AWARENESS OF DIGITAL PRESERVATION STRATEGIES BY LIBRARIANS IN NIGERIA

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ABSTRACT

State that the awareness and investment of libraries in Nigeria on digital library services are on the increase. Despite this trend, most libraries are yet to harness this opportunity, hence it became imperative for libraries and other relevant stakeholders to consider digital preservation as priority, and ensure continuous access to digital resources to sustain services. Investigates the awareness of librarians in Nigeria about digital preservation strategies in libraries. A social survey method of research was adopted for the study and questionnaire as a research instrument was used. Reveals that many libraries lack digital preservation policy while many librarians do not have training on digital resources preservation. Reports that knowledge among librarians about digital preservation is low. Preservation challenges identified includes lack of management support, standard and policies as well as poor funding and low capacity building for libraries and librarians. Recommended for the development and implementation of digital preservation policies, training and retraining of librarians, and review of Library and Information Science (LIS) curriculum, among others.

KEYWORDS: Preservation, Digital Preservation, Preservation Strategy.

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. Also, the attitude and knowledge of libraries concerning digital preservation has not made much progress (Stewart, 1998, and Giordano,2007). 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 material 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 digital preservation measures used by libraries in Nigeria, assess the awareness of librarians with digital preservation strategies, identify challenges,

and make recommendations 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. What is the level of librarians' awareness of digital preservation strategies?

2. Do libraries in Nigeria have digital preservation policy?

3. Do libraries in Nigeria review their digital preservation policy?

4. Whether there training programme is organized for librarians on digital preservation?

5. What are facing digital preservation challenges 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. According to Hedstron(n.d.), preservation of digital material is the planning, resource allocation and application of preservation methods and technologies to ensure digital information of continuing value remains accessible and usable. Garr and Tripathi (2012) opines that digital preservation is a process of preserving both digitized and born-digital content to a distant future in reusable condition for access

by its user. It involves a set of systematic guidelines, processes, strategies, technologies and approaches.

Besides, digital preservation cannot be done in isolation of information professional who already have 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 preservation is 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 digital presentation 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. According to Hart (2010), the benefits of electronic information and sources include remote and multiple access, unlimited library opening hours, ease of searching, economy of space and storage, and large number of users. Beafrie (2006) identified information growth, information explosion, e-research and collection based service, 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 play back technologies as factors that make preservation of digital information imperative.

Satish and Umesh (2005) stated that the increasing proliferation of digital information, combined with the considerable challenges associated with ensuring continuous access to digital information, necessitated concerted action. LIS stakeholders must come together and encourage digital preservation in libraries through regular training, policy development and evaluation.

Digital Preservation Strategies

A large number of material 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, database, 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 the 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.

Satish and Umesh (2005) identified digital preservations strategies to include migration, emulation, and output to permanent paper on microfilm and technology preservation. 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 centres 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.

Kademani, Kalyane and Kumar (2003) argued that many libraries accord least priority to preservation of materials. They identified obsolescence of technologies, lack of skills and knowledge to ensure long-term preservation of multimedia documents and ensure integrity as reasons why libraries tend not to embark on it.

Hodge (2002) also posits that little regards for long-term preservation, compared to traditional paper-based, unknown life span, close link of multimedia to software and hardware technologies and rapid change in technologies as some of the challenges of electronic invention.

Digital objects, regardless of whether they are created initially in digital form or converted to digital form, are vulnerable to loss via decay and obsolescence of the media on which they are stored, and they become inaccessible and unreadable when the software needed to read them or hardware of which the software runs becomes obsolete and is lost (Rosenthal et al, 2005).

These threats are likely to be intertwined. For instance, software failure may likely to be triggered by hardware failure. Since, some of these challenges could be identified as major reasons for loss of contents and corroborating. Wilson (2007) stated 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. It was validated using expert opinion. The reliability of the instrument was tested using test-retest method. Fifteen questionnaires was administered to librarians in Abuja, the capital city of Nigeria. The completed questionnaire was returned and re-administered to the same set of librarians, and the responses were the same with the previous ones. The population of the study was 603 certified librarians of Nigeria from various libraries and institutions across Nigeria that were inducted by the Librarians' Registration Council of Nigeria (LRCN) on the 4th June, 2013. 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 201 questionnaire was distributed to librarians and 145, representing 72% response rate, were completed and returned. Statistical package for the social sciences (SPSS) application software was used for the analysis, and simple percentage was adopted for easy analysis and interpretation.
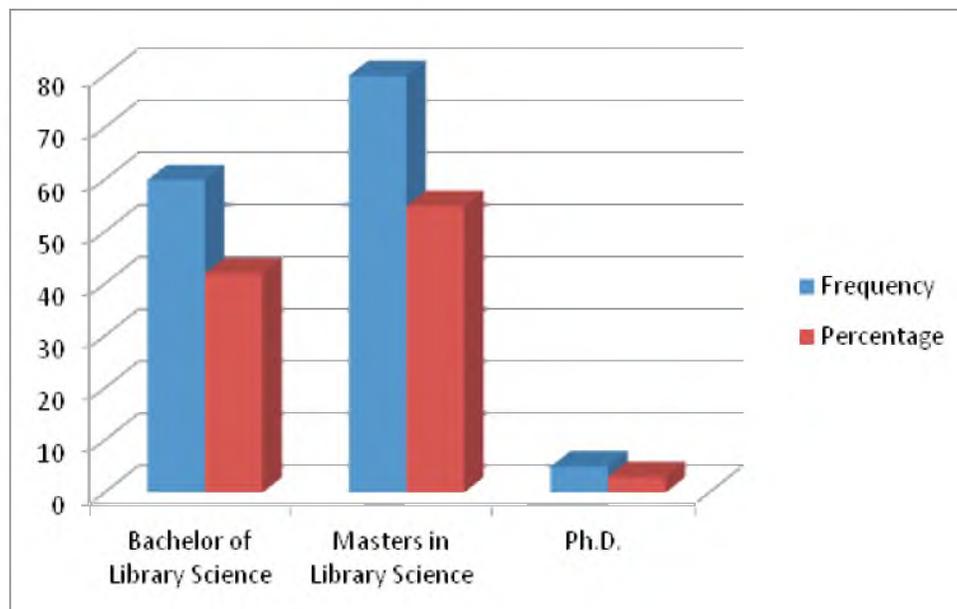
Data Analysis and Discussion

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.).
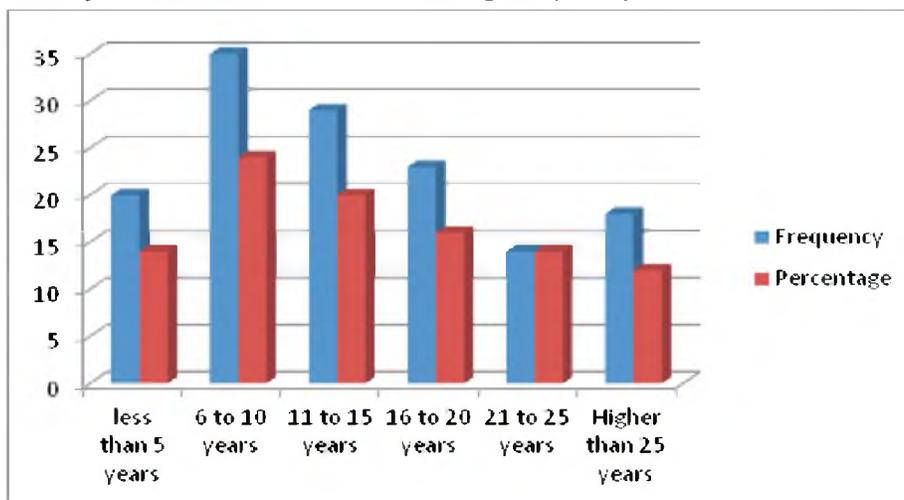

Figure 2: Distribution of Respondents by Years of Experience

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.

Research question 1: What is the level of librarians' awareness of digital preservation strategies?
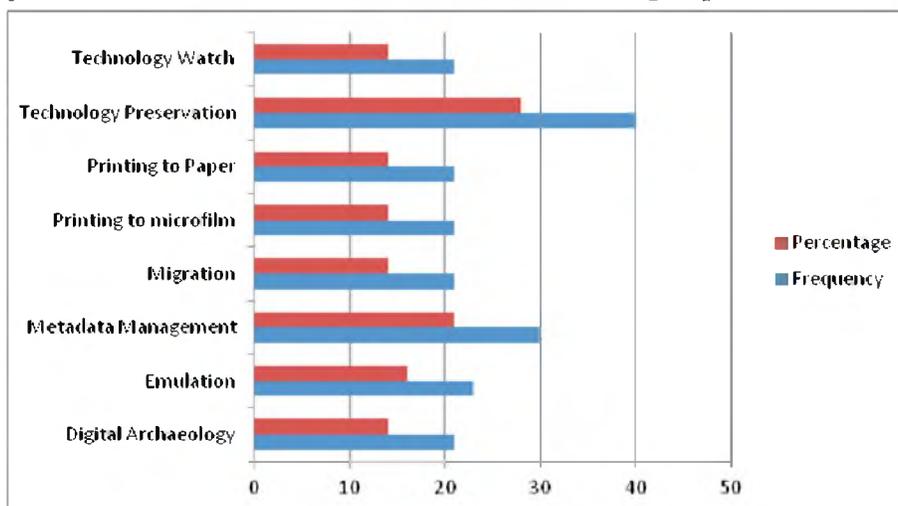

Figure 3: Librarians' Awareness with Digital Preservation Strategies

Figure 3 indicates that the respondents were aware of digital preservation strategies and measures that may be applied in libraries. However, 28% of the respondents were aware of 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 imbalance and inadequate knowledge of librarians about digital preservation strategies measures in libraries.

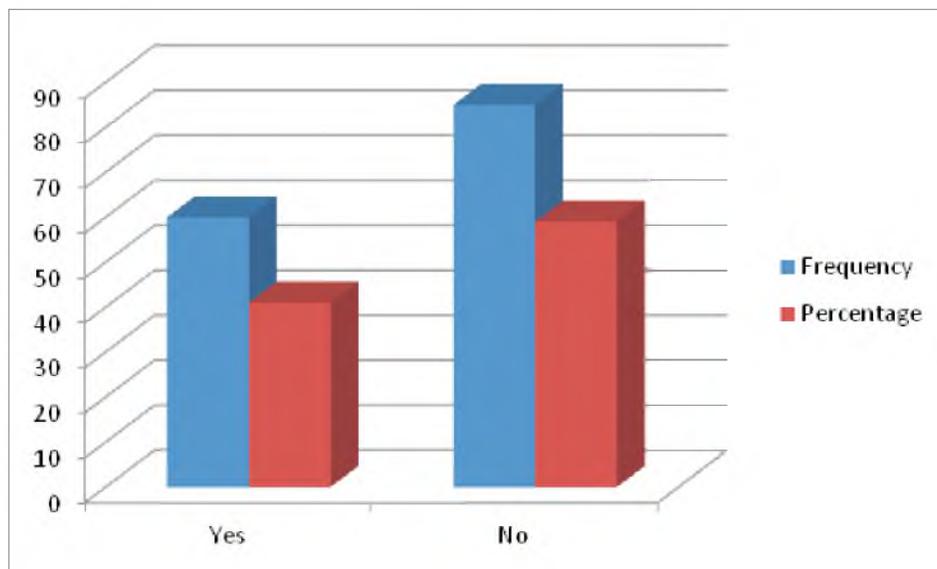Research question 2: Do libraries in Nigeria have digital preservation policy?

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.

Research question 3: Do libraries in Nigeria review their digital preservation policy?
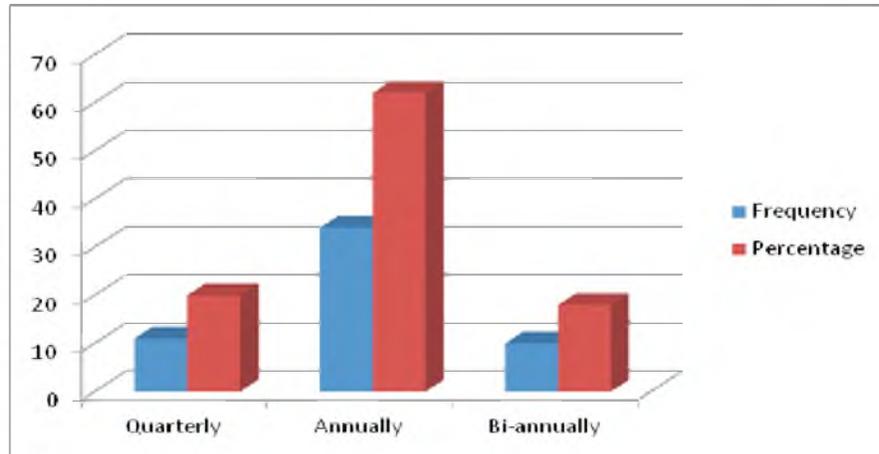
Figure 5: Digital Preservation Policy Review

From figure 5, 62% of the respondents indicated that their libraries had an annual digital preservation policy review. Also, 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.

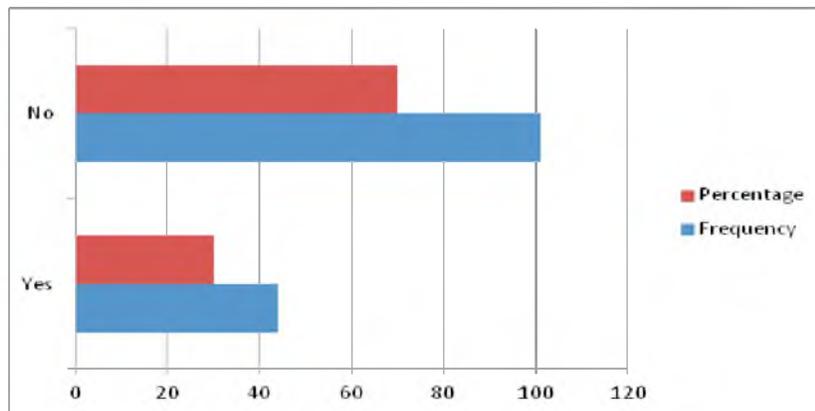Research question 4: Were there training organized for librarians on digital preservation?

Figure 6: Training of Librarians 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 against the report of the Joint Information Systems Committee (2004) and Oke and Oguntuase (2010) 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.

Research question 5: What are the challenges facing digital preservation in libraries?
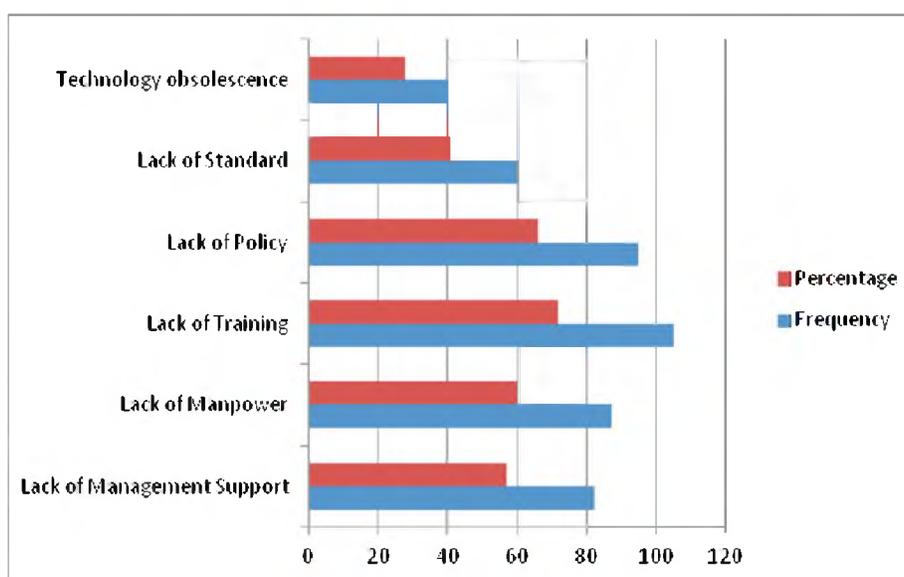

Figure 7: Challenges of Digital Preservation

Figure 7 shows that 72% identified lack of training as major challenge. 66% indicated that policy was a bane while 60%, 57% and 41% indicated that lack of manpower, management support and standard 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.

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 trained 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.

2. LIS curriculum should be reviewed to accommodate training of students with necessary skills to manage and preserve digital information and sources.

3. Policies on appropriate implementation of digital preservation systems should be reviewed for effective and efficient service delivery in libraries.

4. There should be national policy on preservation of digital contents in libraries across Nigeria.

5. 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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