

UNIVERSITY OF GHANA

COLLEGE OF EDUCATION, SCHOOL OF COMMUNICATION AND INFORMATION

STUDIES

DEPARTMENT OF INFORMATION STUDIES

PRESERVATION OF MULTIMEDIA MATERIALS IN GHANA:

A CASE STUDY OF MINISTRY OF INFORMATION AND MEDIA RELATIONS

BY

PROSPER EDEM HORMEKU

(10145404)

**A DISSERTATION SUBMITTED TO THE DEPARTMENT OF INFORMATION
STUDIES, UNIVERSITY OF GHANA, IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE
AWARD OF THE MASTER OF ARTS DEGREE IN INFORMATION STUDIES**

JANUARY, 2016

DECLARATION

I hereby declare that this work is the result of my own research, except for references to other people's works which have been duly acknowledged, and that it has never been presented in part or whole elsewhere for another degree.

.....
MR. PROSPER EDEM HORMEKU

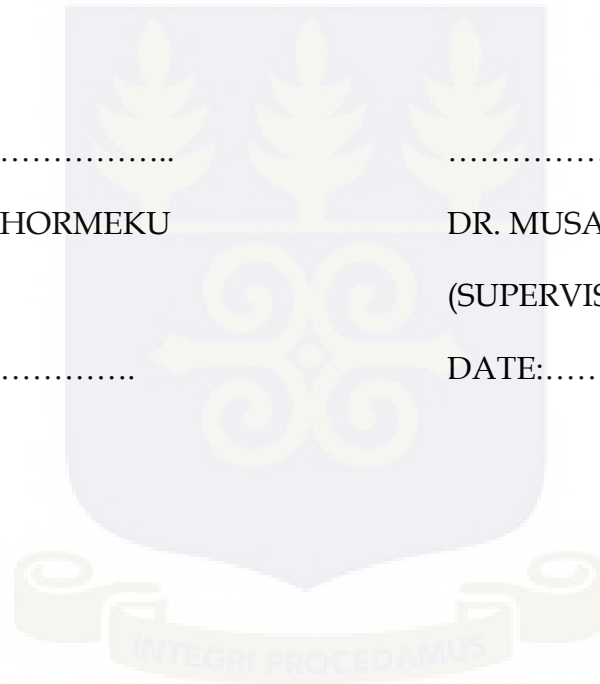
(STUDENT)

DATE:.....

.....
DR. MUSAH ADAMS

(SUPERVISOR)

DATE:.....



DEDICATION

This work is dedicated to the entire Hormeku family. This wonderful family has been supportive throughout my schooling. God richly bless them for their love and care for me. By way of recognition and love this scholarly work is also dedicated to Mr. Wisdom Afornorpe, Mr. Wisdom Hormeku, Mr. Francis Gbormittah and Mr. GodknownsLumor, Mr. Samuel Aryee, Mr. Albert Eshun, Mr. Ebo Sackey and Mr. Gideon Botsyoe. I am very thankful for the pieces of advice you gave to me.



ACKNOWLEDGEMENT

I am very grateful to the Almighty God for the protection and good health granted me throughout the course. Had it not been His mercy and love I would not have completed this work. God I thank you.

A heartfelt gratitude goes to my supervisor Dr. Musah Adams for his patience and guidance who painstakingly and skillfully supervised this work. When life became a desperate struggle and I started encountering problems, you agreed to supervise this research work. I thank you very much.

Another personality who actually laid the foundation for this work and provided almost all the necessary materials is Professor Harry Akussah. Prof I say thank you.

The next thank goes to all the three Unit Heads, the three archivists in the Information Service Department (ISD) and the staff for their cooperation and understanding. God richly bless you all. I also thank Dr. Perpetua Dadzie, former Head of Department for her patience and understanding my situation when I started encountering problems with this work.

Finally, I take full responsibility for any weakness, errors, omissions and misinterpretations in this work.

TABLE OF CONTENTS

DECLARATION..... i

DEDICATION..... ii

ACKNOWLEDGEMENT..... iii

ABSTRACT..... vi

CHAPTER ONE 1

INTRODUCTION..... 1

1.1 Background of the Study 1

1.2 Statement of the Problem 6

1.3 Purpose of the Study 7

1.4 Objectives of the Study 8

1.5 Research Questions 8

1.6 Theoretical Framework..... 9

1.7 Scope and Limitations of the Study..... 10

1.8 Significance of the Study 10

1.9 Organization of the Study 11

REFERENCES..... 12

CHAPTER TWO 13

LITERATURE REVIEW 13

2.1 Introduction..... 13

2.2 History of Multimedia (Audio visual) Materials 14

2.3 Concept and Definition of Multimedia Resources 14

2.4 Importance of Multimedia Resources 16

2.5 Types of Multimedia (Audiovisual) Materials..... 17

2.6 Preservation of Multimedia Materials 20

2.7 Use and Retrieval of Multimedia Resources..... 27

2.8 Summary..... 28

REFERENCES..... 29

CHAPTER THREE 35

METHODOLOGY 35

3.1 Introduction..... 35

3.2 Research Design 36

3.3 Population.....	36
3.4 Sample Size.....	37
3.5 Sampling Technique.....	38
3.6 Instrumentation.....	38
3.7 Mode of Data Collection.....	41
3.8 Data Analysis.....	41
3.9 Ethical Considerations.....	42
REFERENCES.....	43
CHAPTER FOUR.....	45
PRESENTATION OF DATA, ANALYSIS AND INTERPRETATION OF FINDINGS.....	45
4.1 Introduction.....	45
4.2 Preservation policy.....	45
4.3 Environmental Conditions under Which the ISD Preserves Its Multimedia Materials.....	46
4.4 Determining How Multimedia Records Were Processed, Stored and Protected.....	49
4.5 Technology for Preserving Multimedia Materials.....	52
4.6 Preservation method used for multimedia materials.....	53
4.7 Skills of staff to meet new technological change.....	54
4.8 Staff Training.....	54
4.9 Challenges of Preserving Multimedia Materials.....	56
4.10 Film Preservation.....	58
REFERENCES.....	60
CHAPTER FIVE.....	63
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS.....	63
5.1 Introduction.....	63
5.2 Summary of Findings.....	63
5.3 Conclusion.....	66
5.4 Recommendations.....	66
BIBLIOGRAPHY.....	68
APPENDIX 1.....	76
INTERVIEW GUIDE.....	76
APPENDIX 2.....	78
OBSERVATION CHECKLIST.....	78

ABSTRACT

This study dealt with preservation of multimedia materials as part of modern electronic revolution that is changing the way we exchange information. The Ministry of Information and Media Relations specifically Information Services Department (ISD) was selected for the study. This is because the ISD holds collection of valuable Information resources for Ghana. The preservation of multimedia resources is very vital for safeguarding information for posterity.

The study was necessitated by what the researcher observed at the ISD upon several visits. It was revealed that important pre-colonial and post-colonial and even current multimedia materials have been left to decay or rot and the storage facility was not in proper condition. Accessibility to this historical information by researchers, students and the general public was not easy. As a result, the ISD is actually losing Ghana's historical heritage and the new generation would have no information about their identity.

The case study method was used for this research. A review of pertinent literature and data obtained through interviews and observation formed the basis of this study.

The study found out that the problems at ISD ranged from funds, space, policy, logistics, and storage conditions.

The study recommended that the ISD with the assistance of PRAAD should formulate a multimedia material preservation policy as provided under the PRAAD Act of 1997.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In today's advanced and technology adapted society, the concept of multimedia is ever present in many facets of life. Multimedia is part of modern electronic revolution that is changing the way we give and receive information. Multimedia can be termed as the use of several different type of media (e.g. text, audio, graphics, animation, video and interactivity) to convey information. Furthermore, it is important to recognize that multimedia involves the use of computers to present text, graphics, video, animation and sound in an integrated way (Wright, Miller and Addis,2009).

Multimedia includes a range of formats from a simple PowerPoint to a complex interactive simulation (Learning Circuits) and in most cases is believed to enhance user experience and result in easier and faster understanding of the information presented. The concept of presenting information in various formats is not a new phenomenon, however when reviewing this concept in terms of multimedia it generally implies presenting information in various 'digital' formats for preservation access to information (Wright, Miller and Addis,2009).

To Akussah (2011) the introduction of information communication technologies has brought about different formats and media of documentation, storage and two major issues are fundamental in this regard. For the first time, these technologies have also brought to the fore the life-span of most of these media as either too short or hardly known. Secondly, the high turnover of these technologies have made obsolescence of media and equipment one of the headaches for

preservations, especially in ensuring long term access to the intellectual contents of machine dependent-documents. This situation has triggered research into digital preservation of documents stored in multi-media formats.

According to Akussah (2011), preservation of information resources can simply be defined as activities associated with maintaining and keeping documentary materials away from destruction, to sustain their life span or actions taken to ensure the longevity of these materials either in their original physical form or in some other usable way. The process of preservation is very important in the whole operation of information management and its basic objective is to prolong the usable life of information resources whilst ensuring long-term access to them.

Akussah (2003) has observed that, the last quarter of the twentieth century has produced an accumulation of documents generated by computers and stored in electronic form, other than the traditional paper format. These categories of documentation gradually and ultimately find its way into the archives for preservation. The fundamental requirements for archiving multimedia materials are not very different from the requirement for such media as paper and microfilm. However, the multimedia materials are fragile and delicate and for these reasons their preservation demands more stringent attention. The nature of multimedia materials makes it a complex and difficult media to archive. Among others, frequent change of technology makes it easy for multimedia materials to be created, communicated, discussed, revoked and finally deleted within few seconds.

The preservation environment will need to incorporate new types of storage systems, new protocols for accessing data, new data-encoding formats, and new standards for characterizing provenance. Thus a major challenge that confronts preservation is how to incorporate new technology effectively, while conserving preservation properties such as authenticity, integrity, and chain of custody. Technology provides the required ability to incorporate new technology, without compromising the preservation environment properties, through the concept of infrastructure independence (Moore, 2008).

According to Ametefe (2008), the importance of multimedia covers every aspect of life. For example, multimedia can stand for interactive types of media such as videos, games, CD ROMs that teach a foreign language, or information. Another useful form of multimedia is television that presents information using more than one medium as a tool for presenting audio-visual information. In the field of research, multimedia materials can aid research, planning and organizational skills. Many students can now access multimedia information such as electronic books, journals, databases and other materials for their research work at any time, night or day without physically present at the traditional library. Multimedia can be as simple as a newspaper, (combination of text and still image).

1.1.1 Ministry of Information and Media Relations (MIMR)

The Ministry of Information and Media Relations (MIMR) has existed under different names since independence in 1957. It has metamorphosed from being the Ministry of Information and Culture, Ministry of Information and Tourism, Public Relation Secretariat, Ministry of

Communication, Ministry of Media Relations, Ministry of Information and National Orientation and currently its new name; Ministry of Information and Media Relations.

The Ministry exists to facilitate a two-way free flow of timely and reliable information and feedback between the government and its various publics. It is also to assist in the development, co-ordination of policy; to monitor and evaluate the implementation of programmes and activities by its sector agencies. The Ministry's modus operandi include, organising regular weekly interactions with the media on various issues on government programmes and producing various audio-visual documentaries for public education and outreach programmes (Ministry of Information and Media Relations, 2013).

When the portal www.ghana.gov.gh was established in 2002, the Ministry assumed additional responsibility by discharging its traditional functions electronically through the provision of information and other public services through the Internet. The facility has proven to be one effective communication tool to disseminate government's information to the public and to get feedback to provide the way forward in national development.

1.1.2 Information Service Department (ISD)

The Information Service Department (ISD) has been contributing tremendously to the dissemination of information through the use of multimedia materials such as visual, audio, print and face-to-face interaction. The ISD also uses drama, films and talk shows on the ubiquitous cinema vans which criss-cross the whole country and is determined to do more for the country with the advent of information communication technology (ICT).

The ISD is the major and only operational department of the Ministry that manage multimedia resources. The department serves as government's major public relations organization both locally and abroad. It is also mandated to create awareness of government policies, programmes and activities. The department is also empowered to get feedback from the public to government for public reinforcement or redirection.

The Information Service Department (ISD) has three units; Photo, Audio Visual and Film Units respectively. The department was established to produce feature films, documentaries, drama and newsreels to educate Ghanaians about government policies in towns and villages nationwide with mobile van. The total staff at the ISD is sixty. Each unit has its own Unit Head and three professional archivists from each unit. Even though, these units are separated in terms of their job functions, they work together as a team to achieve a common goal.

During the pre-colonial and post-colonial era, a lot of historical activities took place in Ghana. Most of these activities have led to the generation of records in many forms of multimedia resources such as speech of heads of states, bilateral agreements, commission of enquires and independence day speeches of Dr. Nkrumah. Furthermore, various forms of constitutions (such as Clifford, Guggisberg, Alan Burns, Coussey, Arden Clack), have all been produced. All these information have been captured on celluloid and video tape (multimedia materials). The paper based version of these historical and vital information or records have been kept by the Public Records and Archive Administration Department (PRAAD). However, this study is focused on

how ISD preserves multimedia resources which PRAAD does not currently have the capacity in its archival holdings.

This vital information could serve as the flashpoint for lively debates on social values, cultural identities, historical facts and institutional accountability. Multimedia materials are the memory of a nation because they are supposed to remind the citizens about their past because as human beings it is possible to forget information about our cultural identity. Multimedia documents represent enormous power over memory and identity, and it is not a passive store house of old stuff, but active sites where social power is negotiated, contested and confirmed. At times governments use these collections for their political propaganda works to achieve their ambitions (Ministry of Information and Media Relations, 2013).

1.2 Statement of the Problem

The proliferation of tools for generating multimedia materials has seen the emergence of the idea that one day we may all be working in ‘paperless’ offices. While there is still no sign of a reduction in the mountains of paper that are daily generated in day-to-day business activities, there can be no doubt that the exponential growth in the quantity and variety of electronic information will continue for the foreseeable future. The problem is that organisations and individuals are increasingly transacting business electronically. Records which are the archives of tomorrow are being created and kept in electronic form. Multimedia materials are fragile and hardware and software becomes rapidly obsolete, presenting challenges and requiring more proactive intervention in the life of the materials and the systems that generate them. In short,

access to digital information requires hardware and software as technology changes therefore creating potential barriers to re-use.

The advantages of digital technology are well known and its adoption by archivists seems inevitable, inexorable and well-motivated. Yet the fact remains that several key issues concerning the long term preservation of digital materials remain unsolved.

A visit to the Information Service Department (ISD) revealed that important pre-colonial and post-colonial and even current multimedia materials both local and foreign have been left to decay or rot and the storage facility is not in proper condition. Accessibility to this historical information by researchers, students and the public is not easy. Multimedia resources have been kept in a room with no air conditioning. As a result, the ISD is actually losing Ghana's historical heritage and the new generation will have no information about their identity. The Department links the administration and the media. It therefore tries to enhance the public understanding of government policies, decisions and activities. It is therefore relevant to preserve multimedia materials in ISD to keep Ghana's heritage. These were the major reasons why the researcher wants to embark on this study to find out suitable ways of preserving these multimedia resources.

1.3 Purpose of the Study

The purpose of this study was to examine how staff of Information Services Department (ISD) preserved multimedia materials with the view to identifying possible problems and making recommendations for the enhancement of the preservation methods in place.

1.4 Objectives of the Study

The specific objectives of the study were:

- To find out the environmental conditions under which ISD preserved its multimedia resources.
- To determine how multimedia resources are processed, stored and protected.
- To find out the kind of technology in place for the preservation of materials.
- To assess the methods the staff use to preserve multimedia materials in ISD.
- To find out whether the staff have skills to meet new technological changes.
- To make recommendations based on the findings of the study to improve the management of multimedia materials in the custody of ISD.

1.5 Research Questions

The following research questions guided the researcher during collection of data.

- What were the environmental conditions in place for the preservation of multimedia materials at ISD?
- How were multimedia resources processed, stored and protected at ISD?
- What kind of technology was used for the preservation of multimedia materials in the ISD?
- What were the methods used by the staff to preserve multimedia resources?
- How skilled were the staff to meet new technological changes?

1.6 Theoretical Framework

A theoretical framework is a collection of theories and models from literature which underpins a research study. It is a fundamental part of research as it explains the research questions. A theory refers to a set of interrelated constructs of variables, definitions and propositions that presents a systematic outlook of a problem by specifying relations among variables with the purpose of explaining natural phenomenon. Theories are answers to questions about why people behave the way they do in a particular social context, and how social life is organized in the way it is.

1.6.1 Preservation Research

Research in the field of preservation primarily depends on social science and humanistic research methodologies. According to Cloonan (2001), a research on preservation focuses more on preventive or management issues and mostly undertaken by librarians and archivists. There are a number of theoretical frameworks in the field of preservation. According to literature, preservation research can be divided into the following five broad areas. Management of programme, reformatting or transfer technology, the storage environment and disaster recovery, historical and bibliographical studies and general policy issues.

1.6.2 Management of Programmes

This study adopts the management of programmes theoretical framework. According to Akussah (2003), preservation research in this area is often practically oriented. It focuses basically on the functions of preservation programmes such as: collection management, designing of user programmes, policies, planning models, surveys: local, national and international programmes

etc. The end results of research in these aspects of preservation aims at improving the overall managerial capabilities of institutional preservation.

Smith and Schirling (2006) in a similar study on preservation of electronic records stated that codes, encryptions, pass word, PDF and other forms are used as preventive measures that prevents users from deleting vital information. Multimedia materials are fragile and hardware and software becomes rapidly obsolete, presenting challenges and requiring more proactive intervention in the life of the materials and the systems that generate them. This type of preservation aims at improving the overall managerial capabilities of the ministry.

1.7 Scope and Limitations of the Study

The study was confined to the Information Service Department (ISD) of the Ministry and the focus was on preservation of multimedia materials. The ISD was selected because it was the major operational department of the Ministry that deals in multimedia materials. The Department serves as government's major public relations organization both locally and internationally. It was also mandated to create awareness of government policies, programmes and activities.

1.8 Significance of the Study

This study would be relevant to the Information Services Department as it revealed the various ways in which multimedia materials could be preserved to address any irregularity so as to ensure the longevity of the materials. This study would also be helpful to policy makers. This study would also be useful to other media organisations, as the study revealed issues concerning good preservation methods of resources and information services. Also the study would serve as a platform to encourage organisations to engage with each other and to express and share

information on the importance of preservation of vital records. Finally, the study would add to the body of knowledge in the field of preservation.

1.9 Organization of the Study

The study was organized in five chapters as follows;

Chapter one: This chapter dealt with the introduction which consists of background to the study, statement of the problem, purpose of the study, objectives of the study, conceptual framework, the significance of the study and chapter organization.

Chapter two: This chapter covered the literature review and covered the literature on specific areas related to the topic under study.

Chapter three: This chapter dealt with the methodology used for the study.

Chapter four: This chapter covered the analysis and presentation of the data collected and discussions of the findings.

Chapter five: This chapter provided the summary of findings, conclusion, and recommendations based on the outcome of the research.

REFERENCES

- Akussah, H. (2011). *Preservation of Documents*. Accra: NAB Superior Services.
- Akussah, H. (2003). *Preservation of Documentary Heritage in Ghana. 'The National Archives of Ghana in Focus'*: Unpublished PhD Thesis, Department of Information Studies, University of Ghana, Legon.
- Ametefe, J.M. (2008). *Introduction to Information and Communication Technology*. Accra: Jay Publications Limited.
- Cloonan, M. V. (2001). *Whither Preservation*. *Library Quarterly*, 71 (2): 231-242.
- Ministry of Information and Media Relations. Retrieved on 02/06/2014 from <http://www.ghana.gov.gh>
- Moore, R. (2008). "Towards a Theory of Digital Preservation." *International Journal of Digital Curation* 3, no. 1. Retrieved on 14/11/2013
From <http://www.ijdc.net/index.php/ijdc/article/view/63>
- Smith, J. and Schirling, P. (2006). *Metadata Standards Roundup*. *IEEE Multimedia*, 13(2): pp. 84-88.
- Wright, R., Miller, A. and Addis, M. (2009). "The Significance of Storage in the 'Cost of Risk' Digital Preservation." *International Journal of Digital Curation* 4, no. 3 (2009). <http://www.ijdc.net/index.php/ijdc/article/view/138>

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of related literature on preservation of multimedia materials. Review of related literature is an organized presentation of what has been published on the topic. The purpose of a literature review is to convey to the reader what is currently known regarding the topic of interest. It traces out the critical points of existing knowledge. Its main aim is to bring the researcher to the nascent information with current literature on the topic of interest and forms the basis for another goal, such as the justification for future research in the area. The purpose of the literature review may be many folds but usually it is the first step in the process of doing scientific research. The researcher has searched a lot of literature and reviewed only those studies, which are directly or indirectly related to the study. The review was outlined under the following thematic areas:

- History of multimedia materials
- Concept and Definition of Multimedia Resources
- Importance of Multimedia Resources
- Types of multimedia (Audio visual) materials
- Preservation of Multimedia Materials
- Use and Retrieval of Multimedia Resources

2.2 History of Multimedia (Audio visual) Materials

The invention of motion picture photography in 1826 launched a series of discoveries. One person should not be credited with its invention. After several decades, inventors working independently in many countries had developed several tools (film and video cameras) to produce motion pictures. In 1878, Eadweard Muybridge, an American photography, did make a series of motion pictures of a running horse by using glass plate film. Also, in 1882, Eitienne-Jules Marey, a French man and a scientist, invented a motion picture camera that recorded twelve separate images on the edge of a revolving disc of film. Later, in 1889, KODAK introduced a crude flexible film base known as celluloid (which still forms the base of film stock today). By 1893, Thomas Edision and his assistant developed a camera that produced short thirty five millimetre films (celluloid). It is important to note that motion pictures or film did not emerge as mass consumption; however, it came into being as a form of a Pee-Show-Box called the Kinetoscope designed by Thomas Edision which permitted only one person to view a short fifty-foot (50- foot) film at a time for twenty-five cents. By 1905, Lumiere Brothers, Louis and August projected some films in Paris (Gbande, 1996).

2.3 Concept and Definition of Multimedia Resources

Audio visual media in the form of television and video is known to have been used in many developing countries to provide development support information to rural and remote communities. Literature indicates that in most cases, these media helped to overcome communication barriers in non-literate societies and as a result achieved dramatic change in the life of the rural folks (Aduko, 2007).

The advent of computer assisted instruction has emphasized the primary function of audio/visual resources, which is to improve the efficiency and effectiveness of information dissemination. Principal among these as put out by Jorgensen and Jorgensen (2005) is how to move the citizenry from the rank of dreamers to that of achievers, transforming the socio-political country called Nigeria from being a mere geographical expression into a real nation.

Multimedia can include a range of formats from a simple PowerPoint to a complex interactive simulation (Learning Circuits) and in most cases is believed to enhance user experience and result in easier and faster understanding of the information presented. The concept of presenting information in various formats is not a new phenomenon, however when reviewing this concept in terms of multimedia it generally implies presenting information in various 'digital' formats for preservation access to information (Wright, Millar and Addis, 2009).

Barner(2012) defined multimedia material or audiovisual as a means of possessing both a sound and a visual component, such as slide-tape presentations, films, television programmes, church services and live theater productions. According to Nyahe (2001), the word "Audiovisual" consists of two Latin words "audio" which is derived from "audire" to hear and "visual", from visus- seeing or sight. Audio means the various means of recording and transmitting the human voice and other voices and other sounds for instructional purposes.

The American Heritage (2000) defines audiovisual as both audible and visible. The American Heritage further described audiovisuals as materials, such as films and tape recordings that

present information in audible and pictorial form: a corporation's audio-visual department. An aid, other than printed matter, that uses sight or sound to present information.

Many professionals in the field of audio visual preservation such as Edmondson has also defined multimedia materials differently to reflect his point of view on this important subject. According to Edmondson (2004) audio visual includes moving images such as films and electronic data, audio-slide shows, still photography and graphics as well as video games. Edmondson (2004) has further explained that audio visual ranges from filmstrip, microfilms, magnetic tapes, kinetoscope, videograms and any optical readable laser disc.

2.4 Importance of Multimedia Resources

According to Kosch et al (2005), multimedia materials have the potential to improve dramatically information transfer process in libraries. In spite of a growing diversity of media types in this century, the collections of most libraries remain predominately print based. Print is a powerful medium that has a major impact on the development of our highly technological civilization. However, like all types of media, it has both strengths and weaknesses. Primarily, the weakness of print is its use of a single sensory channel, reliance on a fixed, linear sequence of presentation, lack of interactivity, absence of built-in editing tools to create new intellectual works and restriction to single-user mode only (Kosch et al, 2005).

Döller and Coquil (2013) opined that multimedia resources can provide the user with a multisensory, nonlinear, highly interactive, edit-oriented, multiuser environment. To some degree, the reluctance of organisations to embrace traditional media materials reflects the fact that these materials come in a number of different formats, each requiring a different kind of

equipment. To Stegmaier et al (2010) multimedia computer systems can provide unified access to diverse types of media information via a single delivery mechanism. Multimedia computer systems also can significantly increase the communication potential of media materials by relating them to each other in totally new ways.

Within African societies, many multimedia materials especially music, photographs and films are useful for the transmission of culture. As cultural norms and values are constantly changing, one of the best ways of looking at the past is through the use of multimedia materials. The other way in which multimedia materials have been found to be very useful is in the study of history. Photographs and films as well as audio recordings of major historical events have been captured in multimedia formats (Setshwane, 2004).

2.5 Types of Multimedia (Audiovisual) Materials

There exist numerous audiovisual materials that the Information Service Department creates during its daily activities in meeting the communication and information needs of the people. These audio visuals may be classified into two audio visual and multisensory materials. According to Agbe (2007), audio materials are radio and text and pictures among others. Visual materials include filmstrips, pictures, transparencies, while the multisensory materials include the television, the video and the computer.

2.5.1 Radio

The ISD disseminates information to the general public and by so doing creates audio visual materials. According to Doh (1998), one of the most important components of radio is sound, whether it is in the form of music, narration to accompany text or to explain content or special

sound effects to enhance the action being displayed on the screen. The most common type of sound files incorporated into a multimedia application is “digital audio”, which is created by converting analogue sound (sound from microphone, a synthesizer, existing tape recordings, live radio and television broadcasts, popular CDs, etc.) using an analogue-to-digital converter. To play back this signal the computer’s sound card translates the digital information back into analogue sound using a digital-to-analogue converter.

Doh (1998) has further stated that radio acts as a facilitator to guide people’s understanding of issues being discussed. The sounds are said to involve people emotionally, adding desirable effective tones to learning and listening habits. The ISD as a disseminator broadcasts news and other important information through the radio. Nyahe (2001) contended that radio is used to send words, music, codes and other signals worldwide. It is mainly used for broadcasting and also very useful for educating the general public on vital issues such as Ebola virus for precaution measures to be taken by the citizenry.

2.5.2 Television (TV)

Television is an electronic device which transmits broadcast activities or programmes with motion pictures and sound. The TV maybe black and white or colour but can provide the same information for its viewers. Television provides education, entertainment and information to the general public therefore it has the ability to stimulate both senses of sight and hearing and this makes the TV, the most powerful multimedia material. The establishment of TV stations in Ghana such as Ghana Broadcasting Corporation (GBC), Metro TV, TV3, TV Africa and others has provided opportunity for Ghanaians to watch TV programs in different languages. GBC was

set up in 1956, by Dr. Kwame Nkrumah to produce local programmes such as Akan drama (Osofodadzie, Kantata, Obra), show case in Ewe like Dzigbordi Cultral Troupe, adult education and Thursday Theater have helped educate many people in Ghana. According to Coder (1993), the ability of television allows its viewers to see the live coverage of programmes that gives it a sense of reality.

2.5.3 Film and Video

The production of motion pictures involve a combination of a wide range of craft and science whether the images are to be shown in a cinema theater, on a television or through other audio visual medium. In addition, film and video are both recording media that is multimedia material (audio visual). Video record visual images and audio together on a magnetic tape while, film record optical images and sound separately. The usage of film has been in existence for a longer time before any medium such as multimedia. Before video arrived, the most effective medium used to inform, educate, entertain and communicate to Ghanaians nationwide was the mobile cinema van. The Information Service Department (ISD) used the mobile cinema van to disseminate information to rural communities on issues like agriculture, health, sanitation, family planning and community development (Ministry of Information, 2013). The fact remains that film is very expensive to produce and also more expensive to preserve. However, video production is less expensive in both recording and preservation. This new technology is therefore being used more often to propagate information than film (Edgar, 1981).

2.6 Preservation of Multimedia Materials

Organisations have always struggled against the physical destruction of their collections. Fires, floods, earthquakes, and wars have damaged the holdings of countless libraries, destroying forever much of the recorded history of human civilization (Schüller, 2008). Today, the greatest part of the multimedia heritage comprises products of the entertainment industry and of the so-called electronic mass media, radio and television. However, those who invented sound recording and cinematography had neither the music nor the film industry in mind when they developed methods to capture sound and moving images. It was the scientific interest in the nature of acoustical phenomena, specifically in the physics of the human speech that triggered sound recording. On the other hand, the interest in understanding movement to a level of detail that could not be analysed with the blank eye stimulated the development of film. Only a few years after their development, however, these new technologies became the backbone of commercially highly successful entertainment industries (Schüller, 2008).

Akussah (2003), defines preservation as activities associated with maintaining and keeping documentary materials away from destruction, to sustain their lifespan or actions taken to ensure the longevity of these materials either in their original physical form or in some other usable way. The process of preservation is very important in the whole operation of information management and its basic objective is to prolong the usable life of information resources whilst ensuring long-term access to them. Akussah (2003), further explained preservation as a branch of library, archive and information science concerned with maintaining or restoring access to artefacts, documents, multimedia resources and records through the study, diagnosis, treatment and preservation of decay and damage. Preservation of information resources embraces series of

activities associated with maintaining and keeping documentary materials away from destruction in order to sustain their lifespan. It also deals with all actions that will ensure the longevity of these materials either in their original physical state or in some other usable form.

Many scholars such as Akussah (2003), Ngulube and Magazi (2006) have defined preservation differently to reflect their point of view or perception on this branch of library and archival studies. Preservation is a crucial element in the whole operation of information material programme management. The major objective of preservation is to prolong the lifespan of useful information. According to Swartzburg (1983), preservation is the maintenance of objects in their original condition through retention, proper care and if the object is damaged, restoration. Preservation is the generic term, and includes all activities associated with the maintenance of resources and the preservation of information content. This is in contrast with conservation, which refers to the physical items themselves in order to extend their usable life (and restoration, which refers to treating damaged material to bring it to its near original condition).

Ngulube and Magazi (2006) defined preservation as a long-term access to information of value. By this definition, they are referring to both physical access and intellectual access. Physical access means that the materials are intact and in good state while intellectual access refers to facilitating the exploitation or use of its contents. According to Harvey (1994), preservation includes those specific policies and practices involved in protecting library and archive materials from deterioration, damage and decay, including the methods and techniques devised by technical staff.

New technologies have come to change the face of multimedia resources. According to Bradley (2007), the situation completely changed for audio from the mid-1950s onward, when transistorised and easily portable tape recorders became available that were able to produce sound recordings of good to excellent quality everywhere in the world. Since then, researchers equipped themselves with portable tape recorders and, later with inexpensive cassette recorders. He further stated that documents on film were expensive to produce and preserve. Until the late 1970s, when portable video home equipment opened new horizons for studies relying on moving image documents (Bradley, 2007). Musicology, dance research, or the documentation of traditional handicrafts and pre-industrial technology, greatly profited from video recordings. It should be emphasised that present day knowledge of the linguistic and cultural diversity is mainly based on multimedia documents, in their greatest part accumulated over past 50 years. In a world of accelerated globalisation, the significance of these documents reaches far beyond the mere academic world.

If the easy and inexpensive availability of audio visual recording equipment supported the production of audio visual research documents, it also created part of the problems being faced today. Only a smaller part of audiovisual research documents find their way to professional repositories, while the greater part is held by research institutions under sub-optimal preservation conditions, or still rests in the drawers of the researchers that have produced these resources which they use for their publications (Boston, 1998). This system of relative disorganization has worked reasonably well for the analogue formats, because to date, due to their relative physical and chemical robustness, the original carriers have more or less survived. Replay equipment is

still around and works somehow, which makes originals accessible, if necessary (Breen, et al, 2003).

However, over the past 10 years, the situation has changed dramatically. Digital technology has conquered audiovisual production, post-processing, and archiving. Audio has totally become part of the IT world, and video is about to follow the same way. The pace at which audio and video formats are becoming obsolete is breathtaking. The problem is not so much the survival of the original documents, but the availability of highly specialized replay equipment which disappears from the market soon after a format has been abandoned commercially. Today, audiovisual archives associations estimate the time window still open for the transfer of dedicated analogue and digital carriers into digital repositories to be not more than 20 years (Breen et al, 2003)

Breen (2003) explained further that, one of the notorious gaps in the field of multimedia preservation is an estimation of the total amount of materials stored in collections worldwide based on counts or at least serious estimations. Over the past years, the number of 100 million hours audio and 100 million hours video was frequently quoted from various sides. Agbe (2007) however, unveils that beyond materials held in audiovisual collections (in a narrower sense), an additional 50% is held in collections which may generally be subsumed under research or cultural collection. However, many of these holdings are products of the audiovisual recording industry and copies of radio and television broadcasts, hence duplicates, the preservation of which would not be the responsibility of their holders. The amount of unique research materials,

representing primary source materials of the linguistic and cultural heritage of mankind, remains unclear on the basis of the figures available.

Preservation does not simply happen on its own rather a well thought out plan must be drawn and managed. According to Barmer (2012), the fifth Law of Library Science stated that a “Library is a growing organism”. Libraries acquire materials of all kinds continuously, and promote the use of these acquired materials. Hence, more and more number of users want to access these materials. As more and more number of users use these materials, they are more likely to be damaged. To prevent this deterioration of materials which may affect the further retrieval of the contents, there is the need to adopt an array of appropriate management strategies.

According to Barmer (2012), modern libraries maintain collections that include not only printed materials such as books, periodicals, newspapers, and magazines, but also art reproductions, films, sound and video recordings, maps, photographs, microfiches, microfilms, CD-ROMs, computer software, online databases, and other media. In addition to maintaining collections within library buildings, modern libraries often feature telecommunication links that provide users with access to information at remote sites.

Barmer (2012) further contended that the basic objective of a library is to collect, organize, preserve, and provide access to knowledge and information. In fulfilling this objective, libraries preserve a valuable record of culture that can be passed down to succeeding generations.

Libraries are an essential link in this communication between the past, present, and future. Whether the cultural record is contained in books or in electronic formats, libraries ensure that the record is preserved and made available for later use.

Byamugisha (2010) suggested that adapting to new digital technology is vital for success in preservation of multimedia resources. Information about indigenous culture takes many guises: oral history in the form of narration and interviews; artifacts in the form of images and descriptions; songs in the form of audio recordings, music transcriptions, and lyrics, dances and ceremonies in the form of video, audio, written synopses, and interpretations. Multimedia resources allow such information to be integrated, recorded, browsed, and searched, within a uniform user interface. For example, Sreenivasulu (2008) reported that multimedia institutional repositories are very important to every nation. The resource centre of Nigeria Institute of Film and Television (NIFT) has rich collection of print and non-print materials such as books, slides, VHS tapes, journals, reports etc. It contains 4882 slides and 252 VHS tapes, but it is very difficult to view it because it requires a slide projector and VCR player. Sreenivasulu (2008) further explained that multimedia resources are stored on CD/DVD for preservation.

Malkin (2006) reported that the Baltic Library and Archive, England have a detailed preservation strategy. About 80 percent of collection is digital, the remaining 20 percent of the collection in different formats is being digitized. The Cassette tape collection has been digitized and disks are converted into the right format. These were converted again to MPEG-4 or MP3 for use on the database and are stored as uncompressed data on both DVDs and external hard discs .Shukla and

Chaturvedi (2004) reported that a multimedia system is a new information technology product that is modern information storage and communication devices and this solves the brittle books problem that dominates the preservation issues.

Rajendran & Yesudoss (2003) advocated that the multimedia resources such as educational video programmes must be preserved for future use. At present the Information Service department has all these available in a videotape formats (Video Home Services). Over a period of time, these videotapes are spoiled due to repeated viewing forming of dust, fungus etc. and the output of audio and video will not be visible and clear. Rajendran & Yesudoss (2003) further stated that to preserve these analogues format videotapes, they must be converted into digital format and stored in CDs or DVDs. CDs and DVDs have a shelf life of more than 100 years and occupy very little space as compared to VHS tapes. These CDs/DVDs can be played by using VCD player or computer with CD-ROM device.

Sahn (2003) noted in an article that preserving multimedia materials help protect photographs, slide collection, postcards, exhibitions etc. The video collection from analogue formats to DVDs in order to play via the server makes the access to the records better for preservation. Ashcroft (1993) explained the method of arrangement of the slides and photographs for preservation. Ashcroft contended that in order to preserve these, slides and photographs must be labeled and put in envelopes. Within the filing cabinets, suspension files must be used to hold the photographs and slide pocket files to hold the slides. Slide pocket files must be A4 in size, coming with their own suspension brackets like suspension files and they must be clear with

twenty punched pockets to hold 35mm slides. Photographs must be stored within ordinary envelopes.

2.7 Use and Retrieval of Multimedia Resources

Arisona (2010) stated that a user survey in the Department of Music in the Hong-Kong Baptist University library and through questionnaire discovered that participants used multimedia materials more frequently than other types of library materials. Arisona's (2010) study found that over 56 percent of all participants used multimedia materials weekly or monthly. Multimedia materials are considered very important by most of the bachelor students while most of the masters or post graduate students on the other hand believed that e-journals, databases, books and online music listening are very important to their academic and performance needs. It is clear from the survey results that multimedia collections would require future enhancements.

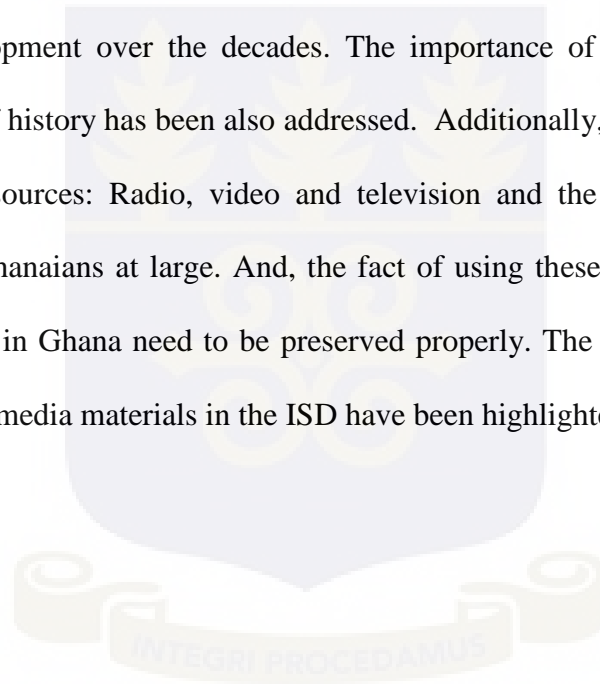
Jorgenson and Jorgenson (2005) have noted that image retrieval by researchers have ignored several fundamental user issues, including the differences between text and image retrieval. These user issues are especially germane with respect to image searching.

Othman (2005) developed a model of image retrieval tasks in the area of creative multimedia. A survey was conducted to compile 35 image retrieval tasks. The findings of the study reveals that images are mostly intended for analysis, decoration, design, illustrations, image processing and inspiration. The study also found that technical attributes, topicality and completeness are the most important relevance criteria. Technical attributes criteria include resolution, size, colour,

and dimensions. Users' keywords are of abstract and concrete elements and expressed in a visual way and as a subject. The study shows that out of 35 tasks, 33 tasks are relevant. Kar (2001) expressed his opinion that multimedia-based user orientation programmes can educate or instruct the user on how to retrieve and techniques to be used.

2.8 Summary

In conclusion, this chapter has carefully highlighted some areas on the history of multimedia materials and its development over the decades. The importance of multimedia to a nation, especially in the study of history has been also addressed. Additionally, the chapter reviewed the types of multimedia resources: Radio, video and television and the opportunities they have presented to ISD and Ghanaians at large. And, the fact of using these multimedia resources to disseminate information in Ghana need to be preserved properly. The bottlenecks that confront the preservation of multimedia materials in the ISD have been highlighted.



REFERENCES

- Aduko, V. A. (2007). *The role of Audiovisual Media in the dissemination of Information on the HIV/AIDS by Action Aid International Ghana in the Bongo District of the Upper East Region*. MA dissertation, University of Ghana Legon.
- Agbe, E. K. (2007). *The role of Audiovisuals in meeting communication and information needs of rural communities of cocoa growing areas in Ghana: a case study of Suhum-Krabo-Coaltar district of Eastern Region*. M.A dissertation, Information Studies, University of Ghana, Legon.
- Akussah, H. (2003). *Preservation of Documentary Heritage in Ghana. "The National Archives of Ghana in Focus"*. Unpublished PhD Thesis, Department of Information Studies, University of Ghana, Legon.
- Al-Essawi, M. H. K. and Nthuli, E. M. (2007). *Accentuating Border Conflicts and Water Privatization: The Southern African Development Community*. *Journal of Applied Sciences*, 7(2): pp. 536-540
- Arisona, S.M. (2010). *Designing and Implementing Computer-based Methods to Support Urban Design and Planning*. Digital Art Weeks Xi'an 2010, Keynote Address at the Research Symposium on Future Cities. Xi'an, China.
- Ashcroft, L. S. (1993). *Establishing a slide and photograph library*. *Library Management*, 14 (7): pp. 36-39.

- Barmer, K. (2012). *The Library is a Growing Organism: Ranganathan's Fifth Law of Library Science and the Academic Library in the Digital Era*. Library Philosophy and Practice e-electronic retrieved on 02/06/2014 from <http://unllib.unl.edu/LPP/>
- Boston, G. (1998). *Safeguarding the Documentary Heritage: A guide to Standards, Recommended Practices and Reference Literature Related to the Preservation of Documents of All Kinds*. Paris: UNESCO.
- Bradley, K. (2007). *Towards an Open Source Repository and preservation System. Recommendations on the Implementation of an Open Source Digital Archival and Preservation System and on Related Software Development*. Paris: UNESCO.
- Breen, M., Flam, G., Giannattasio, I., Holst, P., Pellizzari, P. and Dietrich Schüller, D. (2003). *Task Force to establish selection criteria of analogue and digital audio contents for transfer to data formats for preservation purposes*. International Association of Sound and Audiovisual Archives (IASA). Retrieved on 02/06/2014 from www.iasa-web.org/sites/default/files/downloads/.../taskforce.
- Byamugisha, H. M. (2010). *Digitizing library resources for new modes of information use in Uganda*. *Library Management*, 31 (1/2): pp.42-56.
- Coder, R. (1993). *Television: A powerful medium of communication*. London: Bowker Company Ltd. Pp 54-55.
- Cloonan, M. V. (2001). *Whither Preservation*. *Library Quarterly*, 71 (2): 231-242.

- Doh, V. (1998). School libraries and the use of audiovisual materials in the teaching and learning of French: A case study of some selected institutions in Accra and Somanya. MA dissertation, Information Studies, University of Ghana, Legon.
- Döller, M. and Coquil, D. (2013). *Digital Preservation: The Multimedia Standards way*. Retrieved on 03/12/2014 from http://ddp.nist.gov/symposium/papers/01_05_DPIF_Symposium_Mario_Doeller.pdf
- Edmondson, R. (2004) *Audiovisual Archiving: Philosophy and Principles*. Retrieved on 20/08/2015 from <http://www.unesdco.unesco.org/images/0013/001346>
- Edgar, D. (1981). *Audio visual Method in Teaching*. New York: Holt Rinehart and Wiston.
- Gbande, N. (1996). *The role of Film and Television for Development. A case study of Ghana Broadcasting Corporation*. Unpublished long essay presented to National Film and Television (NAFTI).
- Harvey, R. (1994). *Preservation in Libraries: Principles, Strategies and Practices for Librarians*. London: Bowker.
- Jorgensen, C. & Jorgensen, P. (2005). *Image querying by image professionals*. *Journal of the American Society for Information Science and Technology*, 56 (12): p.1346-1359.
- International Federation of Library associations (2003). *Audiovisual and Multimedia Section Guidelines for Audiovisual and Multimedia Materials in Libraries Draft*. Accessed 03/04/2014 from <http://www.ifla.org/VII/s35/pubs/avmgl03.html>.
- Kar, S. (2001). *Multimedia based user education program for library: A case study*. *Workshop on Multimedia and Internet Technologies*. Bangalore: DRTC.

- Kosch,H., Böszörmenyi, L., Dölller,M., Libsie, M., Schojer,P. and Kofler, A. (2005).*The Life Cycle of Multimedia Metadata* .*IEEE Multimedia*, 12(1): pp.80-86.
- Lekaukau, T. M. (1993). *Catering for User Needs with Special Reference to Botswana National Archives and Records Services*. *South African Archives Journal*, 35:24-32.
- Malkin, G. (2006). *Capturing BALTIC's memory*.*Records Management Journal*, 16 (3): pp. 149-158.
- Ministry of Information and Media Relations. Retrieved on 02/06/2014 from <http://www.ghana.gov.gh>
- Ngulube, P. and Magazi, L. (2006).*Protecting Documents against Disasters and Theft: The Challenge before the Public Libraries in KwaZulu-Natal*, South Africa *South African Journal of Library and Information Science*, 72(3): 185–197.
- Nyahe, G. (2001). *The role of audiovisual media in repackaging research findings for rural folk: a study of the oil palm research institute (OPRI) and the plant genetic resource centre (PGRC) of the council for scientific and industrial research (CSIR)*. MA dissertation, Information Studies, University of Ghana, Legon.
- Othman, R. (2005). *A model for image retrieval tasks for creative multimedia*. *Performance Measurement and Metrics*, 6 (2): pp.115-131.
- Rajendran, P., &Yesudoss, K. P. (2003).*Preservation of video programs for future use: Analog to digital media*. In BavaKutty, M., Veeran, M. C. K., &Salih, T. K. M. (Eds.), *Information access, management and exchange in the technological age* (pp. 249-260). New Delhi: EssEss.

- Sahn, M. E. L. (2003). *The multimedia library at Bibliotheca Alexandrina. The Multimedia Library: The centre of an information rich community*. Berlin: IFLA.
- Shukla, V. K., and Chaturvedi, N. (2004). *Role of multimedia in preservation of rare research library documents in the digital form. Herald of Library Science*, 43(3-4), 251-256.
- Sreenivasulu, M. (2008). *Building of multimedia institutional repositories: A case study of NIFT, Hyderabad*. National Conference on Digitization and Digital Preservation. Delhi: DESIDOC.
- Stegmaier, F., Döller, M., Kosch, H., Hutter, A., and Riegel, T. (2010). *AIR: Architecture for Interoperable Retrieval on distributed and heterogeneous Multimedia Repositories; In Proceedings of the 11th International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS2010)*. Italy: Desenzanodel Garda.
- Schüller, D. (2008). *Audiovisual research collections and their preservation: European Commission on Preservation and Access*. Retrieved on 01/06/2014 from http://www.tape-online.net/docs/audiovisual_research_collections.pdf
- Setshwane, T. (2004). *Managing Sound Recordings at Radio Botswana, MLIS Dissertation*. University of Botswana University of Botswana.
- Swartzburg, S.G. (1983). *Conservation in the library: A handbook of use and care of traditional and non-traditional materials*. Connecticut: Greenwood Press.
- Teygeler, R, De Bruin G., Wassink B. W. and Van Zanen, (2001). *Preservation of Archives in Tropical Climates: An Annotated Bibliography*. Comma: International Journal on Archives, 3 (4): 33- 257.

Wright, R., Miller, A. and Addis, M. (2009). "*The Significance of Storage in the 'Cost of Risk' of Digital Preservation.*" *International Journal of Digital4*, no. 3 (2009). <http://www.ijdc.net/index.php/ijdc/article/view/138>

Zinyengere, I. (2008). *African Audio-visual Archives: Bleak or Bright Future: A case study.* *News*, 46:37-41



CHAPTER THREE

METHODOLOGY

3.1 Introduction

In every research, there are procedures the researcher has to follow to meet its goal. These processes are methods the investigator uses to solve typical phenomenon. According to Akussah (2003), research in a scientific community is undertaken to solve problems of importance or to increase theoretical knowledge. To many scholars, the fundamental goal of research is to develop a general and systematic set of theories from which hypotheses can be generated and tested. Archives research has for a long time focused more attention on practical problems in the field rather than on theoretical issues.

This situation can be attributed to the fact that, most of the researches have been conducted by practitioners. With the establishment of archives and information management schools, the trend has gradual changed. To confirm the views from above, Busha and Harter (1980); Cloonan (1994) pointed out that preservation practitioners lead educators in the research field suggested that it was time archive school educators got involved in imaginative research to address increasingly complex preservation phenomenon that beset information management institutions.

The study adopted an interpretative or qualitative research approach. This section presents the method that was used to collect and analyze data in the study. This chapter consists of the research design, selection of subjects, population, sample size, sampling technique and

instrumentation. Qualitative methodology saves time, money and enables the researcher to get closer to the respondents.

3.2 Research Design

According to Aina (2000), a research design is a plan of study. The study adopted the qualitative method which provides the overall framework for data collection. The researcher used a case study technique in this research work because the use of a case study approach importantly leads to an in-depth understanding or investigation of an individual, family or an institution or a problem. Since this study is based on an in-depth analysis of preservation of multimedia documents in the Information Service Department, a case study technique was deemed appropriate. According to Opoku (2006), interpretative data describes, explains, and characterizes the subjects under investigation using words rather than numbers. Additionally, a qualitative researcher gets closer to the people who are being studied, in order to get in-depth results.

3.3 Population

According to Fraenkel and Wallen (1993) a population is a larger group to which a researcher hopes to apply the results of a research. This can be done by investigation and observation of an entire class or group, such as a study of preservation of multimedia materials. The population for this study is the staff of the Information Service Department (ISD) which consists of the Audio visual Unit, Photo Unit and Film Unit. Each of these units has its own Unit Head. The total population of the staff in the ISD at the time of the study was sixty (60) comprising twenty five (25) females thirty five (35) males. However, for the purpose of this study, the researcher

selected twelve (12) respondents out of the total population who were thought to be directly involved in managing the multimedia materials at the department. The respondents included those whose age ranged between thirty (30) and fifty five (55) years were considered the target group. The Film Unit had a staff strength of twenty two (22) made up of six (6) females and sixteen (16) males, the Photo Unit also had four (4) females and fourteen (14) males while the Audio visual Unit was made up of five (5) females and fifteen (15) males. This is illustrated in Table 3.1 below.

Table 3.1 Breakdown of Study Population

Units	Staff number	Male	Female
Film Unit	22	16	6
Photo Unit	18	14	4
Audiovisual Unit	20	5	15
Total	60	35	25

3.4 Sample Size

The sample size is defined as a small proportion of a population selected for observation and analysis according to Best and Kahn (1989). In the case study as this, the sample size for this research is made up of twelve (12) members of staff of the Information Service Department (ISD). The respondents include the three (3) Unit Heads and three (3) senior archivists from each units as well as six (6) other junior staff who are directly involved in managing multimedia documents. The other members of staff who are not directly involved with the multimedia materials are excluded from the study because they performed administrative and secretarial

work. Furthermore, the sample size does not include Public Record and Archive Administration Department (PRAAD) in this study because PRAAD did not have multimedia materials in its collections at the time the research was conducted. Even though, the Act has mandated PRAAD as an institution to have control and manage all government organizations' records in Ghana.

3.5 Sampling Technique

The Free Dictionary (2015) defines sampling technique as the methods used in drawing samples from a population usually in such a manner that the sample will facilitate determination of some hypothesis concerning the population. Due to the time limit and the type of study, the researcher adopted the purposive sampling technique to select the respondents for the study who had in-depth knowledge in the management of multimedia resources. The purposive sampling technique was used to ensure that the target respondents for the interview were not left out. As a result, twelve (12) respondents were selected for the study.

3.6 Instrumentation

Several methods are used to collect data. These include questionnaires, interviews and observation techniques. Research data was collected using the interview and observation techniques. Data collection instrumentations allow systematic collection of data to ensure that they are reliable and can be analyzed for the study.

3.6.1 Pre-testing / Validation

According to Office of the Auditor-General Canada (2007) pre-testing is the administration of the data instrument with a small group of respondents from the population for the full scale survey. In case problems arise in the pre-test, it only means that there is possibility that similar problems will occur in the next administration. Pre-testing or validation identifies future problems with the data collection instrument and finds possible solutions. Usually, it is very difficult to anticipate all the possible problems that will be encountered during data collection. This is because some respondents may not be able to answer the questions correctly therefore there is the need for pre-testing. Validation of questionnaire allows some adjustments to be made before the actual administration of the instrument.

In the case of this study, the questions were pre-tested using six (6) staff of Ghana Broadcasting Corporation (GBC) at the Audiovisual Library. The researcher selected GBC for this pre-testing because it is also a public organization which exhibits the same functions as the ISD. Besides, the pre-testing was undertaken at GBC due to proximity and time constraints. According to Bentil (2011), a pilot study helps to identify and eliminate ambiguous questions.

3.6.2 Interviews

According to Neuman (2006), an interview is a short-term, secondary social interaction between two strangers with the explicit purpose of one person obtaining specific information from the other. It is an interactive questioning session in a face-to-face situation, in which an interviewer poses selected relevant questions for a respondent to respond. Interviews can also be conducted using the telephone. There are three (3) types of interviews which include structured, unstructured and semi-structured. According to Tagoe (2009), face-to-face interview is usually

conducted using the structured and standardized interview schedule. He further pointed out that, this method allows the researcher to read out the questions to the respondents as the researcher records the answers. The researcher used recording and transcribing the responses between the researcher and the respondents. The study adopted the face-to-face interview for data collection.

The interview was conducted to elicit information on some issues pertaining to the preservation of multimedia materials, how they are processed, protected and stored. The information gathered helped the researcher to address the research questions.

An interview schedule was drawn for the members of staff at the Information Service Department. The interview schedule had 10 questions, and was divided into four (4) sections. In section one (1) questions covered environmental conditions, section two (2) dealt with how multimedia materials were processed, stored and protected, section three (3) had questions on technology in place to preserve multimedia materials and section four (4) questioned the skills of the staff to meet new technological change.

3.6.3 Observation

Apart from interview, observation was also used in data collection. According to Kumar (2005), observation is a powerful systematic and selective way of watching and listening to an interaction or problem as it takes place. The observation was used to reinforce the information gathered through the interview so as to establish an in-depth understanding of preservation of multimedia materials at the Information Service Department.

Salkind (2003), states that observation as a data collection instrument is where the researcher stands outside the behaviour being observed and creates a log, note or an audio or video record

of the behaviour. He further explains that observation is useful when the respondents fear to provide inaccurate information and it is also helpful to overcome issues of validity or bias.

The researcher observed without taking part in any of the activities being undertaken by the staff of ISD. The staff in the various units and equipment that was available to them. The investigator also observed how multimedia materials were processed, stored, protected and retrieved.

3.7 Mode of Data Collection

Fraenkel and Wallen (2002) state that collection of data is an essential activity of all research study. The researcher adopted the observation and interview technique as a source of gathering primary data. Data was collected in phases.

Stage 1. An appointment was booked with the Director of Information Service Department.

Stage 2. The researcher scheduled a time with the participating officers to explain what the study was all about.

Stage 3. Face to face interview was conducted in the offices of the respondents. This was done by observation, recording and transcribing their responses.

3.8 Data Analysis

Interpretative data analysis technique was adopted to analyze the responses collected from the respondents. Interpretatively, content analysis was used based on logical deduction instead of using mathematical methods to explain the data collected.

3.9 Ethical Considerations

A letter of consent was sent to the Information Service Department seeking prior permission to undertake the study. The respondents were assured of their anonymity and confidentiality of the information they provide with regard to the study. I have abided by the University of Ghana code of conduct in carrying out this research and that the data was not manipulated.



REFERENCES

Aina, L.O. (2004). *Library and Information Science Text for Africa*. Ibadan: Third World

Information Service Limited.

Akussah H. (2003). *Preservation Documentary Heritage in Ghana: The National Archives of Ghana in Focus*, Unpublished Ph.D. thesis, Department of Information Studies, University of Ghana, Legon).

Bentil, W. (2011). *The use of Electronic Resources in Ghanaian University: a comparative study of the University of Cape Coast and Central University College*. Mphil thesis, Department of Information Studies, University of Ghana.

Busha, C.H. and Harter, S.P. (1980). *Research Methods in Librarianship: Techniques and Interpretation*. New York: Academic Press.

Coder, R (1993). *Television: A powerful medium of communication*. London: Bowker Company Ltd.

Cloonan, M. V. (2001). *Whither Preservation*. *Library Quarterly*, 71 (2): 231-242.

Fraenkel, J.R. and Wallen, N.E. (1993). *How to Design and Evaluate Research in Education* 4th ed. Boston: MacGraw-Hill.

Gracy, K.F. and Cloonan, M.V. (2004). *The Preservation of Moving Images*, in Frederick C. Lynden (ed). *Advance in Librarianship*, 27 (27): 49-95.

Kumar, R.(2005) *Research Methodology: A Step by Step Guide for Beginners*. 2nded
London: Sage Publication pp. 121- 179

Neuman, W.L. (2006). *Social Research Methods; Qualitative and Quantitative Approaches*

6thed. New York: Pearson Education.

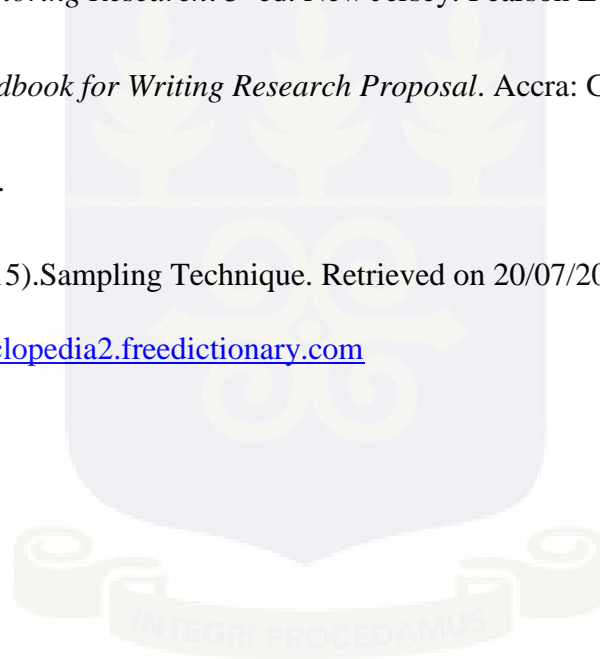
Office of the Auditor-General of Canada (OAC), (2007). Conducting survey, pre-testing data collection instrument. Available at http://www.org-bvg.gc.ca/internet/English/methgdee_19734.Hmt. Retrieved on 25/08/15

Opoku, J.Y. (2006). *Tutorials in Inferential Social Statistics* 2nd ed. Accra: Ghana Universities Press.

Salkind, N.J. (2003). *Exploring Research*. 5thed. New Jersey: Pearson Education Inc.

Tagoe, M. (2009). *A Handbook for Writing Research Proposal*. Accra: Ghana Universities Press.

The Free Dictionary (2015). Sampling Technique. Retrieved on 20/07/2015 from <http://www.encyclopedia2.freedictionary.com>



CHAPTER FOUR

PRESENTATION OF DATA, ANALYSIS AND INTERPRETATION OF FINDINGS

4.1 Introduction

Having been granted permission by the management, three (3) Unit Heads in the Information Service Department (ISD) and three (3) archivists as well as other six staff members of the Department were interviewed. It must be pointed out that the interview questions sought to elicit information on how multimedia materials were preserved from the respondents' point of view concerning the study. The interview questions were arranged under three main subheadings: environmental conditions under which the ISD preserved its multimedia materials, determining how documents were processed, stored and protected, technology used for the preservation of materials and skills of staff to meet new technological changes.

According to Cooper and Schindler (2004), data analysis usually involves reducing accumulated data to a controllable size, developing summaries, looking for patterns, and applying techniques to the findings. Cooper and Schindler (2004) further stated that researchers must interpret their findings in accordance with the research questions or determine if the results are consistent with their hypotheses and theories. Hence, this chapter discusses the results within the framework of the objectives and research questions.

4.2 Preservation policy

The Information Service Department (ISD), though mindful of the need to review how multimedia materials are preserved, does not have a handy documented policy with regard to

how multimedia resources in the Department are preserved. The regulatory and policy framework on records are the responsibility of the Public Records and Archives Administration Department (PRAAD). However, the ISD has within its ranks archives staff posted there to aid the department in its multimedia resources management process. It must be noted that the multimedia materials are public records. The PRAAD Act 535 defines public records, as records that belong to the Republic of Ghana created, received and maintained. Hence, the ISD applies records management standards set by PRAAD in the handling of its multimedia resources.

The ISD has been monitoring the state and condition of the multimedia resources preservation ever since it was established. Again, the ISD periodically mobilizes the heads of the three units, three archivists and other staff members to physically inspect the print and non- print materials. For example, the non- print materials are played back as much as possible. The print materials are dusted regularly to prevent dust settling on them.

4.3 Environmental Conditions under Which the ISD Preserves Its Multimedia Materials

According to Kademani, Kalyane and Kumar (2003), environmental conditions and methods of storage have a great influence on the preservation of documents. Control of the environmental conditions and the provision of good storage conditions constitute the best preventive measures or regulations. In order to find answers to this objective of the study, these questions were set to solicit information on the environmental conditions under which the ISD preserved its multimedia materials such as:

- How multimedia materials were processed?

- Under which conditions were the multimedia records protected?
- What was the temperature level at the storage area?
- Whether air conditioners were in place to regulate the temperature of the materials of the storage room?

From answers to the first question it came out that multimedia materials were processed by sliving them. Sliving is a soft material in which negatives are put and stored in an air-conditioned room because when dust settles on it damages the negatives. The Film Unit Head stated that due to the sensitive nature of the negatives of the films they had noticed that when the temperature was above 20^C the negatives became bulky and the heat made the negatives swollen therefore damaging the materials.

These findings confirmed Ogunmodede and Ebijuwa's (2013) assertion that much research had not been done on finding out the ideal condition of humidity and temperature for the storage materials. The Film Unit Head further stated that the ideal humidity between 40% and 65% and the temperature between 18^C and 20^C were good for conservation of electronic records. Ogunmodede Ebijuwa and Oyetola (2013) indicate that it is very difficult to control atmospheric conditions, which are constantly fluctuating.

The archivist at the Film Unit made the point that the control of temperature and humidity inside the room implied their constant measurement. A number of sensitive instruments were available for measuring temperature and humidity. These instruments were the recording type and made it

possible to record temperature and humidity, or both over a length of time. The archivist further explained that too much of relative humidity or too little of it was equally dangerous. The recording instruments helped the staff to know the actual condition of humidity. It was necessary to find out the humid materials and to maintain the right humidity. During the hamathan season, relative humidity falls below 50% and the atmosphere becomes dry. Two respondents also explained that it was necessary to increase the content of moisture in the air.

Sunil and Kumar (2009) have suggested the use of air conditioners in storage area was ideal. The use of thermometer and barometer were necessary to check temperature and relative humidity level in the storage area. The findings also supported Akussah's (2011) assertion that temperature in the storage area needs to be monitored often.

The Audio Visual Unit Head interviewed stated that in order to have good storage of the multimedia materials, high quality pen drives and computer hard drives were used in storing them. The respondent further added that the above storage devices were also used to preserve the materials from damage. To this finding, Ogunmoded Ebijuwa and Oyetola (2013) pointed out that dust accumulates quickly in records centres, so it is necessary to remove it regularly.

The three archivists from each Unit interviewed also stated that dusting could not be done properly with cloth or brush or hands, because particles of dust rise into air and again settle down in some other part of the room or on other shelves. To overcome these problem storage rooms should use vacuum cleaners. Vacuum cleaners also helped in saving a lot of time otherwise spent on broom and cleaning.

4.4 Determining How Multimedia Records Were Processed, Stored and Protected

On how multimedia records were processed, stored and protected two archivists one from the Photo Unit and the other from Film Unit respectively explained that the Information Service Department (ISD) processed most of its multimedia materials on CDs, video tapes and stored them in dust free containers, computer hard drives and wheels. Other materials were also stored in fire proof cabinets with labels determining the type of coverage and information contained therein.

The Head at the Film Unit interviewed also said that he had his own way of protecting the multimedia materials by making sure that the storage area was clean. The Audio visual Unit Head interviewed also revealed that the old and relevant multimedia materials were appraised while the ones with no further value to the ISD were disposed of. The archivist at the Film Unit said that appraisal helped manage space in the storage area.

The Head of Audio Visual Unit and the archivist at the Photo Unit cautioned that staff needed not to underestimate the importance of differences among formats. There was, nonetheless, a consensus around the basic issues, if not necessarily around solutions. The issues, which include technical obsolescence and standards, metadata, information security, and the overall architecture of the system, were by no means discrete. For example, standards affect creation as well as preservation.

The Film Unit Head pointed out that, the longevity of the storage medium was a consistent concern just as signal degradation and software obsolesce. The archivist at the Photo Unit

advised that degradation be compared with the process by which a photograph ages. The image fades and the medium on which the image was printed also disintegrates. There were methods for error detection; however, the archivist at the Film Unit pointed out that, sometimes the integrity of the digital object was compromised.

The Head at the Film Unit further added that one solution to preservation of multimedia material was to migrate them from one medium to another. However, the three Unit Heads were of the view that whether to use sampling/compression strategies (particularly if the object was made available for example, Joint Photographic Experts Group [JPEG] or Motion Picture Experts Group [MPEG] format), the extent to which migrating the information introduced errors if the data were sampled, and the implications of migrating formats for version control and integrity.

In addition, the archivist at the Photo Unit made the point clearly that when a digital work was migrated from one format to another some amount of quality might be lost as far as technology was concerned therefore, care needed to be taken when migrating materials. So in the case of recorded sound, for example, would improvements to fidelity resulting from more sophisticated software technology compromise the integrity of the original, since it was no longer truly the artist's treatment of a work and misrepresents the recording technology of time. At least the Head at the Audio Visual Unit, who was an expert in sound recording did not consider this to be a serious problem but did acknowledge the fact that, the rules for the successive formats needed to be retained.

On the other hand, the Head from the Film Unit noted that while standard archival practices call for refreshing the data through migration and emulation, these strategies might be inadequate for handling the intricacies, interdependencies, and sheer volume of television content. For film and television, this had resulted in attention to selection and collection policies as well as highlighting the importance of metadata as a management tool.

The Head at the Audio Visual Unit interviewed further remarked that in order to preserve pictures as digital data and ensure their accessibility for the third generation, the pictures' file format should remain usable for many years to come. He also stated that, at present the saving format of commonly-used digital pictures were compliant with standardized file formats which have relatively good future prospects. However, they also may become obsolete any time. There were also issues in relation to the record media. The Head from the Photo Unit noted that, the ISD needed to convert picture files to a new medium before the present record medium became unplayable due to the end of its life span. Whenever the specification of a medium became obsolete because of the change of the times, the department had to copy it to a new medium in each case.

The Head at the Film Unit point of view was that, conservation of multimedia materials required continuous cost which would be a great burden for the ISD or individuals. Other approaches that the department could think of was to preserve pictures by having them printed on photographic paper for silver halide photography in photo studios. Silver halide photography is traditional photographs printed on film. The archivist at the Film Unit pointed out that, the life of the paper for silver halide photos lasts between 100 and 150 years when stored in an appropriate

environment. It also had a merit that no special measure was required once a proper storage space was secured. Nonetheless, physical deterioration was inevitable with this method. The archivist further added that the ISD could do well and practice the best way of preserving multimedia materials.

4.5 Technology for Preserving Multimedia Materials

The findings on technology used for the preservation of multimedia materials revealed that the ISD used technology to preserve multimedia materials created by the organization in three formats such as technical preservation, emulation and migration of the documents. With technical preservation, two Unit Heads from Photo and Film Units and one archivist from the Audio Visual Unit respectively indicated that multimedia materials were maintained in the original state or software, and sometimes hardware, of the original operating environment. These findings support Akussah's (2003) assertion that digital repositories need to continuously sustain the technologies on which they thrive. Akussah (2003) has further explained that there is the need for technological sustainability for range of preservation strategies, regular and timely upgrades and replacement of hardware and software.

Furthermore, the two Heads from Audio and Photo Units further added that other techniques used for preserving multimedia materials were through emulation and migration method. In order to prolong the lifespan of the materials, they were re-created in the original operating environment by programming future platforms and operating systems to emulate the original environment. To this finding, UNESCO (2000) confirmed that these technologies improve the reproduction of original material.

For the migration method, the archivist from the Film Unit said that, documents had to be transferred to new platforms before further production. This was in conformity with what Olatokun (2008) has also stated that it is the responsibility of the staff to keep these materials in good physical condition so that they are available for users at all times.

4.6 Preservation method used for multimedia materials

Preservation does not simply happen on its own. A well planned strategy must be drawn and managed (Clayton and Gorman, 2001). As these multimedia materials are continuously being used, they are more likely to be damaged. To prevent this deterioration of materials which may affect further retrieval of the contents, there is the need to adopt appropriate management strategies. Environmental conditions and methods of storage have a great influence on the preservation of documents. Control of the environmental conditions and the provision of good storage conditions constitute the best preventive measures (Kademani, Kalyane and Kumar, 2003).

The study also revealed that as technological software normally became obsolete in no time, reproduction methods were used to create multimedia materials in compatible format so that when the technology used became obsolete it could be used in the new software or by creating online versions. The study also revealed that backups were created for important multimedia materials which served as national heritage and other relevant events that need to be protected and preserved for posterity and deposited outside the ISD.

Observations made by the researcher confirmed that the ISD was somehow applying preservation methods especially in keeping the multimedia materials under dust protected environment.

4.7 Skills of staff to meet new technological change

In every environment, staff need to be abreast with existing and new methods of preserving multimedia materials. From the interview conducted, it was revealed that junior staff and cleaners who were responsible for the cleaning of the records storage area, regularly were educated on the importance of preventative measures at staff meetings and through staff reports. In addition, every member of staff was made to understand the whole preservation framework. From the researcher's observation, it seemed some preservation methods were embraced as a matter of importance for all the staff of the ISD and not simply conservators or the units set aside for preservation or that member of staff responsible for it.

4.8 Staff Training

Furthermore, as part of the objectives of the study, the researcher set out to find out whether or not the ISD organized regular training for its staff to impart the requisite skills and knowledge in preservation of multimedia materials. According to Obisi (2011) training is a performance development process to foster learning new techniques and methods to perform jobs with the fullest efficiency and effectiveness. Mottey (2013) has stated that successful training and

development programmes assist the strategic requirement of an organization and also satisfies the individual needs of the people working in it.

4.8.1 Frequency of Training

The study looked at how often staff were trained and equipped with necessary skills to meet modern technological challenges of handling multimedia materials. It was revealed that, staff were trained once in a while and when the need arose in order to gain job knowledge so as to expand their horizons of preservation management. A study by Obisi (2011) has further noted that training of staff enhanced their performance if the management used diverse IT based systems to train them. The respondents of the Information Service Department informed the researcher that no regular training was carried out except as and when the demand arose was quite worrying since the ISD produced more multimedia materials. This could be improved when staff received regular training. Yang and Konard (2010) have suggested that with the help of regular training of staff business success is guaranteed.

Furthermore, the study also showed that the Heads of the various units were of the view that training of staff had been low since the establishment of the ISD. They further agreed that apart from the normal orientation when one was employed there was no other regular training or any intensive refresher courses on preservation of multimedia materials. The Head from the Film Unit added that there were plans to augment training programmes on how to protect multimedia materials for all staff that needed to be trained.

4. 9 Challenges of Preserving Multimedia Materials

One of the objectives of study was to find out whether the Information Service Department(ISD) faced challenges in preserving its multimedia materials. It was identified that ISD had a myriad of challenges which ranged from funds, space, policy, logistics and storage conditions. The aim was to analyze the situation of multimedia materials collections, to summarize their specific problems, and to point out possible solutions. The Head at the Film Units agreed to the fact that, the ISD was faced with technical challenges of multimedia materials preservation, safeguarding the master files, signal extraction from originals, typical organizational structures of audiovisual research collections, possible strategic measures to solve the preservation problems and international, European, and national cooperation.

4.9.1The Technical Challenge of Multimedia Materials Preservation

All the three Heads from the respective units noted that multimedia materials could only be preserved by adopting a new paradigm of preservation. Any attempts to preserve the original copies of multimedia documents needed classical paradigm as sooner or later they are bound to deteriorate so much that their contents cannot be retrieved. Additionally, the three archivists from the various units interviewed mentioned the fact that, the rapid pace of technological development or advancement made recording systems and formats obsolete in ever shorter cycles, leaving even carriers in excellent condition without dedicated replay equipment and consequently useless.

The Head from the Film Unit said that, the multimedia resources preservations must concentrate on content, by digital migration from one preservation platform to the next. Contents from

analogue carriers had to be digitised first. The ethical and strategic principles for video and audio must be laid down in a standard document which in its principles can also be applied for video archiving.

4.9.2 Signal Extraction from Originals

The study also found that audio and video preservation was demanding in many respects. Signal extraction from originals needed to meet highest standards, as differently to digitisation of text and images, original ultimately would be lost and the digital archival master had to serve as a faithful replica of the original. It was imperative to have modern replay equipment ready for all original formats, to be kept in good working condition by experienced specialists. There was general agreement from the respondents that format obsolescence and the lack of replay equipment was a greater threat than carrier decay. The time window left to transfer contents from analogue and single digital carriers to digital repositories successfully was estimated to be not more than 20 years.

4.9.3 Safeguarding the Master Files

Another challenge stated by the respondents at the ISD was that preservation of audio and video materials was safeguarding the master files, which included data integrity checking, refreshing of data if needed, and migration of data to new preservation platforms in time to avoid loss of information through obsolescence. They further stated that the specific challenge related to multimedia files required large space for storage. One hour of audio and visual required large volume of space therefore, this made audio and video data the most voluminous of documents. Awareness of these challenges, and consequently the readiness to promote and fund digital long-

term preservation, had only recently developed, considerably for content conversion from analogue to digital.

The Head at the Audio visual Unit noted that, the preservation of multimedia materials was in demand of storage capacities considerably exceeding those for text documents, there was an inherent danger that in such general contexts multimedia materials preservation standards may not fully be adhered to, specifically for video documents, in order to save on costs for storage space.

4.10 Film Preservation

From the study it came out clearly that the Information Service Department (ISD) faced challenges of preserving films. To this, Bradley (2007) has pointed out that film preservation was another challenge and if not properly stored in a fairly stable format and under desirable condition it will be damaged. From observation it could be said that obsolescence and maintenance of replay equipment was not a matter of concern, while digitisation for preservation was presently unviable, because of the high resolution that film documents offer, which would create enormous storage requirements. The study had also unveiled that outside film archives proper; the ISD held 8mm and 16 mm film documentary materials, part of which may be unique source material. The film footage in relation to audio and video material, however, made this issue a matter of concern. Under the prevailing general situation as outlined above, there was a serious risk that the situation of multimedia materials preservation in the ISD would go from bad to worse if care was not taken due to technological advancement.

From the researcher's point of view multimedia materials without specific preservation programmes in principle would be the most endangered group of collections. Here, the researcher identified that lack of appropriate awareness and very typically the lack of financial means to preserve the materials properly would make the ISD irrelevant in historical information. This awareness, however, is generally accompanied by the lack of means to actively preserve these materials.



REFERENCES

- Akussah, H. (2003). *Preservation of Documentary Heritage in Ghana. "The National Archives of Ghana in Focus"*, Unpublished PhD Thesis, Department of Information Studies, University of Ghana, Legon.
- Akussah, H. (2011). *Preservation of Documents*. Accra: NAB Superior Services.
- Bradley, K. (2007). *Towards an Open Source Repository and preservation System. Recommendations on the Implementation of an Open Source Digital Archival and Preservation System and on Related Software*
- Clayton, P., & G. E. Gorman. (2001). *Managing information resources in libraries: Collection management in theory and practice*. London: Library Association.
- Cooper, D.R. n Schindler, P.S. (2004). *Business Research Methods*, 12th ed. Boston: McGraw-Hill Education.
- Kademani, Kalyane n Kumar (2003). Kademani B. S., Kalyane V. L. and Vijai Kumar (2002), A. H. Zewail: Research Collaborator par excellence, *Scientometrics*, Vol. 53, No. 1, pp. 113-121. (HU ISSN 0138 - 9130)
<http://eprints.rclis.org/archive/00001505/>
- Mottey, E. (2013). *Information Management and Tax Administration in Ghana: A Case Study of the Domestic Tax Revenue Division of the Ghana Revenue Authority, Head Office Accra*. MA thesis to University of Ghana, Legon.

Obisi, C (2011). *Employee Training and Development in Nigeria: Some Observation and Agenda for Research*. Aust. J. Bus. Manage. Res. 1(9), 82-91.

Ogunmodede, T.A., Ebijuwá, A. S. &Oyetola, S.O. (2013). Health Information Needs and Information Sources of Pregnant Women in Ogomoso Metropolis, Oyo State, Nigeria. Library Philosophy and Practice (e-journal) Libraries at University of Nebraska-Lincoln, DigitalCommons@University of Nebraska – Lincoln.

Olatokun, W. M. (2008). *Gender and National ICT Policy in Africa: Issues, Strategies and Policy Options*, *Information Development*, 24, 53-65 at <http://idv.sagepub.com/cgi/content/refs/24/1/53>, accessed 25/03/2014

Sunil n Kumar (2009). Joshi, Sunil Kumar,J.S. (2009). *Use of Information Technology in Medical Education* (February 5, 2009). *Modern Trends in Medical Education*, pp. 81-87, 2009. Available at SSRN: <http://ssrn.com/abstract=1518954>

United Nations Educational, Scientific and Cultural Organization (UNESCO, 2000) Reports and on Mass Communication, No. 51

Yang, Y. & Konrad, A.M. (2010). Diversity and organizational innovation: *The role of Employee involvement. Journal of Organizational Behavior*, 32(8):pp. 1062–1083.



CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the study's findings in line with the research objectives, and the conclusion based on the findings. Recommendations have also been made based on the findings as well as suggestions of areas for further research.

The specific objectives of the study were to:

- To find out the environmental conditions under which ISD preserved its multimedia resources.
- Determine how multimedia resources were processed, stored and protected.
- To find out the kind of technology in place for the preservation of materials.
- To assess the methods the staff used to preserve multimedia materials in ISD.
- To find out whether the staff had the requisite skills and knowledge for managing multimedia materials.
- To make recommendations for improvement.

5.2 Summary of Findings

The study has been summarized based on the objectives to the study. The study examined preservation of multimedia materials using the Ministry of Information and Media Relation as a case study but specifically the Information Service Department (ISD). The summary was presented under the following sub-headings: environmental conditions under which the ISD preserved its multimedia materials, determining how multimedia records were processed, stored

and protected, technology in place for the preservation of materials, skills of staff to meet new technological change and challenges of preserving multimedia materials.

5.2.1 Environmental Conditions under Which the ISD Preserved Its Multimedia Materials

The first objective to the study was to find out the environmental conditions under which the Information Service Department (ISD) preserved its multimedia materials whether preservation methods were followed. After the analysis of data it was identified that multimedia materials created by the ISD were stored in air-conditioned rooms to avoid dust to settle on them and also to regulate the temperature of the storage area for constant temperature regulation around materials to ensure long life span of the materials. However, currently all the air conditioners had broken down and the multimedia materials were deteriorating. In addition, the study found out that in recent times, there have been serious roof leakages therefore, making preservation of multimedia materials very difficult.

5.2.2 Determining How Multimedia Records Were Processed

Pertaining to how multimedia records were processed and stored, it was revealed that multimedia materials were put on CDs, CD-ROM, video tapes and stored in dust free containers, computer hard drives and wheels and fire proof cabinets in order to protect them from fire and other disasters associated with it.

5.2.3 Technology in Place for the Preservation of Materials

From the results of the analysis, the study found out that the ISD had some form of technology in place to preserve its multimedia materials although, this technology had become obsolete

overtime. Some of the multimedia resources were copied and stored online and other IT facilities such as computer hard drives, CDs and DVD formats. In addition, the study also revealed that technological facilities were used to change format of the documents without destroying the original format so that it could be used on new softwares.

5.2.4 Skills of Staff to Meet New Technological Changes

The results of the study revealed that management had not been able to organize regular training for staff in charge of preserving the multimedia materials. However, the few training programmes had been held during orientation sessions when employees were first taken. From the results of the analysis, it was also revealed that training was held when the demand arose. The study also found out that the ISD was trying to organize regular training to equip its staff with the requisite skills for the management of multimedia materials due to its sensitive nature of preservation.

5.2.5 Challenges of Preserving Multimedia Materials

The researcher identified the following challenges:

- The department lacked the skilled technical staff to preserve the multimedia material in their custody.
- The department also lacked adequate funding to carry out intended preservation programmes
- The infrastructure to store the multimedia materials were old and obsolete.
- The staff of the ISD lacked motivation to work.
- The ISD also lacked logistics to carry out its preservation activities.

5.3 Conclusion

To conclude based on the finding of the study, every institution whether, public or private, ought to have a policy on every aspect of work which will serve as a yard stick with which all activities would be measured. This study has presented information on the status of multimedia materials preservation in ISD and provided recommendations on how the current situation can be improved. The study has also shown that the staff of ISD faced many challenges with regard to techniques, policy governing the management of multimedia materials and technological changes. As a result, ISD risks losing a lot of its heritage materials forever, unless the department takes appropriate measures to implement adequate multimedia material preservation programmes.

5.4 Recommendations

The recommendations below are made based on the findings of the special focus on how to improve multimedia material preservation and also to improve the work of the staff of Information Service Department (ISD).

5.4.1 Preservation Policy

Based on the findings the ISD should formulate policies on multimedia material preservation. The policy should include appropriate preservation guidelines to help the ISD staff perform their work. The ISD with the assistance of PRAAD should formulate multimedia material preservation policy as provided under the PRAAD Act - 1997 (Act 535).

5.4.2 Staff Training

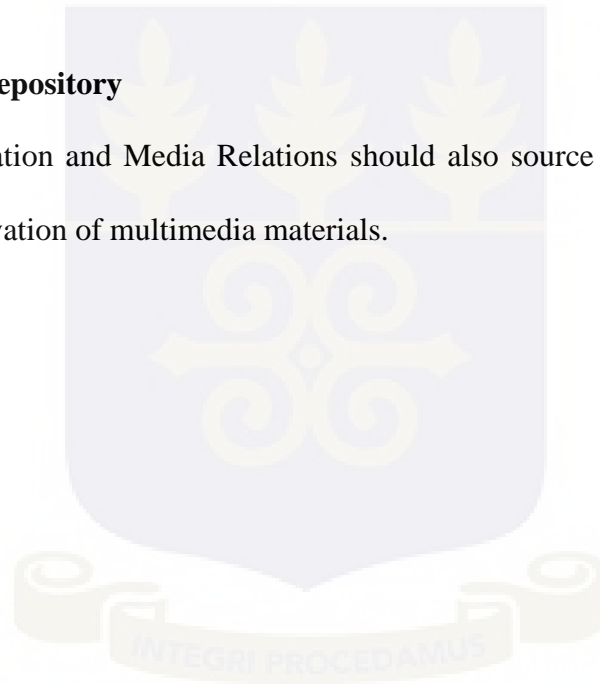
The ISD should also sponsor its staff to undergo regular training to equip them with modern skills in preserving multimedia materials so that they will be abreast with time.

5.4.3 Disaster Preparedness Policy

In addition, the Information Ministry and Media Relations should make funds available for a proper disaster preparedness policy. This policy must be adhered to by all ISD staff.

5.4.4 Construction of Repository

The Ministry of Information and Media Relations should also source funds to build a modern repository for the preservation of multimedia materials.



BIBLIOGRAPHY

Aduko, V. A. (2007). *The role of Audio visual Media in the dissemination of Information on*

HIV/AIDS by Action Aid International Ghana in the Bongo District of the

Upper East Region. MA dissertation, University of Ghana, Legon

Agbe, E. K. (2007). *The role of Audiovisuals in meeting communication and information needs of rural communities of cocoa growing areas in Ghana: a case study of Suhum-Krabo-Coaltar district of Eastern Region.* M.A dissertation, Information Studies, University of Ghana, Legon.

Al-Essawi, M. H. K. and Nthuli, E. M. (2007). *Accentuating Border Conflicts and Water Privatization: The Southern African Development Community.* Journal of Applied Sciences, 7(2): pp. 536-540.

Aina, L.O. (2004). *Library and Information Science Text for Africa.* Ibadan: Third World Information Service Limited.

Akussah, H. (2011). *Preservation of Documents.* Accra: NAB Superior Services.

Akussah, H. (2003). *Preservation of Documentary Heritage in Ghana.* “*The National Archives of Ghana in Focus*”, Unpublished PhD Thesis, Department of Information Studies, University of Ghana, Legon.

Ametefe, J.M. (2008). *Introduction to information and communication technology*. Accra: Jay Publications Limited.

Arisona, S.M. (2010). *Designing and Implementing Computer-based Methods to Support Urban Design and Planning*. Digital Art Weeks Xi'an 2010, Keynote Address at the Research Symposium on Future Cities. Xi'an, China.

Ashcroft, L. S. (1993). *Establishing a slide and photograph library*. *Library Management*, 14 (7): pp. 36-39.

Barner, K. (2012). *The Library is a Growing Organism: Ranganathan's Fifth Law of Library Science and the Academic Library in the Digital Era*. *Library Philosophy and Practice* e-electronic retrieved on 02/06/2014 from <http://unllib.unl.edu/LPP/>

Boston, G. (1998). *Safeguarding the Documentary Heritage: A guide to Standards, Recommended Practices and Reference Literature Related to the Preservation of Documents of All Kinds*. Paris: UNESCO

Bradley, K. (2007). *Towards an Open Source Repository and preservation System. Recommendations on the Implementation of an Open Source Digital Archival and Preservation System and on Related Software Development*. Paris: UNESCO.

Breen, M., Flam, G., Giannattasio, I., Holst, P., Pellizzari, P. and Dietrich Schüller, D. (2003). *Task Force to establish selection criteria of analogue and digital audio contents for transfer to data formats for preservation purposes*. International Association of Sound and Audiovisual Archives (IASA). Retrieved on 02/06/2014 from www.iasa-web.org/sites/default/files/downloads/.../taskforce.

Busha C.H. and Harter S.P. (1980). *Research Methods in Librarianship: Techniques and Interpretation*. New York: Academic Press

Byamugisha, H. M. (2010). *Digitizing library resources for new modes of information use in Uganda*. *Library Management*, 31 (1/2): pp.42-56.

Clayton, P., & G. E. Gorman. (2001). *Managing information resources in libraries: Collection man practice*. London: Library Association.

Coder, R. (1993). *Television: A Powerful Medium of Communication*. London: Bowker Company Ltd. Pp 54-55.

Cloonan, M. V. (2001). *Whither Preservation*. *Library Quarterly*, 71 (2): 231-242. Cooper, D.R. n Schindler, P.S. (2004). *Business Research Methods*, 12th ed. Boston: McGraw-Hill Education.

Cooper, D.R. n Schindler, P.S. (2004). *Business Research Methods*, 12th ed. Boston: McGraw-Hill Education.

Doh, V. (1998). *School libraries and the use of audiovisual materials in the teaching and learning of French: A case study of some selected institutions in Accra and Somanya*. MA dissertation, Information Studies, University

Döller, M. and Coquil, D. (2013). *Digital Preservation: The Multimedia Standards way*. Retrieved on 03/12/2014 from http://ddp.nist.gov/symposium/papers/0105_PDF_Symposium_Mario_Doeller.pdf

Edmondson, R. (2004) *Audiovisual Archiving: Philosophy and Principles*. Retrieved on 06/06/2015 from <http://www.unesdco.unesco.org/images/0013/001346>

Edgar, D. (1981). *Audio visual Method in Teaching*. New York: Holt Rinehart and Wiston.

Fraenkel, J.R. and Wallen, N.E. (1993). *How to Design and Evaluate Research in Education*

2th ed. New York :MacGraw-Hill Inc.

Gbande, N. (1996). *The role of Film and Television for Development. A case study of Ghana Broadcasting Corporation*. Unpublished long essay presented to National Film and Television (NAFTI).

Gracy, K.F. and Cloonan, M.V. (2004). *The Preservation of Moving Images*, in Frederick C.

Lynden (ed). *Advance in Librarianship*, 27 (27): 49-95.

Harvey, R. (1994). *Preservation in Libraries: Principles, Strategies and Practices for Librarians*. London: Bowker.

Jorgensen, C. & Jorgensen, P. (2005). *Image querying by image professionals*. *Journal of the American Society for Information Science and Technology*, 56 (12): p.1346-1359.

International Federation of Library associations (2003). *Audiovisual and Multimedia Section Guidelines for Audiovisual and Multimedia Materials in Libraries Draft*. Accessed 03/04/2014 from <http://www.ifla.org/VII/s35/pubs/avmgl03.html>.

Kademani, Kalyane n Kumar (2003). Kademani B. S., Kalyane V. L. and Vijai Kumar (2002), A. H. Zewail: Research Collaborator par excellence, *Scientometrics*, Vol. 53, No.1, pp.113-121. (HUISSN0138 - 9130) <http://eprints.rclis.org/archive/00001505/>

Kar, S. (2001). *Multimedia based user education program for library: A case study. Workshop on Multimedia and Internet Technologies*. (Unpublished Dissertation) Bangalore: DRTC.

- Kosch,H., Böszörmenyi, L., Dölller,M., Libsie, M., Schojer,P. and Kofler, A. (2005).The Life Cycle of Multimedia Metadata.*IEEE Multimedia*, 12(1): pp.80-86.
- Malkin, G. (2006). *Capturing BALTIC's memory. Records Management Journal*, 16 (3): pp. 149-158.
- Ministry of Information and Media Relations. Retrieved on 02/06/2014 from <http://www.ghana.gov.gh>
- Moore, R. (2008). "Towards a Theory of Digital Preservation."International Journal of DigitalCuration3,no.1.Retrievedon14/11/2013 from<http://www.ijdc.net/index.php/ijdc/article/view/63>
- Mottey, E. (2013). *Information Management and Tax Administration in Ghana: A Case Study of the Domestic Tax Revenue Division of the Ghana Revenue Authority, Head Office Accra.* MA thesis to University of Ghana, Legon.
- Neuman, W.L. (2006). *Social Research Methods; Qualitative and Quantitative Approaches* 6thed. New York: Pearson Education.
- Ngulube, P. and Magazi, L. (2006).*Protecting Documents against Disasters and Theft: The Challenge before the Public Libraries in KwaZulu-Natal, South Africa.*South African Journal of Library and Information Science, 72(3): 185–197.
- Nyahe, G. (2001). *The role of audiovisual media in repackaging research findings for rural folk: a study of the oil palm research institute (OPRI) and the Plant Genetic Resource Centre (PGRC) of the Council for Scientific and Industrial Research (CSIR).* MA dissertation, Information Studies, University of Ghana, Legon.

- Obisi, C (2011). *Employee Training and Development in Nigeria: Some Observation and Agenda for Research*. Aust. J. Bus. Manage. Res. 1(9), 82-91.
- Ogunmodede, T.A., Ebijuwa, A. S. &Oyetola, S.O. (2013). Health Information Needs and Information Sources of Pregnant Women in Ogomoso Metropolis, Oyo State, Nigeria. *Library Philosophy and Practice* (e-journal) Libraries at University of Nebraska-Lincoln, DigitalCommons@University of Nebraska – Lincoln.
- Olatokun, W. M. (2008). *Gender and National ICT Policy in Africa: Issues, Strategies and Policy Options*, *Information Development*, 24, 53-65 at <http://idv.sagepub.com/cgi/content/refs/24/1/53>, accessed
- Opoku, J.Y. (2006). *Tutorials in Inferential Social Statistics* 2nd ed. Accra: Ghana Universities Press.
- Othman, R. (2005). *A model for image retrieval tasks for creative multimedia. Performance Measurement and Metrics*, 6 (2): pp.115-131.
- Rajendran, P., &Yesudoss, K. P. (2003). *Preservation of video programs for future use: Analog to digital media*. In BavaKutty, M., Veeran, M. C. K., &Salih, T. K. M. (Eds.), *Information access, management and exchange in the technological age* (pp. 249-260). New Delhi: EssEss.
- Sahn, M. E. L. (2003). *The multimedia library at Bibliotheca Alexandrina. The Multimedia Library: The centre of an information rich community*. Berlin: IFLA.
- Salkind, N.J. (2003). *Exploring Research*. 5thed. New Jersey: Pearson Education Inc.Schüller, D. (2008). *Audiovisual research collections and their preservation: European*

Commission on Preservation and Access. Retrieved on 01/06/2014 from http://www.tape-online.net/docs/audiovisual_research_collections.pdf

Setshwane, T. (2004). *B. Managing Sound Recordings at Radio Botswana, MLIS Dissertation*. University of Botswana University of Botswana.

Shukla, V. K., and Chaturvedi, N. (2004). *Role of multimedia in preservation of rare research library documents in the digital form*. *Herald of Library Science*, 43(3-4), 251-256.

Smith, J. and Schirling, P. (2006). *Metadata Standards Roundup*. *IEEE MultiMedia*, 13(2): pp. 84-88.

Sreenivasulu, M. (2008). *Building of multimedia institutional repositories: A case study of NIFT, Hyderabad. National Conference on Digitization and Digital Preservation*. Delhi: DESIDOC.

Stegmaier, F., Döller, M., Kosch, H., Hutter, A., and Riegel, T. (2010). *AIR: Architecture for Interoperable Retrieval on distributed and heterogeneous Multimedia Repositories; In Proceedings of the 11th International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS2010)*. City: Desenzano del Garda.

Sunil Kumar (2009). Joshi, Sunil Kumar, J.S. (2009). Use of Information Technology in Medical Education (February 5, 2009). *Modern Trends in Medical Education*, pp. 81-87, 2009. Available at SSRN: <http://ssrn.com/abstract=1518954>

Swartzburg, S.G. (1983). *Conservation in the library: A handbook of use and care of traditional and non-traditional materials*. Connecticut: Greenwood Press.

Tagoe, M. (2009). *A Handbook for Writing Research Proposal*. Accra: Ghana Universities Press.

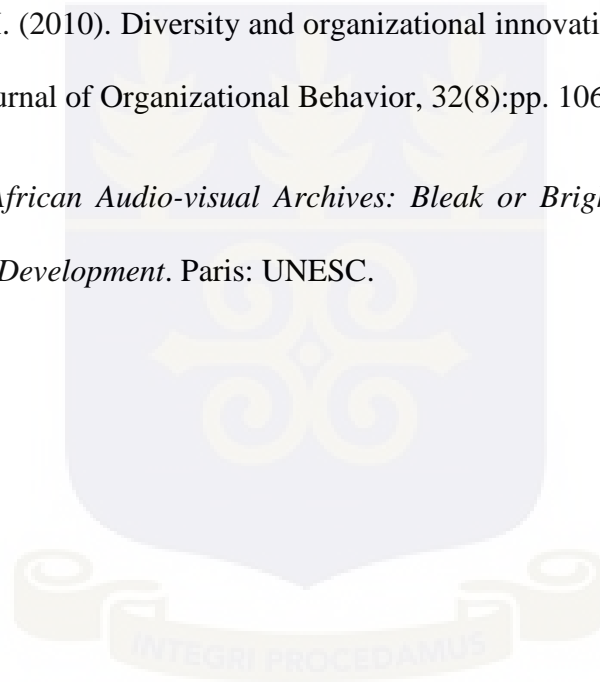
Teygeler, R, De Bruin G., Wassink B. W. and Van Zanen, (2001). *Preservation of Archives in Tropical Climates: An Annotated Bibliography. Comma: International Journal on Archives*, 3 (4): 33- 257.

UNESCO (2000) Reports and on Mass Communication, No. 51

Wright, R., Miller, A. and Addis, M. (2009). "*The Significance of Storage in the 'Cost of Risk' of Digital Preservation.*" *International Journal of Digital4*, no. 3 (2009). <http://www.ijdc.net/index.php/ijdc/article/view/138>

Yang, Y. & Konrad, A.M. (2010). Diversity and organizational innovation: The role of employee involvement. *Journal of Organizational Behavior*, 32(8):pp. 1062–1083.

Zinyengere, I. (2008). *African Audio-visual Archives: Bleak or Bright Future: A case study.* *News*, 46:37-41. *Development*. Paris: UNESC.



APPENDIX 1

INTERVIEW GUIDE

Environmental conditions under which the Information Service Department (ISD) preserve its multimedia materials.

- How do you process multimedia materials?
- Under which conditions are the multimedia documents protected?
- What is the temperature level at the storage area?
- Do you have air conditioners and are they always on?

Determining how multimedia materials are processed, stored and protected.

- How do you process your multimedia materials?
- What are the stages in processing the multimedia information?
- What kinds of storage facilities are available for preservation of multimedia materials?
- How effective are these storage facilities?

Technology in place for the preservation of multimedia materials

- What type of technology do you use to preserve multimedia resources?
- Explain the preservation method you use for the multimedia materials?
- How often are the methods used in preserving multimedia material reviewed?
- Is there any backup storage facility? If yes in which form is it?

Skills of staff to meet new technological change

- What type of training are staff given?
- How often does the ISD organise training for staff?

- Are the staff equipped with the necessary skills to meet modern technological challenges?

If yes, how it is done?



APPENDIX 2

OBSERVATION CHECKLIST

- Check for ventilation
- Level of temperature
- Type of lighting
- Access control to resources
- Humidity level
- The disaster preparedness
- Audiovisual handling

