

Digitization prospects in developing countries: Case of Zimbabwe National Archives

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Abstract

The future of traditional audiovisual archives lies in their ability to adopt digital solutions. This paper discusses digitization prospects in developing countries with particular emphasis on the National Archives of Zimbabwe. Despite technological advances, African countries fail to start digitization projects. The paper attempts to uncover problems that impede wide adoption of digital solutions in Zimbabwe. There is need to overcome these obstacles before setting up meaningful digital systems. It discusses the implications of key audiovisual archiving philosophical and ethical issues on digitization projects in developing countries in East and Southern Africa. The paper goes on to suggest realistic, low cost and applicable digitization solutions that do not strain institutional resources whilst respecting authenticity and inherent values of audiovisual heritage yet at the same time, considering the constraints in which some institutions are currently operating under. The paper concludes by stressing manageable and applicable digital solutions for developing countries

Introduction

There is a growing quest for digitization to succeed in the sub Saharan African region through the active use and implementation of digitization technology to preserve and enhance access to archival collections (Sigauke and Nengomasha 2011. 2). In Africa, Kanyengo (2006:5) points out that whilst the whole world is striving to keep ahead of the digital environment, the continent has still not moved any further in preparing for Africa's knowledge resources in the digital era. He reported that most African countries have no policies on handling, however the pace at which digitization has been implemented by the National Archives of Zimbabwe has been rather slow compared to regional pacesetters South Africa and recently Zambia.

Historical Background of NAZ AVU

The Zimbabwe National Archives Audiovisual unit is responsible for acquisition, preservation and provision of access to the nation's film and sound archives. The unit was set up in 1989 and houses over 15 thousand materials including formats that are approaching obsolescence like 16 and 35 mm films, vinyl disks, video (umatic and VHS), audio reel to reel tapes , audio tape cassettes etc . To ensure continued access to content on these materials, digitization is required.

Unfortunately except for South Africa National Archives of Zimbabwe Audiovisual Unit has not embarked on a meaningful digitization project and this can be attributed to a number of challenges discussed below:

Problems that impede wide adoption of digital solutions in Zimbabwe

- Funding- the institution receives relatively insufficient funds from the National Budget and there is a tendency to prioritize the traditional activities ahead of new projects. Small scale digitization require ongoing sustainability that demand reliable and necessary constant financial support for sustainability of digital content and its supporting repositories, technology and system as long as it is required (IASA guide)
- Overwhelming current collection - The unit is still striving to fully consolidate the current collection and is locked in them not to move forward. The equipment is aging and whenever resources are available, they are used to maintain the aging equipment. For instance, the cold rooms for the storage of films are very old technology and rarely last for three months without a major breakdown. The rest of the equipment such as the telecine machine, editing table and sound room equipment is relatively old and is constantly down. Given the meager budget, AV unit could not venture into new projects as it is tied down with constant breakdown of critical equipment.
- Lack of technical expertise - This is arguably the most serious handicap for NAZ in general. Technological gaps in the NAZ AVU for the past decade is linked to high staff turnover. The institution made investments in staff development in the previous years but high staff turnover in the previous decade have resulted in the institution losing the most senior and experienced staff which negatively impacted on technical areas.

- Resistance to technological change probably due to the lack of risk taking desire to venturing into unknown waters. According to Asogwa 2011, ‘Due to inadequate skills in information technology in Africa, many traditional... archivists are conservative and have phobia for computers. Because of generation gaps between the new and old professionals, computers are perceived as a threat to their status as experts’.
- Institutional structural limitation– there is no functional IT department rather the provisions of IT office operates under the banner of automation archivist. The office has never been manned by an automation archivist with IT background. This lack of a functional IT department to explore and embrace new technology, coupled with the unrealistic costs and challenges have negatively impacted on all digitization coordination efforts.
- Meta data standards in Zimbabwe are IT driven in isolation of heritage institutions personnel. This makes it difficult to access and share digital resources.
- It is difficult to engage private players/ leaders in partnerships e.g. commercial suppliers of storage devices tend to manipulate by charging exorbitant prices as they dominate and tend to abuse. They are usually ahead technically and the fear of losing control hinders trust and a win- win situation.
- The condition of original media and quality of playback equipment have a bearing on digitized output quality. At the national archives of Zimbabwe, original media continue to deteriorate as cold rooms constantly break down, thus exposing thousands of films to extreme temperature and humidity conditions. The type of equipment used when transferring films to digital have a huge contribution on quality of the product. The outdated telecine machines in use at National archives of Zimbabwe have a negative impact on the quality of the digital copy. The telecine machines used for transferring films are old technology and poorly serviced and this negatively impacts on the quality of the digital copy.
- Technological obsolescence continues to be a threat to digitization at the national archives as it results in loss of the means to access digital formats. As a result archivists will be under great pressure to try to balance collection management and upgrading operating systems, programming language application and storage media.
- New social, political, economic and technological milieu impacts on institutional needs and archival uses and priorities for service delivery. This impact on resources, technology and the attitudes of archivist towards priorities for service delivery.)
- Poor description - Most of the materials in the region are not yet fully organized. This will complicate the availability of metadata which is critical for the identification of digital objects. Lack of metadata will affect the copyright management, retrieval and contextualization of the digital objects.

Implications of Key audiovisual archiving ethical and philosophical issues on digitization

In an increasingly digital environment, as pointed out by Green (2007), the tools and processes audiovisual archivists relied on to preserve 'traditional' analog audiovisual media are rapidly disappearing. According to Edmondson (2004:50), the onset of digitization, with its opportunities as well as problems, challenges us to examine some philosophical fundamentals. Andrew Wilson et al (2006:4) alludes that 'management and preservation requirements for digital materials are fundamentally different from analogue materials. The differences present the curators of digital materials with some fundamental challenges.'

The need for new approaches is necessitated by the fact that digital materials are different from their predecessors. Schuller (2007:1) argues that unlike traditional media such as papyrus or parchment based content, which generally has a life expectancy of centuries, digital content is unlikely to survive for a decade, not necessarily because of carrier degradation, but because of format obsolescence.

Wamukoya and Mutula (2005:15) stressed out that 'Given the dynamic nature of information technologies and obsolescence issue associated with them, it is important to put in place digital preservation strategy ...' Jones and Beagrie cited Wamukoya and Mutula (2005) define digital preservation as a series of managed activities necessary to ensure continued access to digital materials for as long as necessary, beyond the limits of media failure or technological change.

This brings a sharp contrast between analogue and digital audiovisual materials. The emphasis with digital materials is not on the medium but on the assets. Where the objective was on preserving the media that carries the content in the analog world, the objective in the digital age has shifted to the preservation of essence (content and metadata) rather than the carrier. Digital content is represented in zeros and ones (bits) and can retain its exact technical form on different media. This is to say that when digital content is moved from one media to another, it is not necessarily transferring but moving hence it does not change its essence. This is a sharp contrast with analog where any change of carrier is transfer which resulted in some technical changes of the essence.

However it has to be mentioned that this does not call for a completely new philosophy. Jewitt (1999:17) argues that in the digital age our business may be radically changed but our overall purpose will remain. Thus in an attempt to bring in new ideas for the preservation of digital materials the philosophical foundations of the audiovisual archiving field will inform every action taken.

Key Philosophical and ethical issues in ESARBICA and their implications on digitization projects in developing countries

1) Respecting originality - Guided in the archival concept of respect des fonds and original order, all reformatting work in the AV archiving should respect the context for which image and sounds

are designed because this is vitally relevant to their appreciation. For example to watch a feature film or cinema newsreel on a TV screen in a lighted room is a very different experience to watching the same film projected on 35mm in a darkened cinema dating from period in which the film was made. Context is therefore achieved by maintaining the following aspects:

Original technology - A digital copy of the original is obviously not a substitute of the original hence the need to keep both copies. Keeping two copies of the same will escalate preservation costs and these obviously complicate things for institutions in the ESARBICA which are struggling to put in place proper storage facilities for their current audiovisual collections (Matangira). This will mean an extra burden on the already meager resources as institutions will have to maintain the original careers and their digital copies.

Original content - No matter what preservation strategies applied due to technological obsolescence and natural decay, audiovisual preservation will eventually result in content migration or copying. Yet the objective to keep the copy as close as possible to the original will remain. The content should be as close as possible to the original, but good quality often comes with costs in terms of transfer equipment and storage facilities as high quality digital files are large and therefore requires more storage facilities which convert to high costs. This again has serious cost implication for ESARBICA states.

- According to IASA 2012 Conference recordings, ‘capturing everything from the original is a key basic which provides context and authenticity for the content, this secondary information provides the performance of computer based processes such as auto transcribing, voice recognition and audio restoration’.
- IASA (2012) recommends faithful reproduction of the original ie a flat copy or archival master. This should be historically accurate and aesthetically appealing.
- Comprehensive metadata and documentation of the process and equipment should be kept for collection management.
- Originals are very important and should be preserved as they may have significance over and above the content.
- Adherence to internationally agreed standards is a vital key digitization principle for long term access and future migration. This pose great pressure to audiovisual archiving institutions in developing countries as immediate digital solutions available to them usually fall below the agreed and appropriate standards.
- Each digital copy must be checked against imported file for verification of imported errors.
- Two preservation copies and additional access copies are essential for digitization.

Edmondson ; 2004, noted that large sums were being spent on not always the best effect because of the absence of clearly defined and accepted professional and reference points . the audiovisual practitioners also lacked clear professional identity and recognition in the government, industry

and community resulting from their lack of clear reference point to that vital recognition, synthesizing values, ethics, principles and perceptions in the field have made them intellectually and strategically vulnerable.

Digital solutions for developing countries.

- Ongoing digitalization and its sustainability demands reliable funding and IASA Recommends that before embarking on meaningful digitization, archival institutions should have a “strategy which includes plans for the funding of ongoing maintenance and replacement, and a listing of the risks associated with the loss of technical expertise and how that will be addressed.”
- High prioritization-In excitement about the solutions that digitization has to offer, the institutions in the region will have to carefully consider the cost implications of the projects that is initial and maintaining. It has to be understood that not all can be digitized. What to, why to and how to digitize are questions that should be carefully considered .Careful collection assessments, user needs and cost implications analysis should provide answers on what, how and what to digitize.
- Affordable solutions-Affordability should never be confused with poor quality. The idea is to start with a very low cost options which but with the same results as the costly ones. Though labor intensive, less automatic solutions are cheaper but with the same results as automated solutions ,shelve hard drives and separate computers/centralized repositories-illustrate using FIAF recommendations in Pretoria.
- Formats space and cost considerations. Small scale manual approaches can be adopted before Digital Mass storage systems.
- Human resource capacity building- Training joint training programs where African solutions are emphasized. Some have gone for training to come back home and do nothing because the skills acquired are not practical. Know not how but to do how and why.
- National policies on digital preservation should be formulated with the aim of identifying who is responsible for driving digitization initiatives national and regional levels, stipulate preservation accessibility, standards in terms of software, processes and procedures to ensure compatibility and easy migration, preserve authenticity and integrity (kalusopa T:2008.198)
- Legislation which stipulates specific responsibility on management and preservation of digital media.
- Archives in developing countries should come up with and cement digital preservation initiatives that raise awareness, document and spearhead digital access, provide technical assistance to institutions on selection and retention of digital material.
- Research and development is necessary for successful digitization implementation.

- Disaster preparedness and recovery planning
- Collaboration with other archival institutions in the region and lobby for audiovisual preservation digitization. Previous projects focused on digitization of paper records and audiovisual archival digitization is an ignored/ silent chapter resulting in less/ no activity at all for example, the ALUKA project mainly focused on digitization of paper records.
- IASA TC04 gives technical guidelines and valuable recommendations for each step of the digitization process, including benchmark specifications for equipment. These should be understood and followed in order for archival institutions in developing countries to carry out meaningful and long term digitization.
- Funding- the government and archival institution should be prepared to part with considerable monies on digital projects as well as constant equipment and software upgrading.
- Every 10-20 years, digital archives should be transcribed to avoid total memory loss and duplication of efforts.
- Knowledge base maintenance is a requirement that the archive works to equip itself with necessary skills and knowledge and to maintain these at high level. The national archives of Zimbabwe and those in developing countries must keep themselves and employees updated with the latest scientific and technical information from the field of Audiovisual archiving(IASA TC03).

Realistic low cost digitization solutions that do not strain institutional resources whilst respecting authenticity and inherent values of audiovisual heritage.

It is imperative that before venturing into digitization for wider access and preservation, institutions in ESARBICA must carefully assess the technological implications and make informed choices that do not strain institutional resources and at the same time respect the authenticity and inherent values of this heritage (ICCROM 2011).

Many digitization and digital preservation strategies have been proposed but no one strategy is appropriate for all data types, situations or institutions.

Claire Tristram: 2002 p24 listed a number of digital preservation which include Bit stream copying/ data backup, Bistream copying, Refreshing, Durable/Persistent media e.g. Gold CDs, Technology preservation, Digital Archaeology, Analogue backups, Migration, Replication, Reliance on standards, Normalization. Canonicalization, Emulation, Encapsulation, Universal Vital Computer to mention but a few.

What have been done so far

The National Archives of Zimbabwe is running a small scale digitization program currently still in its initial stages with film transfer to VHS using the telecine machine, then VHS digitization

using an industrial digital recorder which is a very slow, time consuming and tedious task on a case by case basis usually depending on what have been requested by researchers. Standards are not being followed and cannot be met but the institution is satisfying users through access.

Local area networking have been started through a network attached storage, though it have memory limitations, there is potential for growth.

National Archives of Zimbabwe have successfully hosted the ESARBICA audiovisual archiving training in preservation of audiovisual archives in 2011. This was a major step in establishing regional collaboration for audiovisual archiving issues in the region.

Conclusion

However given the low cost digital solutions, it remains a mammoth task for the National archives of Zimbabwe and archival institutions to compete for standard digitization of their film and sound archives. The cheaper costs demand space for storage and it's a matter of regrouping near obsolete methods and tedious tasks. There is dire need for concerted efforts to be directed towards an overhaul adoption of current digital solutions at the same pace with the developed world.

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