

Awareness of Digital Preservation Strategies by Librarians in Nigeria

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Abstract

Purpose: *This study examined the awareness of librarians in Nigeria about digital preservation strategies in libraries.*

Methodology/Approach: *A social survey method of research was adopted for the study. The questionnaire was the research instrument used. A systematic random sampling technique was used to select two hundred and fifteen (215) respondents for the study.*

Findings: *The study reveals that many libraries lack digital preservation policy while many librarians do not have training on digital preservation. It also reveals low knowledge among librarians about digital preservation. Preservation challenges identified include lack of management support, lack of standard policies as well as poor funding and low capacity building for libraries and librarians.*

Implication: *The paper further emphasised that there should be adequate awareness of librarians in the use of digital library services for effective and efficiency services delivery.*

Originality/value: *The paper's value can be situated in its appropriate recommendations that there is need to train and retrain librarians on new technologies and trends in managing library digital resources in this era. The call for a review LIS curriculum to accommodate training of students with necessary skills to manage and preserve digital information materials is also relevant. Furthermore policies on appropriate implementation of digital preservation systems should be reviewed for effective and efficient service delivery in libraries. There should be national policy on preservation of digital contents in libraries across Nigeria. Software and hardware technologies for digital preservation process in Nigerian libraries should be up-to-date since electronic age is changing rapidly.*

Keywords: *Awareness, Digital Preservation, Information, Librarians, Strategies, Nigeria*

Introduction

The information age is characterized by many opportunities as well as challenges including information explosion which has affected the production of both electronic and print information sources. Large quantities of information and information sources now exist in digital forms, including emails, social networking websites, e-journals, e-books and databases, which change rapidly in content and forms. This, coupled with other needs and challenges makes the concept and measures of digital preservation very imperative. Digital preservation (DP) combines policies, strategies and actions to ensure the accurate rendering of authenticated content overtime, regardless of the challenges of media failure and technological change. It documents an organization's commitment to preserve digital content for future use (ALA, 2007). Electronic records that are not protected against the challenge of

technological change are likely to be inaccessible with time. As a result of advances in information and communication technologies (ICTs), digital information management became the trend in library and information services across the world. This is unconnected with the advantages of digital information and media over physical ones. They guarantee economy of space, timely information access and management, remote access, diverse form of information (multimedia), ease of information sharing and distribution, among others. Libraries are now encouraged to adopt digital information and sources as a result of these benefits and render quality services to users. But, many libraries undertake digitalization projects and e-collection development without adequate knowledge of digital resource management and careful analysis of their choice. (Stewart, 1998, and Giordano, 2007) asserted that, attitude and knowledge of libraries concerning digital preservation has not made much progress.

Therefore, serious considerations are needed to ensure digital information management and preservation. Libraries as well as librarians require strong management support, efficient and effective strategy or policy, positive attitude and actions, and adequate knowledge to manage and preserve information and sources. Library and Information Science (LIS) institutions in Nigeria also need to develop robust model and curriculum to impact on students' knowledge about digital media management and preservation.

The goal of digital preservation is the accurate rendering of authenticated contents over time. Preserving the content of a digital format has become a crucial issue in libraries. There is a need to preserve information materials that are available in electronic format for future use, like the printed materials. However, it has been realized that this is not as simple as the printed format due to non-availability of suitable standards in relation to format and media. However, appropriate strategies at the beginning of implementation can ensure stability, accessibility and long term preservation of digital materials.

Objective of the Study

The objective of this study is to investigate the level of librarian's awareness on digital preservation strategies. It also, aimed to identify digital preservation policy, challenges as well as make appropriate recommendation towards improving digital preservation of materials in libraries.

Statement of the Problem

In Nigeria, many libraries are embracing the practice of e-collection, digitization and management. Over the years, preservation of library materials was not given much priority, and most libraries are faced with the challenge of preserving digital information and sources which are considered to be fragile and obsolete with technology and time. However, understanding the importance of digital contents in library, it is pertinent to know if libraries in Nigeria have policies guiding digital materials, their level of awareness of digital materials and what challenges are there in managing digital materials in Libraries.

Research Questions

This study was guided by the following research questions.

1. Do libraries in Nigeria have digital preservation policy?
2. What is the level of librarians' awareness on digital preservation strategies?
3. What are the challenges facing digital preservation in libraries?

Review of Related Literature

Digital preservation was described by ALA (2007) as combined policies, strategies and actions to ensure the accurate rendering of authenticated content over time, regardless of the challenges of media failure and technological change. The Joint Information Systems Committee (2003) defined digital preservation as "the series of actions and inventions required to ensure continued and reliable access to authentic digital objects for as long as they are deemed to be valued. Satish and Umesh (2005) stated that digital preservation means taking steps to ensure the longevity of electronic documents. It applies to documents that are born digital and stored online (or on CDROM, diskettes or other) or to the products of analogue-to-digital conversion. Maharana & Panda (2001) further described digital preservation as a process by which data is preserved in digital form in order to ensure usability, durability and intellectual integrity of the information contained therein.

(McGovern's report) asserted that, policies and other documentation of decisions and actions represent one of the best indicators of the development of the organizational leg. At the 2006 Best Practices Exchange (BPE) in North Carolina 'participants stressed again and again that a successful digital preservation program requires a strong foundation. Participants identified four essential elements for building a strong foundation for a digital preservation program: support and buy-in from stakeholders; 'good enough' practices implemented now; collaborations and partnerships; and documentation for policies, procedures, and standards.

While Nancy Y.McGovern's (2007) observation about the sentiments expressed at the 2006 Best practices Exchange (BPE) noted that there is an awareness of the need for documented digital preservation policy. Russell reported in 2007 the results of a survey indicated that (92%) of institutions were already digitizing from source materials, only (29%) had written policies or plans for digitization. While (59%) of respondents reported that their digital materials

had a need life of 25 years or longer, which was the longest option offered in the questionnaire, only (13%) had written plans or policies for digital preservation. This data suggested that institutional planning for digitization lagged far behind creation and confirmed our view that institutions needed help with policy development. The results of two studies — one in Europe and one in North America — published in 2011 indicate that progress has been made, but there is still a gap between preserving digital objects and having articulated policy to govern and manage the process. A 2009 Planets project survey showed that: Nearly half (48%) of the organizations surveyed have policies for the long-term management of digital information, where long-term is defined as greater than five years. This varies by organization; (64% of archives, and 43% of libraries, have a digital preservation policy. However, only one-quarter (27%) of government departments, and the public sector in general, have a digital preservation policy in place. Similarly a spring 2010 survey of 72 Association of Research Libraries institutions (ARL is the nonprofit organization of 126 research libraries at comprehensive research institutions in the United States and Canada that share similar research missions, aspirations, and achievements) indicated that (52%) have preservation policies for their institutional repositories.

(Megan, Benach and Bergin 2013) conducted a study to identify institutions with established digital preservation programs, and investigate how these programs were implemented." Her study, which included responses from 148 institutions, produced very similar results to Russell's, indicating that while over (90%) of the respondents had undertaken efforts to conduct digital preservation, less than (30%) had actual written digital preservation policies.

Bruce, Ambacher (2011) expressed concern that, "Worldwide there is a lack of confidence in the ability of archivists and librarians to manage digital data. Those professions are seen as slow to embrace digital data preservation the professions have spent far too much time studying the issues, far too much time on grant-funded pilot projects, far too much time developing redundant best practices, and far too little time developing recommended standards. The professions may have been waiting for someone else to solve the problems, for someone else to provide an out-of-the-box solution.

However, by developing and adopting a policy, set of best practices, and standards, one does not necessarily need to wait for that out-of-the-box solution, and can begin to take incremental steps to provide a better digital preservation environment.

In late 2001, the recommendations from the Ohio State University Library (OSUL) Digital Projects Task Force suggested that line staff be dedicated to digital initiatives; however, existing personnel and budgetary constraints did not allow for this. Instead, the Digital Initiatives Steering Committee (DISC) was created as a means to maintain momentum, solicit, evaluate, and support digital project At about the same time Ohio State embarked on a project to create an institutional repository called the Knowledge Bank (KB) that collects, indexes, and preserves digital content produced by faculty and supports the creation of new research content.

Beside, digital preservation cannot be done in isolation of information professional that already has a preconceived plan about how to manage digital materials. The information expert will identify the resources and the appropriate medium to preserve it. Digital preservation can be understood as a series of managed activities necessary to ensure continued access to digital materials for as long as necessary (DPC, 2008). According to Felicia and Christopher (2012), digital preservationist a series of combined strategies and actions to ensure access to reformatted and born-digital content regardless of the challenges of media failure and technological changes.

Need For Digital Preservation

The need for DP can be considered from the benefits and challenges of digital information resources. Libraries can preserve them in order to ensure continuous rendering of better services and the attendant benefits. Again, library can also preserve them to guard against threat to digital resources and services.

Digital information has a lot of benefits to libraries and users. Hence, it is important for libraries to give adequate consideration for the preservation of the resources.. Beafrie (2006) identified information growth, information explosion, e-research and collection based science, the relative short life span of digital storage media, the ephemeral nature of web documents and links, and the need for regulatory compliance and retention as factors that have

necessitated digital preservation. Hedstrom (1998) in her paper identified vulnerability to deterioration, catastrophic loss, short life span of digital media relative to traditional format materials and obsolescence in retrieval and playback technologies as factors that make preservation of digital information imperative.

Digital Preservation Strategies

A large number of materials or resources exist in digital forms: e-mails, blogs, social network websites, national websites, etc. Electronic information includes a variety of object types such as electronic journals, e-books, databases, data sorts, reference works, and websites (Hodge, 2002).

Hedstrom (1998) stated that digital preservation should be examined in two perspectives: users hoping to get satisfaction from access and the use of digital materials; and the library satisfying the immediate needs of the users. According to him the mechanisms that will enable users to establish authenticity require libraries to store much more than the content of digital documents. Digital information in libraries can be preserved by copying, refreshing, or migration, transferring from less stable magnetic and optical media by printing on paper or microfilm, and preservation in simple digital formats in order to minimize the requirements for sophisticated retrieval software.

Digital preservation programmes include preparing materials along with associated documentation or metadata into an archival digital storage system where they can be managed to deal with the threats of data loss or technology change. It involved:

- Controlling the material sufficiently to support its long term preservation
- Ensuring that the material will remain understandable to this defined community of expected users
- Making the preserved material available to the designated community of users as appropriate
- Advocating good practice in the creation of digital resources (National Library of Austria, 2003).
- Negotiating for and accepting appropriate digital materials from producers

- Working out for whom the material is being kept and who will need to be able to understand it
- Ensuring that the materials is protected against all likely threats, and enabling the material to be accessed and its authenticity trusted

While Gbaje (2012) posited that digital preservation strategy is a method for keeping stored digital objects permanently accessible for long-term use. He also pointed out that strategy is a crucial part of managing the risk associated with rapid hardware and software obsolescence. In 2006, the Online Computer Library Center developed a four-point strategy for the long-term preservation of digital objects. They include:

- Determining the appropriate metadata needed for each object type and how it is associated with the objects.
- Providing access to the contents.
- Assessing the risks for loss of content posed by technology variables such as commonly used proprietary file formats and software applications.
- Evaluating the digital content objects to determine what type and degree of format conversion or other preservation actions should be applied.

There are different kinds of strategies that can be adopted by libraries and information centers to preserve digital information. Some of the digital preservation strategies are described thus:

Technology Preservation: A method for ensuring ongoing access to digital objects. It involves keeping the old technology, that is, hardware and software that were used to create and access the digital information in their original form and environment.

Technology Emulation: It refers to creating new software that mimics the operations of older software and hardware in order to reproduce its performance. It helps to maintain integrity of the original look and feel of the material.

Metadata Management: It is required to track lineage of digital objects. Metadata is needed to preserve the object and for users in future to find and access it.

Printing/Output to Paper: This is sometimes referred to as change media. It involves printing of digital materials and preserving the paper

copy. The advantage of outputting or printing on paper could be preservation of content and to some extent layout (Hodge, 2002; Beagrie, 2000; Saur, 2005; Satish & Umesh, 2005; and Maharana & Panda, 2001).

Digital Archaeology: It denotes method and procedure to rescue content from damaged media or from obsolete or damaged hardware and software environments, the recovery of digital materials at risk.

Migration: It covers a wide range of activities to periodically copy, convert, and transfer original information from one generation of technology to subsequent ones.

Challenges of Digital Information Management

Every innovation and creativity that made impact and advances the cause of humanity has its inherent challenges. Such challenges are not surmountable if there are dedicated personnel to study and implement procedures and policies. The challenges of digital information management and preservation which include machine dependency, technological obsolescence, and tranquility of storage media, integrity, authenticity and history of digital materials (Satish & Umesh, 2005) and human errors could be improved upon with dedicated professionals. Hedstrom (1998) stated that absence of established standards, protocols, and proven method for preserving digital information are a challenge to digital information preservation. Indeed, Saur (2005) identified major challenges of digital preservation to include:

- People digital preservation, that is, finding the skills required in the future and ensuring that they remain available
- Making digital preservation fit, especially achieving scalability of practice to both large systems and the smallest institutions.
- Funding digital preservation.

- Managing digital preservation, especially the importance of integrating digital preservation into mainstream operations of libraries.

Wilson (2007) that computer system and software application change so rapidly that there is no guarantee that existing data sources will be accessible and useable on future computing platform software versions, strategies to avert impending unforeseen circumstances need to be put in place by librarians. Gladney (2007) also posited that the software currently available does not include good tools for saving digital originals in the face of rapid hardware and software obsolescence.

Research Method

This study was carried out using a social survey method. The research instrument adopted for the study was questionnaire. The instrument was structured to assess relevant information about policy and awareness of librarians about digital preservation strategies. The population of the study was 877 Fifth batch certified librarians of Nigeria from various libraries and institutions across Nigeria that were inducted by the Librarians' Registration Council of Nigeria (LRCN) in September, 2014. A systematic random sampling was used to select the librarians involved in the survey. The questionnaire was administered to one out of every three librarians being inducted on that day. A total of 300 questionnaires were distributed to librarians and 215, representing (72%) response rate, were completed and returned.

Data Analysis and Discussion of Funding

The total of two hundred and fifteen (215) questionnaires were duly completed and returned. This represents a response rate of 72%. Statistical package for Social Science (SPSS) application software was used for the analysis and simple percentages was adopted for easy interpretation.

Figure 1: Distribution of respondents by academic qualification

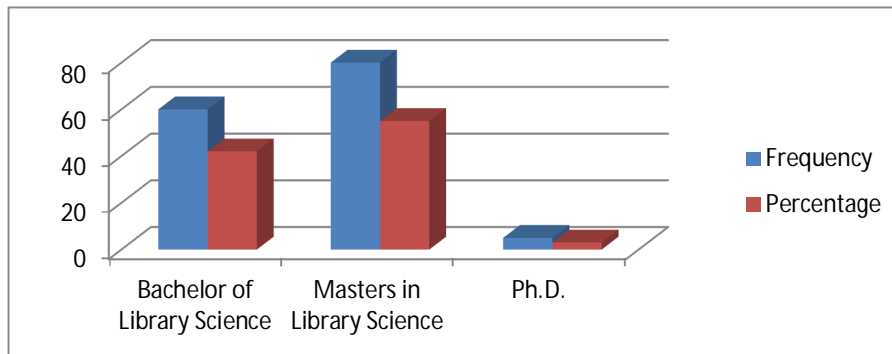


Figure 1 shows that majority (55%) of the respondents had master's degree while (42%) had first degree in library science and (3%) had Doctorate degrees (Ph.D.)

Figure 2: Distribution of respondents by years of experience

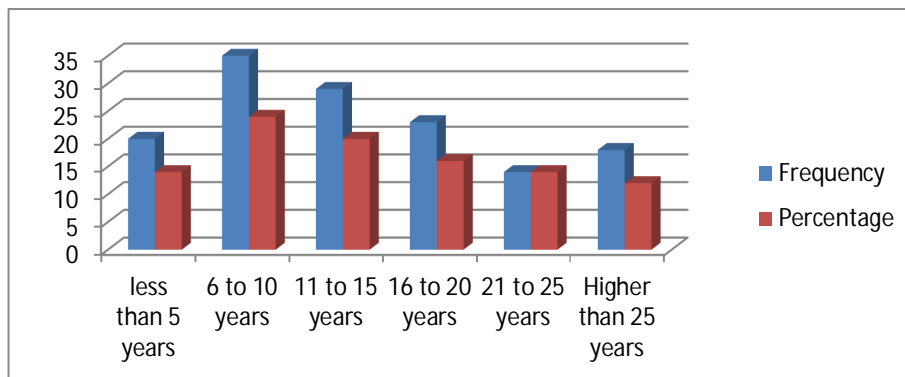


Figure 2 reveals that (24%) of the respondents had 6-10 years of experience while (14%) had <5 years of experience. It also shows that (14%) of the respondents had 21-25 years of work experience. This indicates that most of the respondents have longer years of work experience.

Figure 3: Level of Librarians' awareness with digital preservation strategies

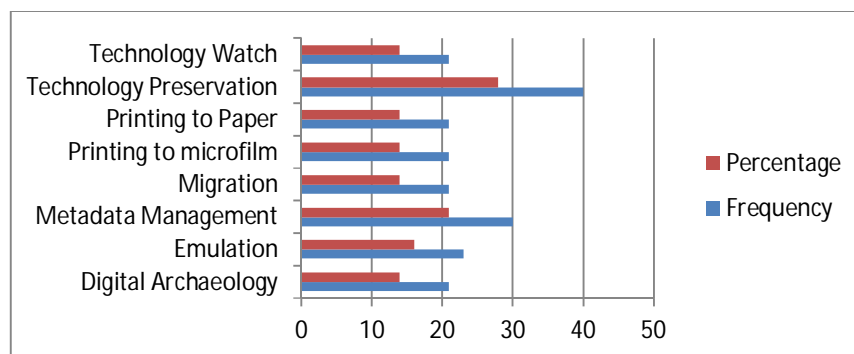


Figure 3 indicates that many librarians are not aware with some of the digital preservation strategies that may be applied in libraries. (28%) are aware with technology preservation while (21%) were aware of metadata management. It also shows that (14%) had acquaintance with migration; (16%) with emulation; (14%) with printing to paper; (14%) with microfilming; (14%) with digital archaeology; and (14%) with technology watch. This result shows inadequate

knowledge of librarians about digital preservation strategies in libraries.

Figure 4: Digital preservation policy in libraries

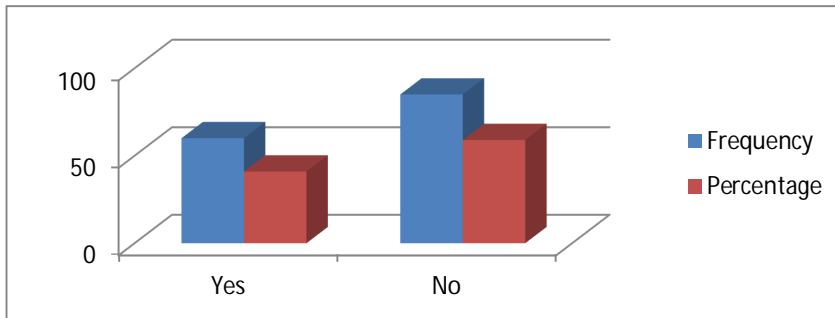
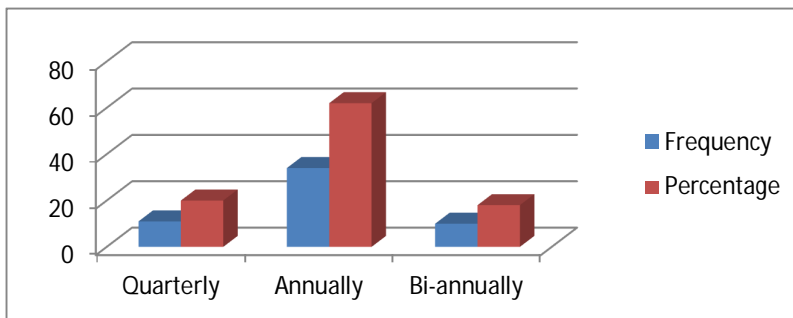


Figure 4 reveals that most libraries do not have a formal digital preservation policy hence (59%) of the respondents indicated so, while some had as indicated by (41%) of the respondents. This

shows that most libraries in Nigeria as represented by the respondents were yet to come up with digital preservation policy.

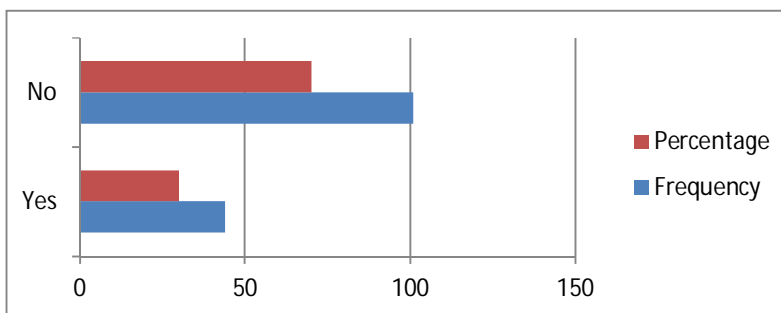
Figure 5: Digital preservation policy review



From figure 5, (62%) of the respondents indicated that their libraries had an annual digital preservation policy review. (20%) of the respondents were of the view that their libraries review quarterly while (18%) of the respondents said they review bi-annually. Their review decisions corroborates with Wilson (2007) that

since computer system and software application change so rapidly and there is no guarantee that existing data sources will be accessible and useable on future computing platform software versions, there was need to frequently review digital preservation policy to meet current trends in technology.

Figure 6: Librarians Training on Digital preservation



It is obvious on figure 6 that majority (70%) of the respondents have not had training on digital preservation while only (30%) of the respondents have received training on digital preservation. This result is corroborates with the

report of the Joint Information Systems Committee (2004) that training in long-term management and preservation of digital assets is a major issue for the Higher and further education sector and that training and

development of library staff in any academic library contributes significantly to productivity because trained staff are motivated and better

equipped to utilize their knowledge, skills, and abilities.

Figure 7: Challenges of Digital Preservation

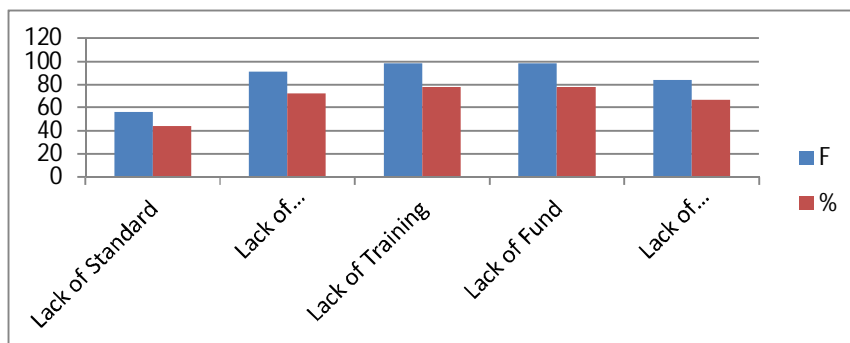


Figure 7 showed that (78%) identified lack of fund and training as major challenge. (72%) indicated that policy/strategy (44%) indicated lack of standard while (67%) indicated management support were some of the numerous challenges facing digital preservation policy in Nigerian libraries. This supports Hedstrom (1998) that absence of established standards, protocols, and proven method for preserving digital information are a challenge to digital information preservation. It is also in line with Saur (2005) who identified ‘people digital preservation’ that is, finding the skills required in the future and ensure that they remain available and funding as challenges.

Discussion of Findings

The study in Table 3 reveals inadequate knowledge of librarians about digital preservation strategies measures in libraries. This findings supported by Bruce, Ambacher (2011) expressed concern that, "Worldwide there is a lack of confidence in the ability of archivists and librarians to manage digital data. Those professions are seen as slow to embrace digital data preservation. Librarians and archivists, etc. have spent much time studying the issues on grant-funded pilot projects, far too much time developing redundant best practices, and far too little time developing recommended standards". The findings in Table 4 indicate that 59% of the libraries do not have a formal digital preservation policy. The finding is in consonance to what McGovern's (2007) who asserted that, policies and other documentation of decisions and actions represent one of the best indicators of the development of the

organizational leg. It is also important to formulate policies and development standards that will serve as a guide for librarians on preservation and management of digital resources in the libraries. The result in Table 5 shows that 62% of respondents had an annual digital preservation policy review. (20%) of the respondents were of the view that their libraries review quarterly while (18%) of the respondents said they review bi-annually. This findings agree with Wilson (2007) that since computer system and software application change so rapidly and there is no guarantee that existing data sources will be accessible on future computing platform software version, there was need to frequency review digital preservation policy to meet current trends in technology.

The findings in Table 6 shows that majority (70%) of the respondents have not had training on digital preservation. This is a threat to the efficient and effective information services delivery in the information technology era.

The result also reveals that (72%) of the respondents identified lack of training as major challenge while (60%) indicate lack of manpower, management supports and lack of policy. This supported by Hedstrom (1998) that absence of established standards, protocols, and proven method for preserving digital information are a challenge to digital information preservation. Special training session on preservation of digital materials at this critical period need to be organized for librarians in order to improve their skill on the job.

Conclusion

As many LIS stakeholders in Nigeria are working towards ensuring efficient and effective digital information services, there may be no meaningful achievements in the long run unless urgent steps are taken to put in place relevant policies and ensure improved capacity building for libraries and librarians as it relates to preservation of digital information and resources. Investments in digital information sources and services needed to be protected and this can majorly be achieved by developing and implementing effective training pattern, policies and measures to safe guard them. Information sources and media in the electronic age are changing rapidly while some are fast becoming obsolete. This trend needed to be clearly studied, understood, and strategies designed to ensure continuous availability, accessibility, and use of resources in future.

At the moment, there is no national policy on preservation of digital contents in libraries in Nigeria compare to notable countries or organizations across the world. This is a threat to the efficient and effective information service delivery in the information technology era. Special training sessions on preservation of digital materials at this critical period need to be organized for librarians in order to improve their skills on the job.

It is also important to formulate policies and develop standards that will serve as a guide for libraries and librarians on preservation and management of digital resources. A handbook on digital preservation for libraries and librarians is necessary in this regard to compliment standard or policy. Management support is crucial for the successful execution of many projects, library boards or management need to show more commitment towards the preservation of library resources.

With the trend on the number of untrained librarians, there is tendency that the challenges of digital preservation in Nigerian libraries will persist. This therefore calls for urgent attention of University administrators and Library managers to ensure that librarians acquire needed skills for effective digitization of library resources for future use.

Recommendations

Based on the findings, the researchers recommend as follows, that

1. There is need to train and retrain librarians on new technologies and trends in managing library digital resources in this era. Also LIS curriculum should be reviewed to accommodate training of students with necessary skills to manage and preserve digital information materials.
2. Policies on appropriate implementation of digital preservation systems should be reviewed for effective and efficient service delivery in libraries.
3. There should be national policy on preservation of digital contents in libraries across Nigeria.
4. Software and hardware technologies for digital preservation process in Nigerian libraries should be up-to-date since electronic age is changing rapidly.

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