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Review Article

Digital Preservation and Curation of Artificial Intelligence (AI) Generated Contents for Sustainable Library Operations in Academic Libraries in Nigeria

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Abstract

The study investigated digital preservation and curation of Artificial Intelligence (AI) generated content for sustainable library operations in university libraries, 3 research questions and 3 hypotheses were used for the study. The population comprised of 193 Librarians from thirteen (13) university libraries in South-South and South-East, Nigeria. The random sampling technique was used to select a sample size of 116 Librarians in the 13 universities representing 60% of the population. A 15-item questionnaire was used for data collection. Cronbach alpha statistics was used to obtain 0.74 reliability. Mean/standard deviation was used for research questions and z-test statistics was used to test the hypotheses at 0.05 level of significance. The result amongst others revealed that, some of the challenges faced by University libraries in the preservation and curation of AL generated content are ethical and bias considerations that deals with fairness, accountability and transparency, legal and intellectual property issues, data privacy and security and more. One of the strategies to preserve and curate AI generated content is the storage of multiple copies of AI-generated content in geographically distributed locations to curb situation that would lead to loss of data due to hardware failures and many others. It was recommended that, government in collaboration with university management should provide necessary infrastructure and facilities, upgrade and update existing ones to enable the preservation and curation of AI generated content for the sustenance of digital library operation in academic libraries.

Keywords

Digital, Preservation, Curation, Artificial Intelligence (AI), University, Libraries

1. Introduction

Academic libraries have engaged in digital library collections and operations with the purpose of ensuring quality service delivery to its users. Academic libraries without doubt have adopted and facilitated new technologies and procedures that have improved their ability to carry out their operations in a digitally productive ways, providing users with easy access to information resources for research and intellectual pursuit. Academic libraries are set up for the achievement of the goal of maximizing information resources and services for the benefit of its users. On this note, the incorporation of Artificial Intelligence (AI) in academic library operation has seriously redefined the traditional library routine services to a more

appealing, scientific and amiable service delivery without heaping much on real human intelligence. AI application in the library has aided the improvement of many libraries and librarians' activities like cataloguing, retrieval, reference, indexing, serials functions, collection development, acquisition of information resources, among other activities [15].

Prior to this time, academic libraries were based mainly on integrated library systems that is solely based on managing and providing access to library collections and services such as the integrated library services (ILS) which was designed when collections were operating primarily on physical items and they provided automated support for the tasks related to the management and access to library materials. No matter the advantages associated with the technological operations of academic libraries, digital materials are susceptible to potential damages by media failure or remain fluid over time. They can be edited or altered with ease, decoded into human readable information in an untrustworthy or inaccurate manner by some rendering software [15]. The integration of AI has the potential to elevate the role of librarians from mere custodians of information to knowledge navigators, curators, and facilitators of meaningful interactions between users and resources [5]. This will make room for simplistic and without seeking direct human intelligence to always be responsible in carrying out library services.

Frankenfield, J. [9] opined that simulation of human intelligence in computers that are groomed to reason and act in human-like characteristics like learning and problem-solving. It is a computer-based technology or system capable of human-like mental processes which performs activities like learning, reasoning, and self-correction. To equally authenticate the integrity of digital resources most especially when it concerns *AI-generated materials, digital preservation and curation are very essential for maintaining long-term access and usability of digital content in academic library. To this, it is believed that all technological applications in library operations are embraced* to assist in fulfilling the goal and vision of libraries, which includes research, teaching, and community service to society.

Digital preservation refers to an organized activities and processes that helps to ensure significant long-term, error-free in the storage of digital information and materials, that aid a smooth process of retrieval and interpretation putting in consideration a time span that information required are safely maintained. These preservation packages include: a database which helps to track preservation actions taken on each content object to include recording events, agents and objects; active checking of the fixity on archived objects to ensure the integrity of archived materials; and alerts to archive [10] On the other hand, digital curation is about the act of selecting, preservation, maintenance, collection, and archiving of digital assets which establishes, maintains, and adds value to repositories of digital data for present and future use [12].

Sustainability of AI generated digital content is the process of applying all environmental, economic and social steward-ship principles to digital products, services, and data delivered via the internet. To satisfy library users optimally. According to a material retrieved in, [14], for curation and preservation of AI generated content to be intact, library professional has to be abreast with current trends and privileges and expand their reach, and demonstrate values and key in to aspects of digital curation, such as the lifecycle model, the skills and competencies, the tools and platforms, the standards and best practices, and the ethical and social implications. *As AI technologies continue to advance, libraries are facing new challenges in preserving and curating these dynamic and often complex digital creations. The digital preservation and curation of AI-generated content in academic libraries are vital for sustainable digital library operations in universities. By addressing preservation challenges, promoting transparency, adhering to ethical guidelines, and fostering collaborations, academic libraries can effectively support the evolving landscape of AI research and education while ensuring the long-term accessibility and usability and sustainability of AI-generated content for future generations of scholars and students* [8, 1].

AI generated content needed to be preserved and curated in academic libraries for sustainable library operations.

Academic libraries have a significant role to play in terms of preserving and curating AI-generated content to make-sure a sustainable digital library is attained. On this note, the following are the key types of AI-generated content that deserve to be preserved and curated in academic libraries in the South-South and South East.

Research papers and publications: These papers and publications that involve AI-generated content must be preserved and curated. Such papers encircled disciplines, like computer science, engineering, natural language processing, and medicine. Curators need to ensure accurate metadata, proper categorization, and adherence to ethical guidelines when archiving these publications. Proper documentation of the AI models used and the versioning of models are important for future reproducibility and research validation in this regard [18].

Datasets and training materials: AI models that often rely on large datasets for training. Academic libraries need to preserve and curate these datasets to support future research and validation of AI algorithms. Proper documentation of licensing information, data provenance, and ethical considerations concerning data privacy and bias are critical to this effect.

AI-Generated artifacts and creative works: AI technologies are utilized to create art, music, and other creative works which are to be preserved and curated by academic libraries. These AI-generated artifacts and creative works needs proper documentation of the AI algorithms and parameters used in the creative process sustainable library operations [2].

AI models and algorithms: The AI models and algorithms need preservation and curation to ensure research reproducibility and future advancements. Academic libraries can

maintain repositories of AI models and their versions, along with associated documentation and licensing information.

AI-generated educational materials: AI is being integrated into education, leading to AI-generated educational materials such as interactive learning modules, personalized tutorials, and adaptive assessments. Academic libraries need to curate these materials to support personalized learning pathways and enhance the learning experience.

AI-driven research tools and software: AI technologies are used to develop research tools and software in various disciplines. Academic libraries should preserve and curate these AI-driven tools to support ongoing research and provide valuable resources for future scholars. Regular updates, bug fixing, and versioning are essential for maintaining the usability and relevance of these tools [4].

AI-enhanced learning platforms: AI is transforming learning platforms through adaptive learning, personalized recommendations, and intelligent tutoring systems. Academic libraries must curate these AI-enhanced learning platforms to ensure their accessibility, reliability, and adherence to privacy and ethical standards. Regular updates and user engagement are essential to optimize their functionality and relevance. Others are AI-generated analysis and insights, AI-generated language resources and AI-generated knowledge graphs.

Challenges faced in the preservation and curation of AL generated content for sustainable library operations.

As AI technologies continue to advance and become more prevalent in academic research and education, libraries face unique challenges in preserving and curating these dynamic and complex digital creations due to the dynamic and rapidly evolving nature of AI technologies. Some of the basic challenges faced by academic libraries on this note are as follows:

1. *Rapid technological obsolescence: AI technologies, models, and algorithms evolve rapidly, leading to problems of technological obsolescence. The preservation of AI-generated content requires continuous monitoring and updates to ensure compatibility with newer AI frameworks and software. [7].*

2. *Versioning and reproducibility: Maintaining version control of AI models and datasets used to generate content is crucial for reproducibility and research validation. However, ensuring access to specific versions of AI models and datasets can be challenging due to issues like licensing, storage, and version management [4].*

3. *Ethical and bias considerations: AI-generated content may inherit biases from training data, raising ethical concerns. Academic libraries must address issues of accountability, consented fairness and dogged transparency (FAT) in AI-generated content to ensure responsible curation and avoid perpetuating biases [6].*

4. *Data privacy and security: AI-generated content sometimes might be sensitive data that needs protection and be managed according to data protection regulations. Ensuring data privacy while maintaining the usability*

and accessibility of AI-generated content presents a complex challenge.

5. *Large-scale data management: AI models are often trained on vast datasets, resulting in large-scale data management challenges for academic libraries. Storing, curating, and providing access to these extensive datasets require robust infrastructures and efficient storage solutions [16].*

6. *Resource constraints: Limited funding and resources can hinder academic libraries' ability to invest in AI infrastructure, staff training, and specialized AI curation tools, impacting the preservation and curation of AI-generated content [2].*

7. *Legal and intellectual property issues: AI-generated content may raise intellectual property concerns, especially when the ownership of AI-generated works is ambiguous. Determining copyright ownership and licensing terms can be complex and require legal expertise [18].*

Strategies to preserve and curate AI generated content for sustainable library operations

Collaboration among AI researchers, librarians, and policymakers to develop comprehensive strategies for sustainable preservation and curation of AI-generated content in academic libraries is necessary. Some strategies that academic libraries can employ to preserve and curate AI-generated content are:

Versioning and metadata management: Maintain detailed versioning and metadata information about AI models, training data, and parameters used to generate content. This information helps in tracking changes, ensuring reproducibility, and facilitating future analysis [19].

Emulation and virtualization: Implement emulation or virtualization techniques to recreate the AI environment when rendering AI-generated content. This ensures that content remains accessible even if the original software becomes obsolete [1].

File formats and standards: Use open and standardized file formats for storing AI-generated content to enhance its long-term compatibility and reduce the risk of format obsolescence [13].

Distributed storage and redundancy: Store multiple copies of AI-generated content in geographically distributed locations to curb situation that would lead to loss of data due to hardware failures or disasters [17].

On the other hand, [8, 3, 1] revealed in their works that, digital preservation and curation of AI-generated content in academic libraries are critical for ensuring sustainable digital library operations in universities. Some key aspects of AI-generated content in terms of preservation and curation of digital content are:

1. *Preservation challenges: it is obvious that AI models and algorithms can change leading to versioning issues and potential data obsolescence. Due to this, implementation of version control mechanisms and metadata*

management to track such changes in AI models and their training data need to be undertaken by academic libraries to ensure the reproducibility and authenticity of AI-generated results for future research and reference.

2. *Reproducibility and transparency: The need to prioritize reproducibility and transparency of AI-generated content for digital preservation to generate specific content to validate research findings and reproduce experiments is necessary making researchers and users to access the same AI models and datasets used. On this note, academic libraries can collaborate with researchers and maintain curated repositories of AI models and datasets, making them openly accessible to ensure transparency and foster collaborative research efforts.*

3. *Ethical considerations: Since AI-generated content may raise ethical concerns related to authorship, privacy, and fairness due to the fact that, AI models trained on biased datasets might produce biased content, affecting the authenticity of research and educational materials. For this reason, academic libraries need develop ethical guidelines for acquiring, curating, and preserving AI-generated content, taking into account the potential biases and societal impacts of such materials.*

4. *Long-term funding and support: Preserving and curating AI-generated content involves ongoing efforts, including hardware upgrades, software maintenance, and staff training. Academic libraries need advocate for adequate funding and support to sustain the infrastructure and expertise needed for digital preservation and curation (11).*

5. *Interdisciplinary collaboration: To ensure a comprehensive preservation and curation of AI-generated content, academic libraries need encourage interdisciplinary collaboration among librarians, researchers, and AI experts.*

Statement of the problem

As academic libraries continue to engage in digital revolution, librarians and their users are increasingly reliant on digital data to store their memories, observations, and life events. AI incorporation into the library has redefined the traditional library routine services to a more appealing, scientific and amiable service to aided digital libraries activities. Nonetheless, storage media that are digital in nature like hard drives, cloud storage services, USB drives, and many others have attracted issues regarding data's fragility and its potential loss. Preservative and curative control used in AI technology that helps in the reduction of error-free storage of digital materials and information for easy retrieval and interpretation seems to be affected by inaccessibility, lack of funding, security and privacy, data migration, fragility of storage media, hackers and cybercriminals issues, vulnerabilities in existing systems and other challenges associated with AI generated content.

Despite the effort to digitalize all library operations for sustainable AI generated content digital, academic libraries in South South and South East seems to lack required infrastructures and manpower to fully engage in the application of AI generated content and the possible means of preserving and curating them, inconsistency in the existing preservation strategies, lack of established standards and policies, inadequate trained personnel, intellectual property rights and copyright issues, unnecessary lack of collaboration between institutional managers and libraries management, poor ICT infrastructure, financial resources problems are issues that have affected the preservation and curation of AI generated content, causing unsustainable AI operations. If these issues are not well addressed, it will definitely mar the incorporation and practice of digital technology in our academic institutions.

2. Objectives of the Study

The study investigated digital preservation and curation of Artificial Intelligent (AI) generated content for sustainable library operation in South-South and South-East University libraries in Nigeria. The specific objectives are:

1. To examine AI generated content needed to be preserved and curated in academic libraries for sustainable library operation in South-South and South-East university libraries in Nigeria.
2. To ascertain the challenges faced by academic libraries in preservation and curation of AL generated content for sustainable library operation in South- South and South East University libraries in Nigeria?
3. What are the *strategies to preserve and curate AI generated content for sustainable library operation* in South-South and South-East, University libraries in Nigeria?

Hypotheses

1. There is no significant difference between the mean scores of librarians in South-South and South-East university libraries on the challenges faced in the preservation and curation of AL generated content for sustainable library operations/
2. There is no significant difference between the mean scores of librarians in South-South and South-East university libraries on the *strategies to preserve and curate AI generated content for sustainable library operation*s.

3. Methodology

Descriptive survey design was employed for the study. The population includes 193 selected librarians in the thirteen (13) selected public universities in South-South and South-East Nigeria as a case study. Some of the universities are Rivers State University (19), Ignatius Ajuru University of Education (11), Imo State University, Owerri (IMSU), (14), Abia State

University (13), Ambrose Alli University (AAU), (12), Federal University, Otuoke, Bayelsa (17), NnamdiAzikiwe University (21), Niger Delta University (NDU) (13), University of Calabar (UNICAL), (10), Enugu State University of Science and Technology (ESUT), (12), Ebonyi State University (EBSU), (12) Akwa Ibom State University, Ikot Akpaden, (13) Delta State University (ABRAKA), (15) Chukwuemeka Odumegwwu Ojuku University (COOU) (11).

A sample size of 116 Librarians in the 13 public universities in South-South and South-East, Nigeria representing 60% of the population served as respondents. *Random* sampling technique was used for the study. The reason for this technique is to give every p*articipant an equal opportunity to be selected.* In doing this, the researcher administered the questionnaire to Librarians that were available as at the time of the study. The instruments employed to get data in this study was a 15-item questionnaire titled: "Digital Preservation and Curation of Artificial Intelligence (AI) Generated Content for Sustainable Library Operation Questionnaire" (DPCAIGCSLOQ). The questionnaire instrument was divided into 2 sections: section A was for demographic data of the respondents, while section B a 15-item questionnaire was used to gather respondent responses to the questions raised. The criterion mean of 2.50 was used as the bench mark for agreeing or disagreeing to the responses in the mean calculations in the study.

The 4- points modified likert rating scale of Strongly Agree (SA) = 4 points; Agree (A) = 3 points; Disagree (D) = 2 points; and Strongly Disagree (SD) = 1 point) was used as response options that guided the respondents' opinions on the instrument. Cronbach alpha statistics was used to obtain a reliability coefficient of 0.74. Mean/standard deviation were used to answer the research questions and z-test statistics was used to test the hypotheses at 0.05 significance level.

4. Results and Discussion

Research Question 1: What AI generated content needed to be preserved and curated in academic libraries for sustainable library operation in South-South and South-East universities, Nigeria?

Table 1. Mean/standard deviation Analysis of Information Professionals in South-South and South-East universities on AI generated content needed to be preserved and curated in academic libraries for sustainable library operation in South-South and South-East universities, Nigeria.

S/N	Items	Librarians in South-South Universities (58)		Librarians in South-East Universities (43)			
		$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}_1\ \overline{X}_2$	Remark
1	In your university, research papers and publications are preserved and curated digitally as AI generated content	1.89	1.27	2.01	1.22	1.95	Disagreed
2	In your university, datasets and training materials to *support* future research and validation of AI algorithms are preserved and curated digitally as AI generated content	1.99	1.23	2.02	1.23	2.01	Disagreed
3	In your university, AI-generated artifacts and creative works are preserved and curated digitally as AI generated content	1.60	1.37	2.13	1.19	1.87	Disagreed
4	In your university, AI-driven research tools and software that provide valuable resources for future scholars are preserved and curated digitally as AI generated content	2.13	1.19	2.5	1.82	2.32	Disagreed
5	In your university, AI-generated language resources like t*ranslation models, sentiment analysis tools* are preserved and curated digitally as AI generated content	2.02	1.23	2.12	1.18	2.07	Disagreed
	Average mean/standard deviation	1.93	1.26	2.16	1.33		

Table 1 indicated that item number 4 had a mean score of 2.32, followed by item 5 with 2.07, item 2 with 2.01, item 1 with 1.95 and item 3 with 1.87 respectively which are below the criterion mean of 2.50. This clearly indicated that, Information Professionals in both South-South and South East consented to the fact that, in their universities, research papers and publications are not preserved and curated digitally as AI generated content, datasets and training materials to *support* future research and validation of AI algorithms are not preserved and curated digitally as AI generated content,

AI-generated artifacts and creative works are not preserved and curated digitally as AI generated content, AI-driven research tools and software that provide valuable resources for future scholars are not preserved and curated digitally as AI generated content and AI-generated language resources like t*ranslation models, sentiment analysis tools* are not preserved and curated digitally as AI generated content.

Research Question 2: What are the challenges faced in libraries in academic environment preservation and curation of AL generated content for sustainable library operation in South-South and South-East Universities, Nigeria?

Table 2. Mean/standard deviation Analysis of Information Professionals in South-South and South-East universities on the challenges faced in libraries in academic environment preservation and curation of AL generated content for sustainable library operation in South-South and South-East universities, Nigeria.

S/N	Items	Librarians in South-South Universities (58)		Librarians in South-East Universities (43)			
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}_1\bar{X}_2$	Remark
1	*Ethical and bias considerations that deals with fairness, accountability and transparency in AI-generated content*	3.22	1.33	3.72	1.25	3.47	Agreed
2	*Legal and intellectual property issues especially when the ownership of AI-generated works is ambiguous*	3.60	1.57	3.46	1.39	3.53	Agreed
3	*Data privacy and security in the maintenance, usability and accessibility of AI-generated content*	2.91	1.14	2.80	1.16	2.90	Agreed
4	*Versioning and reproducibility of AI models and datasets used to generate content for reproducibility and research validation*	3.42	1.45	3.38	1.43	3.4	Agreed
5	*Rapid technological obsolescence of AI technologies that leads to the risk of technological obsolescence*	3.32	1.38	3.39	1.43	3.36	Agreed
	Average mean/standard deviation	3.29	1.37	3.35	1.33		

Table 2 indicated that item number 2 and 6 had the highest mean scores of 3.53 followed by item 1 with 3.47, item 1 with 3.4, item 5 with 3.36 and item 3 with 2.90 respectively. The scores were above 2.50 criterion mean. This implies that, some of the challenges faced in libraries in academic environment preservation and curation of AL generated content for sustainable library operation are *ethical and bias considerations that deals with fairness, accountability and transparency in AI-generated content*, l*egal and intellectual property issues especially when the ownership of AI-generated works is ambiguous, data privacy and security in the maintenance, usability and accessibility of AI-generated content, versioning and reproducibility of AI models and datasets used to generate content for reproducibility and research validation* and r*apid technological obsolescence of AI technologies that leads to the risk of technological obsolescence.*

Research Question 3: What are the *strategies to preserve and curate AI generated content for sustainable library operation* in South-South and South-East, University Libraries in Nigeria?

Table 3 indicated that item number 1 had the highest mean score of 3.1 followed by item 4 with 2.88, item 5 with 2.86, item 3 with 2.55 and item 2 with 1.97 respectively. Items 1, 3, 4 and 5 had mean scores above the criterion mean of 2.50. This clearly indicated that, the *strategies to preserve and curate AI generated content for sustainable library operations* is the storage of multiple copies of AI-generated content in geographically distributed locations to curb situation that would lead to loss of data due to hardware failures, d*evelopment of ethical guidelines to regulate the curation and preservation of AI-generated content taking into account all potential biases, adequate funding to build digital infrastructural facilities and train experts needed for digital preservation and curation and encouragement of interdisciplinary collaboration among librarians, researchers, and AI experts for the sustenance of AI generated content*. Meanwhile, item 2 had mean scores below the criterion mean of 2.50. This means that, *academic libraries collaboration with researchers to maintain curated repositories of AI models and datasets is to make them openly accessible to ensure transparency.*

Table 3. Mean/standard deviation Analysis of Information Professionals in South-South and South-East universities on the strategies to preserve and curate AI generated content for sustainable library operation in South-South and South-East, University Libraries in Nigeria.

S/N	Items	Librarians in South-South Universities (58)		Librarians in South-East Universities (43)			
		$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}_1\overline{X}_2$	Remark
1	Storage of multiple copies of AI-generated content in geographically distributed locations to curb situation that would lead to loss of data due to hardware failures	3.01	1.23	3.19	1.31	3.1	Agreed
2	Academic libraries collaboration with researchers to maintain curated repositories of AI models and datasets by making them secretly accessible to ensure transparency	1.99	1.22	1.94	1.25	1.97	Disagreed
3	Development of ethical guidelines to regulate the curation and preservation of AI-generated content taking into account all potential biases	2.5	1.82	2.60	1.22	2.55	Agreed
4	Adequate funding to build digital infrastructural facilities and train experts needed for digital preservation and curation	3.07	1.26	2.68	1.13	2.88	Agreed
5	Encouragement of interdisciplinary collaboration among librarians, researchers, and AI experts for the sustenance of AI generated content	3.12	1.28	2.60	1.22	2.86	Agreed
	Average mean/standard deviation	2.74	1.36	2.60	1.23		

Test of Hypotheses

Ho$_1$: There is no significant difference that exist between the mean score of Librarians in South-South and South-East University Libraries on the challenges faced in libraries in academic environment preservation and curation of AL generated content for sustainable library operations in South-South and South-East, University libraries in Nigeria.

Table 4. z-test Analysis of the Difference between the Opinions of Information Professionals in South-South and South-East universities on the challenges faced in libraries in academic environment preservation and curation of AL generated content for sustainable library operations in South-South and South-East, Universities Nigeria.

Subject	N	$\overline{x}$	SD	Df	z-cal.	z-crit.	Level of Sig	Remark
Librarians in South-South Universities	58	3.29	1.37	299	-0.22	$\pm$1.96	0.05	Accepted
Librarians in South-East Universities	43	3.35	1.33					

The result of table 4 shows that the z-calculated value of -0.22 is less than the z-critical value of 1.96 at degree of freedom of 99 at 0.05 level of significance. Therefore, null hypothesis is accepted and upholds that, there is no significant difference that exist between the mean scores of Librarians in South-South and South-East Universities on the challenges faced in libraries in academic environment preservation and curation of AL generated content for sustainable library operations in South-South and South-East, Universities Nigeria.

Ho$_2$: There is no significant difference that exist between the mean scores of Librarians in South-South and South-East Universities on the *strategies to preserve and curate AI generated content for sustainable library operations* in South-South and South-East Universities, Nigeria.

Table 5. *z-test Analysis of the Difference between the Opinions of Information Professionals in South-South and South-East Universities on the strategies to preserve and curate AI generated content for sustainable library operationin South-South and South-East universities, Nigeria.*

Subject	N	x̄	SD	Df	z-cal.	z-crit.	Level of Sig	Remark
Librarians in South-South Universities	58	2.74	1.36	2	0.60	±1.96	0.05	Accepted
Librarians in South-East Universities	43	2.60	1.23	99				

The result of hypothesis 2 showed that the z-calculated value of 0.60 is less than the z-critical value of ±1.96 at degree of freedom of 99 at 0.05 level of significance. We therefore retain the null hypothesis and uphold that, a significant difference is not in existence between the mean scores of Librarians in South-South and South-East Universities on the *strategies to preserve and curate AI generated content for sustainable library operations* in South-South and South-East Universities, Nigeria.

5. Discussion of Findings

The first finding corresponds with the findings of *[2]* whose work found that, AI technologies are increasingly used to create art, music, and other creative works which are to be preserved and curated by academic libraries. These AI-generated artifacts and creative works needs proper documentation of the AI algorithms and parameters used in the creative process sustainable library operations. The findings of *[1] also go in line with this work by revealing that,* research papers and publications are AI-generated content that must be preserved and curated. Such papers cover a wide range of disciplines, like computer science, engineering, natural language processing, and medicine.

The second findings is in consonance with the findings of *[6, 4, 1])* who found *ethical and bias considerations that deals with fairness, accountability and transparency,* l*egal and intellectual property issues, data privacy and security as challenges that faces libraries in academic environment preservation and curation of* AI-generated content.

Finally, the third findings supported the findings of [1, 8, 9] *whose works found that,* the storage of multiple copies of AI-generated content in geographically distributed locations to curb situation that would lead to loss of data due to hardware failures, *reproducibility and transparency,* d*evelopment of ethical guidelines to regulate the curation and preservation of AI-generated content as notable strategies to sustain digital library operation*.

6. Conclusion

The digital preservation and curation of AI-generated content in academic libraries are vital for sustainable digital library operations in universities. By addressing preservation challenges, promoting transparency, adhering to ethical guidelines, and fostering collaborations, academic libraries can effectively support the evolving landscape of AI research and education while ensuring the long-term accessibility and usability of AI-generated content for future generations of scholars and students. Preservation and curation of AI-generated content in academic libraries come with several unique challenges. Addressing these challenges requires collaboration among AI researchers, Librarians, and policymakers to develop comprehensive strategies for sustainable preservation and curation of AI-generated content in academic libraries.

7. Recommendations

Based on the findings of the study, the researchers recommended that:

1. Library management in universities should urgently implement the application of digital collections so as to meet the global standard of library operations around the world and be able to provide necessary information to users with ease.
2. Librarians should be trained on digital application of library services to be able to embrace AI technology to ease the operational services of academic library to sustain better service delivery.
3. Government in collaboration with University management should provide necessary infrastructure and facilities, upgrade and update existing ones to enable the preservation and curation of AI generated content for the sustenance of digital library operations in academic libraries.

Conflicts of Interest

The authors declare no conflicts of interest.

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