Prevalence of Digitization and Security Management in Archives Preservation in Public Libraries in Rivers State

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Abstract: This study assessed prevalence of digitization and security management in archives preservation in public libraries in Rivers state. Two objectives and its corresponding research questions and hypotheses guided this study. The descriptive survey design was adopted for this study. The target population of this study comprised 514 library staff drawn from Rivers state library board and staff from Jubilee library Port Harcourt. The sample size for this study was 399 library staff comprising of 172 library staff from Jubilee library Port Harcourt and 227 staff from Rivers state library board. The sample size was determined by Taro Yamane sample size determination formula while a two-stage sampling technique of stratified and simple random sampling techniques was used to select the sample size. A self-structured questionnaire titled prevalence of digitization and security management in archives preservation questionnaire was used as the instrument for data collection. Face and content validation was ensured by three experts. The instrument yielded reliability coefficients of 0.79 with the use of Cronbach Alpha reliability method. Mean and Standard Deviation was used in answering research questions while z-test was used for the inferential statistics. The findings revealed that digitization and security management are prevalent in the preservation of archives in public libraries in Rivers state, Nigeria. Based on the findings, it can be concluded that there is a significant difference in the responses of staff from Jubilee library Port Harcourt and the ones from Rivers state library board on the prevalence of security management in the preservation of archives in public libraries in Rivers state. It was therefore recommended that Librarians and Information Technologists in Rivers state public libraries should be scheduled for regular upskilling. By so doing, they will update their knowledge on digitization and security management in archives preservation to meet global demands.

Keywords: Prevalence of Digitization, Prevalence of Security Management, Library, Archives Preservation.

Background to the Study

The primary purpose of preservation in libraries is to prolong the life of documentary heritage and to ensure that long-term access to these collections is maintained by government, agencies, institutions, businesses and the public as a whole (Cloonan, 2012). Digitization and security management are both keywords in the research of library management. Both of these have recently become integral parts of current global information trends that are part of the library's

archive to effectively disseminate information, preserve resources and facilitate the integration of library services into the educational process of academic institutions (Otubelu & Ume, 2015).

Basically, digitization refers to the shift towards digital technology and networks, while security management focuses on the protection of the archives by developing strategies and protocols. With the massive amount of digital data that is accessed, stored, and shared by public libraries, the protection of these valuable assets are more important than ever before, not only to preserve the information, but to maintain a secure, trusted environment for the users. Digitization also makes library resources available electronically, users can access the library digitized resources from their offices and halls of residence even when the library is physically closed. Most libraries are digitizing materials which might not be lost in the future, such as old manuscripts, research projects, photo images, analogue maps, non - live musical recordings, government official gazettes and several other historical records, making high quality digital unpaged available electronically will reduce wear and tear of fragile items. Gbaje (2011) asserted that digitization could be viewed as the process of converting non-digital born documents into digital format which includes selection of collection/material, imaging or scanning, transcribing, creating markup and index, creating metadata, processing images, uploading to the web, preserving and maintaining archival media.

In archives, security has traditionally been defined as the preservation management of stored cultural materials and collection of historical documents or records to forestall the eventuality of theft and possible damage. Simply put, library security management is the identification of assets including people, buildings, machines, systems and information assets, followed by the development, documentation, and implementation of policies and procedures for protecting assets and preserving library resources. It consists of identifying threats or risk causes, assessing the effectiveness of existing controls to face those threats, determining the risks' consequence(s), prioritizing the risks by rating the likelihood and impact, classifying the type of risk, and selecting an appropriate risk option or risk response (Charles, 2016). Consequently, the need to assess the prevalence of digitization and security management in archives preservation in public libraries in Rivers state.

Statement of the Problem

Human written heritage found in libraries includes a variety of cultural materials carved or written with ink on palm leaves, tree bark, wooden panels and traditional paper. However, the information media had different challenges in the effort to preserve them in the face of harsh elements of nature. Additionally, there is also the issue of theft and damage to these archives which are intended to have security in order to preserve them for future generations. It is no secret that the loss of these valuable items contributes to the high level of social unrest in many countries, especially developing nations. It has also made it difficult to resolve disputes without going to court. Normally, there wouldn't have been a need for court cases if archives which in most cases contain the specifics of events and the development of a society or community were adequately preserved and accessible.

What therefore motivated the researcher is, to ascertain if the government of Rivers state is working with librarians and administrators of public libraries in the State to preserve archives by putting in place contemporary library practices to forestall the eroding of written heritage and unpublished documents found in the State's public libraries. In order words, the study sought to assess the prevalence of digitization and security management in archives preservation in public libraries in Rivers state.

Aim and Objectives

This study was aimed at assessing prevalence of digitization and security management in archives preservation in public libraries in Rivers state. Specifically, the objectives were to:

1. find out the prevalence of digitization in the preservation of archives in public libraries in Rivers state.

2. ascertain the prevalence of security management in the preservation of archives in public libraries in Rivers state.

Research Questions

1. How prevalent is digitization in the preservation of archives in public libraries in Rivers state?

2. What is the prevalence of security management in the preservation of archives in public libraries in Rivers state?

Hypotheses

The following two (2) hypotheses were tested at 0.05 alpha level.

1. There is no significant difference in the mean scores of staff from Jubilee library Port Harcourt and staff from Rivers state library board on the prevalence of digitization in the preservation of archives in public libraries in Rivers state.

2. There is no significant difference in the mean scores of Jubilee library Port Harcourt and staff from Rivers state library board on the prevalence of digitization in the preservation of archives in public libraries in Rivers state.

Conceptual Framework

The concept of this study is situated on prevalence of digitization and security management in the preservation of archives in public libraries in Rivers state as diagrammatically represented in figure 1 below.
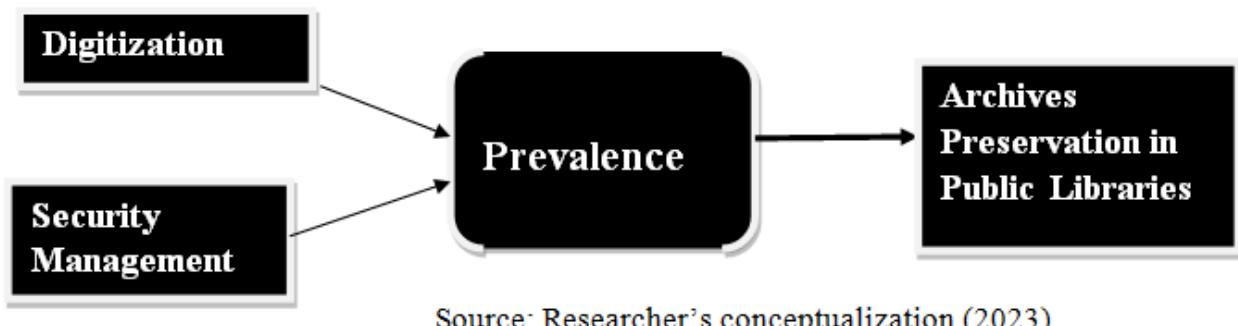
Source: Researcher's conceptualization (2023)

Conceptual Review

Prevalence of Digitization and Archives Preservation

The concept of storing information digitally first emerged in the 20th century. Engineers developed ways to store and transmit data electronically (Lischer-Katz, 2022; Meikle, 2010; Jordan, 2005). Since then, the rate at which information are being digitized has become rapid. This rapid rate of digitization has caused many issues when attempting to preserve it. The most common problem with archiving information digitally is the loss of data due to rot or corruption. At the same time, many institutions are still reluctant to digitize their collections. Digitization allows for faster and more efficient archiving. With digitization, it is easy to transfer large amounts of data without any human involvement (Loebbecke & Picot, 2015). Additionally, it is much safer than burning or storing hard copies of sensitive materials (Astle & Muir, 2002). Unfortunately, not all archives have adopted digital preservation yet. Many public libraries still store their historical data on physical media such as DVDs and CDs (Forstot-Burke, 2019). However, there is no reason to do so when a much more effective storage method exists. This goes in line with Brown (2013) that despite the many benefits of digitization, not all archives have adopted digital preservation yet. Many public libraries still store their historical data on

physical media. This is often due to the fact that digitization can be a costly and time-consuming process. In addition, some scholars (Guccio, et al, 2016; Clough, 2013; Mead, 2011) pointed out that digitization can never completely replace the experience of visiting an archive in person. As more and more institutions begin to digitize their archives, it is important to consider the implications of this trend. Digitization can have a positive impact on archives, but it is important to make sure that the process is done correctly in order to avoid losing important historical data. On the part of International Council on Archives (ICA, 2016), the recent development showed a somewhat positive signal. The ICA noted that archive digitization has quickly become common practice in a great many institutions. It is providing an excellent opportunity to disseminate historical images widely and greatly increasing access to collections but it is not without obvious challenges. This is in the same vein with Szekely (2017) that although the analysis of the dominant information operators of the archival institutions in the respective paradigms of archival history shows that today's internet-based services can replicate all the main functions of the archival institutions, at least at the level of the fundamental information operators, on a mass scale. Despite these developments, Szekely (2017) contended that archives are under no direct threat of abolition or loss of function in the digital age, not only because of institutional inertia and traditions, but also their role in preserving context and preserving physical copies, and their institutional responsibility which will continue to be an important social, legal and administrative requirement in the future, too..

Prevalence of Security Management and Archives Preservation

Libraries and organisations often have extensive archives that they need to protect. In order to do this, they need to have effective security management policies (Harvey & Mahard, 2020; Maidabino & Zainab, 2013) in place and those with effective security management policies in place do have a prized archive. There are a number of different security management policies that libraries and organisations can adopt. For example, they can have security guards on duty, or they can install security cameras. They can also adopt security management information systems (MIS) (Ismail, 2012). The most important thing is that libraries and organisations have effective security management policies in place. This will help to protect their archives and ensure that they are preserved for future generations. According to Whitman and Mattord (2021), the lack of security management creates a risk of accidental loss or destruction of valuable information. Many organizations have inadequate security management policies due to budgetary constraints, resulting in loss and corruption of organizational data. This is especially prevalent in developing countries where organizations do not have the funding necessary to manage their data effectively (Rakemane & Mosweu, 2021; Osunrinde & Adetunla, 2018a). Additionally, corrupt government employees can destroy vital information about their country's citizens- sometimes for monetary gain. Similarly, Millar (2017) as well as observed Oluwaseun et al (2017).that organisations and libraries with extensive archives face many challenges when it comes to security management and archives preservation. The costs associated with these functions are significant, and the potential risks are great. This is in tandem with other scholars who reiterated that there are several reasons why security management and archives preservation are important. First, archives contain valuable information that can be used by criminals (Huddleston, 2021). Second, archives are often located in vulnerable areas, such as basements or attics, which can be easily accessed by criminals (Taylor, 2021; Cowick & Cowick, 2019). Third, archives are often left unattended for long periods of time (Machava & Gonçalves, 2021), making them easy targets for theft or vandalism (Benny, 2012).

Fortunately, there are a number of things that organisations and libraries can do to improve security management and archives preservation (Harvey & Mahard, 2020). One of the most important is to develop and implement comprehensive security policies (Fennelly, 2014). These policies should address all aspects of security, from physical security to data security. They should be reviewed and updated on a regular basis to ensure that they are effective. Another important step that organisations and libraries can take, According to Corrado and Sandy (2017), is to invest in security technologies. These technologies can include everything from security

cameras to alarm systems. They can deter criminals and help to prevent loss or damage to archives (Ekere & Akor, 2019; Osunrinde & Adetunla, 2018b; Adetunla & Osunride, 2016; Benny, 2012). There are also a number of simple security measures that organisations and libraries can take to improve security management and archives preservation. These measures include things like locking doors and windows, installing lighting, and storing archives in secure locations (Forde & Rhys-Lewis, 2013).

Interconnectedness between Digitization and Security Management in Archives Preservation

The impact of digitization on archives is manifold. According to Asogwa (2011), it provides new opportunities for how users access and interact with archival collections and library services. Additionally, digitization can improve operational efficiency and support new ways of managing and documenting archives resources (Müller, 2021). As such, digitization can contribute significantly to the library and archive's mandate of providing equitable access to information. Of course, with these opportunities come new challenges—particularly when it comes to security. The increased prevalence of digital libraries exposes them to a range of new security risks, both internal and external. In order to mitigate these risks, it has become important for library staff to have a good understanding of the interconnectedness between digitization and security management.

There are many potential security risks associated with digitization. One of the most significant is the possibility of data breaches (Vavousis, et al., 2020. This can happen if sensitive or confidential information is stored in an electronic format and is not properly protected. For example, if a library's digital collection includes birth records, marriage licenses, or other personal documents, a data breach could have serious consequences for the people whose information is exposed. Another security risk associated with digitization is the loss or damage of digital assets. This can happen if digital files are not properly backed up or if storage media becomes corrupted (Mccurdy, 2022; Asogwa, 2011). Additionally, digital files are susceptible to being deleted or overwritten accidentally. Finally, digitization can also make it easier for copyrighted material to be unlawfully copied or distributed. This has become a serious concern for publishers, authors, and other content creators. Fortunately, research has shown that there are a number of steps that libraries can take to mitigate these risks. One of the most important is to develop and implement security policies. These security policies may include but not limited to having digitized files backed up and stored off-site (Robertson & Borchert, 2014),

Theoretical Framework

Wolfgang Ernst Archive Theory

Wolfgang Ernst, a German philosopher, Archivist and media theorist reinvigorated the archive theory in 2012. It posits that digitization is not just a process of transcribing data from one format to another, but fundamentally changes our understanding of what an archive is, its functions and management (Ernst, 2012). Ernst's theory has important implications for the way the digitization of archives are being perceived and carried out. First, it suggests that there is a need to think about the social, cultural and political dimensions of archives, not just their technical aspects Ernst, 2018; 2012).. Second, it emphasizes the need for archives to be preserved and accessible (Ernst, 2012). Archives cannot be said to be preserved through digitization if the means of access to have been lost and access becomes impossible. The purpose of preserving archives through digitization is to make it well-secured so as to maintain accessibility: the ability to access their essential, authentic message or purpose (Ernst, 2012). Hence, as applied to archive security management, Ernst suggests that organizations should think twice about digitization. In theory, it makes sense to put all the data in one place where it can be organized, protected, and even copied if needed. However, as the world has seen with large media organizations, the internet is not a safe place to store sensitive information irrespective of measures such as putting a password on it and maybe encrypting it. Notably, the bigger the

archive, the more likely it is that someone will find a way in. Ernst's theory is that digitization actually makes it easier for people to access and misuse data. It is much easier to copy and distribute digital data than it is to copy and distribute physical data. So, while it is normal to think that digitization is a way of keeping data safe by putting it in a digital archive, it may actually be making it more vulnerable if necessary security policies are not properly cross-checked and followed.

Methodology

The descriptive survey design was employed for this investigation. The population of interest in the study was 514 library staff from the Rivers State board and staff from the Jubilee library in Port Harcourt. The sample size for this investigation was 399 library staff, including 227 staff from the Rivers State library board and 172 staff from the Jubilee library in Port Harcourt representing 44.16% and 33.46% of the population, respectively. The sample size was calculated using Taro Yamane's formula, this formula was used to determine the sample size, a two-stage sampling technique was employed to select the sample size, stratified and simple random sampling were both used. A self-structured bquestionnaire titled, 'Prevalence of Digitization and Security Management in Archives Preservation Questionnaire (PDSMAPQ)" was used for data collection. Face and content validation was ensured by three experts. The PDSMAPQ is composed of ten (10) items divided into two (2) sections. This was encoded as a four-point likert scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) and had a weight of 4, 3, 2, and 1, respectively. The instrument (PDSMAPQ) had a reliability of 0.79 via the Cronbach Alpha reliability method. Mean and Standard Deviation were employed to answer questions related to the research, while the z-test was utilized to test the null hypothesis at a 0.05 alpha level. After administering the questionnaire to the intended respondents, 192 of the copies were completely filled and returned by the Rivers state library board staff, representing a response rate of 84.58%. 161 of the copies were completely filled and returned by the Jubilee library in Port Harcourt, representing a response rate of 93.61%.

Results

Answer to Research Questions

Research Question 1: How prevalent is digitization in the preservation of archives in public libraries in Rivers state?

Table 1: Mean and Standard Deviation scores on the prevalence of digitization in the preservation of archives in public libraries in Rivers state.

S/N	Prevalence of digitization observed include:	Jubilee Library Port Harcourt Staff (n =161)		Rivers State library Board Staff (n =192)		Mean Set	Remarks
		$\bar{x}$	sd	$\bar{x}$	sd	xx	
1.	Production of a duplicate of one record in a collection.	3.18	1.78	2.92	1.71	3.05	Agreed
2.	3D digital surrogates of different scales of heritage artifacts.	2.50	1.58	2.51	1.58	2.51	Agreed
3.	Consistent updates on the technical properties of digitized items (technical metadata).	2.55	1.60	2.49	1.58	2.52	Agreed
4.	Consistent updates on the information about the intellectual content of a digital items (descriptive metadata).	2.86	1.69	2.93	1.71	2.90	Agreed

S/N		$\bar{x}$	sd	$\bar{x}$	sd	xx	
5	Consistent updates on the information necessary for the long-term management and archiving of digital assets (preservation metadata).	2.51	1.54	2.49	1.58	2.50	Agreed
	Cluster Mean	2.72	1.65	2.67	1.63	2.70	Agreed

Research Question 2: What is the prevalence of security management in the preservation of archives in public libraries in Rivers state?

Table 2: Mean and Standard Deviation scores on the prevalence of security management in the preservation of archives in public libraries in Rivers state.

S/N	Prevalence of security management observed include:	Jubilee Library Port Harcourt Staff (n =161)		Rivers State library Board Staff (n =192)		Mean Set	Remarks
		$\bar{x}$	sd	$\bar{x}$	sd	xx	
6	Designed measures to prevent sensitive information from unauthorized access attempts (confidentiality).	2.99	1.73	3.01	1.74	3.00	Agreed
7	Designed measures to ensure that data cannot be altered by (an) unauthorized person(s) (integrity).	3.00	1.73	2.84	1.69	2.92	Agreed
8.	Designed measures in ensuring that information resources are readily accessible for authorized persons (availability).	2.73	1.65	2.55	1.60	2.64	Agreed
9.	Designed measures to ensure that internal library critical data are safely and frequently exchanged via the network in use (network security management).	2.73	1.65	2.61	1.62	2.67	Agreed
10	Presence of an active chief information officer (CIO).	2.59	1.61	2.58	1.61	2.59	Agreed
	Cluster Mean	2.81	1.68	2.72	1.65	2.77	Agreed

The results of Table 1 indicated the mean weighted scores for the responses of the Port Harcourt library of Jubilee and the board of the Rivers state library staff to the prevalence of digitization in archives' preservation in public libraries in Rivers state. All of the items were agreed by the respondents (xx, > 2.5) as prevalent in the preservation of archives through digitization in public libraries in Rivers state. As a result, the mean set cluster value of 2.70 for all of the items indicates that digitization of archive for preservation is prevalent in public libraries in Rivers state, Nigeria.

The results of Table 2 indicated the Mean weighted scores for the responses of the Port Harcourt library of Jubilee and the board of the Rivers state library staff to the prevalence of security management in archives' preservation in public libraries in Rivers state. All of the items were agreed by the respondents (xx, > 2.5) as prevalent in the preservation of archives through digitization in public libraries in Rivers state. As a result, the Mean set cluster value of 2.77 for all of the items indicates that archive preservation through security management is prevalent in public libraries in Rivers state, Nigeria.

Test of Hypotheses

Hypothesis 1: There is no significant difference in the mean scores of staff from Jubilee library Port Harcourt and staff from Rivers state library board on the prevalence of digitization in the preservation of archives in public libraries in Rivers state.

Table 3: z-test analysis on the mean difference between the responses of staff from Jubilee library Port Harcourt and staff from Rivers state library board on the prevalence of digitization in the preservation of archives in public libraries in Rivers state.

Status	N	$\bar{x}$	sd	df	z-cal	z-crit value	Level of significance	Decision
Jubilee library Port Harcourt staff	161	2.72	1.65	351	1.88	1. 96	0.05	No Significant difference
Rivers state library board staff	192	2.67	1.63					

Hypothesis 2: There is no significant difference in the mean scores of Jubilee library Port Harcourt and staff from Rivers state library board on the prevalence of security management in the preservation of archives in public libraries in Rivers state.

Table 3: z-test analysis on the mean difference between the responses of staff from Jubilee library Port Harcourt and staff from Rivers state library board on the prevalence of security management in the preservation of archives in public libraries in Rivers state.

Status	N	$\bar{x}$	sd	df	z-cal	z-crit value	Level of significance	Decision
Jubilee library Port Harcourt staff	161	2.81	1.68	351	2.00	1. 96	0.05	Significant difference
Rivers state library board staff	192	2.72	1.65					

Results in Table 3 showed that Jubilee library Port Harcourt staff has mean and standard deviation scores of 2.72 and 1.65 while Rivers state library board staff has mean and standard deviation scores of 2.67 and 1.63. With a degree of freedom of 351, the z-calculated value of 1.88 was lower than the critical z-test value of 1.96. Therefore, the null hypothesis was retained. By implication, there was no significant difference between the mean responses of staff from Jubilee library Port Harcourt and staff from Rivers state library board on the prevalence of digitization in the preservation of archives in public libraries in Rivers state.

Results in Table 4 showed that Jubilee library Port Harcourt staff has mean and standard deviation scores of 2.81 and 1.68 while Rivers state library board staff has mean and standard deviation scores of 2.72 and 1.65. With a degree of freedom of 351, the z-calculated value of 2.00 was higher than the critical z-test value of 1.96. Therefore, the null hypothesis was not retained. By implication, there was a significant difference between the mean responses of staff from Jubilee library Port Harcourt and staff from Rivers state library board on the prevalence of security management in the preservation of archives in public libraries in Rivers state.

Discussion of Findings

The findings of this study are discussed under the following subheadings:

Prevalence of Digitization in Archives Preservation in Public Libraries in Rivers State

It was found that production of record duplicates and advanced digital surrogates of heritage artifacts are among the indicators of digitization prevalence in archives preservation in public libraries in Rivers state. Others are: consistent updates on the technical properties of digitized items (technical metadata), consistent updates on the information about the intellectual content of digital items (descriptive metadata) as well as consistent updates on the information necessary

for the long-term management and archiving of digital assets (preservation metadata).. This finding supports the finding of Matlala (2019) that it is incontrovertible for archives to adopt strategies involving digitization to ensure long-term digital preservation. By so doing, it will become seamless to preserve digital records perpetually on a standard platform and make them accessible because without proper preservation of archives, the will be limited historical information. This goes in line with the findings of Day (1998) that the creation and dissemination of metadata is gradually becoming a significant component of all digital preservation strategies, whether they are based on hardware or software conservation, emulation or migration.

Prevalence of Security Management in Archives Preservation in Public Libraries in Rivers State

It was found that the preservation of archives in Rivers state public libraries as investigated in this study are properly manned through designed measures that are in place to prevent sensitive information from unauthorized access attempts. Also, there are designed measures to ensure that data cannot be altered by an unauthorized person or persons. Other aspects of the security management prevalence are: designed measures are in place in ensuring that information resources readily accessible for authorized persons. Also, designed measures are in place to ensure that internal library critical data are safely and frequently exchanged via the network in use and there is a presence of an active chief information officer (CIO) in the public libraries. This finding supports the finding of Peltier (2016) that the purpose of security management for information resources is to ensure that the selection of appropriate security policies, standards, and procedures are in place and implemented to meet the overall objective or mission charter of an organisation. Also, this finding resonates with Gbaje (2011) that the management of information has long been regarded as the domain of librarians and libraries. Librarians and information professionals are trained to be experts in information searching, selecting, acquiring, organizing, preserving, repackaging, disseminating, and serving. However, professionals in information technology and systems have also regarded information management as their domain because of the recent advances in information technology and systems which drive and underpin information management (Lischer-Katz, 2022). One of the clearest evidences of this as discovered by Schinagl et al (2023) is that the positions of 'Chief Information Officer' (CIO) in many organizations are generally held by information technologists instead of librarians. In fact, most of the work of CIOs has to do with developing and managing the Information Technology infrastructure and systems.

Conclusion

Based on the findings of this study, it can be concluded that in Rivers state public libraries, digitization and security management in archive preservation are established. However, there is a significant difference in the responses of staff from Jubilee library Port Harcourt and the ones from Rivers state library board on the prevalence of security management in the preservation of archives in public libraries in Rivers state.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The facilities in Rivers state public libraries should be scheduled for regular preventive maintenance. By so doing, the security management system will be at good steps ahead of those with malicious tendencies.

2. Librarians and information technologists in Rivers state public libraries should be scheduled for regular upskilling. By so doing, they will update their knowledge on digitization and security management in archives preservation to meet global demands.

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