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STRATEGIES FOR THE PRESERVATION OF ELECTRONIC RECORDS IN UNIVERSITY LIBRARY STAFF IN NIGERIA

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Abstract

This study attempts an empirical investigation of strategies for the preservation of electronic records in university libraries in Nigeria. The main objective of this study is to ascertain the strategies used by the University libraries in Nigeria to preserve electronic records. The study employed descriptive research design. The population comprises one hundred and sixty nine (169) librarians from university libraries in Nigeria. Simple random sampling technique was used and the instrument for data collection is semi-structured closed and open-ended questionnaire. Data was analysed using descriptive statistics, charts with simple percentages. Statistical Package for Social Science version 22 are used for data analysis. The findings of the study revealed that ($\bar{x}$=1.63±SD = 0.660) majority of university libraries in Nigeria do not have in place preservation strategies for electronic information records. 94.1% of librarians do not possess requites skills for preserving electronic information records. Lack of manpower and other infrastructure are identified as the major inhibiting factors ($\bar{x}$=3.90±SD = 0.418). The study also found out that there is a significant relationship inhibiting factors of preservation and preservation strategies adopted by university library staff in Nigeria (r=-0.305, N=169 and P <0.01).

Keywords: Electronic Records Preservation Strategies, ICT, Digital Curation, Electronic Records, Preservation, University Digital Library Services, Electronic Information Resources.

1 INTRODUCTION

Information age, though with many prospects, has also resulted in information overload. This is as evident in the creation of large electronic information formats which include emails, social networking websites, e-journals, e-books and databases. The form and content of electronic resources and records are liable to change from time to time. Therefore, it behooves librarians to ensure that electronic records are properly preserved to ensure continuous sustainability. Digital preservation involves policies, strategies and actions to be taken to ensure the precise and authentic maintenance of the contents of these records at all times, irrespective of the challenges of media failure and technological change that may occur [1]. Electronic records in the University libraries, not properly protected against technological modification may undergo challenges in the future. This may occur as a result of advancement in information and communication technology (ICT) Electronic Records have become the trend in Libraries and Information Centres across the world today. These records are said to have more advantage over their physical counterparts. E-records guarantee reduced space, accessibility and management is timely, remote access, diverse form of information (multimedia), information sharing and distribution among others.

The objective of electronic record preservation is the perfect interpretation of valid contents over time. Preservation of electronic contents has become an issues in University libraries. Therefore, there is need to ensure the sustainability of electronic records through proper preservation, even though it has been realized that the preservation of electronic records is not as simple as the printed materials due to non-availability of appropriate criteria relating to the format and media type. However, there are appropriate strategies for the establishment of implementation that will certify a stable, accessible and long term preservation of electronic materials for future use. Prior to the advent of the internet, libraries preserved their paper collections using different processes. [2], noted that the advent of electronic information introduces new preservation requirements. Preservation of electronic records is the maintenance of digital information resources irrespective of their location, for continual access to such generations of technology users for as long as possible [3].

[4] observed that unlike paper records that could last for centuries, electronic records need deliberate efforts for their preservation and access to such records is dependent on evolving technologies. According to [5], electronic records are diverse, huge, and hardware/software dependent. To this end, a preservation strategy would be needed to put them in place in order to obtain a most rewarding

result. Various strategies of electronic records preservation abound in literature ([6], [3], [7]); as far back as in the 1990s, each with its peculiarities. Some of these strategies include: migration, emulation, cloud computing, institutional repository and conversion.

Migration is the process of transferring electronic data/information from one technology to another, without losing its properties ([8]). This means that a particular library moves its database entirely to another system without losing any data as a result of the library changing to a new information management system. The record's authenticity, reliability and usability is however maintained. It is a good method through which libraries can ensure that the preservation of electronic resources.

According to [6], in a bid to solve the challenge of losing some complex data during the process of migrating from one system to the other, some researchers came up with emulation. Emulation is the process of mimicking the hardware of older versions of a technology that are compatible with a new technology to access electronic data.

Emulation is the process of preserving the old environment of electronic records by using latest technologies, mimicking the original environment that was used to create the records. This will technically ensure that no data is lost in the new technology environment; this way, a new technology is used without losing the old data. [6] reported that emulation ensures the validity and integrity of electronic records and provides access to such in their original environment even though the technology has changed.

Cloud computing is also a new technology through which libraries preserve electronic resources and records for posterity. [7] maintained that cloud computing is one of the most effective strategies for preserving electronic records in the library. Electronic records are preserved through sharing or using applications and infrastructure in a network environment to achieve set goals without having concerns of its ownership, network management or resources.

Institutional Repository has also become a valuable method for the preservation of electronic resources. It an archive for the collection and preservation, as well as dissemination of intellectual, emanating from Faculty, Staff and Students of an institution. Institutional repository offers opportunity for the members of a university community to manage and disseminate electronic materials created by the community members of the institution ([7]). According to him, just a minor fraction of the libraries in Nigeria have repositories.

Conversion is defined as the process of changing records from one medium to another or from one format to another when a record's format becomes obsolete as a result of the application becoming unsupported because the developer goes out of business and it is the oldest method of electronic data preservation ([6])

In spite of the need for the preservation of electronic resources in libraries, the efforts are hindered by challenges obvious in the area of planning. Planning is one of the initial crucial matters to consider when thinking of preservation. Planning entails that libraries will be ready to preserve their records. Decision has to be taken on whether it will be outsourced or carried out in-house. If the decision is to have it done in-house, then, there will be need for Management to consider if there are sufficient members of staff to carry out the assignments. This is because electronic preservation will involve different skills and roles as well as availability of required infrastructure. However, if preservation of electronic resources will be outsourced, it will be necessary to consider the integrity of the outsourcing organization as part of planning. Sometimes, these issues constitute bottlenecks.

Lack of prerequisite experience also hinder preservation of library resources. According to [9] the technical expertise is needed for the preservation of electronic records in Africa. [10] in their studies reported that there was a need for specialized training in electronic information resources preservation techniques. There is the lack of skill and expertise in the art and training of electronic records preservation, especially in Africa as compared to America and Europe ([6]).

Technological hardware and software are not static neither are data formats. This will mean that libraries will keep upgrading their systems to meet up with the changes. This could pose a very big challenge for libraries especially with the meagre budget Nigerian libraries have to operate with. Its either libraries preserve their digital records themselves, putting in place the infrastructure, manpower and the technical skill involved or they outsource it and pay the bill. It is very crucial to consider where to preserve digital information. The file format that is not software dependent is recommended for adoption in saving electronic record to overcome the challenge of format obsolescence.

Preservation of information resources is an expensive venture which requires proper funding. Digitisation, and preservation of both digitized and born digital records entails acquiring or accessing infrastructure, cloud computing processes among others are all capital intensive processes, yet library funds are inadequate. [11] reported that the major constraints to preservation of records in academic libraries is lack of funds and storage facilities, still part of offshoot of lack of fund. To preserve electronic resources, Libraries must have some level of automation to generate electronic records, have qualified technical and professional staff and access either by acquisition or otherwise computer and telecommunication facilities and power supply. This is a challenging task to academic institutions in Nigeria.

1.1 Statement of Problem

Electronic records preservation strategies are seen as mechanisms put in place to ensure that electronic records' original value are maintained to guarantee long-term access. Long-term preservation of electronic records for continued access is a serious issue facing university libraries in Nigeria and most African countries. A number of limiting factors have been identified in literature such as lack of requisite technical expertise, reliance on software and hardware to function and quick obsolescence as a result of the high-speed technological change. Lack of preservation policy and guidelines hinder proper preservation strategies in Nigeria, unlike her South African counterpart, that has published guidelines of the preservation of electronic records which was published in year 2000 and updated in 2003, 2004 and 2006. [12] highlighted lack of policy as one of the challenges of the preservation of electronic resources in Nigeria. All these are major concerns that require proper planning by implementing preservation strategies. Against this backdrop, the study examines strategies for the preservation of electronic records in university library staff in Nigeria.

1.2 Objectives of the Study

The broad objective of this study is to examine strategies for the preservation of electronic records in university libraries in Nigeria. The specific objectives are to:

1 identify strategies used by the University library staff in Nigeria to preserve electronic records

2 determine the level of preservation strategy skills among university library staff in Nigeria

3 investigate factors inhibiting University library staff in preserving Electronic Information Records in Nigeria

1.3 Research Questions

1 What are the strategies adopted by the University library staff in Nigeria to preserve electronic records?

2 What is the level of preservation strategy skills among university library staff in Nigeria?

3 What are the factors inhibiting University library staff in preserving Electronic Information Records in Nigeria?

1.4 Hypothesis

H0: There is no significant relationship inhibiting factors of preservation and preservation strategies among university libraries in Nigeria

2 METHODOLOGY

The study employed descriptive research design. The population comprised of one hundred and sixty nine (169) librarians from university libraries in Nigeria. Simple random sampling technique was used and the instrument for data collection is semi-structured closed and open-ended questionnaire. Data was analysed using descriptive statistics, charts with simple percentages. Statistical Package for Social Science version 22 was used for data analysis.

3 RESULTS

3.1 Data Analyses and Discussions

3.1.1 Research Question 1: What are the strategies used by the University libraries in Nigeria to preserve electronic records?

Table 1: Preservation strategies of electronic records by the University libraries in Nigeria.

Strategies for Preservation	Very Often		Occasionally		Never		Mean	Std. Dev.
Medium refreshing–It is copying digital files from one storage medium to another medium.	15	8.9	63	37.3	91	53.8	1.55	.654
The condition of the storage media is examined periodically by an auditing application	8	4.7	70	41.4	91	53.8	1.51	.589
The hardware/storage media are periodically swapped with a new, recent and healthy alternative.	94	55.6	64	37.9	11	6.5	1.51	.618
Electronic information resources are duplicated in multiple copies.	16	9.5	63	37.3	90	53.3	1.56	.662
All preservation system within the federation is linked with distributed environment.	5	3.0	65	38.5	99	58.6	1.44	.555
An emulation application is used to simulate the function of old computer environment. Besides, the original programme can be performed in the emulation application.	6	3.6	67	39.6	96	56.8	1.47	.567
Required hardware/software is preserved for accessing and manipulating digital information from the old storage medium	14	8.3	86	50.9	69	40.8	1.67	.622
The format requirement is entrenched with the digital information. The preservation system develop new software in terms of the stored format specification	13	7.7	94	55.6	62	36.7	1.71	.602
The electronic information and the required software are transformed to a set of particular commands, which can be translated by a virtual computer.	11	6.5	91	53.8	67	39.6	1.67	.595
The preservation system periodically transform the old formats to new formats	10	5.9	79	46.7	80	47.3	1.59	.603
Digital materials are transfered from one hardware/software configuration to another.	17	10.1	73	43.2	79	46.7	1.63	.660

Decision score of $\bar{x}$=2.0 and above is significant

Results from Table 1 showed an analysis tabulation of preservation methods of electronic records by the University libraries in Nigeria. The findings revealed that the ($\bar{x}$=1.63±SD = 0.660) mean score out of eleven indicators/strategies was significant and all scores were below 2.0. This implies that there is lack of preservation strategies for electronic records in Nigerian university libraries. This shows that the librarians are not prepared to handle electronic record preservation issues either due to lack of preservation policies, lack of infrastructure or manpower ([8]).

3.1.2 Research Question 2: What is the librarian's level of skills for electronic records preservation in Nigeria?

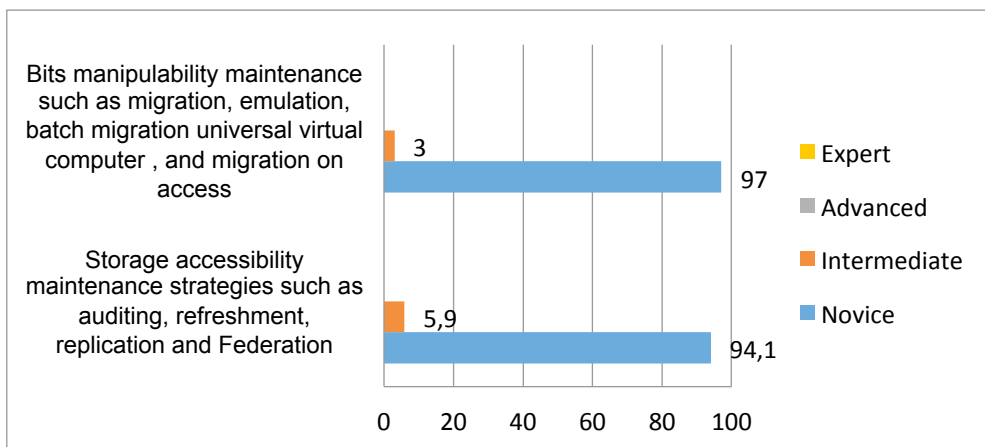Librarian's level of skills for electronic records preservation in Nigeria

Figure 1: Librarians level of skills for electronic records preservation in Nigeria.

Figure 1 showed that majority (97%) of librarians in Nigerian university libraries have no knowledge about bits manipulability maintenance such as migration, emulation, batch migration etc. Also 94.1% indicated that many librarians have no knowledge of storage accessibility, maintenance strategies such as refreshment, replication and federation. ([10] [14]). reported that about 70% of librarians in academic institutions in Nigeria have little knowledge about preservation of library resources.

3.1.3 Research Question 3: What are the factors inhibiting preservation of Electronic Information Records in Nigeria.

Table 3: Factors inhibiting University libraries in preserving Electronic Information Records in Nigeria.

Factors	Strongly Disagree		Disagree		Agree		Strongly Agree		Mean	Std. Dev.
Financial Constraints	4	2.4	9	5.3	20	11.8	136	80.5	3.70	.678
Lack of collaboration among librarians	6	3.6	12	7.1	51	30.2	100	59.2	3.45	.779
Lack/inadequacy of Equipments/Materials	28	16.6	25	14.8	56	33.1	60	35.5	2.88	1.076
Malicious attacks on a preservation system can result in information loss of information.	26	15.4	19	11.2	58	34.3	66	39.1	2.97	1.060
Hardware/storage media obsolescence	5	3.0	7	4.1	27	16.0	130	76.9	3.67	.696
Software/format obsolescence	4	2.4	4	2.4	28	16.6	133	78.7	3.72	.629
Lack of a comprehensive preservation strategy or absence of legislation, policies and procedures to guide the management of records	4	2.4	3	1.8	25	14.8	137	81.1	3.75	.608
Lack of organisational plans for managing records	3	1.8	7	4.1	27	16.0	132	78.1	3.70	.632
Lack of manpower and other infrastructure	2	1.2	1	0.6	9	5.3	157	92.9	3.90	.418

Table 2, show factor inhibiting preservation of electronic information records in Nigerian university libraries, out of nine indicators, lack of manpower and other infrastructure identified as the major inhibiting factor with mean and standard deviation scores of $\bar{x}$=3.90±SD = 0.418. The lowest is ($\bar{x}$=2.88±SD = 1.076) lack/inadequacy of equipment/tools. This happens in University libraries because much importance is not attached to the issue of preservation unlike other library functions such as cataloguing and classification. It is also very rare to have budget for preservation matters in University libraries in Nigeria ([12], [14]).

3.1.4 Hypothesis

H0: There is no significant relationship *inhibiting factors of preservation* and preservation strategies among university libraries in Nigeria

Table 3: relationship between inhibiting factors of preservation and preservation strategies for electronic resources.

Variable	Mean	Std. Deviation	Sum of Squares and Cross-products	N	R	P	Remark
Problem Encountered	35.3905	4.16635	2916.225	169	-.305[**]	.000	Sig.
Preservation Strategies	17.3136	4.97875	-1063.698	169			

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3, shows significant relationship *inhibiting factors of preservation* and preservation strategies among university libraries in Nigeria *(r=-0.305, N=169 and* P <0.01).*This means that problems experienced towards preservation such as l*ack of manpower and other infrastructure, financial constraints and lack of a comprehensive preservation strategy policies affect adoption of preservation strategies for electronic information resources. This corroborates the study undertaken by ([13).

4   SUMMARY OF MAJOR FINDINGS

The major findings of the study are summarized as follows:

The study found out that majority (97%) of librarians in Nigeria university libraries have little or no knowledge about bits manipulability maintenance such as migration, emulation, batch migration etc. It also came to the fore that 94.1% have no knowledge of storage accessibility, maintenance strategies such as refreshment, replication and federation. The study also shows the factors inhibiting preservation of electronic information records in Nigerian university libraries, in which out of nine indicators, lack of manpower and other infrastructure identified as the major inhibiting factor, while the lowest is lack/inadequacy of equipment/tools. In this study, it was discovered that there is a significant relationship between inhibiting factors of preservation and preservation strategies in university libraries in Nigeria. This means that problems experienced such as lack of manpower and infrastructure, financial constraints and lack of comprehensive preservation strategy policies affect adoption of preservation strategies for electronic information resources.

5   CONCLUSIONS

The study concludes that although preservation electronic library resources in Nigerian university libraries is very essential, the University Management and other stakeholders are yet to attach importance to it. Librarians in such institutions still operate in ignorance and cannot come up with strategies on how to preserve electronic library resources. Inadequacy of preservation tools and equipment also serves as hindrance to the library system. In order to match up with global standards, it is essential that Nigerian university managers and librarians take the issue of preservation of electronic library materials very seriously.

ACKNOWLEDGEMENTS

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