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COLLEGE OF EDUCATION, SCHOOL OF COMMUNICATION AND INFORMATION STUDIES

DEPARTMENT OF INFORMATION STUDIES

PRESERVATION OF AUDIOVISUAL COLLECTIONS IN THE J. H. KWABENA NKETIA ARCHIVES

BY

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JUNE, 2016
DECLARATION

I Samira Oteley Adjin – Tettey hereby declare that this is the end product of my research and all references made, have been duly and formally acknowledged in the reference section of this work and that no part of or entire thesis has been submitted to this university or any other academic and non-academic institution for such an award.

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(Supervisor)
DEDICATION

To God Almighty, my parents and sisters (Yasmine and Emelia) for their support and consistent prayers.
ACKNOWLEDGEMENT

I would like to thank the Almighty God for seeing me through this journey. Thanks also to my supervisor Dr Emmanuel Adjei for his guidance, advice, and patience.

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LIST OF ABBREVIATIONS

CD: Compact Disc
CD-R: Compact Disc Recordable
CD-RW: Rewritable Compact Disc
DVD: Digital Versatile or Video Disc
HHD: Hybrid Hard Drive
IAS: Institute of African Studies
ICCROM: International Center for the Preservation and Restoration of Cultural Property
ICT: Information Communication Technology
MAARA: Making African Academic Resources Accessible
PVC: Polyvinyl Chloride
VHS: Video Home System
UV: Ultra Violet
R-DAT: Digital Audio Tape
ABSTRACT

Preservation of audio visual collections is challenging but a necessary armament for maintaining the past in the present. It is essential at all levels in archiving. The study researched into the challenges encountered in the preservation of audio visual collections at J. H. Kwabena Neketia Archives in Ghana. Included in the objectives were to: identify the storage media and facilities used for the preservation of audio visual collections in the archives; identify the challenges encountered in preserving audio visual archives; point out digital preservation strategies adopted by the institution’s archives; and determine what prospects there are for the future in digitization. To meet these set objectives and find answers to the research purpose, a qualitative case study design was used with a target population of five (5) staff members, which was used as the sample size—owing to its manageable size. As a qualitative research, interview and observation methods were employed and the acquired data analyzed qualitatively using content analytic techniques to identify major themes from textual notes. Findings showed that most of the challenges have linked with inadequate financial resource. The challenges, aside collaboration, climatic conditions, obsolete media format and conversion; lack of expertise, unavailability of play back machines, inadequate storage facilities, poor internet connectivity, and lack of storage space all linked to financial constraints. Besides, technological dynamism and practices are the greatest challenge to audio visual archiving. Moreover, as part of preservation strategies, the J. H. Kwabena Nketia Archives has embedded specialized preservation software in their digitization project and adopted the conversion of tape content to MP3 file format. Based on the findings, the study concluded that digitization holds magnified potentials for preservation in archives however the challenges faced with archiving in Ghana are multitude and most have something to do with finance. Recommendations made include fund sourcing, human resource improvement through specialized training, and regular clean up exercise for the entire archives.
CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Archiving seeks to satisfy two major objectives. The first is to preserve the collections and the second is to make the collections accessible for research and educational purposes. The efforts made towards achieving these two central objectives in archives often conflict with one another, as there is no way collections will be accessed without the materials deteriorating either wilfully or unconsciously during use. Archiving is gaining global recognition in both developed and developing countries and archivists are anxious for efficient means of archiving, especially in the area of preservation. One of such measures that comes readily to mind is the preservation of audio visual archives.

Understanding issues concerning archives is a necessary tool to facilitate the preservation of audio visual collections in archives. Shellenberg (1975) defines archives as records of any public or private institution which are adjudged worthy of permanent preservation for reference or research purposes, and which have been deposited or selected for deposit in an archival institution. Millar (2004) in her writing suggests that archives are resources for individuals, organizations and the wider community. They provide evidence of and information about the actions of individuals, organizations and corroborate human and corporate memory. They play a critical role in maintaining awareness of how the present is shaped by the past. These definitions highlight the fact that the archiving institution must be well established because all collections in archival repositories are of permanent value. Again, archival institutions are faced exclusively with the mandate of an efficient preservation of these documents, since archives hold evidences of past, present and future.
The modern concept of archiving started during the French revolution in 1789. According to Laas (2011), for centuries, written text has been the main medium of recording and preserving people’s memory. Laas (2011) added that audio visual media is comparatively younger in the field of archiving. It started during the 19th century when new forms of external memory appeared: photography, sound transmission and sound recording of key events bringing along new media; radio, cinema and television. The invention of these external memories led to the emergence of a new type of cultural heritage; the audio visual heritage. Presently the audio visual heritage is becoming an important component of life culture.

Presently, audio visual media are gaining recognition and now being acknowledged as part of the world’s cultural heritage. This growing awareness has helped the audio visual archives to gain legal status within the mainstream of archiving. Edmondson (2004) states that the stimulating attention towards audio visual archiving during the 1990s, was obviously due to the increasing importance of the audio visual media as a part of the world’s memory. The International Federation of Library Associations and Institutions has stated:

That in no circumstances should Audio Visual materials be regarded as additional luxury materials but rather they should be considered as necessary components in a fully integrated library service’. Accordingly, ‘in developing countries the provision of Audio Visual materials and their associated equipment might be regarded as of greater importance than the printed word because, the level of literacy is such that oral and visual communication is essential for the purposes of communication. (IFLA 2003)

In relation to the above, Zinyengere (2008) avers that “Audio Visual records are vital elements of our collective memory, determining our achievements over the years, documenting our past, present and determining our future.” They are major information carriers comparable to books and other well-known archival documents. Mnjama (2010), states that nations are increasingly becoming aware of the role played by audio visual materials. This consequently means that globally audio visual documents are cherished not because they are young in the field of archiving, but rather due to their unique characteristic
of retaining detailed evidential sources that paper documents lack, giving a cause for their preservation.

According to Edmondson (2004) an audio visual archive is a unit or department of an organization which is statutorily mandated to provide access to the audio visual heritage through collection, provision and promotion of access to the audio visual collections. It exists for the preservation and continuation of the materials as a cultural heritage. This fits well into Hunter’s (2004) assertion that archiving and preservation are matching pairs, as long as there are records to be kept, people have to preserve them.

1.1.1 Brief History of the University of Ghana

The University of Ghana was founded in 1948 as the University College of the Gold Coast based on the recommendations of the Asquith Commission on Higher Education in the then British colonies. In the 1960-61 academic year, the College Council made a request to the Government of Ghana for legislation to constitute the University College into a University with the power to award its own degrees. The government appointed an International Commission to examine the problem. Based on the recommendations of that Commission, the University of Ghana was set up by an Act of Parliament on October 1, 1961 (Act 79). The University of Ghana presently has adopted the collegiate system in 2015/2016 academic year, and thus categorized all schools and departments under four (4) colleges which are:

- College of Basic and Applied Sciences
- College of Humanities
- College of Education
- College of Health Sciences
The Institute of African Studies (IAS) is under the College of Humanities and located on the main Legon campus of the University of Ghana. The IAS was established in 1961 as a semiautonomous institute within the University. The mandate of the institute was to conduct research and teaching on the peoples and cultural heritage of Africa and to disseminate the findings.

1.1.2 Brief History of J. H. Kwabena Nketia Archives

The J. H. Kwabena Nketia Archives was established in 1952 by Professor Emeritus J. H. Kwabena Nketia a musicologist and composer of African music. Professor K. A. Busia, the then Head of Department of Sociology supported the project with a technician and a Land rover vehicle from the Ghana Broadcasting Corporation. The team travelled throughout the ten regions of Ghana and captured a lot of audio materials on the “reel-to-reel” which was the trending audio recorder at the time. These recordings later formed the basis of the sound archives at the IAS. The materials were however abandoned when Professor Nketia left the country to teach in the United States of America. Upon his return from the United States, contributions from other visiting researchers and fellows of the Department of Sociology led to the restoration of the materials.

In the early 1990s, Professor Nketia set up a Centre for African Music and Dance which was running on funding from the Ford Foundation. It was after this that moving images were added to the collection to become an audio visual archive. The archival collections were donated to the IAS after the funding ceased. The archive is now made up of collections of the IAS and that of the International Centre for Music and Dance (ICMD) collected between the 1950s and 1970s. The new management of the archival institution further expanded the repository to include paper documents in 2014. The repository was then named after J. H. Kwabena Nketia in February 2015. Presently the archive is a mixed collection that includes audios, videos,
photographs, manuscripts and paper holdings numbering up to approximately seven thousand
(Opoku-Boateng, 2015).

1.2 Problem Statement

Audio Visual media although young in the field of archiving, is regarded as very important
because it forms an integral component of contemporary life and culture. In Africa, audio visual
collections have an added significance. This is so because Africans are more interested in their
customs, traditions and practices and audio visual archives allow the users to go back in real
time and relate events to particular settings easier than as presented by textual archival
documents.

This accounts for the emergence of their preservation in Africa. The preservation of audio
visual formats refers to retaining the content of the original audio visual material and possibly
migrating it onto a different recording medium so that it is secured for future use (Conservation
Centre for Art and Historic Artifacts, [CCAHA], 2009).

According to Cloonan (2001), preservation facilitates the continuity of the past with the present
and the future. This statement suggests that resources will go waste if archival institutions
invest substantial sums of money in procuring and processing collections that cannot be
accessible to patrons in the present and future. Matangira (2003) has argued that most archival
institutions in the Eastern and Southern African regions are “still struggling to develop their
archival collections” because audio visual collections are much more complex and expensive to
handle, preserve and provide access to in comparison to paper archives. Supporting these
findings, Mnjama (2010) in his research work on the preservation and management of audio
visual archives in Botswana proposes that despite the fact that audio visual materials play a vital
role in the preservation of cultural heritage, they are very often neglected. This means that the
reason why audio visual collections are neglected may stem-out of the fact that they are complex and expensive to handle.

A visit to the J. H. Kwabena Neketia Archives revealed that the archives holds vital historical documents of audio visual formats which include important traditions, customs and practices of Ghana and beyond which need to be preserved effectively to enable users and researchers to reap their maximum benefits.

During the visit, it was observed that the archival institution had some audio visual recordings that could either not be accessed any longer or difficult to access due to the problem of obsolete equipment. This is because there was no play back equipment to help read the audio-visual collections, as a result of rapid technological advancement. This gives rise to a purpose of devising more efficient mechanisms of preservation so that the life span of these collections can be prolonged for convenient access.

Also, most of the audio recordings which formed the initial basis of the audio visual archival collections have lost their sound qualities due to the effects of the harsh climatic conditions. As a result, some recordings are either suffering from mould infestations or persistent decay. Consequently, users are no longer able to access them both for research and study purposes. The implication is that expenditure is being increased since there is a necessity to treat and restore them.

Again, the archival repository did not have fireguards, fire alarms and fireproof storage equipment for rare collections. The only firefighting gadgets installed were the smoke sensors which were fixed in the ceiling of the repository that could alert staff on fire outbreaks and two fire extinguishers. As a result of this, all electrical gadgets are turned off including air conditioners at the end of every working day to forestall any fire outbreaks at night and during
weekends. Teygeler et al. (2001) suggests that the problems encountered by conservationists in many developing countries are often more complex than those in developed countries.

There is, therefore the need to undertake studies that relate to specific areas and suggest solutions that address these issues. It is against this backdrop, that the researcher sought to investigate the challenges facing the J. H. Kwabena Nketia Archives in the preservation of its audio visual collections.

1.3 Purpose of the Study

The purpose of the study was to investigate the challenges in the preservation of audio visual collections at J. H. Kwabena Nketia Archives.

1.4 Objectives of the study

The specific objectives of this research were:

1. To identify the storage media and facilities used for the preservation of audio visual collections in the archives.
2. To identify the challenges encountered in the preservation of audio visual collections in the archives.
3. To determine future prospects in digitization of archives.
4. To identify the digital preservation strategies adopted by the archives.

1.5 Research Questions

1. What were the storage media and facilities used for the preservation of audio visual collections in the archives?
2. What were the challenges encountered in the preservation of audio visual collections in the archives?
3. What were the prospects of digitizing the collection in the future?
4. What kind of the digital preservation strategies were adopted by the archives?
1.6 Scope of the study
The investigation and activities of this study covered the extent to which archival practices were used in preservation of the audio visual collections in the J. H. Kwabena Nketia Archives. The study was confined only to the J. H. Kwabena Nketia Archives in the University of Ghana. Also, it engaged all the entire staff of the selected institution. The justification being that, the J. H. Kwabena Nketia Archives holds adequate audio visual collections for the research work; again it is the only audio visual archive in the University of Ghana.

1.7 Significance of the Study
The study’s report adds to the existing body of literature in the field and would be useful to researchers and scholars who intend to delve into related area of study. The archivists’ main duty is to aid in accessing collections by observing good preservation practices. The study highlights the necessity for archivists to preserve their audio visual collections for sustainable academic innovativeness. It also highlights the importance of the services of audio visual archives, engaging in long term preservation practices as well as their making holdings accessible.

The study alerts administrators on the need to formulate and implement policies to serve as a guide for preserving audio visual archives. This helps to forestall the challenges associated with the preservation of audio visual archives

1.8 Theoretical framework
The theoretical framework adopted for this study was the management programmes model. Akussah (2003), states that research in the field of preservation basically depends on social science and humanistic research methodologies. According to Cloonan (1994) (as cited by Akussah, 2003), it focuses more on preventive management issues and is mostly undertaken by librarians, archivists and conservators with responsibilities for preservation. Akussah (2003)
similarly stated that preservation research according to the literature can be divided into the following five broad areas. These are:

- The management of programmes
- Reformatting or transfer technologies
- The storage environment and disaster recovery
- Historical bibliographic studies
- General policy issues

1.8.1 Management of Programmes
Preservation research in this area focuses on the functions of preservation programmes such as: collection management, designing of user programmes, policy and planning models; surveys; local national and international programmes and so on.

1.8.2 Reformatting or Transfer Technologies
Research in this field focuses on feasibilities, cost, implementations and storage issues relating to the transfer of documentary materials from one format to another which includes photocopying, microfilming and digitization. It also involves the transfer of sound recordings from one medium to another and the transfer of moving images.

1.8.3 Storage environment and disaster recovery and preservation
This field of preservation focuses on issues relating to ensuring congenial and optimal environment for the longevity of collections. It also relates to development of procedures for preventive maintenance through building inspections, integrated pest management, storage facilities among others.

1.8.4 Historical and Bibliographic Studies
This field of preservation examines the development over time of preservation programmes as well as individuals who have made marks in the field of historical and bibliographic studies.
1.8.5 General Policy

This research area embraces everything from local institutional to national preservation policies in all aspects of preservation, be it environment, treatment, reformatting and others. The researcher decided to pay attention to the second broad area of the model, \textit{Reformatting or Transfer Technologies} which focuses on feasibilities, cost, implementations and storage issues relating to the transfer of documentary materials from one format to another which includes photocopying, microfilming and digitization. The transfer of sound recordings from one medium to another and the transfer of moving images (e.g. records to compact discs and from film to video tapes) constitute the fertile areas of research in this area.

This model is linked to the study since it focuses on feasibilities that relate to determining what prospects there are for the future in digitization in the J. H. Kwabena Neketia Archives. Other areas are cost that relates to the challenges encountered in the preservation of audio visual collections in the archives and the implementations and storage issues relating to the transfer of documentary materials from one format to another, the storage and media facilities used for preservation in the archives and the digital preservation strategies adopted by the archival institution.

1.9 Organization of the study

The study is organized into five chapters.

\textbf{Chapter one} covered the background of the study, problem statement, objectives of the study, research questions, scope of the study, significance of the study, theoretical framework and chapter organization.

\textbf{Chapter two} dealt with the review of the related literature of the study; organised in relation to the various research objectives.
Chapter three highlighted the methodology of the study made up of the research design, selection of case, selection of subjects, population of the study, data collection instruments, data analysis and ethical consideration.

Chapter four dealt with the analysis and presentation of data. This chapter also gave a highlight of the discussion on the data results and outlined the major findings.

Chapter five focused on summary of major findings, conclusion and recommendations.
REFERENCES


CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter is a review of literature on audio visual collections or documents, audio visual archiving, strategies of preservation (conservation, restoration, and digitization). It further looks at literature on the storage media and facilities for preservation of audio visual collections, prospects and challenges of digitization and digital preservation strategies.

2.2 Audio visual Collections (Materials)

The concept of audio visual collections (similarly called audio visual materials or documents) is necessary at the early stage in the literature review because it will help us understand the topic and themes in the study. Edmondson (2004) proposes that audio visual documents include reproducible images and/or sounds embodied in a carrier whose recording, transmission, perception and comprehension usually requires a technological device. Edmondson (2004) further proposes that the visual or sonic content has a linear duration and their purpose is the communication of content rather than use of the technology for other purposes. Oomen, Verwayen, Timmermans and Heijmans (2009) also explained that audio visual materials are a vital component of heritage collective memory and they aid in identifying all our yesterdays. In the view of Mnjama (2010) audio visual materials are “non-print” documents. They convey information in some way other than text on a printed sheet and are sometimes referred to as “special formats”. This may require the help of an equipment to read their content.

Edmondson (2004) suggests audio visual collections could be categorized into two: “projected materials” and “non-projected materials”. Deegan and Tanner (2002) assert that they include sound recordings, film and video, graphic materials, electronic resources, three-dimensional objects, maps, and microforms.
From these definitions it can be deduced that audio visual materials are equipment reliant, and can be accessed through the help of special equipment. Again they are non-text documents distinct from written or manuscript documents and are better media for preserving collective memory.

2.3 Audio Visual Archiving

An audio visual archive is an organization or department of an organization which has a statutory or mandate for providing access to a collection of audio visual documents and audio visual heritage by collecting, managing, preserving and promoting audio visual materials (Edmondson, 2004). Johansen (2001) also acknowledged that content of the information stored in audio visual collections permits the users to go back in real time and relate to the settings easier than as presented by textual archival documents.

In summary, audio visual archiving serves as an added value to the effort of the traditional archiving practice of textual documentation. It has stimulated the interest in cultural heritage preservation because it has been able to document and record events and experiences that written texts, sculptures or artifacts could not document comprehensively.

2.4 Strategies of Preservation in Audio Visual Archives

According to Mnjama (2010) a preservation strategy involves three aspects: Assessment, Planning, and Action. He explained that these strategies are usually undertaken to determine the preservation requirements for the collection and to evaluate the strengths and weaknesses of the building, policies and guidelines, storage environment, archives’ holdings (collection media), holdings maintenance and disaster management (Mnjama, 2010). From the assertion of these scholars: Oomen et al. (2009), Pickover (2009); Schüller (2008), and Webb (2004), preservation of Audio Visual materials features in three main forms, depending on the state of the document. These include:
2.4.1 Conservation

Abankwah (2007) and Matangira (2003) accentuate that this type of preservation involves the explicit policies and procedures applied, so as to avoid delay and reverse deterioration of, and damage to documents, including passive and active methods and techniques. Laas (2011) posits, conservation has to do with maintaining the originals by means of:

a) Proper handling, packing and shelving;

b) Control of environmental conditions such as temperature and humidity;

c) Protecting the masters by minimizing their use; and

d) Condition monitoring.

Pickover (2009) believes from his findings that conservation is usually used to preserve film-based documents. It seeks to lessen risks of destruction, and slows down the rate of deterioration. Thus, its aim is usually attained by selecting good quality materials and by providing suitable storage environments and safe handling procedures (Monageng, 1997; Zulu and Kalusopa, 2009).

2.4.2 Restoration

This refers to the means of repairing, and, or treating damaged materials and bringing them close to their original state as possible for useful access (Evens and Hauttekeete, 2011; Feather, 1996; Forde, 2007). The “General Guide” (2006) affirms the necessity of restoration in audio visual archiving, it is usually an attempt to undo damages resulting from age and handling. The cleaning of carrier and removing scratches are still practiced in audio visual preservation. Laas (2011) opines that film restoration is expensive and highly specialized task. In explaining this,
Britz and Lor (2004) articulated that once the content is digitized, restoration of its quality is cheaper, and both processes can be carried out more quickly and repeated as technology advances to increase the final quality of the data. This presupposes that digitization is gaining popularity in the field of audio visual archiving and must be adapted by preservationist in order to regulate cost (Asogwa, 2011; Forde, 2007; Pickover, 2009). Akussah (2011) concurs that restoration is very expensive and often reserved for documents with very high intrinsic value.

2.4.3 Digitization

Digitization is a vital aspect of collection care in audio visual archives (DeGracia, 2009; Edmondson, 2004). It comes with much importance as Abankwah (2007) postulates that it protects historical collections and analogue records from further deterioration. It also salvages endangered collections and prevents deterioration that accompanies repetitive handing (BruceCathline, 2013). Bayissa, Ketema and Birhanu (2010) admit in their study that records preservation is a primary factor for digitization in some selected institutions in Europe, since it creates substitution to deteriorated or damaged archival collections.

2.5 Storage Media and Facilities for Preserving Audio Visual Collections

Storage media and facilities for preserving audio visual collections are those carriers or media, buildings, equipment and services that are used or observed in keeping audio visual collections in good condition to enable their continuous access (Monageng, 1997; Mudzaki, 2013; Puplick, 2009; Rowley and Smith, 2012). According to Akussah (2011) storage media refer to the bases on which the intellectual content of a document is captured or the material that is used to create the document. Schüller (2008) categorized storage medium for preserving audio visuals under three headings: mechanical, magnetic and optical carriers.

2.5.1 Mechanical carriers/media

According to Schüller (2008) mechanical carriers constitute the oldest commonly used type of carriers for audio recordings and reproduction. Mechanical disc formats governed the market
from the late 19th century until the 1980s, when they were superseded by the Compact Disc (CD). This consists of cylinders, coarse groove discs (vinyls, shellacs and intaneous disc or direct cut disc) and micro groove disc (Lps and vinyls) (Evens, and Hauttekeete, 2011). Schüssler (2008) adds that mechanical formats are delicate and the rate of deterioration in normal use is high. To DeGracia (2009) in mechanical carriers, misalignments and inexperienced operation may severely lead to damage or even destroy a mechanical carrier. Hence, must be handled by trained, skilled and specialist staff (DeGracia, 2009).

2.5.2 Magnetic carries/media

Schüssler (2008) stated that historically, magnetic, recording was invented in the 19th century and was first used for audio recording and later video. They include Digital Audio Tape (R-DAT) a digital recording cassette format, open reel, audio reel-to-reel and cassettes, tapes cassette home formats of which the Video Home System (VHS) format still survives today and the hard disc drives Hybrid Hard Drive (HHD) (Granger, 2000; Wright, 2004). In contrast to mechanical carriers, Astle and Muir (2002) contended that magnetic recordings are fairly modern and well preserved. Supporting Astle and Muir (2002), Edmondson (2004) holds that magnetic tape can be replayed several hundred times without any measurable loss of quality. However, Van Malssen (2008) argues that given the limitations of this medium, although still in existence, magnetic media’s life expectancy proved not to be very promising. Webb (2004) postulates that for magnetic formats to persist until the next wave of media carriers come along, contents of magnetic tapes should be constantly conveyed into another carrier. A better option could be migration by copying the data from a less stable to a more stable medium—media (Webb, 2004).

2.5.3 Optical carriers/media

Schüssler (2008) also revealed that optical carriers are the oldest audio visual carriers. In the form of photographs, they have been in use for analogue image representation for almost 160
years (Van Malssen, 2008). Contrasting Schüller (2008), Van Malssen (2008) claimed the optical audio and video carriers are restricted to disk formats. These format include recordable CDs, CD.

Recordable (CD-Rs) and rewritable CDs (CD-RW, Orange Book standard) according to (Abankwah, 2007; Conway, 2010; Deegan and Tanner, 2002; Van Malssen, 2008) in order to increase the capacity of optical disks, mainly to make them suitable to store video films, the Digital Versatile or Video Disc (DVD) was introduced from 1995 onward using the same recording principles as CDs. There is no measurable deterioration by replay with optical disks (Feather, 1996; Hamid, 1998).

2.5.4 Storage and Shelving

Many scholars are of the opinion that, ideally, location of storage areas within a given building should be in the centre of a building, slightly elevated from the ground floor (Schüller, 2008; Van Malssen, 2008; Webb, 2004; Wright, 2004; Zulu, 1994; Zulu and Kalusopa, 2009). This will ensure that such a location would allow effective and autonomous control over all environmental factors such as temperature, humidity and water, dust and pollution, light, as well as magnetic stray field. (Wright, 2004; Zulu, 1994; Zulu and Kalusopa, 2009).

Furthermore, Schüller (2008) asserts that any location at the fringe of a building would make such control more difficult, and possibly less effective.

According to Baynescope (1980) (as cited in Bruce-Cathline, 2013) opined that racks of shelving should rest on bases which help to distribute the weight they bear and should run at right angles to joints, the bottom of shelves should at least be six inches from the floor and preferably placed away from walls to enhance free air circulation.

It is established in literature that, nowadays, metal (steel) shelves are generally used (DeGracia, 2009; Edmondson, 2004; Evens and Hauttekeete, 2011). Feather (1996) reported in his study that, there is no risk in using them for storage of magnetic carriers, as long as they are not
magnetized and as long as they have less risk of becoming part of the lightning conductor system in the event of a strike. According to Astle and Muir (2002), as metal shelves emerged, wooden stacks, preferred in the 1950s and 1960s, and are now discouraged: as chemical treatment components may interact with audio visual carriers. Expanding on agreements on steel shelves, Jones (2001) recommends carriers, be it discs, tapes or cassettes, be stored upright. However, only soft, instantaneous discs like gelatine or decelith discs, should be stored horizontally in small piles, not more than 10 discs high (Jones, 2001; Schüller, 2008).

2.5.5 Disaster preparedness

From Abankwah (2007) and Hamid (1998), disasters are generally unexpected events in archiving, so it is necessary for audio visual archives to guard against it. They hold that, without disaster preparedness plans, it would be difficult for archivists to act quickly to organize salvage labours save collections from destructions (Abankwah, 2007; Hamid, 1998). In archiving, causes of disaster could be fire or water (Hamid, 1998; Jones, 2001; Laas, 2011)

2.5.5.1 Fire

Scholars like Schuller (2008), Van Malssen (2008) and Webb (2004) revealed in their studies that fire is extremely disastrous to media storage. As precautionary measures, against fire disaster, Schüller (2008) suggested that fire prevention and extinguishing devices must be given utmost importance. Ideally, the entire building should be separated into appropriate fire zones and equipped with a fire detection system (Schuller, 2008). In addition to irreplaceable losses of holdings, complicated and expensive decontamination of premises may be the result of such incidents (Feather, 1996; “General Guide,” 2006).

2.5.5.2 Water

One topmost reason for developed countries’ adoption of a vault as a storage facility for audio visual carriers is the prevention of penetration of watery substances (DeGracia, 2009;
Edmondson, 2004; Evens and Hauttekeete, 2011). As a mitigation measure, Oomen et al. (2009) advised that special attention should be given to the prevention of water influx, which may be from several possible sources. This is easier to achieve if the stores are located in an elevated position above the ground floor. A waterproof ceiling will prevent any influx of water caused by plumbing leakages and water from fire extinguishers in upper floors.

In general, Bayissa et al. (2010) put it that this threat is due to chemical flux of carriers, the inherent weakness to external hazards and from the fact that continuous replay deteriorates some varieties of carriers. From the discussion so far, it can be said with some authentication, that audio visual carriers are more endangered than conventional text documents.

2.6 Environmental Influence on Preservation in Audio Visual Archives

One of the most effective steps that libraries and archives can take to preserve their holdings is to maintain safe humidity and temperature levels, good air quality and controlled light (BruceCathline, 2013; Feather, 1996; Forde, 2007; “General Guide,” 2006; Granger, 2000; Hamid, 1998; Jones, 2001; Van Malssen, 2008; Webb, 2004; Wright, 2004).

2.6.1 Humidity

Emphasizing on humidity, Schüller further (2008) contends that water is omnipresent in the form of humidity of the air. Schuller (2008) asserted that humidity is the greatest natural enemy for all audio visual carriers. The reason, as Astle and Muir (2002) accentuated being that, it has direct chemical and indirect influences on the stability of (magnetic, mechanical and optical) carriers. Scholars like Bayissa et al. (2010) and Deegan and Tanner (2002) affirm that direct chemical influences are hydrolysis and oxidation of carrier components. Akussah (2011) puts forward that relative humidity levels must be monitored and controlled at all times; and recommended humidity levels for film and electronic materials to be 35% plus or minus two, which is acceptable.
2.6.2 Temperature

From literature, temperature influences audio visual carriers in various ways (Monageng, 1997; Rowley and Smith, 2012; Schüller, 2008). Physically, temperature causes dimensional changes (Feather, 1996; Forde, 2007). According to Schüller (2008), generally, carriers expand with rising and shrink with falling temperatures. Akussah (2011) adds that changes in temperature levels cause film-based documents to buckle at the edges whilst others break completely. Akussah (2011) further suggests that, temperature fluctuations should be avoided through the use of air condition or proper ventilation.

2.6.3 Light, ultra violet (UV) radiation, x-rays

According to Schüller (2008), light and UV radiation have several deteriorating effects on audio visual carriers. Many polymers, for instance polyvinyl chloride (PVC), deteriorate under prolonged or permanent exposure to light (Schuller, 2008). Supporting this, Bruce-Cathline (2013) claims that, the extremely dangerous one is the influence of light on the life of recordable CDs and DVDs (“dye disks”). Tests have shown that permanent exposure of such disks to daylight—and specifically to direct sunlight—render them unreadable within weeks (Monageng, 1997; Mudzaki, 2013). On this note, Pickover (2009) advised that it is wise, therefore, to avoid any unnecessary exposure of all types of audio and video carriers to light.

2.6.4 Dust, foreign matter, (air) pollution

Schüller (2008) again postulates that, dust and foreign matters have various effects on audio visual carriers. With mechanical carriers they cause deviations of the stylus, resulting in audible artefact (clicks) (Schuller, 2008). In conjunction with Schuller (2008), Monageng (1997) reported that with magnetic tape, dust and foreign matter clogs the replay head and prevents intimate tape-to-head contact which, in audio, cause’s high frequency loss and, in video, the
swift breakdown of the signal. On the other side, with optical disks, the reading laser is obstructed which may lead to irreversible errors and, eventually, muting (Monageng, 1997). Feather (1996) avers that air pollution is unavoidable in the modern world, and all we can do is to try to deal with the acceptable levels and deal with the consequences of what remains. Akussah (2011) adds that it is difficult to control pollution but chemicals extractors can be used in storage environment as well as Double Door Chamber to filter air before it enters into the storage environment. These methods are often possible but expensive (Feather, 1996; Forde, 2007).

2.7 Challenges of Preserving Audio visual Collections

Audio visual preservation projects have come to stay and are generating huge digital collections, which share with all other digitized collections the challenges of maintenance, sustainability, and regeneration of the collections (Wright, 2014).

Audio visual literature has shown that existing and persistent deterrent factors in audio visual archiving are the challenges associated with the preservation of collections that come into their custody. Astle and Muir (2002) attributed it to an innate desire among media curators to preserve all in their collections for the sake of the future generations to come. Regardless of the fact that it is impossible to preserve their entire collection forever due to some inherent deteriorating factors with the media carriers (Astle and Muir, 2002). However, preservation here is not the media carrier but rather the information content of these media (Abankwah, 2007).

According to Forde (2007) the safety of the intangible heritage is always the reason for preservation. A study conducted by Mnjama (2010) reported that most of the challenges facing the management and preservation of audio visual materials are not Botswana exclusive but common to many developing countries. Zinyengere (2008) (as cited in Mnjama, 2010) rightly
observed that, “Audio visual recordings in many African countries are endangered because of various factors including legal statutes towards audio visual materials, staffing, lack of training and funding, obsolescence of playback equipment, perception of society towards archives, climatic issues, technological awareness and the preservation and access of recordings.”

2.7.1 Financial Constraints

One aspect of the preservation suite that poses a challenge to media centres is limited finance (budget). As Puplick (2009) puts it, “the first and most pressing, especially in these times of global financial stress, is that we lack the money and the resources to identify, preserve and protect these treasures”. Adequate budget is always the conjoint problem as preservation practices do not come cheap (Puplick, 2009). In the same vein, Mnjama (2010) also acknowledges that financial provision for training of audio visual archivists and the procurement of specialist storage equipment for the storage of audio visual materials have been limited.

Adding to the issue of finance, many of the audio visual centres lack a line budget for audio visual resources. Mnjama (2010) adds that the main difficulty with this option is that financial resources may not permit more than one employee to be sent on attachment to receive the required training.

2.7.2 Lack of Equipment

Another challenge with audio visual preservation is lack of equipment and familiarity with its usage. Lihoma’s (2008) studies on the National Archives of Malawi’s film archive collection expressed that over extended periods up to 2006, audio visual collections were inaccessible due to the lack of playback equipment (i.e. film projectors). Lihoma (2008) detailed that spare parts for the equipment were scarce on the local market due to the phasing out of the equipment by
the manufacturers. Mnjama (2010) adds that all audio visual materials with the exception of photographs and maps are machine dependent and this presents challenges when users are not familiar with the use of the equipment. Apart from familiarity with technology, as Mnjama (2010) proclaimed, changes in recording and playback equipment very often results in inability to access information created in some models. Abankwah (2007) claims technological advancement possess the greatest challenge to audio visual archiving. Most often playback equipment were not available and there are also no spare parts to replace or repair damaged ones as well as magnetic tape formats which were all rapidly disappearing from the market (Mnjama, 2010).

2.7.3 Storage Facilities

Studies by Matangira (2003), Abankwah (2007) and Mnjama (2010) observed that another problem facing the preservation of audio visual collections in developing countries relates to storage. The studies report that in almost all the repositories visited over several years by these authors, it was established that audio visual collections were kept under the same environmental conditions as traditional paper archives which are not ideal for the management of audio visual collections (Matangira, 2003; Abankwah, 2007; Mnjama, 2010). Studies by Monageng, (1997) conducted in Botswana established that only the National Archives and media houses that had purpose-built buildings for the preservation of audio visual collections. Many of the other information centres currently house their collections in buildings not designed for the storage of audio visual materials. Mnjama (2010) avers that irrespective of the fact that the storage facilities were inadequate for audio visual recordings, the storage facilities were not also restored in the National Archives. Meaning restoration of damaged audio visual materials requires specialist equipment and trained personnel, both of which are not available locally (Mnjama, 2010).
The nation also faces the challenge of lack of trained personnel in audio visual archiving. While Botswana has well established programmes for the training of librarians, archivists and other information providers, the same cannot be said of audio visual archivists (Mnjama, 2010).

### 2.8 Digitization

Technological advancement has taken a toll on most activities in our world today including the role of preservation in libraries and archives. However, the bulk of the world’s audio visual materials are currently analogue not digital (Wright, 2014). As Abankwah (2007) and Matangira (2003) concurred most archives in the developing world today are still filled with materials that are still recorded in analogue formats: Traditional archivists are still carrying out the tasks of preserving these analogue or paper documents and are still assisting their patrons in having access to their collections. Contrarily, these scholars: Pickover (2009); Puplick (2009); Rowley and Smith (2012) and Schüller (2008) claimed the story is a reverse among developed countries since they are responding faster to the influence of computer technology. However, it might be audio visual collections in the main that require digitisation for both preservation and access (Wright, 2014).

The physical collections are gradually giving way to electronic documents and online access. Supporting this assertion, Van Malssen (2008) proposed that audio visual archivists recognize the daunting turn in preservation at this time of growing technological advances. It is apparent that “the creation, distribution, preservation and reuse of media materials will soon go digital” (Van Malssen, 2008). Evens and Hauttekeete (2011) opined that, the deterioration of analogue carriers of information, the lack of storage and playback infrastructure, and insufficient access to different archival collections have led to digitization.

The idea of digitization has been subjected to several related meanings among scholars. Deegan and Tanner (2002) see digitization as a process involving the conversion of any analogue or physical document into a digital representation or facsimile. Asogwa (2011) describes
digitisation as the process in which analogue contents are converted into a sequence of ones (1s) and zeros (0s) and put into a binary code to be readable by a computer. To Akinwale (2012) digitization is a concept that is connected to the management of cultural heritage in the technological environment. Deducing from the various definitions, digitization in audio visual archiving in essence refers to the transfer of analogue documents or materials onto digital medium. Expressed better, digitization is ‘an activity of converting the physical analogue files into computer readable files’.

For future digitization prospects, Abankwah (2007), Akinwale (2012), and Asogwa (2011) recommended some factors that must be considered when digitization projects are to be embarked on in developing countries and these include; planning, setting goals, developing digitization policies, legal and copy right issues; selection criteria and metadata. Focusing on Africa, Asogwa (2011) opined that the success of digital projects in Africa depends not on expensive technology but rather on sound project planning. To him, technology should not motivate digital projects, rather, the objectives should be determined first, and only then should appropriate technology be selected (Asogwa, 2011).

2.8.1 Prospects of Digitization

Generally, the concept of digitization is simply to create a duplicate of existing collections in electronic format, which also provides the opportunity to protect the original document from further deterioration often caused by frequent handling (Abankwah, 2007; Rowley, and Smith, 2012; Schüller, 2008). Digitization enables these collections to have electronic characteristics and makes their migration much easier from one format to another as technology progresses (Oomen *et al.*, 2009; Pickover, 2009; Rowley, and Smith, 2012; Zulu and Kalusopa, 2009). Additionally, it enables wider access to the collections (Evens, and Hauttekeete, 2011; Feather, 1996; Forde, 2007).
In this perspective, numerous scholars have demonstrated that digitisation of local collections is conducted for two different but related objectives: (1) to preserve rare and fragile documents; and (2) to make those documents more accessible to a wide range of users (Akussah, 2011; Anderson, and Maxwell, 2004; Edmondson, 2004; Evens and Hauttekeete, 2011; Feather, 1996; Forde, 2007; “General Guide,” 2006; Granger, 2000; Rowley and Smith, 2012; Webb, 2004).

The benefits of improved global access that comes with digitization cannot be overlooked. One most important potential aspect of digitization, in the view of Astle and Muir (2002) is that it has been presented as an effective tool to increase accessibility to archival collections. On the forefront, it is able to break: (a) barriers, (b) geographical locations, and (c) restricted access, because it makes it possible for a wider range of users to access collections at various locations (Van Malssen, 2008; Webb, 2004; Zulu, 1994; Zulu and Kalusopa, 2009). Not only that, Anderson and Maxwell (2004) explicity hold that it improves access to materials that are delicate and have restrictions for regular handling.

Aside access, digitization also serves as an effective tool for preservation of audio visual collections (Akinwale, 2012; Anderson, and Maxwell, 2004; Asogwa, 2011; DeGracia, 2009; Mudzaki, 2013; Puplick, 2009; Rowley and Smith, 2012). A globally acknowledged fact is, all audio visual collections from the twentieth century are in analogue format (Feather, 1996; Hamid, 1998; Jones, 2001; Monageng, 1997; Zulu, 1994). Analogue contents on vulnerable magnetic materials are being migrated onto digital medium for both access and preservation. Professionals recommend that all audio visual archives will probably need to be digitized for preservation as non-digital options are disappearing (“General Guide,” 2006). Film restoration is expensive, however the quality, when digitized makes it cheaper, quicker and easy to store (Laas, 2011). This in the view of Laas (2011) and Lihoma (2008) presupposes that digitization is gaining popularity in the field of audio visual archiving and must be adapted by preservationist in order to regulate cost.
Directly linked to preservation as explained above, digitization of audio visual collections aids in their preservation (Abankwah, 2007; Zulu and Kalusopa, 2009). Audio visual collections are rare and fragile; therefore helps to preserve them by reducing the frequency of their handling (Feather, 1996; Forde, 2007). With Ford (2007), this is so because among audio visual archivists, preservation entails the transfer from one media to another in order to skip the threat of losing collections when there is an emergence of obsolescence of equipment. According to the report of Wright (2004) and the “General Guide” (2006) (as cited by Laas, 2011) every other category of audio visuals are threatened because most collections in the twentieth century still exist in analogue formats, and need to be digitized for preservation and access, if not, all non-digital options are endangered. Inferring from the above, it is shown that digitization of audio visual collections is embarked on with two different but related objectives in mind. As Abankwah (2007) and Mudzaki (2013) put it, the first being preservation and the other accessibility.

Moving forward, review of several studies on audio visual by these scholars: Forde (2007), Oomen et al. (2009), Pickover (2009), and Puplick (2009), demonstrate that among audio visual archivists, digitization reduces the continuous handling of documents and promotes their longevity. The reason being that the more documents are accessed manually, the faster their pace of deterioration. Digitization affords archives the opportunity to place their original materials in appropriate archival and secure storage areas (Feather, 1996). In this way, Conway (2010) explained that access is restricted and the risk of damage associated to rampant handling is lessened. Anderson and Maxwell (2004) conclude that digitization must be an important component of an institution’s preservation strategy as it has benefits beyond improved accessibility. It will also ensure the protection of originals from excessive handling and repeated copying (Matangira, 2003).
Furthermore, it is established in literature that, digitization offers hope of being a long-term prospective solution to longevity. Arguably, some (Mnjama, 2010; Mudzaki, 2013; Oomen et al., 2009; Puplick, 2009; Rowley and Smith, 2012) are of the scholarly view that digitization is not a means of preservation, rather, it helps archives to fulfil their obligation as social institutions in the provision of a wider access to their materials. This, according to Asogwa (2011) and BruceCathline (2013), is because digitization makes it possible for many people to access materials online through the use of internet services regardless of their location and time.

Similarly, Britz and Lot (2004) also agree that digitization serves as a very effective instrument for accomplishing a moral obligation and duty of making audio visual archival material available and accessible to humankind.

Deducing from the above, audio visual digitization poses enormous positive prospects to archiving. As Asogwa (2011) explained the reasons for which cultural institutions in many parts of the world are investing in digitization projects include: (1) providing access; (2) reduction of over-handling of materials; and (3) assisting in promoting the collections and visibility of the institutions which are involved in the digitization project.

2.8.2 Challenges of Digitization

Most cultural heritage institutions such as audio visual archives are confronted with the challenge and limitation of failing to satisfy the information requirements of all of their prospective patrons (Schüller, 2008; Van Malssen, 2008). Considering the worthy prospects, digitization is often presented as a remedy to the challenges and limitations of traditional audio visual preservation and access information, however, there exist disadvantages of digitization that could cause audio visual preservationist serious regrets. It is therefore important these difficulties are sorted and possibly controlled before digitization is attempted (Hamid, 1998; Zulu and Kalusopa, 2009).
One most identified challenge with audio visual digitization is the expenses (cost). According to Jones (2001) digital projects in general are costly. In that, the cost of digitization continues even after a project’s completion as all digital files require maintenance to ensure readability in future. He explained further that when audio visual collections are digitized into electronic formats, another task begins because more cost is incurred as these formats need to be frequently updated to meet technological changes so that patrons can continuously access them without difficulties (Jones, 2001). In support of this, Granger (2000) and Hamid (1998) apportioned this cost to the start of training of archive staff on how to preserve the electronic format, which has been created. Estimating the cost for the advanced countries, Wright (2004) reported that annually leading broadcasters across the continent of Europe spend roughly €100 million on digitising their archives.

Deegan and Tanner, (2002) state that a more disturbing challenge is limited funds, funds are needed to enhance services and sustainability of digitization of project. Asogwa (2011) admittedly reported that digital projects are expensive hence difficult to finance. In explaining this, he expressed vividly that digitization of archival or library automation requires enormous funding due to frequent hardware and software upgrades, and increasing cost of subscription to electronic databases (Asogwa, 2011). Another study by Mudzaki (2013) revealed that funding is a major challenge in developing countries and Zimbabwe in particular. Since the national archives of Zimbabwe receive relatively inadequate funds from the national budget, there is a tendency to prioritize the traditional archiving activities ahead of modern archive projects (Mudzaki, 2013). In relation to archival institutions in Africa which are financially handicapped, this could mean they cannot embark on digitization projects (Zulu and Kalusopa, 2009) if the cost of funding spreads across the entire project. Adding to the above, Anderson and Maxwell (2004) and DeGracia (2009) agreeably opined that digitization on its own is an expensive and time consuming process. Funds for personnel, copyright issues and equipment
are needed (Akinwale, 2012). Abankwah (2007) assertively put across that most of the audio visual archives in developing countries such as Ghana run on limited funding and that makes it difficult for them to employ experts and personnel to undertake and manage such projects (Abankwah, 2007).

It is also known that a technology deficiency is among the challenges of audio visual digitization. Asogwa (2011) and Mudzaki (2013) also concur that digitization challenges among developing countries are associated with technology hitches. According to them, this challenge eventually creates vacuum of technical expertise and resistance to technological change (Asogwa, 2011; Mudzaki, 2013).

Notwithstanding, drawing attention to technological hitch is the limited technological infrastructure. Zulu (1994) reported in his study that developing countries lacked the needed technological infrastructure to initiate digitization projects. In a similar vein, Granger (2000) apportioned these infrastructure inadequacies to lack of budgets for digitization projects and the consistent cost incurred. Technological obsolescence of digital materials is much more frequent because of the consistent upgrading versions of both hardware and software that is needed to read these digitized files (Matangira, 2003; Mnjama, 2010).

Furthermore, included in the challenges is the low human resource expertise and incompetency, especially in the case of developing countries (Conway, 2010). In supporting this, Granger (2000) illustrated that although there are computer engineers that work with libraries and archives, there are frequent breakdown of information communication technology (ICT) equipment and it is because their competencies and attitudes are not readily available to initiate, implement and sustain digitization projects. Which is an illustration of technophobe. Hauttekeete (2011) pointed out that the issue of technophobe has rendered traditional librarians
and archivists conservatives because they are unable to bridge generational gaps between the old and new professionals.

It seems when it comes to challenges of audio visual digitization, much is centred on internal issues of archives owing to the fact that archives are within interconnected rooms (vaults). On the contrary, it is being revealed in many literature works that external factors most specifically electricity supply and telecommunication pose threats to audio visual digitization. Stressing on electricity, Abankwah (2007) and Akussah (2011) discovered similarly in their studies that the problem of frequent power outages has damaging effects on digitization equipment. Throwing light on poor telecommunication and bandwidth, Mnjama (2010), Monageng (1997), and Mudzaki (2013) made it known that most developing countries are either facing a difficulty with the lack of, or poor telecommunication networks that make the transmission and access of digitized materials very difficult for this reason there is no desire to take up digitization ventures.

Archivists are also confronted with the threats of government negligence that come along digital preservation. Emphasizing on government’s neglect in digital preservation, Wamukoya and Mutula (2005) (cited in Asogwa, 2011) stated that “legislators in Africa are neither aware of, nor conversant with the requirements of digital preservation and for that reason they either ignore or inadequately cover digital preservation issues”. Following this assertion, Forde (2007) suggested that for change in strategies within archival institutions in terms of migration, there is the need for archival professionals to come up with strategies that entails smooth transitions when migrating digital materials to new formats.

As much is centred on technology, infrastructure, cost, and human resources, per contra, Pickover (2009) argues from the socio-political dimension that digitization of audio visual collections has become a bitter pill to swallow not because of technological or technical
challenges but social, ethical and political reasons. Evens and Hauttekeete (2011) put it plainly that factors of ownership and copyright are the key issues that cause contention with respects to digitization of audio visuals. In Africa, the fear of losing control over their cultural documentation through digitization has had major implications with political organizations (Abankwah, 2007; Akinwale, 2012; Akussah, 2011; Zulu, 1994; Zulu, and Kalusopa, 2009).

2.8.3 Digital Preservation Strategies

The preservation of audio visual collections does not end when they are digitized. Beyond the digitization of the collections, there is a continuous process of safeguarding the digitized format to ensure continuous access which is called digital preservation. According to Edmonson, (2004) and Granger (2000) (as quoted in Evens and Hauttekeete, 2011) heritage institutions have to bear in mind that digitization will not be the solution since it is assumed that digital carriers are fragile media for two reasons: 1) they have a restricted life span or short ‘shelf life’ and 2) certain types of computer hardware and software are rapidly becoming obsoletes.

To Zulu and Kalusopa (2009) digital preservation refers to the series of adapting management activities necessary to ensure continued access to digital materials for as long as necessary. In the view of Puplick (2009), digital material preservation is a means of preserving digital back-ups produced as a result of migrating analogue materials to digital form and those that are born digital for which there has never been and is never intended to be an analogue equivalent and digital record. Conway (2010) elaborates further that while digitization for preservation produces valuable new digital products, digital preservation protects the values of those products regardless of whether the original source is a tangible artefact or data that was born and live digitally.

Hamid (1998) suggests that even though our ability to record information has increased considerably overtime, the durability of the media used to store the information has reduced
correspondingly. The problem is commonly acknowledged to be technological obsolescence (Hamid, 1998). Conjointly, Deegan, and Tanner (2002) accentuate that although the problems of digital preservation are becoming more obviously understood, we do not yet have long-term solutions.

Moreover, studies by Astle and Muir (2002) point out that there are essentially three possible strategies for digital preservation. George Mackenzie of the National Archives of Scotland has provided a brief synopsis and discussion of these strategies. According to MacKenzie (2000) (as cited in Astle and Muir, 2002), the first strategy is the preservation of the original technology (hardware and software). This method is limited by the extensive logistical complications involved in storing and maintaining over time, a variety of different machines and operating systems (Mackenzie, 2000).

The studies further mentioned another strategy called emulation (Astle and Muir, 2002). Mackenzie (2000) made mention that this strategy comprises taking steps, which will facilitate imminent computer systems to read digital information with minimal loss of its original look, feel and functionality.

In the works of Forde (2007) and “General Guide” (2006), the third strategy identified is migration. Migration involves the periodic transfer of data from one technological setting to another (Forde, 2007; “General Guide,” 2006). In like manner, Birhanu et al. (2010) observed that method is a response to the recurrent updating of software coupled with a consistent lack of technical support for previous versions.

Drawing emphasis on migration weakness, Smith (1999) avers that there exists a risk of losing some level of functionality or even data at each migration phase. In like manner, Mnjama (2010) holds that as digital collections increase in size, the process of migration may become an extremely time consuming practice and costly; and it could become an almost uninterrupted
process. On the contrary, this establishes the fact that there is a role for emulation in digital preservation (Oomen et al., 2009). However, arguably, Granger (2000) points out that migration is currently the only practical strategy open to large-scale digital archives, regardless of its constraints. What remains indisputable is digital preservation is of equal relevance to any archive considering digitization project (Abankwah, 2007; Pickover, 2009; Puplick, 2009; Rowley and Smith, 2012). Thus, a fair idea of how digitized materials must be preserved will help make informed decisions relating to the sustainability of the digitized products (Webb, 2004; Wright, 2004).

2.9 Summary
The literature review commenced with definitions of audio visual collections, audio visual archiving, strategies of preservation (conservation, restoration, and digitization), storage media and facilities for preservation of audio visual collections, and challenges of preservation. It also looked at literature on digitization, prospects and challenges of digitization and then concluded with digital preservation strategies.
REFERENCES


CHAPTER THREE
RESEARCH METHODOLOGY

3.1. Introduction

This chapter outlines the blueprint of the manner in which the research study was conducted to achieve the purpose it was designed for. Specifically, this chapter describes the methods and techniques that were used for the study. They include the research design, case study, selection of case, population of the study, sources of data, data collection instruments, data analysis procedure and ethical consideration.

In all researches, there are only three methods or approaches involved. These methods can be divided into qualitative, quantitative (De Vaurs, 2002) and mixed methods (Creswell, 2009). All the three methods have unique characteristics and are appropriate in different situations. Quantitative method is defined as the technique associated with the gathering, analysis, interpretation, and presentation of numerical information. Qualitative method can also be defined as the technique associated with the gathering, analysis, interpretation, and presentation of narrative information (Mugenda, 1999).

Qualitative data gathers information that is not in numerical form. Some of the methods used by qualitative research are open-ended questionnaires, unstructured interviews and unstructured observations. Qualitative approach involves measuring data which is usually related to human activities and the grounds behind them. Qualitative research is mostly used in behavioural sciences (De Vaurs, 2002). Qualitative data cannot be quantified and measured in relation to a quantity. In other words, thus, qualitative research is inefficient when it comes to identifying, measuring or quantifying a single statistic (Creswell, 2009).

One advantage of qualitative research method is its ability to examine given phenomena with respect to multiple human perspectives. Thus, it is useful for studies at the individual levels and
to investigate into people’s perception about an issue, for instance case studies. The free nature of research allows a more rich input that might contribute to a more specific learning outcome (Mugenda, 1999). The only disadvantage regarding this study is, according to Menon, Raghubir and Schwarz (1995), analysis of qualitative data is difficult and requires accurate description of participant responses.

3.2. Research Design

There have been several definitions of a research design. De Vaus (2002) for instance, explains that research design involves all data collection approaches or guides or rules that are adhered to in collection of data. According to Yin (2009), a research design is a procedure or plan a researcher adopts that connects data to the ‘study’s initial research questions’ and its conclusion. The research design can be considered as a blueprint for conducting the marketing research (Gray, 2009). Yin (2009) further explained that, the design of any research is based on its objectives or the purpose it was designed to achieve. Meaning that, a research study’s design will typically entail how the data to be used will be acquired, what instruments the researcher of the research study of will employ, how the instruments employed could be used and the intended means for analyzing that data when collected.

3.3. Case Study

For this research study, a case study was identified as the most suitable for the achievement of the final report. Creswell (2009) expresses it as a deep examination of a subject in its contextual conditions. Similarly, Gray (2009) expressed that it is an assessment of a subject, person, event, or institution holistically by single or several methods.

Punch (2005) puts forward that in keeping with other approaches in qualitative research, the case study aims to understand the case in depth and in its natural settings, recognizing its complexity and its context. The cardinal advantage, compared to other methods, of a case study
method is its ability to examine, in-depth, a “case” within its “real-life” context (Yin, 2009). That is, it helps make direct observations and collect data in natural settings (Yin, 2009). Moreover, it will provide intensive concentration of efforts at examining all the relevant issues under investigation in natural unrestricted settings. The case study was appropriate, as it helped the researcher to gather data from a sample that was a representative of the entire population of respondents.

3.4 Selection of Case
The J. H. Kwabena Nketia Archives was selected as a case for the study. This is because it is well-stocked and equipped with relevant audio visual materials. Again the archives hold very important cultural heritage documents between the periods of 1950 to date. Their records also span the whole of Ghana and beyond. Therefore, the Archives was considered a good case study.

3.5 Population
Frankel and Wallen (2003) stated that a population can be any size that will have one (or sometimes) several characteristics that set it off from any other population. A population is all of individuals who possess a certain characteristic. It is usually a group to which a researcher would like the results of a study to be generalized.

According to Bentil (2008) a population refers to all units of which information is required. The population of this research therefore comprised the staff of the J. H. Kwabena Nketia Archives. The population of staff at the archives was five, comprising one audio visual archivist, two research assistants and two national service personnel who were all actively involved in the preservation and management process in the Archives. Owing to the fact that the total population of staff was of a manageable size and their participation was also relevant to the study the researcher decided to use the whole population as the sample. In view of the fact that the entire population was used for the study there was no sampling.
3.6 Sources of Data

There are basically two sources of data used in conducting research. They are the primary data and secondary data sources.

3.6.1 Secondary Data Sources

Secondary data are the data collected by other individuals or parties not related to the research study. These data are collected for some other purpose and at different time in the past. Secondary data may be available in handwritten, typed or in electronic forms and include published materials, journals, theses and dissertations. If the researcher uses these data, then these data become secondary data for the current users.

Secondary data could be either internal or external. Internal or in-house data is secondary information acquired within the organization of the research study. External secondary data is obtained from outside sources such as journals. An advantage of secondary data is that it helps the researcher gain initial insight into the research problem on which research is being carried out. Another is the fact that secondary data is fast and cheap to access. On the other hand however, it may not be reliable since it is collected by a third party making the reliability and accuracy of the data go down.

3.6.2 Primary Data

Primary data are information collected by a researcher specifically for a research assignment. Primary data are unique in nature, directly related to the issue or research problem and their currency is high. Primary data are the data which the researcher collects through various methods like interviews, observation, surveys and questionnaires.

Although the collection of primary data involves a lot of time and effort which also results in increased cost, it has immeasurable advantage. There is high reliability of primary data because they are collected by the concerned and reliable party. Again the primary data is current and it
gives a better and realistic view to the researcher about the topic under consideration. For the purpose of the study the researcher collected the data from primary sources.

3.7 Data Collection Instruments

Data collection instruments are the various techniques used to collect data. Aina and Ajifruke (2002) posit that there are different instruments that one can use in social science research. They include questionnaire, interview, observation and documentary sources. The study employed an interview and observation methods. These two were the most appropriate and preferred means to obtain qualitative data for the research.

3.7.1 Interview

Darke, Shanks and Broadbent (1998) stated that the goal of the interview is to generate facts which hold independently of both the research setting and the researcher. Kothari (2004) adds that the “interview method of collecting data involves presentation of oral –verbal stimuli and reply in terms of oral verbal responses. This method can be used through personal interviews and if possible through telephone interviews”. Although interviews can be very time consuming it enables the researcher to collect information from illiterates who otherwise may not be able to respond to research questions in written form. Interviews also help the researcher to avoid instances of non-response as the interviewer personally collects the data. Again the collected data is very reliable since the interviewer tactfully collects the data by cross examining the respondents.

Bentil (2008) states that there are mainly three types of interviews: the structured, semi structured and the unstructured interview. In the structured interview both questions and their respective response categories are predetermined before interview. Semi structured interview is a method where the researcher conducts the interview with a check list of topics to ensure an even distribution of topics without predetermined answers. The unstructured interview is
conducted without pre-designed schedule. The unstructured interview approach was adopted for the study. This was to make it convenient for the entire staff to take part, considering their busy work schedule and time constraint against the interview.

3.7.2 Observation

Frankel and Wallen (2000) proposed that observation does not only rely on what people say, do, or think; rather, it is based on the premise that for certain purposes, it is best to observe what happens. This facilitates ascertaining what people thought and did by seeing them in various actions they expressed. This is a clue that observation methods are second to none since they help in verification of results. Dewalt and Dewalt (2002) stated that observation helps the researcher and facilitates better understanding of the context and phenomenon under study and also help researchers check non-verbal expressions.

There are two types of observation. They are non-participant observation and participant observation.

Non-participant observation is the observation that does not require the researcher’s involvement; they are often used in collecting data on psychological characteristics or behavioural patterns. An advantage of non-participant observation is that it detaches the researcher from influencing study results or data. Participant observation refers the process of enabling researchers to learn about the activities of the people under study in the natural setting through observing and participating in those activities. It provides the context for development of sampling guidelines and interview guides (Dewalt and Dewalt, 2002). Participant observation is that it is used as a way to increase the validity of the study, as it helps the researcher get a better understanding of the context and phenomenon under study. Participant observation can be used to help answer descriptive research questions, to build theory, or to
generate or test hypotheses (Dewalt and Dewalt, 2002). The researcher employed the participant observation method to collect detailed descriptive data for the study.

### 3.8 Mode of data collection

The researcher interviewed five archive staff in total. The interviews were conducted at the J. H. Kwabena Archives in a cordial manner and in the confines of a room where there was no interference with respondents offering information willingly. The entire interview was conducted successfully in within two weeks (ten working days). Each respondent was allocated two days due to their busy schedule. Each interview session on the average lasted for about thirty-five minutes. The interview questions were open-ended and probes were used to seek clarification to ambiguous and incomplete answers during the interview where necessary.

The researcher scheduled a two-day visit to the repository to observe the physical condition of the audio visual collections and to also observe the processes involved in the digitization of the audio files. The researcher saw at first hand the conditions of the materials in the repository. The observation exercise was done in the company of the archivist who readily offered clarifications and illustrations when necessary.

### 3.9 Data Analysis

The primary data collected from the interviews was solely qualitative. The data was in verbal response form, recorded with an electronic recording device. This was then transcribed into text and analyzed qualitatively. Due to the nature of the data, a qualitative analytic technique called content analysis was applied for the analysis. The data was therefore analyzed by identifying major themes from field notes. Tables were used in this study to illustrate participants’ background profile and responsibilities in the case study.
3.10 Ethical Consideration

According to Neuman (2006) ethics help describe what is, or are, legitimate to do and what moral research involves. He further asserts that many ethical issues require people to balance two values: the pursuit of knowledge and the right of the research participants, or of others, in society. An introductory letter was taken from the Department of Information Studies to the Institute of African Studies of the University of Ghana to seek the consent of the Institute. This was to serve as a form of introducing the researcher to the Institute. The intention of the study was made clear, thus, for academic work. Confidentiality of information provided by the research respondents were guaranteed and all sources of information were acknowledged. Lastly, the study adhered to the University of Ghana code of ethics for conducting research and data was not manipulated to suit research objectives.
REFERENCES


CHAPTER FOUR

ANALYSIS OF DATA AND DISCUSSIONS OF FINDINGS

4.1 Introduction

The focus of this chapter is a presentation of a well explained discussion of the findings that emanated from the analysis of the primary data that was gathered from the field survey. The discussion was done in comparative assessment of literature findings to make known what the outcome of the study corroborates and what it does not and identify what was missing, if any. The primary data was acquired from five interviewees (archive staff) through structured interviews. The researcher decided to use the entire archive staff in the study owing to the fact that the total population was of a manageable size and their participation was relevant to the study. Due to the nature of the data, content analysis was the preferred choice of analysis.

The data was analyzed under five themes as follows: Background Profile of Respondents; Storage and Media Facilities for Preservation; Challenges of the Preservation of Audio Visuals; Prospects for Digitization; and Digital Preservation Strategy used.

4.2 Background Profile of Respondents

This section highlights the demographic profile and functions of respondents that were engaged in the study. As part of the interview, questions relating to the background of the respondents were asked. These included their ranks (positions), length of service in the institution, educational qualification and duties as well as their professional training in audio visual archiving (see Figures 4.1, 4.2, 4.3, 4.4 and 4.5).

4.2.1 Gender of Interviewees

The figure below presents the number of males and females interviewed, during the field data collection stage. The figure illustrates female dominancy.
The data provided in the Figure 4.1 shows that of the entire archive staff interviewed, the females (3) outnumbered the males (2). This was due to the inclusion of two female national service personnel who were temporary staff and their service period spanned only one year.

4.2.2 Marital Status

Figure 4.2 presents the marital state of interviewees.
Marital status of interviewees deduced from Figure 4.2 revealed that two of the respondents were married. The remaining, three were not married.

### 4.2.3 Age of Interviewees

Displayed in the Figure 4.3 is the age structure of interviewees sampled.

![Age Structure Chart](http://ugspace.ug.edu.gh)

**Figure 4.3: Interviewees’ Age Structure**  
Source: Author’s Construct, 2016

It is shown in the Figure 4.3 that all the interviewees were adults with ages ranging between 22 and 42 years. The three full time staff were in their middle ages and had had some amount of work experience. The archivist with ten years work experience and the two assistants with five years’ work experience each.

### 4.2.4 Religion of Interviewees

In terms of Religion, four respondents were Christians and one a Muslim (see Figure 4.4). Thus, interviewees were predominantly Christians.
4.2.5 Educational Status of Interviewees

Estimation showed that all staff of J. H. Kwabena Nketia Archives had had tertiary education.

Figure 4.5 demonstrates that, the Archivist held a Master in Arts degree in Archival Studies from the University of Ghana. She had also obtained a three (3) week specialized training in Audio visual archiving, specifically, Cultural Heritage Preservation, organized by the State Department of the United States of America. In addition to this, she had also attended and been awarded four (4) certificates in professional training programmes, including “Imagining Access
to Audio Visual Heritage” this programme was organized by the Audio Visual Preservation Exchange, in New York University in collaboration in Ghana at the Ghana Broadcasting Corporation, and SOIMA 2015 “Unlocking Sound and Image Heritage” organized by the International Centre for the Preservation and Restoration of Cultural Property (ICCROM) in Brussels—Belgium. The four subordinates held bachelor’s degrees, one in information studies whilst the others were in different programmes which had no audio visual content (see Figure 4.5 above).

Deducing from the background of respondents in terms of training, qualification and experience, it means that all the archival staff possessed some professional qualification or training as audio visual archivists. Mnjama’s (2010) has observed that handling audio visual materials required trained personnel who were skilled and specialists to handle mechanical carrier in archiving to prevent its destruction through misalignment and inexperienced operation. The findings of the study support Mnjama’s (2010) assertion that there is lack of trained personnel in audio visual archiving as the archivist was the only trained professional in the J. H. Kwabena Nketia Archives.

4.2.6 Work Experience

![Work Experience Chart]

*Figure 4. 6: Work experience of Interviewees*

Source: Author’s Construct, 2016
Figure 4.6 demonstrates years of archiving experiences. Data contained in the Figure 4.6 is a demonstration that it is only the archivist who had had over 10 years working experience in archiving, out of the remaining four; two had had 5 year experience in archiving and the other two had one year experience each.

4.2.7 Interviewees’ Rank at workplace

![Bar chart showing respondents' rank](image)

**Figure 4.7: Interviewees' Positions at workplace**

Source: Author’s Construct, 2016

It is vividly displayed in Figure 4.7 that of the archive staff interviewed, only one was an archivist, two (2) were research assistants, and the rest (2) being national service personnel. The archivist indicated that though the staff position was adequate due to the size of the archive there was a need to have more technical staff. It could be that as Abankwah (2007) revealed besides the size, there was the lack of funds that made it difficult to employ experts and personnel to undertake and manage the archives.

4.2.8 Possession of Professional Training

Below is the response to whether interviewees had had professional training in archiving before being employed as archives or being engaged in activities concerning archiving. This was to determine the professional status of interviewees.
As seen in Figure 4.8, all the interviewees declared that they possess professional training in the field that they are rendering services.

4.2.5 Duties of Interviewees

The study also sought for duties performed by the staff

<table>
<thead>
<tr>
<th>Interviewee (R)</th>
<th>Rank</th>
<th>Duties</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Archivist</td>
<td>• Overall supervisory functions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Develop and manage archives</td>
</tr>
<tr>
<td>2</td>
<td>Research Assistant</td>
<td>• Assist in catalogue collections, management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Controls archives database, identify and describes photographs</td>
</tr>
<tr>
<td>3</td>
<td>Research Assistant</td>
<td>• Responsible for creating preservation masters and access copies for audio visual digitized files for classroom and research use</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ensuring the quality and integrity of the files created</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Managing the back-up archive and audio visual database</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Maintaining all archive equipment</td>
</tr>
<tr>
<td>4</td>
<td>National Service Person</td>
<td>• Provision of complementary functions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provision of assistance to students and lectures in their research</td>
</tr>
<tr>
<td>5</td>
<td>National Service Person</td>
<td>• Provision of complementary functions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Assisting students and lectures in their research</td>
</tr>
</tbody>
</table>

Source: Author’s Construct, 2016

According to the data presented in the Table 4.1, the archivist (R1) preformed managerial functions relating to her position. She claimed to be the supervisor in charge of the overall archival tasks. She expressed, in the statement below.

Figure 4.8: Response to Possession of Professional Training
Source: Author’s Construct, 2016
The load on me is so much...Imagine, supervising all these personnel and attending programmes on behalf of the institution... I do all the supervisory works while the other two research assistants performed complementary functions\textsuperscript{R1}.

The first research assistant (\textbf{R2}) catalogued collections, managed and controlled the archives database. According to him, he as well identified and described photographs of the Institute of African Studies. The other research assistant (\textbf{R3}) claimed to be responsible for creating preservation masters and access copies for audio visual digitized files for classroom and research use. He also ensured the quality and integrity of the files created, managed the back-up archive and audio visual database and maintained all archive equipment. The various responses below prove their assertions.

\textit{Oh... I do a lot of works concerning this position. I am second to the boss so I make sure the collections are catalogued properly. Sometimes, I identify and describe photographs of the Institutes of African Studies. The tasks are many, especially if my boss is not available. I assist the service persons manage the database, and do a lot.}\textsuperscript{R2}

\textit{Even presently, I am creating and preserving the copies of the files...Sometimes, the tasks might look small but when my boss is not at post, I have to ensure that the quality and integrity of the audio-video files are of standard...In fact I maintain all these archives equipment installed here}\textsuperscript{R3}

Adding to the duties of respondents, the two national service personnel (\textbf{R4} \& \textbf{R5}) helped in fulfilling the above responsibilities and in addition, assisted both students and lecturers in their researches. Details are found in Table 4.1 above.

The functions disclosed here prove what DeGracia (2009) holds that trained, skilled and specialist staff handles several operations in archiving.

\textbf{4.3 Storage Media and Facilities used for Preserving Audio-Visual Collections}

The first specific objective sought to find out the storage media and facilities used for preservation of audio visual collections. To achieve this, interviewees were first queried on the
total number of collections the archive held. The various responses provided, showed that the J. H. Kwabena Nketia Archives held approximately beyond twelve thousand collections, comprising audio, video and visual formats. Evidence was based on these two responses.

....the archive holds much...about 12000 collections in both audio and visual formats”\textsuperscript{R1}; I think probably getting to 12700 video and audio formats”\textsuperscript{R3}.

This is a measure of the extent of the capacity of the storage media and facilities for reserving archives. Hence, individuals need some measure of technical training to handle these formats properly. It is therefore not surprising that all staff members were tertiary institution graduates.

4.3.1 Storage Facilities for Preservation

Regarding facilities being used for preserving collection of files, scholars like Schüller (2008), Van Malssen (2008), Webb (2004), Wright (2004) and Zulu (1994) concur that ideally, location of storage areas within a given building should be in the centre of a building, slightly elevated from the ground floor in that such a storage location must exist to allow for effective and autonomous control over all environmental factors as well as magnetic stray fields to be achieved. In the case of the J. H. Kwabena Nketia Archives, evidence proved otherwise. There were designated areas (specific rooms) for keeping audio visual archives. Thus unlike the advanced countries where well-constructed vaults are allocated for archiving, it is not so in the repository.

This is based on the responses below.

...You know Madam, the facilities here in this institution are scarce hence we manage to keep the audio visual files here in this locally made shelves with locks; just right there...Seriously, this is not done in the developed countries because they have special vaults with regulated temperatures. We wish we could get vaults to store these collections but we don’t...$^{R1}$
We use the rooms here.... they are about four but I think it will be expanded

Researcher, you can see it here... offices are used... don’t go far, just at the right corner

This finding is contrary to the views of scholars like Schüller (2008), Van Malssen (2008), Webb (2004) and the others. Hence, it is appropriate for one to assert that the J. H. Kwabena Neketia Archives storage does not meet the international set standard. In addition, according to Astle and Muir (2002), as metal shelves emerged, wooden stacks used in the 1950s and 1960s, are now discouraged. This is not so at the J. H. Kwabena Nketia Archives.

Interviewees stressed that in securing collections there were designated places in the archives where collection of files were kept with restrictions on public access except individuals or groups on tour. They also emphasized that in advanced countries there are special vaults with controlled temperatures for storing these materials. Simply, metal shelves are not used in J. H. Kwabena Nketia Archives, which poses risk in carriers’ storage, as Schüller (2008) suggests that any location at the fringe of a building would make such control more difficult, and possibly less effective.

4.3.2 Storage Media for Preservation

Akussah (2011) has explained that storage media refers to the base on which the intellectual content of a document has been captured or the material that had been used to create the document. Contrary, in the present storage facilities of the archival repository, there were numerous storage media formats that had been used for preserving audio visual collections. Table 4.3 presents all the media formats used in preserving audio visual files in J. H. Kwabena Nketia Archives.
As vividly seen in the Table 4.2 above, the interviewees mentioned that there were lots of media formats for storing the files. These are some of their views:

*We store them in DVDs, Mini, VHS, U-Matics and DAT.*

*We use all the available storage media especially reel-to-reel, Micro-cassettes, Audio cassettes, DVDs, Hi-8/video 8, LP, and 78rpm shellac.*

This could mean that, there are varieties of storage media and facilities for storing or preserving audio visual archive files. However, in the case of the J. H. Kwabena Neketia Archives, only the above listed media types (see Table 4.2) are used for preserving audio-video files in the archives. All these storage media fall under the storage format categorization for preserving audio visuals that Schüller (2008) listed to be mechanical, magnetic and optical carriers.

Again, to determine the safety of these storage formats, interviewees were further probed about how secured these collections were considering the prevailing storage media and the facilities. They all agreed that collections are highly secured, demonstrated by the expressions below.

*They are good, they are good. The Formats are very secured.*

*The storage facilities we use for now, are highly secured even though they are not sophisticated. Again the media formats are highly protected from public access and this goes a long way to protect the media formats from deterioration that may result from unprofessional handing.*

This finding supports the purpose of digitization, which according to Abankwah (2007), Feather (1996), Rowley and Smith (2012), and Schüller (2008) is to afford archives the opportunity to
protect the original document from further deterioration by placing it in appropriate and secure storage areas. In all, findings discussed in this section helped achieve the first specific objective of the study.

4.4 Challenges of Preservation of Audio-Visual Collections

Another objective for conducting the study was to find out the challenges in the preservation of audio visual collections at Professor J. H. Kwabena Nketia Archives. Zinyengere (2008) as cited by (Mnjama, 2010) rightly stated that, in most African countries, audio visual recordings are endangered due to several factors, such as legal statutes towards audio visual materials, obsolescence of playback equipment, staffing, the lack of training and funding, societal perception towards archives, technological awareness and the preservation, climatic issues, and access to recordings. Undoubtedly, much evidence of such challenges have been discovered and proven to exist in the above mentioned archival institution. Based on the views of respondents, the challenges identified were: physical damage/deterioration of magnetic tapes; obsolete media format and lack of availability of obsolete machines; inaccessibility of obsolete media formats; lack of funding; poor collaboration; conversion of magnetic tapes to digital; poor vaults/media storage areas; lack of technical expertise; inadequate metadata; poor electricity power supply; and unstable internet connection.

According to literature, existing and persistent deterrent factors in audio visual archiving are the challenges associated with the preservation of collections (Astle and Muir, 2002; Wright, 2014). Participants interviewed admitted that the J. H. Kwabena Nketia Archives held a large collection of important Arabic Manuscripts, Audio visual heritage and administrative records but preservation of these collections had become a burden because of its associated challenges.

4.4.1 Physical Deterioration of Magnetic Tapes

Among the challenges first mentioned was physical deterioration of magnetic tapes, which Astle and Muir (2002) explained to be some inherent factors with the media carriers. A similar
challenge was discovered here but attributed to three factors (a) acetate based materials used for manufacturing the magnetic tapes; (b) poor climatic conditions; and (c) pest attacks. Expressions stated below established this finding.

The tropical climate is very damaging to the tapes. It made the room either too hot or too cold (temperature fluctuation) which makes the tapes deteriorate faster. You see our climate is up and down, hence we don’t have a stable condition in the room and the tapes are affected when the temperature is unstable.\textsuperscript{R1R3}

These acetate materials used for producing the tapes cannot withstand the climatic weather conditions as in Europe and America. It is deteriorating day in and day out...creating a very big problem for us.\textsuperscript{R2,R3}

The climate is creating an unstable temperature in media storage areas. Most often temperature in the media storage areas fluctuates! Madam, look, the archival machines are also air-conditioned reliant and cannot work under warm environment. As for us we cannot do anything about it but it is the rate at which the tapes are deteriorating. You see that these tapes are made with acetate materials, the pests feed on it.\textsuperscript{R2R3}

The findings disclosed here is in conjunction with Astle and Muir’s (2002) generalization that it is impossible to preserve entire audio visual collections forever due to some inherent deteriorating factors with the media carriers (Astle and Muir, 2002).

4.4.2 Inadequate Storage Facilities

Another major challenge mentioned was inadequate facilities, which was precisely what Lihoma (2008) and Zinyengere (2008) articulated in the literature review. This inadequacy included lack of: storage areas, office for staff, and obsolete machines, as explained below.

Studies by Matangira (2003), Abankwah (2007) and Mnjama (2010) observed that another problem facing the preservation of audio visual collections in developing countries relates to storage. This was the first cited challenge associated with inadequate facilities in case of the repository, which was the lack of space for storage of collections and to accommodate staff.
Most of the interviewees explained that the institution had insufficient rooms for accommodating the various archival collections and staff hence constraining them in their functions. This is supported by two comments:

“Staff where sharing offices with the tapes”\(^{R3}\); and “There is also inadequate space to house materials resulting in the disposal of most materials”\(^{R1}\).

In view of this Mnjama (2010) avers in his study in Botswana national archives that irrespective of the fact that the storage facilities are inadequate for audio visual recordings, the storage facilities are not also restored in the National Archives. This case is similar to that of Bostwana, where Monageng, (1997) conducted his study and established that many of the information centres (archives) currently housed their collections in buildings not designed for the storage of audio visual materials.

Strongly linked to lack of space, respondents talked about the standard (condition) of the storage spaces. Thus, lack of vaults/media storage areas was revealed to be problematic. Interviewees asserted that unlike the advanced countries where vaults are built for archives, it is otherwise in Ghana. Their responses demonstrated poor standard, storage space for archive collections. This was the response;

“No proper vaults to control temperatures, the store rooms are old and cannot withstand the tropical climate,”\(^{R3}\)

This is not different from what Matangira (2003), Abankwah (2007) and Mnjama (2010) established, based on their visit to all repositories over years, that preservation of audio visual collections in developing countries are kept under the same environmental conditions as traditional paper archives which are not ideal for the management of audio visual collections.
4.4.3 Obsolescence of equipment

Thirdly, there was an issue with obsolete media format and unavailability of play back machines. The J. H. Kwabena Nketia Archives was faced with obsolete media format and lack of or availability of play back machines that could be used to access the obsolete media, according to the Archivist and personnel interviewed. Below is the expression of the Archivist and one Research Assistant that attests to this finding.

Most tapes are on obsolete media formats and the machines are unplayable, obsolete machines cannot be found in the vendor shops in Ghana anymore.\(R^2\)

There have been few difficulties digitizing quarter inch open reel, the play back reel to reel machine was initially imported from Germany, but upon receipt of the equipment, it was realized that most of the reels were half-track (1/2”) and quarter track (1/4”) and the imported machine could only play half-track. This problem had put a halt to the digitization process until a new machine that could play both tracks was again sourced from the United States of America.\(R^1\)

This issue reported confirms the findings of Lihoma’s (2008) study on the National Archives of Malawi’s film archive collection detailed, that spare parts for the equipment were scarce on the local market due to the phasing out of the equipment by the manufacturers.

Directly linked to the above is the issue of inaccessibility of obsolete media formats. Interviewees recounted that lack of obsolete machines make the obsolete tapes unplayable and inaccessible.

This again corroborates Lihoma’s (2008), that over extended periods up to 2006, audio visual collections were inaccessible due to the lack of playback equipment.

Presently all the collections are accessible except the tapes that are on obsolete media formats.\(R^1,R^2,R^3\)

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The above statement was from the archivist which corroborates that of the research assistants interviewed. It is therefore clear that the formats of preserving archives can pose a threat in archiving. Hence, what Abankwah (2007) postulated that Audio Visual carrier preservation is not the media carrier but rather the information content of these media is true everywhere.

Further, associated with the obsolete media format and obsolete machines is the issue of converting magnet tapes to digital ones. Interviewees claimed that, because of the lack of sophisticated machines, digitization of magnetic tapes was very problematic.

…..“Look, conversion of magnet tapes to digital ones is not a joke, it is virtually impossible…we find it hard to do it because these old techniques are archaic,” R1 and “We hope to have all of them converted to digital formats in the near future but for now it is not easy,” R2 were the evidence of this outcome.

This is not contrary to Mnjama’s (2010) assertion that apart from familiarity with technology, changes in recording and playback equipment very often results in inability to access information created in some models.

Furthermore, there was poor collaboration between the J. H. Kwabena Nketia Archives and other archival institutions—be it international or local. This was identified to be a challenge to the staff, especially in determining the trend in archiving and technological advancement. “Basically there is poor collaboration between us and the other archival organizations,” R3, a statement from one research assistant, which is not different from that of the archivist, “The archives hopes to enter into collaborations” R1.

Moreover, assessment of the various responses of respondents established that inadequate metadata was among the challenges. The interview response upon which this was unveiled is stated below.
There are inadequate metadata on the tapes so we have to call old photographers and old researchers to help in identifying images, places and other details on the programmes that have been captured.\textsuperscript{R1,R2,R4}

This finding seems to be new within this research area, as it was not discovered in literature reviewed.

**4.4.4 Power Outages**

In recent times, Ghana has been bedevilled with electricity power crises, which has affected and it is still affecting offices, institutions and businesses. It is therefore not surprising that interviewees pointed out poor electricity supply as a challenge in executing their functions. As Abankwah (2007) and Akussah (2011) discovered similarly in their studies that the problem of frequent power outages has damaging effects on preservation equipment. One research assistant said; “Dumsor” (a local name for power outage) is also another enemy to the tapes\textsuperscript{R2}. Not only that, the archivist was of a similar view, (see below).

Another problem encountered during the process was the power crisis Ghana experienced.

Even though the Archive has a reliable UPS that could last for four hours, the room becomes warm and most of the equipment cease working resulting in a pause in process until the electricity supply is stable.\textsuperscript{R1}

This frequent power outage is a national canker. Hence, until it is resolved it will still remain a detriment to archiving as it demands energy.

**4.4.5 Low Internet Bandwidth**

Much more, after decades of traditional archiving, modern archive system is a direct reliant on internet connection provided by telecommunication companies. Analysis of the responses from respondents illustrate that an unstable internet connection is detrimental to the archive. This is based on the assertion by the research assistants who assist the archivist.
Unstable internet bandwidth is another deterrent factor. Most of the metadata is embedded in the database, and inability to retrieve the information from the internet, renders digitization impossible.\(^{R2,R3}\)

One of national service personnel also explained in the responses below;

“The internet is not stable at all… it makes the work slow”\(^{R4}\) and “At times, the WAN and LAN becomes slow, and if it happens like that Madam we can’t work,”

Mnjama (2010), Monageng (1997), and Mudzaki (2013) made it known in their studies that most developing countries are either facing difficulty with lack of, or poor telecommunication networks that make the transmission and access of digitized materials very difficult. For this reason there is no desire to take up digitization projects.

4.4.6 Lack of Technical Expertise

One challenge commonly found in most human organizations in the developing countries is the lack of technical expertise and Ghana is no exception. These assertions below validate that.

\textit{We lack technical expertise to help manage the materials, this is putting a strain on the archivist and her two staff due to the inadequate staff situation there is a reliance on service persons annually who do not have any special expertise}\(^{R1,R3}\)

\textit{We have to consult old photographers and old researchers to help in identifying images, places and other details on the programmes that have been captured}.\(^{R2,R3}\)

The finding also agrees with Conway’s (2010) report that preservation challenges include low human resource expertise and incompetency, especially in the case of developing countries. In supporting this, Granger (2000) illustrated that although there are computer engineers that work with libraries and archives, there are frequent breakdown of ICT equipment and it is because their competencies and attitudes are not readily available to initiate, implement and sustain archive projects. What is more surprising with this is that there is no sense of urgency to employ more staff to help curb this technical deficiency. Abankwah has (2007) assertively put across that most of the audio visual archives in developing countries such as Ghana run on limited
funding. This makes it difficult for them to employ experts and personnel to undertake and manage such projects because of limited funds (Abankwah, 2007). This is the last finding discovered as discussed below.

4.4.7 Inadequate Budgetary Allocation

Last but not the least; budget allocation is the most threatening challenge of audio visual preservation. All the challenges brought to bear are linked to lack of funding. Financial constraints pose lots of issues being social, economic, psychological, and cultural. As Puplick (2009) puts it, “the first and most pressing, especially in these times of global financial stress, is that we lack the money and the resources to identify, preserve and protect these treasures”. The above mentioned challenges indirectly and directly have something to do with finance. What was revealed here was that, the J. H. Kwabena Nketia Archives was faced with financial crises. Interviewees asserted that there was lack of funds for resolving these challenges deliberated upon but still hoping that funds would be made available for future prospects. In supporting this, the statement below serves as the evidence.

*We hope that we will receive funding for our activities and to deal with the pertinent issues we are encountering.*

*In the advanced countries there are special vaults with controlled temperatures for storing these materials but are very expensive and our archives could not afford them because of limited funds.*

This is not new from the literature reviewed as adequate budgets are always the conjoint problem as preservation practices do not come cheap (Puplick, 2009). In the same vein, Mnjama (2010) also acknowledges that financial provision for training of audio visual archivists and the procurement of specialist storage equipment for the storage of audio visual materials have been limited.
In summary, the study has revealed that most of the challenges deliberated upon in the above discussions had something to do with finance. Collaboration, climatic conditions, obsolete media format and conversion; lack of expertise, unavailable obsolete machines, inadequate facilities, poor internet connectivity, and poor storage space all have a relationship with financial constraints. Moreover, aside financial constraints, as Abankwah (2007) stated, technological advancement possesses the greatest challenge to audio visual archiving. However, in all most of the challenges facing the management and preservation of audio visual materials are not exclusive to Ghana but common to many developing countries like Botswana (Mnjama, 2010).

4.5 Prospects for Digitization

The general concept of digitization is to create a duplicate of existing collections in electronic format, which provides the opportunity for wider access and protection against damage. There are two reasons for digitizing local collections: (a) to preserve rare and fragile documents; and (b) to make those documents more accessible to a wide range of users (Rowley and Smith, 2012). Emphasizing on future success of digitization in Ghana, the J. H. Kwabena Nketia Archives has started a digitization project called “Making African Academic Resources Accessible” (MAARA) project. Under this project, a target of a pilot of 400 hours of audio deposited on the quarter inch open reels was digitized within 18 months and the target was achieved successfully within the set period. The archivist explained that;

The next digitization project to embark on would hopefully be ‘video digitization’ because the archive has a huge collection of heritage materials deposited on VHS, Betacam, U-matics, Mini-DV, Hi-8 and video 8.

According to the staff, this project is on-going and includes audio digitization, which has made digitization successful to overcome. A very precise statement that attests to this is displayed below.
Digitization is worthwhile since the successes overcome the challenges. Moreover, information that has been hidden in these quarter inch formats for 64 years can now be retrieved and accessed by students, researchers and teaching faculty.\textsuperscript{R2,R3}

There is also both local and international project collaborations. The project was a collaboration between the Institute of African Studies and New York University. Experts from Audio visual Preservation Solutions in New York were contracted by New York University to train staff on audio digitization and setting up a digitization lab. This was disclosed during the interview session with the archivist. She specified that;

\textit{“The project was a collaboration between the Institute of African Studies and New York University.”}\textsuperscript{R1}

The J. H. Kwabena Nketia Archives outsources some of it technical tasks. This involves direct and contractual consultancies with both international and local experts for ad hoc and specified tasks. Below are some of the statements that emerged as evidence of this outcome.

\textit{Experts from Audio visual Preservation Solutions in New York were contracted by New York University to train staff on audio digitization and setting up of an audio digitization lab.}\textsuperscript{R1,R3}

\textit{Since the archive does not have much expertise on video digitization, the task of video digitization would be out-sourced.}\textsuperscript{R2,R3}

There is immediate prospect to achieve the objectives of digitization by the archival institution. The archive has recently embarked on video digitization by setting up a video digitization lab.

\textit{The next digitization project to embark on would hopefully be ‘video digitization’ because the archive has a huge collection of heritage materials deposited on VHS, Betacam, U-matics, Mini-DV, Hi-8 and video 8.}\textsuperscript{R1}

The above statement was from the archivist, who further explained that the digitization of video files is a long term prospect that will help archiving in the country.
To curb the challenges that emanated from unavailability of modern machines, there has been an installation of new equipment in the repository. This was done to make digitization progress steadily, as one interviewee explained,

To remedy these challenges a new reel to reel machine that plays all the tracks was imported, so digitization is going on smoothly now.\textsuperscript{R3}

Interviewees expressed optimism in the energy supply system. Interviewees were aware that the archival institution had installed emergency power supply generators called “University Power Supply” to stabilize the electricity power cut offs. This was captured in the following statement;

“Power crises has stabilized so the problem with power is being solved”\textsuperscript{R1} and “The University has constructed alternative power generation facilities hence the ’dumsor’ is minimal,”\textsuperscript{R3} were some of the views of respondents that helped point out this.

The use of internet connectivity has made it possible for digitization of traditional archival collections. To overcome the break downs in the internet bandwidth and sustain this progress, the challenge with the internet connection was being rectified, according to the staff.

The mail internet connection is being controlled by University of Ghana Computing Systems (UGCS). This problem has been reported to them and it is being worked on.\textsuperscript{R1, R2, R5}

Thus, the institution itself is working on resolving all technicalities and differences in their internet connections to ensure that archiving and other activities progress.

Upon these results discussed above, the third specific objective of the study which sought to determine what prospects there were for the future in digitization was achieved.

4.6 Digital Preservation Strategies used in the Archive

In the archive the digitization is purposely for preservation not only access. According to Zulu and Kalusopa (2009), digital preservation refers to the series of adapting management activities necessary to ensure continued access to digital materials for as long as necessary. This was the
last specific objective of the study as it sought to assess the preservation strategies used in archive.

Evidence from field interviews demonstrate that the institution has embedded specialised preservation software in their digitization project/database. These software included Bagger, Karen Hasher, MDCQ, MP3 tag, BWF, Beyond Compare and others. According to the interviewees, the reason for that particular choice was because it was the best recommended by their consultants. Moreover, most of the interviewees observed that some of these computer applications were specially made by the consultants from audio visual preservation solutions to enable preservation. Below are some of the statements that validate this result.

The digitization for preservation software have been embedded in the database, they include software like such as Bagger, Karen Hasher, MDCQ, MP3 tag, BWF, Beyond Compare etc., and it was because it was the best among those of the consultants.\(^R_1\)

Some of these software are special software made by the consultants from Audio Visual Preservation Solutions (AV Preserve).\(^R_2, R_3\)

Audio visual heritage preservation needs these specialized software for specialized tasks to be carried out. For instance, the MDQC is a quality control software used to check all details on the uploaded tape.\(^R_4,R_5\)

This finding is in support of MacKenzie (2000) as cited by (Astle and Muir, 2002) that the first strategy in digital preservation is the preservation of the original technology (hardware and software).

Another preservation strategy adopted in the J. H. Kwabena Archives is the conversion of tape content to MP3 file format. “Basically a wave lab is used for recording the content of the tape and used to create an mp3 copy for access which also has a default metadata”\(^R_2\), was articulated by one research assistant. Not that only, these expressions “The MP3 tag is used to embed data into the mp3,” “The BFW as a metadata into the wave files”. It therefore implies that, media storage formats are the strategies used to preserve digital collections in archives.
(Zulu and Kalusopa, 2009). In addition, it enables these collections to have electronic characteristics and that makes their migration much easier from one format to another as technology progresses (Oomen et al., 2009; Pickover, 2009; Rowley, and Smith, 2012; Zulu and Kalusopa, 2009).

As part of the preservation strategy, the institution has embarked on content checking and bagging. This is what Astle and Muir (2002) term as emulation. According to these scholars, emulation involves taking steps, which will facilitate imminent computer systems to read digital information with minimal loss of its original look, feel and functionality (Astle and Muir, 2002). The responses of interviewees were similar to the view of Astle and Muir (2002) in that they all emphasized that after conversion of tape files, the next step was to decipher the content of all files to ensure they are of quality and accessible before bagging them. These were captured in the following statements:

“The next stage is to bag, using the bagger software to create codes for digitized collections. These codes can also be used to trace the collections” \(^{R1}\), and “After bagging, data is copied into the database.” \(^{R3}\).

The final preservation strategy was system check-ups. This involves tracing and checking data collection security by the staff. As to how this is done, it was not disclosed but some of the interviewees’ expressed the following views as affirm below

After bagging the codes are then copied into the database and used to trace and check data security of collections. \(^{R1,R3}\)

The Karen Hasher is used to size check the codes; it is used to compare the gigabytes in the files. Finally the Fixity is an online check sum that schedules a check on all the drives conservative programmed time and sends you reports through your mail. \(^{R2,R4,R5}\)
Although, studies by Astle and Muir (2002) pointed out that there are essentially three possible strategies for digital preservation, from the discussed findings in this section, there seems to be a few strategies adopted for preserving digital audio collections in the J. H. Kwabena Nketia Archives.
REFERENCES


CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The previous chapter discussed in depth the findings that emerged from the analysis of the primary data in relation to the literature review. This chapter highlights the major findings in relation to the study objectives, draws conclusion from it and provide appropriate recommendations. The objectives that guided the conduct of this study were:

a) To identify the storage media and facilities used for the preservation of Audio Visual collections in the archives.
b) To identify the challenges encountered in the preservation of Audio Visual collections in the archives.
c) To determine what prospects there were for the future in digitization.
d) To identify the digital preservation strategies adopted by the archives.
e) To make recommendations based on the findings of the study.

5.2 Summary of Findings

5.2.1 Storage and Media Facilities Used for Preservation

The study investigated issues in archiving audio visual materials, the case of J. H. Kwabena Nketia Archives. Much was discovered on the evidence of respondents’ responses. First and foremost, the study demonstrated that the selected institutional archive held a total of approximately twelve thousand collections. These records were acquired from the 1950s- to date. Regarding facilities being used for preserving collection of files, there were designated areas (special rooms) for keeping audio visual archives. Moreover, there were numerous storage media formats for audio visual collections. They included: ¼ open Reel (Reel to reel), Long Play (LP), 78rpm shellac, Micro-cassettes, Digital Audio tapes (DAT), Audio cassettes, Compact Discs, UMatics, Betacam, VHS, S-VHS, Hi-8/video 8, Mini-DV, DVDs, and...
Photographs. In general these records were classified into three main groups and stored in designated places within the archival repository. These groups comprised the audio, visuals and the audio visuals, which were secured strictly from public access. It is these findings that the study based on to accomplish the first specific objective stated in the introduction above.

5.2.2 Challenges Encountered in the Preservation of Audio Visual Collections

Secondly, another objective that initiated the conduct of the study was to explore the challenges encountered in the preservation of audio visual collections in J. H. Kwabena Nketia Archives. The study identified numerous challenges facing audio visual preservation. These challenges were: (1) physical deterioration of magnetic tapes attributed to (a) acetate based materials used for manufacturing the magnetic tapes, (b) poor climatic conditions, and (c) pest infestation. Additionally, a major challenge mentioned was inadequate facilities, which included lack of storage areas, office for staff, and lack of play back machines. Other challenges identified included: inaccessibility of obsolete media formats; difficulties in converting magnet tapes to digital ones; poor collaboration between the J. H. Kwabena Nketia Archives and other Archival organizations; inadequate metadata; electric power crises; unstable internet connection; lack of technical expertise; and financial constraints. Attainment of the main objective of conducting the study was based on these challenging factors facing the J. H. Kwabena Nketia Archives.

5.2.3 Prospects for Future Digitization

Furthermore, the study examined the future prospects for digitization of archives in Ghana. The results from the analysis of data established that the J. H. Kwabena Nketia Archives has started a digitization project called “Making African Academic Resources Accessible” (MAARA) project; with a target of a pilot of 400 hours of audio deposited on the quarter inch open reels within 18 months and the target was achieved successfully within the set period. Also, the project was still on-going with the inclusion of audio digitization and which has made digitization successful to overcome. There is also both local and international project
collaboration between the Institute of African Studies and New York University. In order to curb the challenge of lack of expertise, the archival institution has been engaged in outsourcing of some its technical tasks, for example, experts from Audio Visual Preservation Solutions in New York were contracted by New York University to train staff on audio digitization and setting up a digitization lab. The institute is about to embark on video digitization by setting up a video digitization lab, installed new equipment to resolve the problem of play back machines, installed alternative electricity generation plants called University Power Supply, power additions and rectifying the unstable internet services by resolving all technicalities and differences in their internet connections.

5.2.4 Identification of Digital Preservation Strategies

The last major finding of the study concerned digital preservation strategies. The views of interviewees from the field survey demonstrated that staff of the J. H. Kwabena Nketia Archives had embedded specialized preservation software in their digitization project/database. These software included Bagger, Karen Hasher, MDCQ, MP3 tag, BWF, Beyond Compare and others. Another preservation strategy adopted in the institutional archive was the conversion of tape content to MP3 file format. As part of the preservation strategy, the institution had embarked on content checking and bagging. The final preservation strategy was system check-ups, which involved tracing and checking data collection security by the staff. These articulated findings helped achieve the last specific objective of the study.

5.3 Conclusion

The study was undertaken to investigate the issues in the preservation of audio visual collections in J. H. Kwabena Nketia Archives. The objectives defined were all achieved as summarized in the above (see section 5.2). At this stage, the study concluded that digitization possesses magnified potentials for preservation in archives however the challenges faced with
archiving in Ghana were multitude and most had something to do with finance. Aside from collaboration, climatic conditions, obsolete media format and conversion, lack of expertise, unavailable obsolete machines, inadequate facilities, poor internet connectivity, and poor storage were all affected by financial constraints. Also, unlike developed countries, there are few strategies adopted for preserving digital archival in collections in Ghana, specifically the J. H. Kwabena Nketia Archives.

5.4 Recommendations

5.4.1 Introduction

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

5.4.2 Sourcing of Funds

The first recommendation is the need for the archives to source for funds. The funding of audio visual institutional archives should not be left to the parent institution alone. Individuals and nongovernmental organizations should endeavour to support it with donation of funds to enable the archivists purchase quality equipment such as vaults and modern archive machines for storage of sensitive collections and also help in acquiring logistics to enhance the progress of digitization projects.

5.4.3 Training of Archive Staff

Secondly, the human resource of the archive must be improved and well trained. This should include staffing archives with the required technical expertise and providing continued professional training. This will improve professionalism and develop staff capability to deal with the challenges of digitization and conversions. Moreover, training of audio visual archivists should not be the sole responsibility of educational institutions but also professional bodies such as the Archivist and Record Managers Association of Ghana (ARMAG) which should run specialist short courses, seminars and workshops to equip individuals who are...
willing to work in audio visual archives but lack the required skills with basic expertise on managing audio visual resources.

5.4.4 Good House Keeping

Moreover, it is good to suggest regular clean up exercises for the archives. With the nature of storage spaces, there should be good housekeeping practices and consistent monitoring of collections. This would ensure the regular cleaning of materials, good temperature regulation, and periodic fumigation to prevent fungus infestations and check tape binder degradation.

Again, archivists should be careful with the quality of the media files they secure into their custody, obsolete audio visual materials must be turned away since their acquisition merely end up in severe preservation challenges later.

5.4.5 Digitization of Video Files

It is of general benefit to promote digitization in archives. This is highly recommendable since archiving aims at preservation for access while access should not be limited to a few. It is important that the J. H. Nketia Archives embark on digitizing its video files soon so that access can be extended to the public. This would promote good academic and research work.
Bibliography


APPENDIX

Interview guide for respondents

A. Background of the respondent
1. How long have you been working as an audio visual archivist?
2. What are your duties?
3. Do you possess any professional qualification or training as an audio visual archivist?

B. storage media and facilities used for preservation of collections
4. How many collections do the archives hold?
5. What are some of the various media /carriers (format) used for their preservation?
6. Do you need special skills or training to handle these mediums?
7. How secured are these collections?

C. challenges of preservation of audio visuals.
What are the type and nature of your collections?
9. What is the state of their preservation?
10. Are the collections accessible?
11. What are some of the preservation challenges you are facing now?

D. what prospects are there for digitization
12. Have you started any digitization project?
13. If yes, what prospects do you have for digitization?
14. Are you encountering or have you encountered any challenge in digitization so far?
15. How are you working to remedy these challenges?
16. Considering your challenges, is digitization worthwhile?

E. Digital preservation strategies
17. Which digital preservation strategy do you use for your digital preservation?
18. Why that particular choice?

F. Suggestions
19. Any suggestion on audio visual collections you would like to share.