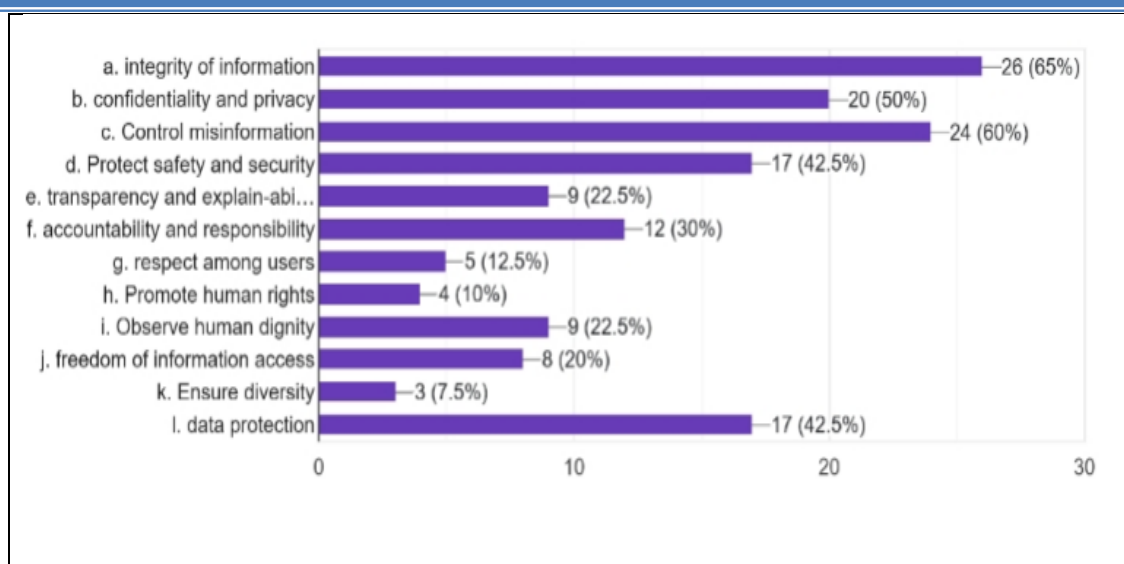


Figure 6: Ethical Challenges towards the use of AI.

The findings show that the ethical aspects that librarians strongly recommend be considered in the guidelines are integrity of information (26, 65%), confidentiality and privacy (20, 50%), and control of misinformation (24, 60%). In this context, the integrity of information provided is vital. Scholars such as Thomassen (2021), Cook (2021), and Marshall (2019) have noted that when a professional demonstrates integrity, their service and organisation are improved and respected by the majority of stakeholders. Also, findings are supported by UNESCO (2021), which advises higher learning institutions to develop AI ethics curricula for all levels, aligned with their programmes and standards, and to promote cross-collaboration between AI technical skills education and the humanistic, ethical, and social aspects of AI education. According to Peters (2022), ICT facilities, online courses, and digital resources for AI ethics education should be developed to meet the needs of all stakeholders, particularly students and instructors. From the figure above, one could note that the ethical aspects of AI are a focal point for ensuring the academic business remains in good standing from an operational, regulatory, and reputational standpoint. Similarly, establishing guidelines to address ethical issues will enhance the quality of education, particularly in university libraries. Generally, the other aspects mentioned in the figure above are also important to consider when addressing ethical challenges in academic libraries when providing information services using AI technologies.

On the other hand, ethical aspects such as honesty, accountability, bias avoidance, and responsibility among librarians in service provision should be included in the guidelines. These ethical principles are fundamental to any profession; librarians, as part of the information sector, are required to adhere to them. In this regard, a lack of ethical guidelines or regulations for librarians might create opportunities for professionals to exploit loopholes and violate ethical standards. Honesty is essential for information professionals to be considered in their daily information service delivery. Cox (2005) noted that in some cases, information professionals engage in improper actions, such as the destruction, disclosure, or unnecessary withholding of valuable information. A lack of such ethical standards among librarians in academic libraries might hamper the quality of academic services at higher education institutions.

Conclusion and Recommendations

Naturally, it has reached our university education as well; it is already changing how educators work, how students learn, and how students conduct research. The impact of AI on our education and training systems is undeniable and will continue to grow. Indeed, higher learning institutions require the prompt and effective deployment of quality assurance mechanisms to monitor the ethical use of Artificial Intelligence. Specifically, this paper has explored several ethical challenges librarians face towards the use of AI in information service provision. Moreover, the findings show that many librarians are aware of AI use in their libraries. They identified the following tools used: ChatGPT, Virtual Assistants and Chatbots, digital Archives and Preservation, User Experience and Personalisation, Predictive Analytics, and Natural Language Processing (NLP) for Search and Automated Information Retrieval. Others are Text and Data Mining, Language Translation, Recommendation Systems, Cataloguing and Metadata and customer service recommendation. Furthermore, various ethical challenges were identified: the propagation of biases; discrimination among users; inequality in information access; digital divides among library stakeholders; exclusion of services; misinformation; violations of privacy; lack of accountability; violations of dignity; violations of human rights; and gender inequality. Similarly, they identified ethical considerations in establishing guidelines to address potential ethical violations arising from AI use. Significant aspects to consider include the integrity of information, confidentiality and privacy, and the control of misinformation.

The gap is evident in developing countries, particularly in Tanzania, where there is a shortage of research and publications on the effective use of AI in education and other key sectors. Apart from research, there is a need to raise awareness among stakeholders of AI's importance in the education sector, particularly in academic libraries, which serve as sources of knowledge and information. Other recommendations include universities having general guidelines for ethical AI use. The libraries should develop a specific guideline on AI use in academic libraries and other sectors, and teach basic or advanced AI literacy to university stakeholders. This can be embedded in information literacy courses or introduce a tailor-made course on the basics of Artificial Intelligence and its associated technologies.

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