STORAGE MEDIA USE AND CHALLENGES: THE CASE OF DIGITIZATION UNIT OF KASHIM IBRAHIM LIBRARY, AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA

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Abstract

This paper investigates the storage media used for preserving digital information resources and its challenges in the Digitization Unit of Kashim Ibrahim Library, Ahmadu Bello University, Zaria, Nigeria. In order to achieve the objective of the study, three research questions were raised for the purpose of the study. A qualitative research method was used with a purposive sampling technique adopted for the study; the instruments used to collect data were structured interview and observation. The responses from the respondents who were the staff of the Digitization Unit were analyzed descriptively using tables. The results of the study revealed that external hard drive, CD/DVD, Internal server were some of the storage media used in the Digitization Unit of the Library. It was also discovered that storing uploaded digitized local contents formed part of the reasons for using storage media. Finally, damaged CD/DVD and corrupt files were said to be some of the challenges faced while using the storage media. The paper recommends the use of mirror server, refreshment, migration and destruction of passwords to ensure perpetuity in the use of storage media in the Digitization Unit of Kashim Ibrahim Library.

Keywords: Storage Media, Library Digitization, ICT Digital Information Resources

Introduction

The emergence of Information and Communication Technology (ICT) has changed the way information resources are preserved in libraries, archives and information centres. Through the use of ICT, institutions are not only able to store a large amount of information but can also have quick access to it for present use, future use and long term-reuse. The rate at which digital information resources are created keeps increasing daily and their management becomes a challenge, therefore there is the need to choose the right storage media to be used for storing the digital information resources. Information resources in libraries include e-textbooks, theses

and dissertations, question papers, conference proceedings, seminar papers , technical report, undergraduate project, papers, maps, online databases, pictures, music, etc. Digital information resources are information such as text, graphics, images and sounds in the non-print format which can be accessed through the use of a computer. Nwabueze and Oghenetega (2015) stated that digital information resources are information in soft copy and are accessible through computer machines and other corresponding ICT tools.

Digitization in the library is the process of converting information resources such as local contents, sound recordings and pictures from analogue to digital form. The aim of digitization is to increase access, preserve resources and improved library services.

Storage media is a computing hardware that is used for storing, porting and extracting information; for temporary or permanent use. The digital storage medium includes optic and magnetic technology. The optical technology includes the DVD and CD-ROM, while the magnetic technology includes floppy disk hard drives and removable drives.

Without an effective storage media of digital information resources in libraries, access via digital storage devices becomes difficult and produces little or no access to resources that can be used for teaching, learning and research.

Statement of the Problem

The aim of a university library is to acquire, process, store, preserve and disseminate information resources in print and non-print format to support, teaching, learning and research for present and future generation. It was observed by Gbaje (2011) that digital information resources will cease to be available without proper management intervention. Gbaje (2011) posits that as a result of changes in technology hardware and software and these serve as a threat to digital storage because the media are designed in such a way that it must be compatible with one another.

It is as a result of this that the research wants to determine if the Digitization Unit of Kashim Ibrahim Library, Ahmadu Bello University, Zaria, Nigeria is faced with such a challenge and whether or not it is bracing up to face the challenge.

The Objectives of the Study

The following were the objectives of the study.

1. To identify the types of storage media used in the Digitization Unit of Kashim Ibrahim Library , Ahmadu Bello University, Zaria, Nigeria.
2. To determine the purpose of the storage media use in the Digitization Unit of Kashim Ibrahim Library, Ahmadu Bello University, Zaria, Nigeria.
3. To determine the challenges faced in using storage media in the Digitization Unit of Kashim Ibrahim Library, Ahmadu Bello University, Zaria, Nigeria.

Literature Review

Gbaje (2011) stated that the continuous changes in computer hardware and software can cause technological obsolescence and this can pose a threat to storage media because it leads to the loss of the means of accessing information in digital form, and to tackle this problem, information resource needs to be migrated from one platform or format to another due to the constant changes in hardware and software so as to meet up with the current changes and upgrades. Gbaje (2011) and also Kol and Oltmans (2005) asserted that the purpose of migration is to preserve the integrity of digital objects and to retain the ability of clients to retrieve, display, and otherwise, use them in the face of constantly changing technology. With migration, file formats will be converted into new formats as soon as the original formats run the risk of becoming obsolete.

The two primary technologies used for digital storage are magnetic and optical storage media. The magnetic media come in a number of formats; the floppy disk, tape systems, removable disks and hard drives. They all rely on magnetic particles in the recording of the substrate that changes direction in the presence of a magnetic field while optical technology includes CD-ROM, CD-R/W, DVD-ROM, DVD-R/W and DVD+R/W are read using a laser beam which reflects the light from the surface of the disc in areas of differential reflectivity (Gbaje, 2011). Another serious challenge facing digital preservation is technological obsolesce which is caused by continuous upgrade of operating systems, programming language applications and storage media due to commercial interest the devices, software and formats used to store information are often designed for obsolescence. In other words, corporations that design these hardware and software design them with a shelf-life in order to ensure the sale of latest upgrades and models (Reyes, 2013)**.** Moghaddam (2012) stated that emulator should be used to recreate the functionality of obsolete technical environments on modern computer platforms

Mageto (2009) provided general advice on issues that should be considered by the creators and managers of digital information resources when selecting physical storage media for long-term preservation. Mageto (2009) points out that server-based hard disk storage is the most effective and secure storage regime for digital resources, provided it is well managed and includes an effective backup strategy. Mageto (2009) further states that any physical storage medium is, by definition, completely dependent upon very specific combinations of hardware and software for access and the accessibility of information stored on such media is therefore highly vulnerable in today's rapidly evolving technological environment. The need to periodically refresh digital resources onto new media is inescapable for the near future. Nevertheless, careful selection of appropriate media can maximize the periods between refreshment cycles and simplify the refreshment process, in addition to providing the securest storage environment possible.

Media deterioration is also a problem of obsolescence in retrieval and playback technologies. Innovation in the computer hardware, storage and software industries continues at a rapid pace, usually yielding greater storage and processing capacities at lower cost. Devices, processes and software for recording and storing information are being replaced with new products and methods on a regular three to five years cycle. Records created in digital form, in the first instance, and those converted retrospectively from paper to microfilm to digital form are equally vulnerable to technological obsolescence.

Ekoja and Gbaje (2012) asserted that digitization and archiving of digital materials have also brought upon libraries the responsibility to preserve them for future use and reuse. Preservation is aimed at ensuring that the digital materials remain accessible and useable as long as it is required, notwithstanding technological (hardware and software) change.

Methodology

The qualitative research design was adopted for the purpose of this study. The population of the study covered the staff of Kashim Ibrahim Library, Ahmadu Bello University, Zaria, Nigeria which consisted of 560 staff. The subject of the study were the staff of the Digitization Unit who were purposively selected .Their total number was eight (8) and they automatically formed the sample size for the study.

Interview and observation were the instruments used to collect data for the study and triangulation was used to determine the validity of the data collected. The data collected was organized, tabulated and discussed descriptively.

Results and Discussions

The response rate indicated that only 6 (75%) out of the (8) staff were interviewed because two of the staff were absent at the time of the interview.

Table 1: Storage Media used in the Digitization Unit of Kashim Ibrahim Library

Flash Drive	X	
CD-ROM/Hard Disk		√
Computer Hard Disk		√
External Network Drive		√
Memory Card	X	
Microfilm	X	
Memory Sticks	X	
Floppy Disk	X	
Mirror Server	X	
Internal Server		√
Software		√

Key: X= Not Available   √=Available

Table 1 above revealed that during the interview and observation, it was discovered that the CD Rom/DVD, computer hard disk, external network drive, software and server were said to be storage media used in Kashim Ibrahim Library to store Digital Information Resources (DIRs) such as theses, dissertations, seminar and conference proceedings etc. Other forms of storage media like flash, memory card, microfilm, memory sticks, floppy disk and mirror servers were not put to use as storage media. This implies that the Library is meeting up with expectation only that there are better options if used, could be more effective and reliable.

Table 2: Use of Storage Media in the Digitization Unit of Kashim Ibrahim Library

Storing individual Information Resources		√
Storing Repository Work		√
Storing Uploaded Information		√

Storing Departmental Assignment	X	
Storing Past Exam Question Papers	X	
Storing Continuous Assessments Scores	X	
Storing Thesis and Dissertations		√
Storing Undergraduate project	X	

Key: X= Not Available   √=Available

Table 2 above revealed, at the time of the interview, that the storage media was used in Kashim Ibrahim Library to preserve information about the results of the research output carried out by members of the University community, information about resources that have been uploaded, information about the repository work, and information about individual personal research work such as conferences, seminars and theses. It was discovered that some of the information on the storage media in the Digitization Unit served as a backup in case of failure or any type of threat. This implies that the information resources stored on the storage media were mainly preserved for easy access and retrieval.

Table 3: Challenges Faced in the use of Storage Media in the Digitization Unit of Kashim Ibrahim Library

Passworded storage devices	√
Damaged storage devices	√
Empty storage devices	√
Corrupted storage devices	√

Key: X= Not Available   √=Available

Table 3 above revealed that password storage devices, damaged storage devices, empty storage devices and corrupted storage devices were said to be some of the challenges faced in the use of storage media in the Digitization Unit. This implies that information on the research output of the University community will become difficult to access, upload and retrieve if the challenges were not addressed as and when due.

Conclusion

Storage media is vital to the preservation of digital information resources. External hard drive, internal server and CD Rom were identified as the storage media used in the Digitization Unit of Kashim Ibrahim Library, Ahmadu Bello University, Zaria, Nigeria. The study confirmed that storage media were used to keep information about individual information resources,

repository work and the information uploaded about the research output of the University community.

Finally, corrupted CD-ROM, damaged CD-ROM, passworded information, empty CD-ROM were some of the challenges identified.

Recommendations

The following recommendations are made based on the findings of the study;

1. Mirror server should be used as a backup in case of technological failure.

2. Constant refreshing, replication, emulation and migration of storage media should be adopted in the Digitization Unit of Kashim Ibrahim Library in order to ensure continuous access and easy retrieval of the information on the storage media.

3. The digital information stored on the storage media should not be provided with passwords, and the ones with password should be destroyed.

References

Ekoja, I. S. & Gbaje, E. S. (2012) "Digital Preservation Activities of two for most Information In situations in Nigeria" In Omondi, B. and Omuyango, C. (eds) Information Sustainable Development in a Digital Environment. Nairobi: Kenya Library Association. P.245

Gbaje, E. S. (2011) Digital Preservation Policy and Implementation Strategies for National Information Centres in Nigeria. PhD thesis, Faculty of Education: Ahamadu Bello University Zaria.

Kol, N., & Oltmans, E. (2005). Comparison between Emulation and Migration. Retrieved on 25/03/2014fromhttp://worldcat.org/arcviewer/1/OCC/2007/08/08/0000070519/viewer/file9 59.html#article0

Mageto, D. K (2009) Cost Factors in Digital Preservation.

Moghaddam, G. G. (2010). Preserving digital resources: Issues and concerns from a view of librarians. *Collection Building, 29*(2), 65-69

Ndakasharwa, M. (2012) Investigation into the State Digital Records Management in the Provincial Government of Eastern Cape: A Case Study of the Office of the Premier. PhD Thesis. Faculty of Social Sciences and Humanities: University of Fort Hare.

Nwabueze, U., & Oghenetega, L. (2015). Availability and Use of Digital Information Resources by Undergraduates of Universities in Delta and Edo states, Nigeria. *International Journal of Digital Library Services, Vol.5 April-June 2015, Issue-2*

Reyes, V. (2013). We created it, now how do we save it? Issues in Preserving Personal Information, a Review. *Preservation, Digital*Reich, V. and *Technology & Culture, 42(3), 150-154.*