

**AN INVESTIGATION INTO THE MANAGEMENT OF ELECTRONIC
RECORDS IN THE PUBLIC SECTOR IN LESOTHO**

by

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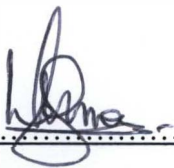
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DECLARATION

I, the undersigned, hereby declare that the work contained in this thesis is my own original work and has not previously in its entirety, nor in part, been submitted at any other university for a degree.



.....
Lefuma Sejane

January 2004

DEDICATION

This work is dedicated to my mother and my late father. Thank you for laying the foundation for a brilliant career and a fulfilled life.

ABSTRACT

Government computers are generating enormous volumes of e-records such as e-mails, word processed documents and databases. The immediate challenge of the public sector is therefore to preserve these digital records and make them accessible to future generations.

The present study was conducted to investigate the management of e-records in the public sector in Lesotho. The objectives of the study guided the researcher to find out what IT infrastructure and resources existed. The study looked at which records were currently being created and strategies and policies used in managing those records. The archival legislation was reviewed to assess how it affected e-records. An e-records model suitable for managing e-records in Lesotho was suggested.

The study adopted the descriptive research by utilizing the case study approach. Interview schedules were employed for data gathering, together with observations. The literature review guided the content of the interview schedule. Data was analyzed according to the objectives of the study.

The overall findings revealed that the public sector in Lesotho was not managing its e-records satisfactorily. The public sector did not have legislation that specifically dealt with managing e-records, there were no written policies, strategies and guidelines were non-existent. The study also revealed that there were no qualified personnel with expertise and skills in the management of e-records in the public sector.

The study's conclusions and recommendations were that the public sector be allocated more resources and IT infrastructure. Staff should be trained, policies should be formulated, legislation should be amended to accommodate e-records and, lastly, the study recommended that the public sector in Lesotho should adopt the South African e-records management model.

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LIST OF ABBREVIATIONS

ANSI/PIMA	American Standard for Life Expectancy of Information Stored in Recordable Compact Disks Systems
CD-R	Compact Disk-Recordable
CD-ROM	Compact Disk-Read Only Memory
CD-WORM	Compact Disk-Write Once, Read Many
CPU	Central Processing Unit
DIRKS	Designing and Implementing a Record Keeping System
DOS	Disk Operating System
DPSA	Department of Public Service and Administration
DTD	Document Type Definition
DVD	Digital Versatile Disk
DVD-WORM	Digital Versatile Disk-Write Once, Read Many
ERA	Electronic Record Archive
ERM	Electronic Records Management
ERMS	Electronic Records Management System
ESARBICA	Eastern and Southern African Regional Branch of the International Council on Archives
EU	European Union
GITOC	Government Information Technology Officers Council
GPEA	Government Paperwork Elimination Act
HTML	Hyper Text Markup Language
ICA	International Council on Archives

ICTs	Information and Communication Technologies
InterPARES	International Research on Permanent Authentic Records in Electronic Systems
IRMT	International Records Management Trust
IT	Information Technology
LAN	Local Area Network
MIS	Master of Information Studies
MoReq	Model Requirement
MS DOS	Microsoft Disk Operating System
NAA	National Archives of Australia
NARA	National Archives and Records Administration
NARS	National Archives and Records Service
NARSSAA	National Archives and Records Service of South Africa Act
NUL	National University of Lesotho
PCs	Personal Computers
RM	Records Management
SA	South Africa
SGML	Standard Generalized Markup Language
SITA	State Information Technology Agency
SSA	Sub-Saharan Africa
TEI	Text Encoding Initiative
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPS	Uninterrupted Power Supply

VEO	Victorian Encapsulated Object
US	United States
VERS	Victorian Electronic Records Strategy
WORM	Write Once, Read Many
WWW	World Wide Web
XML	Extensible Mark-up Language

CHAPTER ONE: INTRODUCTION TO THE STUDY

1.0 Introduction

Recorded information is a crucial source of variable evidence, which is essential to accountability and transparency (Akotia 2003: 111). Records are resources on which the growth and development of any individual, organization or nation depends to be able to conduct business normally.

According to Mutiti (2001b: 57), records have a variety of formats such as paper, film, magnetic tape and digital optical discs. They pose different challenges to preservationists and conservationists alike. Various record formats are preserved and maintained in order to provide documentation that provides evidence of activities and actions of government organizations and individuals. Without proper policies, strategies, skills and knowledge of managing records there would be no evidence, legal and operational purposes, and making decisions would be difficult.

Electronic records are attracting more attention than paper-based records because of rapidly growing and changing technology used to create and manage records. According to Bearman (1996: 1), “within the next decade, almost all organizational records created in our society will be made and communicated electronically”. Unless these records are managed, some of the memory of society will be lost forever.

The content and original medium of electronic records can easily be separated, with the content being transferred to other media. Thus the issue of securing the reliability and integrity of electronic records is raised. While paper records exist as physical entities and can be identified from their physical characteristics, electronic records exist as logical entities. The various aspects that make up the electronic records, namely structure, content and context, may exist as separate entities that are only brought together when a record needs to be viewed (Cathro 1999).

Technological obsolescence is the greatest challenge to managing and preserving electronic records. In fact it has been characterized as the greatest threat to the twin pillars of preservation and access (Yahaya 2001). Yahaya (2001) pointed out that neglected paper records could exist in boxes for many years until something is done to save them, but neglected electronic records simply disappear. The hardware and software systems on which they can be read become rapidly obsolete. For example, finding a late model computer to read a 5.25-inch floppy disk, a format common only a few years ago, or the software to interpret WordPerfect 4.0 files, is practically impossible. If there were important data stored in these obsolete formats it would be virtually inaccessible.

According to Ngulube (2001), one of the major means of dealing with issues pertaining to the management of electronic records is to formulate policies and strategies dealing with electronic records. The policy aspects of management of electronic records need to be addressed in terms of formulation, dissemination and implementation. In the absence of clear and enforceable policies, models and strategies, electronic information would not be easy to access and retrieve over time. In the long run the information might end up lost. Ngulube (2001) points out that it is evident that governments in Sub-Saharan Africa (SSA) have not taken policy formulation, in relation to managing e-records, seriously. It is apparent that the public sector in Lesotho is also doing very little in that direction.

The present study will investigate the steps that have been taken, if any, in relation to managing and preserving electronic records in Lesotho. The following sections give further background information and outline the research issues, significance of the study and data collection and analysis procedures.

1.1 Background to the Problem

The Government of Lesotho is composed of nineteen Government Ministries, listed in Appendix I. Government registries, in conjunction with the National Archives of Lesotho, control and manage public records in Lesotho. A registry is a place where files and other records are processed, kept and retrieved. It is the heart of any organization, where the control of information coming and leaving the organization takes place. The

main aim of registries is to provide information when it is needed, where it is needed, at the time it is needed and to the people who need it (Seabo 1994: 441).

In general, registry management is widely seen as a low-grade service and virtually no attention is given to the way information is created, structured and managed (Tafor 2001:4). In many government ministries in Lesotho, registries do not discharge their responsibilities adequately. The researcher observed that some files were not indexed and not in sequence. Yet archival institutions and government departments depend on registries for records to be managed. Records kept in registries are fundamental to good governance and accountability. It is therefore necessary to put forward the critical aspect of managing and preserving public records.

It has been problematic to manage paper-based records; electronic records that are produced and generated with such high volumes would be even more problematic. As mentioned, records are increasingly being produced in electronic form. They range from the relatively simple, text-based file (for example, Word documents) to highly sophisticated web-based resources, which fully exploit the benefits of technological resources and infrastructure. More and more records are being generated in purely electronic format, without any traditional paper versions (Yahaya 2002: 63).

According to Duranti (2001: 271), the fundamental difference between electronic and traditional records is that components of the former may reside in different parts of the medium, or even of the system, and may not physically exist if not purposely generated. Information is being created in electronic form, either through converting existing materials to digital form, or originally created in electronic form if “born digital”. The speed of changes in technology means that the time during which action must be taken with electronic records is very much shorter than with paper-based ones. Time frames, during which action needs to be taken, are measured in a few years, perhaps only two to five years as opposed to decades or even centuries associated with the preservation of traditional paper-based materials. Technology obsolescence is generally regarded as the

greatest technical threat to ensuring continued access to digital material (Hedstrom and Montgomery 1998).

Preliminary observation by the present researcher has revealed that the public sector in Lesotho is increasingly becoming part of the digital world. Electronic records are becoming a reality, as information and communication technologies (ICTs) are being embraced. ICTs include the Internet, software and hardware applications and telecommunication facilities such as faxes, telephones and satellites.

E-mail is one of the information communication and distribution tools used in the public sector in Lesotho. General information such as announcements, meeting agendas and notices are being distributed through e-mail (Lesotho Government Website 2003).

1.1.1 Importance of Records Management

Records are information in tangible form and should be appropriately managed throughout the records life cycle (Wiggins 2000: 64). For many government departments and organizations, the only tangible evidence of their past is business records. The history of a nation or company can play an important part in its on-going sense of identity. Records can play a significant role in this process. Minutes of board meetings and of departmental groups and committees can provide a useful commentary on the ministerial department and an indication of its future direction. These factors can be particularly relevant during a period of change, for instance from one political regime to another, a merger of two departments or a split between departments in government.

Records management is the key to effective use of resources within a nation or an organization. Records can provide a way of revisiting previous decisions and can help in avoiding similar problems in the future. Organizations depend on recorded past accomplishments to provide a foundation for future development. Ricks, Swafford and Gow (1992:8) emphasized that accurate records are crucial to provide background information for planning for the future, while taking advantage of the past. Records are, therefore, both an organizational resource and an organizational asset. As a resource,

records provide information; as an asset, they provide documentation. This is reason, therefore, for their sound management.

According to Musembi (2003:440), records are the main administrative tools through which the work of a government is carried out. Records contain evidence and commitments that must be preserved to protect the government itself. Records also contain vital information on the rights and privileges of the citizens that are derived from the citizen's relationship with the government. Since this immense concentration of official information is later transferred and preserved in the national archives, it serves as the memory of the nation.

Records preserve history for future generations. When recorded information is lost or destroyed, much of it can never be regained. To make appropriate decisions, appropriate information should be available. Decisions are only as good as the information on which they are based. To make professional decisions, managers should have background information, a basis for evaluating the alternatives. Records provide the information required for routine decisions. These types of decisions are based on established organizational policies, procedures and rules, all of which are part of organizational records, which of course, if not well managed, could be meaningless and unhelpful (Ricks, Swafford and Gow 1992: 8).

1.1.2 Management of Electronic Records

Effective electronic records management to support government in the information age will require a formalization of control over electronic records already existing in departments and agencies, as well as planning for those that will be generated by new service delivery and policy-making systems. According to the Public Records Office (2001) in the United Kingdom, records represent an explicit corporate memory for the organization. Electronic records unlock the content previously difficult to access in paper form, enable more effective sharing of information and contribute to knowledge network flows. They support evidence-based policy-making by providing reliable evidence of past

actions and decisions; but to do so they must be managed so as to retain their integrity and authenticity.

Electronic records of authenticated electronic transactions need to be kept in such a manner that they retain their qualities of legal admissibility and evidential weight (International Records Management Trust 2004). Privacy and access issues, and particularly freedom of information legislation, which is widely advocated, requires that electronic records be managed consistently within regulatory frameworks. Aspects of electronic records management should be built into record-generating and records management systems, to ensure that long-term requirements are met (Katu 2001:4).

The longer-term requirements of public records will require public sector organizations to plan for migration of records, as hardware and software platforms change, to ensure continued access and authenticity. According to the Public Record Office (2001) effective electronic management supports:

- Efficient joint working, information exchange and inter-operability between government organizations.
- Evidence-based policy-making by providing reliable and authentic information for the evaluation of past actions and decisions.
- Administration of data protection principles and effective implementation of freedom of information and other information policy legislation, through good organization of records.
- Knowledge management across sectors of government by making reliable information available for sharing, extraction and summarization.
- Various specialized legislation by demonstrating the authenticity of records and supporting legal admissibility.

1.1.3 Management of Records in Lesotho

Lesotho, like many governments had recognised the relationship between good governance and effective records and information management. That is why governments all over the world have registries to manage official business records. Kenosi (1999: 122)

pointed out that registries have been the nucleus of active records management accounting for the classification, filing, storage, equipment and access of records and have either been centralised, decentralised or combined, depending on the particular needs of the government department. A centralized system of registries is very easy to run, since everything is standardised, in terms of administrative operations. Seabo (1994: 440) pointed out that centralized registries have greatly reduced duplication in government, led to the better use of space, kept records together, and led to well-defined series and security of records. Registries, therefore, play an important part in administrative issues in the public sector and need to be equipped with the necessary infrastructure. If registries are not properly controlled, vital records will be lost. Therefore the public sector should be aware of the importance of registries. The important component of the management programme for records in registries is ICTs.

The records management information awareness or value in most African countries is low, since records are treated as a waste product of administration (Thurston 1996). Laws and policies on records management are weak, in terms of access, privacy and preservation. There are weak, non-existent or inconsistent record-keeping policies and standards. It has been observed that when it comes to accountability the public sector has weak leadership for information or records management programs, fragmented, unclear responsibilities for keeping records; weak links with business processes and technology development. The national archives and registries should make the records management function visible, and underscore the role that records play in bringing about efficiency in organizations.

The National Archives of Lesotho is charged with the responsibility of providing records and information management services to government ministries and departments, local authorities and parastatals. In terms of the Archives Act of Lesotho, 1967, the National Archives stipulates that public records are created, used, maintained and managed in an organized way, that promotes the efficient and economic handling of information (Lesotho Archives Act 1967).

The Archives Act 1967 of Lesotho states that records include not only written records, but records conveying information by any other means whatsoever. The Act is, however, outdated and does not specifically address e-records. Some scholars believe that management of e-records should be clearly stated in any archives legislation (Harris 1999/2001:7). For example, the South African National Archives Act of 1996, as amended, gives the National Archives of South Africa regulatory authority over all public records from the moment of creation and provides a separate definition of “electronic records systems”. The Act accords the National Archives specific powers in relation to managing e-records (Harris 1999/2000:7).

1.2 Research Problem

The practice of records management can be conceptualized at two different levels: the general level of Records Management (RM); and a second, narrower level involving Electronic Records Management (ERM). The first level addresses the traditional print environment and paper documents and the second level pertains to spreadsheets, word processing files, data files, hardware and software standards and updates, e-mail, storage, retention, disposal and legality issues (Ngulube 2001). The government of Lesotho has policies for dealing with paper-based records, as stipulated in the National Archives Act of 1967.

Like other countries, Lesotho has developed guidelines and policies for the first level. As one approaches the second level, however, varying degrees of guidelines and policies begin to emerge among countries. There is evidence from the literature that such guidelines and policies are non-existent in most developing countries (Ngulube 2003b). Some preliminary surveys done by the present researcher in registries in the public sector in Lesotho revealed that records and registry personnel were:

- Completely unaware of the issues involved in the management of e-records.
- Those who had expertise in e-records were unsure how to apply what they knew, as there were no clear guidelines.
- Even if they did know they were, at the time, incapable of doing anything.

The situation poses severe consequences for the preservation of the national memory of Lesotho and making the government transparent and accountable. Put differently, the public sector in Lesotho has concentrated on the management of paper-based records at the expense of electronic ones, thus putting the national digital memory in jeopardy.

1.3 Research Objectives

- To identify the existing information technology (IT) infrastructure and resources in the registries in Lesotho in relation to the management of e-records.
- To establish what e-records are currently being created.
- To identify strategies and policies used in managing e-records.
- To assess how archival legislation affects the management of e-records.
- To identify the existing skills and knowledge of the public sector staff in managing e-records.
- To identify models for the management of e-records that will be suitable for Lesotho.
- To make recommendations on the management of e-records in the public sector in Lesotho.

1.4 Research Questions

- What IT infrastructure and resources exist in the in the registries in Lesotho in relation to the management of e-records?
- What e-records are currently being created?
- What strategies and policies are being used in managing e-records?
- How does archival legislation affect the management of e-records in Lesotho?
- What skills and knowledge does the public sector staff have in managing e-records?
- What model or models would be suitable for managing e-records in Lesotho?
- What can be done to improve management of e-records in the public sector in Lesotho?

1.5 Justification

It is believed that the study would assist the public sector in Lesotho to be aware and be responsible for the management and preservation of electronic records. The public sector is important; it reflects the origins and growth of a government and is the main source of information on all its activities. It contains evidence of financial and legal commitments that must be preserved to protect the government. It is the great fund of official experience that the government needs to give continuity and consistency to handle social and economic, as well as organizational and procedural, problems (Schellenberg 1956: 11). Without the effective management of e-records the work of the public sector would be seriously undermined.

Since the public sector is the primary source of records creation, it must have the responsibility of ensuring that future generations have access to public records for referencing, educational and research purposes. If these records are not managed, the collective memory of the society will be lost. It is also of great importance to carry out this study, as it will try to influence the Government of Lesotho to formulate policies and strategies regarding e-records management and to ensure that these policies are implemented. One other point is that there is limited literature on the subject of e-records management in Lesotho. This study will add to the literature and influence other researchers and academics to be aware of the crucial aspect of e-records management.

1.6 Scope and Limitations

The study will focus on two aspects. It will describe in, detail, the current state of electronic records management within the public sector in Lesotho with special reference to the registries. It will also investigate the role the public sector is playing in managing e-records. Although there are models of e-records management elsewhere in the world, the limitation of the present study is the scarcity of literature dealing with the management of electronic records in Lesotho. Not much has been written and documented on the subject in the country. The chief limitation of the study was difficulty of interviewing IT specialists in Lesotho. In addition to that limitation, access to the Government Computer Center was denied.

1.7 Definition of Key Concepts and Terms

1.7.1 Records

Records are any recorded information, regardless of characteristics, medium and form, created, received and maintained by an institution, organization or individual in pursuance of its legal obligations, or in the transaction of business (Penn, Pennix and Coulson 1994: 5).

1.7.2 Records Management

It is that area of general administrative management concerned with achieving economy and efficiency in the creation, maintenance, use and disposal of records; that is during their entire life cycle (Walne 1998: 320).

1.7.3 Electronic Records

Electronic records are defined as codes recorded on media such as a magnetic disk, magnetic tape, or optical media, the contents of which are accessible only by machine, and organized in accordance with the principle of provenance, as distinct from data archives (Bellardo and Bellardo 1992:12). Mutiti (2001b: 57) defines an electronic record as a digital record that can be manipulated, transmitted or processed by a computer. It is written on magnetic or optical media such as magnetic tapes, CD-ROMs, hard disks and diskettes.

also falls under Electronic records

1.7.4 Digital Records

Digital records refer to information sources in digital form, including converted materials and electronic records. The definition encompasses materials originally in digital form, which have never existed in print or analogue form (also called “born-digital” records), as well as digital surrogates of analogue materials created for access and preservation purposes through the use of imaging and recording technologies (Hedstrom and Montgomery 1998). For the purpose of the present study “electronic records” will be used to refer to records originally created in electronic form and those that are scanned from analogue formats.

1.7.5 Public Records

Public records are documents created or received and accumulated by government agencies in the conduct of public business, which may or may not be open to the public for inspection (Bellardo and Bellardo 1992: 29).

1.7.6 Electronic Records Management

This is the capturing, managing and preserving electronic document in an organized system, which maintains their integrity and authenticity, retaining their value as retrievable corporate records (Public Record Office 2001).

1.7.7 Archives

Walne (1998: 3) defines archives as records in any medium which were compiled for the purpose of, or used during, a public or private business transaction or which were selected for preservation by the persons concerned with the transaction, or their successors or delegates, for their own use and as materials for research or reference. According to Prytherch (2000: 550), archives are public records or selected materials kept in a recognized archival repository.

1.7.8 Registry

According to the *ICA Dictionary of Archival Terminology*, a registry "... is a unit of an agency, institution or organization responsible for the creation, control and maintenance of current files/records and/or semi-current records".

1.8 Context of the Study

Every organization, be it private or public, generates records to document actions, outline goals and programmes, identify rights and privileges and communicate information (Mutiti 2001b: 57). It cannot be denied that governments throughout Africa have long neglected registries and left them largely undeveloped. The registry has only been important so far as it provides information whenever it is needed, or when a file cannot be found when it is needed urgently (Seabo 1994: 41).

It is an administrative centre for the control of all records, documents and information required by the ministry/department for the operation of its work. It is where the administrative transactions of government are managed. Seabo (1994: 43) points out that one can presuppose that the registry is the heart of any ministry and, if the registry fails, the ministry cannot function. Yet registries are not properly controlled in most ministries, leading to such problems as loss of files, accumulation of ephemeral files in prime office space, loss of information as a result of torn files or very bulky files, which cannot be controlled easily.

Registries provide two very important services: one is the handling of mail or correspondence in an organization. An efficiently run mail and message management programme is essential for rapid and economic distribution of information from one department to another, within an organization, and to and from others, outside the organization (Robek, Brown and Stephens 1995: 14). The mail and message management programme should be designed to provide prompt and accurate collection and distribution.

The second is the storing of the organization's records. According to Wamukoya, cited by Seabo (1994: 43), the conduct of business in an organization, and the successful implementation of policies, largely depends upon the organizational efficiency of its filing services and records retrieval systems. The registry keeps records primarily for the use of action officers who are responsible for continuing operations of the various ministries, departments and divisions of government. As soon as these records are reasonably inactive they must be reviewed, to determine those that merit transfer to the records centre for intermediate storage.

The function of a registry is also to receive and register all incoming correspondence, to control its movement throughout the department for action purposes, to provide reference services for both the incoming correspondence and related outgoing correspondence after action is completed, or pending further action. Generally, the registry's important role is to be involved in organization and management.

The National Archives of Botswana has been given the responsibility for the management and administration of registries throughout the entire government machinery (Lekaukau cited by Seabo 1994: 46). It considers its role as a matter of policy to provide guidelines for the efficient management of registries. Such guidelines will insist upon the proper maintenance and careful handling of files, to ensure both permanency and easy retrieval for use.

The great advances made in the use of information technology in recent years have revolutionized communication, both within and outside the organization, and also the way in which information is stored and retrieved. This has brought great professional challenges to archivists who, for years, were content to work in the secure world of unchanging paper records (Mutiti 2001b: 57). It is therefore the responsibility of archivists to process and manage all records, irrespective of storage media, according to acceptable archival standards and guidelines in order to fulfil their mandate and obligations.

E-records are being created daily in public institutions in a variety of formats, using different technologies. The record formats are not necessarily compatible from one institution to another. Rapid changes in technology have created a situation of technological obsolescence.

According to Mutiti (2001b: 59), most of the countries in Africa have institutions responsible for the computerization programmes of public institutions. However, their emphasis is mostly on ensuring that public functions are computerized as far as possible.

Issues relating to long-term preservation of the electronic heritage are often considered inconsequential, resulting in systems that are not designed to keep records but merely data (Mutiti 2001b: 59). As a result there is often lack of laid-down methods and procedures for the management of e-records, such as measures to retain and safeguard electronic information over time.

1.9 Research Methodology

Landry and Banville (1992: 78) elucidate the relationship between research goals, research methodology and research methods. According to Landry and Banville (1992: 78), the rationale and process for any research is formed by the relationship among research goals, methodology and methods. The research goals, in addition to determining the theoretical framework, determine the research methodology and the research methods. The research methodology represents a collection of methods with a particular philosophical justification and a particular epistemology.

This thesis is based on the research, the goal of which was to investigate the management of e-records in the public sector in Lesotho. The survey research was used to describe the situation being investigated. The method adopted was descriptive, since it assisted in describing the respondents' opinions and perceptions, current situations or conditions and knowledge and attitudes.

The population of the study was identified from the Lesotho Government Official Website (2003). It was made up of 19 ministries. A number of respondents were interviewed. They comprised key role players who were involved in records management. The population of the study is given in detail in Chapter Three. Data analysis was carried out to describe the characteristics of the units of analysis.

1.10 Chapter Outline

Chapter One firstly discussed the importance of records management and the management of electronic records. The statement of the problem was presented, so were the objectives and research questions. The chapter also provided background information, with particular reference to the public sector in Lesotho. The justification of the problem was established and this chapter provided the scope and limitations of the study.

Chapter Two reviews the management of electronic records. The archival legislation and the management of records are reviewed. Information technology infrastructure and resources in the public sector are discussed. Various models for managing electronic

records are examined, to identify the one suitable for the study. Existing skills and knowledge in the management of electronic records are discussed. From the previous studies, strategies and policies with regard to managing electronic records are examined, to help identify strategies that would be suitable for the present study.

Chapter Three discusses the research methodology that was used in the study. It describes and explains why the methodology was identified and chosen for the study. The population is described and who the target is. The data collection method is described and details of how the analysis of data was carried out are given.

The findings and interpretation of results are presented in Chapter Four. The objectives of the study are used as the framework for the discussion. Chapter Five presents the summary of findings and conclusions based on the findings. Recommendations are presented from the study's findings point of view. Suggestions for further research are given.

1.11 Summary

The purpose of Chapter One was to introduce the importance of records management in the public sector, as well as management of electronic records. The role the national archives play in managing records was discussed. The statement of the problem was presented; the objectives and research questions being addressed by the study were presented. The justification of the study was established; the definitions of key concepts and terms, including the scope and limitations, were presented. Chapter One concluded with a summary of the outline of the thesis.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

A literature review involves the identification and analysis of literature related to one's research project. This process includes identifying potentially relevant sources, an initial assessment of these sources, thorough analysis of selected sources and the construction of an account integrating and explaining relevant sources (Kaniki 1999:17). According to Neumann (2000: 447), the purpose of a literature review is to provide a theoretical background to the study, as well as to learn from what others have done. The literature was reviewed from sources such as published books, journals, the Internet and published and unpublished conference papers dealing with electronic records management.

The purpose of this study was to investigate the management of electronic records in the public sector in Lesotho. Starting with the discussion of the importance of records management and e-records life cycle, Chapter Two examines the existing IT infrastructure in the public sector, what records are being created, and the strategies, policies and models used to manage e-records. The chapter also looks into archival legislation in Lesotho and existing skills and knowledge in the management of e-records.

2.1 Archival Legislation and E-Records Management

2.1.1 Significance of National Archives

For any government to be accountable, there is a need for record-keeping. Records are the memory of an organization and without them there would be no administration. Public servants would not be able to account for their actions. National archives are institutions which are responsible for keeping the national records. The national archives should be the focal point for all archival institutions in the country. It should provide standards for the national archives; it should be the centre of excellence when it comes to archival collections; it should guide the national archives. Finally, it should be the key institution responsible for the management of records throughout the public service (Qobo 1996: 286).

Qobo (1996: 287) adds that the responsibilities of the national archives should include the operation of a country-wide records management of the central, local and government records, so as to ensure that records are created, utilized and disposed of methodically and that those of permanent value should be identified and preserved. Records management ensures that there is a systematic control of recorded information. It provides economy and efficiency in the creation, organisation, use, retrieval and disposition of records, ensuring that records whose value has expired will not be kept in the archives. Only valuable records will be preserved and made available for public inspection, in due course.

2.1.2 Requirements

A national archive must meet certain requirements if it is to function efficiently. One such requirement is a building, preferably purpose-designed, with controlled temperature and humidity. This is especially necessary for storage areas for audiovisual records, moving images and other materials that are sensitive to high and fluctuating temperatures and humidity. Even conventional paper records need appropriate storage conditions if they are to be preserved for a long time. It will also be necessary for the building to have sufficient safeguards against fire, floods and other similar dangers. The need for appropriate and adequate storage space can, of course, never be emphasized enough, since it is a basic requirement for every national archive (Musembi 2003: 441).

The building should have the necessary facilities to preserve archives, documents and publications. These include shelves and well-equipped conservation workshops. In addition, a national archive should have adequate facilities and capabilities for arrangement, description and indexing of records and archives. The facilities should include the use of information technology.

Musembi (2003: 441) explained that a national archive needs to have adequate personnel, who must be well-qualified and experienced. Apart from general archivists, national archives need information technology experts, preservation specialists and other experts with diverse academic backgrounds. For example, all national archives need experts to

manage e-records, throughout the entire life cycle. Most other non-paper records also need specialized personnel. The total number of personnel and the type of experts required will vary from country to country, depending on the size and complexity of the particular national archive.

A national archive should have adequate financial resources for its recurrent and development budgets. Money is needed, for example, for staff salaries, procurement and maintenance of equipment, as well as for the maintenance of the archive building itself. It is mainly the inadequate provision of personnel and financial resources in developing countries that make their national archives so different from those of developed countries, in terms of performance (Musembi 2003: 441). Having looked at the legislation and e-records management, the following section will discuss describe the archival legislation in Lesotho.

2.1.3 Archival Legislation

The Lesotho National Archives Act was passed in 1967 and is still operational together with the Archives Regulations of 1972 and 1996 (Qobo 1996: 289). The legislation spells out the duties of the archivist, what is expected of the archivist, and what the archivist should expect from the organization in order to be able to carry out the assigned duties. It spells out what materials should go to the archives, and when and how they should be transferred to the archives. Legislation needs to be revised regularly, to accommodate the changes in society and to accept new forms of media such as e-records.

Section 9 empowers the Chief Archivist to destroy records that should not be permanently preserved, provided the Archives Commission, which is constituted in terms of Section 6 of the Act, approves of the disposal decision. The Archives Commission is composed of seven members appointed by the Minister and it acts as a watchdog over the acquisition and preservation of archives. The Act is still operational, together with the Archives regulations of 1972 and 1996.

The National Archives of Lesotho is charged with the responsibility of providing records and information management services to government ministries and departments, local authorities and parastatals. In terms of the Archives Act of Lesotho, Act 1967, the National Archives stipulates that public records are created, used, maintained and managed in an organized way that promotes the efficient and economic handling of information (Lesotho Archives Act 1967).

The Lesotho Archives Act 1967 states that records include not only written records but records conveying information by any other means whatsoever. The Act is outdated and does not include e-records. The management of e-records should be clearly stated in the Act, since many records are currently being created electronically. For example, the South African National Archives Act of 1996, as amended, gives the National Archives of South Africa regulatory authority over all public records from the moment of creation and provides a separate definition of “electronic records systems”. The Act accords the National Archives specific powers concerning the management of e-records. (Harris 1999/2000:7).

Qobo (1996: 290) states that when the archives regulations of 1972 were passed, the archives at that time were under the Ministry of Education, Health and Social Welfare, but at present there is no such ministry. Education has its own ministry and so does Health and Social Welfare. At present the National Archives falls under the Ministry of Tourism, Environment and Culture.

According to Harris (1999/2000: 9, 10), some countries have passed new laws regarding evidence, to accommodate new realities. Australia passed its Evidence Act in 1995. Also in 1995, the state of New South Wales passed a similar Act, and the other states of Australia are following suit. The United Kingdom passed its Civil Evidence Act in 1995. In the United States, the federal government and most states have adopted uniform laws containing standard provisions for the legal admissibility of e-records. These have been adapted to the South African context to accommodate the specific attributes of electronic records.

The US Government Paperwork Elimination Act (GPEA, Pub.L. 105-277) requires that, where practicable, federal agencies use electronic forms, electronic filing and electronic signatures to conduct official business with the public, by 2003. This legislative imprimatur has accelerated the pace of change in US Government record-keeping practices. The US National Archives and Records Administration (NARA) has taken a leading role in designing processes by which agencies can move to a GPEA-compliant status, without compromising the integrity and authenticity of the public record (Victorian Electronic Record Keeping Strategy 2003).

2.2 The Nature and Principles of E-Records

According to the Victorian Electronic Records Strategy (2003), a record is most simply defined as evidence of an event. A record has, or can have, a number of characteristics:

- It occurs within a context. All information is best understood with reference to the context within which it was created.
- It can include more than one document. For example, if the “record” is a land transfer it might include a land title certificate, correspondence related to the transfer, and a receipt issued for payment. Together, these separate pieces of paper constitute the “evidence of the event”.

2.2.1 Aims of Record Keeping

In order to be full and accurate, records must be authentic, reliable, complete, unaltered and useable and the systems that support them must be able to protect their integrity over time. The National Archives of Australia (2003) describes these issues as follows:

- Authentic. It must be possible to prove that a record is what it purports to be and that it has been created or sent by the alleged person and at the time purported. Records need to be protected against unauthorised addition, deletion, alteration, use or concealment and the creation, receipt and transmission of records needs to be controlled to ensure that creators are authorised and identified.
- Reliable. It must be possible to trust the content of a record as an accurate representation of the transaction to which it attests. It should be created and

captured in a timely manner by an individual who has direct knowledge of the event or generated automatically by processes routinely used by the organization to conduct the transaction.

- Complete and unaltered. It must be possible to protect a record against unauthorised alteration and to monitor and track any authorised annotation, addition or deletion.
- System integrity. It must be possible to implement control measures, such as access monitoring, user verification, authorised destruction, security and disaster mitigation to prevent unauthorised access, destruction, alteration or removal of records and to protect them from accidental damage or loss.

The type of structural and contextual information, or metadata, that is built into an organization's business systems, and the way in which that metadata is applied, influences such characteristics.

2.2.2 Life Cycle of the Records

The Public Record Office (2001) suggests that records, whether electronic or paper, pass through identifiable phases in their life cycle, from initial creation to final disposition. At each phase of the cycle, electronic records need to be actively managed according to established procedures, to ensure that they retain qualities of integrity, authenticity and reliability (Public Record Office 2001).

The life cycle describes the stages through which a record passes through from creation to disposition. The concept is based on the premise that when records are created their creators intensively use them. Thus they need to be stored as close as possible to their users. With the passage of time this use decreases and they enter into the semi active stage, where they can be stored in less expensive space, away from their users. Ultimately they enter the disposal stage, when they are no longer of any use to their creators (Chinyemba 2002: 35).

Mnjama (1996: 25) pointed out that records pass through three main stages. The first stage involves records creation. At this stage records are created and maintained to serve

day-to-day administrative functions of the creating office. As the need to consult records decreases, the records enter their semi-active stage. During this stage records might be retained in departmental record stores or transferred to national records centres. Once records have served the purposes for which they were created and have been selected for permanent preservation, they become non-current or archives.

Government agencies are responsible for ensuring that their records are created and preserved in accordance with the legislative provisions of the national archives. Records generated electronically include electronic mail (e-mail) messages, word processing documents, spreadsheets, databases and images. All these records present a preservation challenge for archival institutions and agencies, because technologies are changing very rapidly (Wato 2003). Other records are in the form of videotapes of performances and ministerial and national events.

Sources of e-records include desktop applications such as financial systems, human resource systems and corporate databases. Typically, records are evidence of government or organizational activities and include policy documents, memoranda, letters and database reports (Victorian Electronic Records Strategy 2003). Paper-based records in the public sector normally include reports (monthly, quarterly and yearly) press releases, official speeches, policy documents, court proceedings, minutes of official meetings, tax invoices, business plans, conference papers and government forms.

2.2.3 Major Types of E-Records

Robek, Brown and Stephens (1996: 201) define e-records as records containing machine-readable, as opposed to human-readable, information. A collection of e-records is often generally referred to as a file. Examples include disk files, tape files and image files. Robek, Brown and Stephens (1996: 202) describes these type of records as:

2.2.3.1 Text files

Text files are usually produced by word processing programs or by other software. The records consist of character-coded letters, digits or symbols appearing in typewritten

documents, such as correspondence and reports. Text files are most often created by keyboard entry of the data, but optical character recognition (OCR) programs, electronic messaging software and various other types of computer programs may also be used to create them.

2.2.3.2 Data files

Data files are computer-processible files that store numeric data (and frequently some textual information as well), so that the numbers can be manipulated utilizing arithmetic computations. Data files are stored simply as characters, in a more structured manner. These e-records are normally subdivided into one or more data elements, referred to as fields. For example, in accounting or general ledger files, separate fields and sub-fields would be dedicated for credits and debits.

2.2.3.3 Image files

Image files are e-records that contain computer-processible images of documents that generally existed in hard copy format prior to having been converted to image files. These files consist of digitally coded document images; they are created electronically, by scanning the hard copy documents or by various other methods.

According to the Public Record Office (2001) of the United Kingdom, these major types of e-records need a system which will support their qualities and evidence. Effective electronic records management to support government in the information age will require a formalization of control over electronic records already existing in departments and agencies, as well as planning for those that will be generated by new service delivery and policy-making systems. According to the Public Record Office (2001) of the United Kingdom, records represent an explicit corporate memory for the organization. Electronic records-unlock the content which was previously difficult to access in paper form, enable more effective sharing of information and contribute to knowledge network flows. They support evidence-based policy-making by providing reliable evidence of past actions and decisions; but to do so they must be managed so as to retain their integrity and authenticity.

Electronic records of authenticated electronic transactions need to be kept in a manner that preserves their qualities of legal admissibility and evidential weight. Privacy and access issues, and particularly freedom of information legislation, requires that electronic records be managed consistently within regulatory frameworks. Aspects of electronic records management should be built into record-generating and records management systems, to ensure that these longer-term requirements are met (Katu 2001:4).

The longer-term requirements of public records will need public sector organizations to plan for migration of records, as hardware and software platforms change, to ensure continued access and authenticity. According to the Public Record Office (2001) effective electronic management supports:

- Efficient joint working, information exchange and inter-operability among government organizations.
- Evidence-based policy making, by providing reliable and authentic information for the evaluation of past actions and decisions.
- Administration of data protection principles and effective implementation of freedom of information and other information policy legislation, through good organization of records.
- Knowledge management across sectors of government, by making reliable information available for sharing, extraction and summarization.
- Various specialized legislation, by demonstrating the authenticity of records and supporting legal admissibility.

2.2.4 The Life Cycle of E-Records

From the perspective of the International Council on Archives (1997), there are four principles involved in the e-records life cycle. The first principle in the framework for managing e-records is:

The archives should be involved in the entire life cycle of electronic systems that create and retain archival records to ensure the creation and retention of e-records that are authentic, reliable and preservable.

There are two basic concepts in this principle: archival involvement and the life cycle of records. For archives to be involved in the entire life cycle of records does not mean that the archives are responsible for all actions relating to records during their life cycle. Rather, it means that the archives need to foster understanding of the archival function and to promote standards and practices, which achieve the goal of the archival function by all actors who have a role in this function, at any and all points in the life cycle. The archival function extends across the entire life cycle of records, which may be seen as having three basic stages:

1. Conception
2. Creation
3. Maintenance (including preservation and use).

The International Council on Archives (1997) elucidates: the life cycle of e-records is substantially by choices and decisions that are made at the stage when the need for keeping records is identified and record-keeping systems are designed and developed, before any records are created. At this stage, referred to as the “conception stage”, ⁹ electronic information systems are designed, developed and implemented. The process includes the analysis of requirements for both information and for processing of that information for the purposes of current business. It also includes the selection, acquisition and installation of appropriate technology. Functional requirements for the management of e-records should be addressed in the design and specification of electronic information systems in order to ensure that the content, context and structure of the records created or retained provide reliable evidence of the creator’s activities and that archival e-records are identified and preserved. Addressing these requirements in the conception stage will reduce the need to alter systems after they are implemented. Such alterations are often costly and complicated and may not even be feasible.

It is further explained that, while the fundamental decisions are made at the point of conception, the creation stage is obviously critical (International Council on Archives 1997). A system may be designed to satisfy requirements for maintaining accessible e-

records; however, if complete and reliable records are not consistently captured in the system, the design will be of no value. Adequate and reliable records must be created, as needed, and captured in well-designed record keeping systems.

The maintenance stage encompasses the remainder of the life cycle of archival records, whether they are in paper-based or electronic form. Initially, the creator will use a record to support decision-making and the transaction of business. Subsequently, it may be stored for some time for use in other activities to satisfy requirements for accountability. Finally, it will be maintained for legal, cultural and other research purposes. The maintenance stage of records thus encompasses maintenance for business purposes and maintenance for archival value.

The second principle in the framework for managing e-records is:

The archives should ensure that creators create and retain archival records which are authentic, reliable and preservable.

This principle does not imply that the archives are responsible for the functions of records creators or that the creators are not competent to manage their records. The creator must be responsible for creating reliable records and for maintaining them in authentic form for as long as the creators have custody of the records. The archives need to direct, influence, or oversee the actions of other actors throughout the life cycle of archival e-records. These actors include:

1. Record creators and record managers
2. Those who establish laws, regulations and policies
3. Those who allocate resources
4. Those who produce, supply and manage the information technology on which the records depend.

Success in this area will entail developing contacts and alliances with others interested in good record-keeping, including lawyers, accountants and other decision-makers.

The third principle in the framework for managing e-records is:

The archives must manage the appraisal process and exercise intellectual control over archival e-records.

Appraisal examines the values of records and determines their retention periods; that is it identifies those records, which should be preserved after they have satisfied the creator's business needs. The knowledge and advice of the creating agencies, higher authorities and others familiar with the operations of the records creators are valuable in the appraisal process. Archives need to adopt an approach to appraisal, which is grounded in comprehensive knowledge about the originating body and its functions and work processes; how those functions are assigned to agencies and expressed in their mandates; and how the functions are carried out through business processes and activities. Because it focuses on the functions and activities in which the records are created and used, the approach is termed "functional appraisal".

The conception stage is the most advantageous time for appraisal, because it provides the greatest opportunity for ensuring that appraisal decisions are effectively implemented. Functional appraisal makes it possible to identify which record keeping systems will contain archival records and which records in these systems have archival value. Appraisal at the conception stage will also help to avoid the unnecessary expense of applying standards for archival records to records that do not have enduring value.

Appraisal in the conception stage includes identifying functions and activities which will generate archival records; determining what information systems will support these functions and activities; identifying the archival records that will be captured in the systems; and designing these systems to enable the retention, preservation and accessibility of archival records. The conception stage concludes with design, installation and testing of the system. System testing should include tests to verify if record-keeping requirements have been built into the system so that appraisal, preservation and access provisions are operative.

Appraisal at the maintenance stage is not desirable. First, there are risks that adequate records will not have been created; that the authenticity of the records cannot be demonstrated; that the records are incomplete, unreliable or not interpretable; or that the information that is retained reflects only how an organization carried out its record-keeping and how the organization accomplished its functions and activities. Second, changes in systems may make it impossible to access older records or may have destroyed their reliability or authenticity. Third, adaptation of existing record keeping systems to satisfy archival requirements may be very costly and complex, or even impossible (International Council on Archives 1997).

The fourth principle in the framework for managing e-records is:

The archives must articulate preservation and access requirements to ensure that archival e-records remain available, accessible and understandable.

This principle addresses issues that are especially problematic for e-records because of their dependence on technology, which continues to change. Preservation and access to archival e-records are interdependent:

- Available records are physically intact and readable
- Accessible records can be selected within search strategies, consonant with the way the creator organised the records, and presented in a historically, authentic form; and
- Understandable records are records that can be used as historical evidence. This requires identification of provenance of the records, maintenance of the original order of the records and the availability of related records and other contextual information.

Maintaining them in static form, because of technological obsolescence, cannot preserve archival e-records. It will be necessary to transform the records in order to migrate them from obsolete technology to current forms. Archival preservation requires that such transformations respect them from the authenticity of the records and that such changes

enable the records to be retrieved and understood (International Council on Archives 1997).

2.2.5 Retention Scheduling

The concept of the retention scheduling is necessary for a good records management system. The system must provide the functionality to add disposal instructions and retention rules to all subject files in the filing system, identify records that are due for disposal, alert the records manager that records are due for disposal and keep an audit trail of all disposal actions (Kirkwood and Venter 1999/2000:35). The disposal of records from an electronic record keeping system is governed by retention rules, referred to as retention and disposition schedules (Hedstrom 2000: 167).

According to Hedstrom (2000: 167), the system should have the capability to delete records that are no longer required to be maintained and that are no longer needed to support ongoing operations. Retention rules can be built into a record keeping system and retention periods or conditions can be specified in the metadata for each record or record type. This approach enables the automatic disposal of e-records from a record keeping system once their retention period expires.

In a document management system, retention implies the length of time documents are kept online before they are moved near-line or off-line (Kirkwood and Venter 1999/2000: 35). Kirkwood and Venter stated that there are usually no proper disposal procedures in place, which means that all the e-records are moved to near-line or off-line storage, which takes up more tape/disk storage space. By implication, there are then more tapes/disks to store under optimal conditions and to maintain by regular refreshing of the media. It also implies that all records need to be migrated to new hardware and software platforms when new technologies are developed. The archival records should be maintained permanently by:

- Storing them as or on acceptable storage media.
- Keeping the storage media under optimal storage conditions, according to the specific type of media, to prolong their life expectancy.

- Refreshing the media at regular intervals.
- Migrating to new hardware and software technologies when necessary (Kirkwood and Venter 1999/2000: 35).

Storing e-records is a very expensive exercise. No institution has money to waste storing e-records that are no longer needed for administrative and legal purposes. The issuing of a disposal authority on the filing system in the design phase of an electronic system enables only those e-records that are really necessary to be kept for long periods of time or permanently to be migrated to new technologies. The disposal and retention instructions apply to both paper-based and e-records. This ensures that disposition of records is done on the same subject, but on different media, at the same time (Kirkwood and Venter 1999/2000: 36).

2.3 Information Technology Infrastructure and Resources to Support Records Management in the Public Sector

2.3.1 Information Technology Infrastructure

According to Lyytinen, cited by Okunoye (2001: 11), the characterization of information technology infrastructure comprises computing and telecommunication technologies, as well as the associated knowledge of how to apply them in different fields or organisations. Infrastructure is the underlying foundation or basic framework of a system or an organization. It could also mean the public sector system of a country, state or region; and also the resources (as in personnel, buildings, or equipment) required for an activity.

Computing infrastructure consists of physical components of computing, the wiring, switches, operating systems, servers and, sometimes, desktop machines. Computing infrastructures can be quite central for organizations. For example, Hildebrand, also cited by Okunoye (2001: 11), emphasises that a sound infrastructure can mean rapid access to online information, e-mail and, generally, personal computer systems. A reliable infrastructure can facilitate the success of any future technology endeavours.

IT infrastructure can be viewed as a term being used to embrace the collection of computers, operating software, communication equipment and links, which collectively form the platform for assimilating and delivering information products and services to the organization and its customers or its suppliers. It is therefore important that IT infrastructure supports records management to enhance the access, transfer and facilitation of information.

2.3.2 Resources to Support Records Management

Two factors threaten to strangle the efficiency of modern organisations. The first is the exponential explosion in the volumes of information they must process. The second is the consolidation that is creating ever larger and more complex organizations and compounding the information explosion (Fujitsu 2003).

Many large businesses are experiencing a doubling in the volume of documents they handle every two years and there is an equally fast developing need to add value to the process by increasing the speed and breadth of access to this information. Although it can be argued that IT is contributing to increasing information flows, technology can also provide the fundamental solutions to managing them.

Fujitsu (2003) points out that document management was mainly used to manage paper documents, using some form of indexing to aid retrieval. Document image processing systems delivered efficiency gains through improvements to the filing, accessing and processing of what were still basically paper-based systems. However, document management is no longer just about paper.

New business technologies have created an unprecedented variety of information sources, including paper, electronic, voice and multimedia files. All of these need to be captured, stored, managed and distributed. Moreover, organization structures and the scope of business processes have developed from small, individual, discrete departments to fully integrate employees, partners, suppliers and customers. As a consequence, there is

immense pressure to have information that is widely available, easily accessible and in a usable format.

The Internet has changed the way organisations manage documents and their content. Governments are seeing the advantages in consolidating systems and data and the ideal is now to build a single, repository that can manage all enterprise content. If records are to survive and be useful in supporting the functions of a public organization, ensuring the rights of citizens and preserving a cultural record of the past, then records professionals in developing countries need to be engaged in the global discussion of how best to capture, manage and preserve e-records over time.

According to Roe (1988: 224), some of the resources that need to be considered when reflecting on an effective and sound records management are allowances for training and personnel development, equipment maintenance, software updates, replacements or additions, capital expenditure for equipment, furniture and fittings.

2.3.3 Storage Methods and Formats

When identifying records that must be preserved indefinitely, the special requirements regarding the medium in which these records must be preserved to ensure accessibility in the future can be set at an early stage. Electronic storage media are inherently unstable media. The life expectancy of the information stored on these media is influenced by various environmental factors, including temperature, humidity, oxidation, dust and magnetic fields, and they are extremely sensitive to physical damage through careless storage, handling and use.

Examples for standards are SGML, HTML, and XML. Lazinger (2001: 146) describes these standards. HTML is the most widely used mark-up language on the web. The two metalanguages, SGML and XML, have greatly expanded the potential within communities producing and organizing electronic documents, because they both allow the author to create a DTD (Document Type Definition) that defines the fields to be used

and provides rules to govern the application of those fields within the document (Lazinger 2001: 146).

SGML is a language for describing mark-up languages, just as metadata is data about data. The advantage of SGML is that it allows very rich possibilities for document creation and indexing, because the mark-up is not set, as in the simple HTML, to display only text or provide hyperlinks. It not only enables the creation of lists, page breaks and paragraphs, for example, but also allows different DTDs to provide marking of historical background, ownership and provenance, controlled vocabulary subject headings within the text, information contained in the text (such as author, title and date), information about the electronic document and information about the original, generally print-based-source material.

Because it ensures that the indexing is not separated from the text, including indexing within the text itself and, for descriptive data, within a header, a critical issue in indexing records which must be maintained, updated and linked over long periods of time and various server architectures, it provided the most reliable method for insuring various persistent indexing for electronic text.

The disadvantage of SGML is that, in spite of its feature-richness and flexibility, it is highly complex. It is SGML's high level of complexity that has inhibited its adoption in a wide variety of environments, including the web environment. A no less serious failing of HTML for long-term archiving of electronic data is that it is simply too limited in its indexing capacities to allow for the creation of the complex metadata required.

Problem

2.3.4 Physical Media

The physical storage media of the digital world fall into two main categories, namely magnetic and optical.

- Magnetic media use the principles of electromagnetism to record and change electrical signals.

- Optical media use concentrated light, in the form of lasers, to alter reflectance on the surface of a disk.

2.3.4.1 Magnetic Storage Media

Hunter (2000: 22) states that magnetic recording has dominated computer storage technology since the 1950s. Magnetic media rely upon magnetism to record and erase the information to be stored. While the information is active, the computer retrieves information from storage, brings it into the Central Processing Unit (CPU), performs the desired operation and usually returns it to storage.

Magnetic media fall into two categories:

- Disk
- Tape

2.3.4.1.1 Magnetic Hard Drives

Magnetic hard drives are essential components of today's personal computers. Each time the hard drive is accessed to read or save a file it causes the read/write heads to burst into a furious flurry of movement that must be performed with microscopic precision.

Hard disks are made from polished aluminium platters. They are coated one at a time with a thin layer of magnetic material and then used either singly or in stacks. The principal advantage of magnetic hard drives is that they offer rapid, direct access to information, especially when compared to magnetic tape. Hard drives are formatted into a series of tracks and sectors in which information is placed.

2.3.4.1.2 Floppy Disks

Floppy disks were the most widely encountered type of magnetic media. They were introduced in 1971 and became an instant success with consumers. Floppy disks have a much lower recording density than hard disks. However, they are rugged and can be easily removed from one computer's disk drive and placed in that of another computer. As technology changes, the eight-inch floppy disks have given way to 5¼ -inch disks and

now to 3½ -inch disks (Hunter 2000: 24). The changes in floppy disks sizes and formats are a precursor to larger preservation challenges to come.

2.3.4.1.3 Magnetic Tapes

Magnetic tape is the most widely used medium for offline data storage and backup protection. It is a long strip of polyester film, coated with a magnetic recording material. A disadvantage of magnetic tape is the time required to find data after it has been stored. Searching a long tape for a particular file, even though it is all stored together, typically takes much longer than finding the same file scattered about the surface of a disk.

The anticipated life expectancy of a magnetic tape is 12-20 years, if stored under optimal conditions and if subject to regular maintenance (National Archives and Records Service of South Africa 2003: 12). This means that simply to preserve the electronic signals on tape, it is necessary for annual precision rewinding, physical inspection and cleaning to prevent deterioration through chemical reaction. Furthermore, data has to be transferred to new tapes periodically, to ensure that the data on the tapes remain readable.

2.3.4.2 *Optical Storage Media*

Optical media employ a different technology from that used for magnetic disks and tapes. One category of optical disk is called WORM (Write-Once, Read Many) (Hunter 2000: 27). CD-WORM and DVD-WORM seem to offer greater stability for archival storage of e-records. Accelerated-ageing tests done in terms of the American Standard for Life Expectancy of Information Stored in Recordable Compact Disks Systems (ANSI/PIMA IT9.27) indicates that the life expectancy of these media is 100 years and more if stored under prescribed conditions and handled with care (National Archives Service of South Africa 2003: 12). Since the real goal of archival preservation is to access the disks' content, not merely the preservation of the physical objects themselves, it is imperative that optical storage media should be cared for correctly.

2.3.4.2.1 Compact Disk

The phrase “compact disk” means that the system uses optical age formats and products based on technology developed jointly by Sony and Phillips during the 1970s and 1980s. Compact discs have a reflective metal layer covered with a protective coating. Information is recorded as microscopic pits and adjoining spaces arranged in spiralling tracks.

CD-ROM (Compact Disk-Read Only Memory) is the application of compact disk technology to the storage of computer-processible information. CD-ROMs measure 4.75 inches in diameter. The principal advantages of CD-ROMs are their relatively low cost, widespread availability and established international standards (Hunter 2000: 30). Compact Disk-Recordable (CD-R) became available in the late 1980s. CD-Rs permit direct recording of information on Compact Disk, without going through the mastering process that previously was necessary. CD-Rs can store over 600 megabytes of data but offer slower access times than other types of optical disks.

2.4 Models for E-Records Management

The management of e-records implies putting in place the same mechanisms that are necessary for managing paper records. Models are necessary to regulate the creation of e-records, their storage and maintenance, as well as retention and scheduling. The following section discusses models of managing e-records that are found in the literature.

2.4.1 Victorian Electronic Records Strategy Model

Victorian Electronic Records Strategy (VERS) model is the Victorian solution for electronic record keeping. It encompasses a model of which the state of Victoria owns the intellectual property, as well as the best developments from Australian and overseas jurisdictions. VERS was developed within Victoria to preserve the electronic records of the state for the long-term. This model pays particular attention to records that are being poorly managed and not retained: records created at the desktop by users in applications such as e-mail and Microsoft Word. It also gives priority to capture consistent and adequate metadata, which provides for records, so that any user looking at it now or in

the future can properly understand the context and meaning of a given record. A key objective of the strategy is flexibility. The strategy enables Victorian state government agencies to put in place e-records management and archiving systems and policies, which suit their existing business processes and records management structures.

The strategy is effectively a framework that operates to reliably archive and authenticate e-records created or managed by the Victorian government. It recommends a single long-term format for e-records. This ensures that Victorians will still be able to read these records in the distant future, but also means that e-records can be exchanged between government agencies and between different systems without having to worry about strange formats. Authenticity is important for records; they are, after all, supposed to tell the “truth” about a particular event. Their evidentiary value, one of the primary reasons for keeping records at all, is materially damaged if serious questions are raised about their authenticity or originality. The standard includes three specifications prescribing key elements for e-records retention in Victoria.

- **Specification 1** is the system requirements for archiving e-records. Specification 1 describes the record capture, archive system and discovery system requirements that must be met by systems used by Victorian government agencies to store e-records.
- **Specification 2** details the metadata fields that Victorian Encapsulated Object (VEO) must contain. It was determined that, for the sake of simplicity and ease of translation, the VERS Standard should adopt the metadata paradigm used by the National Archives of Australia (NAA), as it was recognised that the Australian market was too small to encompass more than one record-keeping metadata standard.
- **Specification 3** provides detailed technical descriptions of the actual format for VERS-compliant e-records. Specification 3 also takes on the question of digital signatures, how to use them, and how to authenticate them.

2.4.2 United States Model

According to the Victorian Electronic Strategy (2003), the United States National Archives and Records Administration (NARA) has developed a strategy known as the Electronic Record Archive (ERA) to address the question of electronic information. ERA is focused on identifying and developing ways to preserve and provide access to e-records within a comprehensive and stable architecture that will be:

1. Infrastructure independent
2. Modular
3. Scalable, and
4. Extensible.

The basic concepts within ERA and VERS are very similar. Both accept that technology will change over time and that components of any solution must be replaced. The VERS standard defines an extensible XML document type description (DTD) for handling changes in the future. Ongoing contact has been maintained between NARA teams working on the ERA and the VERS teams.

2.4.3 National Archives of Australia Model

NAA has been active in the field of e-record-keeping and digital preservation for several years. NAA's work in this area has included a number of elements.

- ✓ The DIRKS (Designing and Implementing a Record-Keeping System) manual, which is a tool for e-record-keeping design, just as it is for paper-based systems.
- ✓ Publication of record-keeping Metadata Standard for Commonwealth Government Agencies.
- ✓ Development of an Archiving Web Resources Policy, supported by guidelines (Victorian Electronic Record Strategy 2003).

Under this policy, e-records, regardless of their ongoing value, are usually expected to remain in the custody of the agency that created them (or its successor). Deciding to accept e-records that are of archival value, regardless of their format, poses challenges for NAA in the coming years. As NAA develops strategies and policies to deal with the

issues raised by multiple formats, this toolkit will provide information and explanation on them, helping to highlight an alternative method of addressing the e-records dilemma.

2.4.4 European Union Model

The Victorian Electronic Records Strategy (2003) describes the European Commission Model (EU). This specification describes Model Requirements for the Management of Electronic Record (MoReq). While the specification focuses on functional requirements, it recognizes that non-functional attributes are central to the success of an ERMS, as with any information system. Related issues such as digitization and other means of creating e-records are outside the scope of this specification. Similarly, it makes no attempt to cover practical implementation of an ERMS. This specification is written with the assumption that ERMS users include administrators or archivists, but also general office and operational staff, who use ERMS as apart of their everyday work, while creating, receiving and retrieving records.

Other closely related requirements, such as document management and the electronic management of physical records (e.g. paper files and microfilm) are also addressed, but in less detail. For example, the specification includes guidelines on the requirements for managing physical records, but it does not include all the detailed functionality associated with tracking physical locations, bar coding, etc.

As the specification contains “model” requirements, it is designed to be entirely generic. It does not consider any platform-specific or sector-specific issues. Because it is modular, user communities can add to it additional functionality specific to their own business requirements.

2.4.5 South African Model

While its practical experience in the field is still limited, the National Archives and Records Service has adopted a strategy underpinned by a legal framework explicitly provided for in the National Archives and Records Service of South Africa Act (Act No. 43 of 1996, as amended). The Act specifies in sections 13(2)(b)(ii) and 13(2)(b)(iii) that

the National Archivist must determine the conditions subject to which records may be reproduced electronically, as well as the conditions with regard to the way electronic records systems must be managed. The National Archives and Records Service of South Africa (2003: 19-20), stipulates that:

The National Archives and Records Service's Electronic Records Management Programme is aligned with the regulatory requirements of the State Information Technology Agency (SITA), the Department of Public Service and Administration (DPSA) and the Government IT Officers' Council (GITOC) and is built on the following four-pronged strategy:

Archival involvement in the design and maintenance of e-records management systems. The National Archives and Records Service of South Africa Act allows the National Archives and Records Service (NARS) to insist that mechanisms and procedures be put in place to ensure that archival records are identified while still functional and then preserved appropriately. NARS requires that electronic correspondence systems should be managed with e-records management applications and that structured and legacy systems be managed with a schedule for e-records systems as an instrument for obtaining disposal authority and use as a disposal schedule.

The earliest possible transfer into archival custody of e-records with enduring value. In terms of the National Archives and Records Service of South Africa Act, 1996, governmental bodies are obliged only to transfer archival records into archival custody when they reach 20 years of age. The National Archivist is, however, empowered to determine shorter transfer periods when appropriate. This shortened transfer period applies to e-records.

The identification of archival e-records that should remain in the custody of the creating body. Circumstances in which this approach might be considered include the following: where cost of transfer into archival custody is prohibitive; where technical considerations like data complexity and software copyright raise insuperable barriers; where the creating



body, because of its facilities and/or the nature of the record, is best positioned to provide archival user services; or where statutory provisions exist which prevent transfer to archival custody. The Act, as amended, specifically empowers the National Archivist to make such an arrangement with creating bodies.

The identification of non-archival e-records that can be disposed of as part of an offices' normal administrative practice. Most electronic systems, for which disposal authority has been applied to date, do not possess archival value, while systems that might have archival value are seldom reported. These general disposal authorities enable governmental bodies to dispose of e-records that do not have archival value without specifically applying for disposal authority, so that the focus can be placed more appropriately.

The Victorian Electronic Records Strategy emphasizes the best practices. The standards emphasize records management responsibilities, strategies, control, storage, appraisal and disposal. The Australian project, Designing and Implementing Record Keeping Systems (DIRKS) includes the best practices, accountable record-keeping systems, capturing of complete records, their maintenance and usability. According to these requirements, the organization has to follow codes and regulations, has to know what it has to do and then do it in line with the set policies and procedures. This will ensure compliance with the highest quality of information management.

South Africa's functional tools are based on the Australian model, which are the Electronic Records Management Systems and Electronic Document Management Systems. The EU model is flexible in that communities can add to it additional functionality specific to their own business requirements. Though it is flexible, it does not include, for example, all the detailed functionality associated with tracking physical locations and bar coding.

Since the South African model aims at developing a framework to support business, social and cultural needs for creation and management of e-records, it would be suitable

for the public sector in Lesotho to adopt such a model. The model addresses issues of authenticity, metadata, making records accessible and sustaining environments in which e-records can continue to function over time as evidence for governance and accountability.

2.4.5.1 Requirements for the South African Model

- *Establishment of e-records management policies and procedures*

All information resources, whether they are in paper-based, electronic or other formats, should be managed by the organization in terms of the broad policy guidelines contained in the National Archives and Records Service Act of South Africa (NARSSAA), 1996, as amended. It is essential for each organization to establish its own records management policy, to link its own unique processes and procedures to the requirements of the NARSSAA. The policy should not only be in line with the Act, but should specifically address the management of e-records and should take into account the unique characteristics of the specific electronic applications that are in use by the specific office.

- *Assigning responsibility for e-records management*

People create and use records. They are a key factor in successful record-keeping and records management. Organizational units should be identified for involvement in the management of e-records. The units, together with the responsible IT staff, accept responsibility for the intellectual control and physical management of all e-records. The organization needs to ensure that the staff of the organization are properly skilled to capture and manage records.

Specific leadership responsibility and accountability for records management should be assigned to the records manager, who should also be responsible for the management of records generated and stored in electronic systems. The records manager must have a basic understanding of database management, file/document imaging and scanning, electronic document management and workflow and e-records management, to enable him/her to properly control records created in an electronic environment. The

management of e-records should not be left to the IT manager alone, because he/she is involved with the technical management of the IT systems and may not have time to apply records management principles to the records generated in these systems.

- *Introduction of e-records systems by the National Archives and Records Service*

The implementation of such systems usually leads to destruction of paper-based records, which needs to be done in terms of a proper disposal authority issued by the National Archivist. The National Archivist can still determine that paper-based records are the archival records and that they should be retained permanently. The disposal requirements for e-records should be built into the systems during the planning phase of the systems, to prevent records from being kept for unnecessarily long periods of time. This is especially necessary in the electronic environment, where a system's performance can be adversely affected when data/records that are no longer needed for functional and legal purposes are retained unnecessarily. The requirements regarding the medium for the long-term storage and the format for long-term accessibility of archival records should be built into electronic systems in the planning phase of such systems, to prevent records becoming inaccessible. Descriptive and background information (metadata) needed to ensure that records are authentic and reliable should be built into the system, to ensure that understandable records are created.

- *Implementation of e-records systems by the National Archives and Records Service*

If a governmental body contemplates using an automated correspondence system for the management of correspondence system, such an office should implement an Integrated Document Management System that contains an e-records management application, to manage the entire life cycle of records from the moment they are created until they are disposed of.

- *Formulation of an e-records preservation plan*

Governmental bodies should preserve and care for any item forming part of an e-records system in such a manner as to ensure that they are not exposed to harm or unauthorized

access and under such specific conditions as the National Archivist may prescribe. Electronic storage media require proper care to ensure the preservation of e-records contained on that media. A few common rules must be obeyed when handling and caring for computer files and magnetic media. Additionally, special handling is needed to ensure the long-term preservation of e-records. The first requirement is that file custodians know specifically which files are permanent, what is to be done with them and when. This is even more important if computer files appraised as being archival are maintained in decentralized locations.

- *Accessibility of e-records*

Records are valuable only if they can be found when needed for action or reference. Proper classification labelling, indexing and preservation actions are necessary to ensure that e-records are available and accessible throughout their useful life. The easiest way to ensure that records are accessible is to file them in a file plan containing subjects connected to the business operations or functions of the office. An indexing system requires the document creator to indicate the name of the document and the addressee, the date and the identifier of the disk/tape on which it is stored.

- *Identification of e-records*

Labels on diskette's jackets should include the originating office name, title and beginning and ending dates, what software was used to create the records and on what equipment it was produced. Labels on a computer magnetic tape should include the volume/serial number, the name of the office that created the data and data set names. Identification of any access restrictions should be included on any external labels. Labels should be easily understandable and standardized, so that authors or successors can find and use information stored on disks or tapes.

- *E-mail management*

E-mail should be managed according to the basic principles that apply to records in any medium. Each governmental body needs to establish a policy for the capturing of records of e-mail communications. The policy should be endorsed by senior management and

should be communicated throughout the organization, as part of the overall records management policy. The policies should inform e-mail users that official records communicated through e-mail systems must be identified, managed, protected and retained for as long as is needed for ongoing operations, audits, legal proceedings, research, or any other anticipated purpose. A policy should explain how the governmental body would implement a records management programme that includes e-mail records. For example, the policy should specify where official records will be kept, such as in a central repository associated with a departmental network or LAN, or in decentralized electronic or paper-based filing systems. Governmental bodies should inform end-users about policies for security, back-up, alteration, loss or inappropriate destruction.

Other records are derived from the functional needs of the office and any additional legal and audit needs. Generally, records transmitted through e-mail systems will have the same retention periods as records in other formats that are related to the same function or activity. Strategies are necessary for managing and preserving electronic messages, as records will differ, depending on the specific environment within a governmental body.

There are two basic options for filing and managing e-mail records:

- Print messages and file them in paper-based filing systems or
- Transfer e-mail messages to an electronic file plan in the electronic repository.

Problematic in its
"This this paper"
be time
concern

The method chosen will depend on whether the office has a paper-based filing system or an Integrated Document Management System in place.

- *Websites and web-based activities management*

Websites should be managed according to the basic principles that apply to records in any medium. Each governmental body needs to establish a policy for the capturing of records of web-based activities. Its own, unique functions, environment and accountability requirements should inform this policy. The policy should be endorsed by senior management and should be communicated throughout the organization, as part of the overall records management policy. The International Records Management Standard (ISO 15489) outlines the need for organizations to develop strategies to ensure that "full

and accurate” records are captured into records classification systems and that these records should be retained for as long as required for legal, accountability and historical purposes. The NARS endorses this standard and advises that governmental bodies should apply the guidelines contained in the standard to capture and maintain records of web-based activities.

- *Maintenance and migration procedures*

Records need to remain accessible and understandable if they are to be used. Maintenance of electronic storage media, as well as migration to new software and hardware platforms, requires a continued commitment from an office. Offices need to budget for the expense, as well as for the use of the human resources required to maintain e-records in a readable format.

- *Appraisal of records systems*

In order to manage e-records systems other than correspondence systems efficiently and determine retention periods, a governmental body must compile a comprehensive inventory of all e-records systems containing a brief description of the purpose of each system. The inventory must be submitted to the National Archives which will appraise the remaining electronic systems.

- *Transfer of archival records into archival custody*

Should a disposal authority require the deposit of specific e-records into archival custody, such transfers should be made as soon as possible, to ensure their proper maintenance and preservation. These e-records would be maintained permanently for subsequent use by the original body, other bodies, other organizations, researchers and the general public. Before transferring e-records into archival custody, it is necessary for a governmental body to arrange for the transfer with the archives repository. If records are identified as archival, the NARS will specify certain requirements regarding the format of the records. The governmental body is responsible for all costs regarding transfer and archival preservation.

- *Disposal authority by the National Archivist*

No deletion or erasure of e-records should be done without the assurance that the records are no longer required, that no work is outstanding, and that no litigation or investigation or request which would involve the records in question in terms of the Promotion of Access to Information Act, 2000, is pending. Erasure should be done in such a manner that ensures protection of any information requiring special security provisions.

- *Data warehouses and Geographic Information Systems*

The management of these systems is subject to the requirements of the NARSSAA. Governmental bodies should assess the risk associated with the improper management of, and disposal of records from, these systems. They should ensure that these systems integrate with the Integrated Document Management System to enable reliable records to be captured.

The analysis of the existing literature on e-records management models indicated that sound e-records management depends on developing strategies and policies. A sound records management system must provide the functionality to add disposal instructions and retention rules to all subject files in the filing system, identify records that are due for disposal, alert the records manager that records are due for disposal and keep an audit trail of all disposal actions. The other important aspect is authenticity. This refers to the record, which is real or genuine. Confidentiality service is one of the requirements. This would ensure that information is protected from being disclosed or revealed to any entity not authorised to have that information.

2.5 Existing Skills and Knowledge

In most African countries, registries, where records are kept during the active period, are poorly staffed (Barata, Kutzner and Wamukoya 2001:38). The researcher has observed that Lesotho is not different in this regard. Registry staff are least educated and they are poorly paid. It is not uncommon to find that when the messenger or the cleaner is to be promoted she/he is taken to the registry. These people, because of their low level of

education, mostly do not appreciate the importance of records and this results in haphazard circulation of records, which often results in loss of valuable files and records.

Registry personnel with responsibility for current records received and created by the public organization are recruited from the lowest ranks of the civil service (Barata, Kutzner and Wamukoya 2001: 38). They have little or no means to enforce registry regulations in offices, nor do they have the influence to encourage officials to file their records in the registry. Registry staff members are often untrained themselves. That is why managers do not trust them to handle their records. Instead, they have a tendency to keep records in their offices and file them or save files on their hard drives.

In cases where records personnel show initiative, an individual is quickly promoted to another post, with better remuneration. This promotion results in the employment of yet another low-paid clerk, with little or no background, training or authority to make a filing system and registry work. Records staff that should be advising on the design and use of filing systems are simply not capable of advising on the development of computer directory structures and file naming conventions. In most cases, registry staff are not computer literate (Barata, Kutzner and Wamukoya 2001: 39).

In most countries in the region, there is a great number of professional archivists with knowledge of basic computer skills. There is also a growing trend for these archivists to utilise PCs in the course of their daily duties. For instance, in countries where the finding aids have been automated, archivists are able to utilize the systems according to their level of operation (Mutiti 2001a). Mutiti points out that there is scarcely any knowledge of operating e-records management systems, or the overall management of document imaging systems. There is greater need to meet training requirements in this area.

Archivists should be trained in electronic record-keeping in order to enable them play an active role in the management of e-records. Such training should be sufficiently appropriate to enable archivists to work with the IT experts in instituting the necessary

controls which would ensure their integrity and preservation and also facilitate access and use (Mutiti 2001a).

From records management, information is gained not only about the life cycles of government records, but also about the life cycle of information itself. It is learned that information must be preserved and retained, migrated from format to format, refurbished, as necessary, and kept in an active, accessible manner (Wells 2002).

Wells (2003) stresses that records managers must be able to organise not just by item or by content, but by type and use of information, which, in the machine-readable environment of e-government, will become ever more essential. Records managers should be able to teach people to think about business processes of the government, so that people can look at the overall government business practices in order to plan effectively for information use and retrieval.

2.6 Challenges and Issues to E-Records Management

2.6.1 Legal Issues and Legislation

The International Council on Archives (1997) states that the legislation governing many aspects of information creation, management, use and preservation has not kept pace with the rapid change in technology. Archive legislation is no exception. In most countries, archives laws were written with paper records in mind and with a simpler model of the archival function and the role of archival institutions. Many archival institutions are finding that the options available to them for dealing with e-records are constrained by the basic archival legislation. Some issues that are particularly problematic include:

1. The legal definition of a record, especially when it does not encompass records in electronic form.
2. Laws that do not accept e-records as legitimate evidence in legal proceedings.
3. Legislation that defines the role of the archives as a strictly custodial one.
4. Laws and policies that impose long waiting periods before the archives can appraise records or influence their disposition.

5. Legislation governing privacy and access to records and alienation of records from public oversight (International Council on Archives 1997).

To a large extent, the success of a total records management programme depends on a broad, carefully constructed and flexible archives and records management law. Lack of such a legal framework results in diminished programme scope that cannot provide effective management of records from creation to disposal (Mnjama 1996: 30).

Government organizations will need to establish a formal policy for maintaining electronic evidence as corporate records and a broad strategy for projecting enterprise-wide electronic records management. This will provide guiding principles, as structures and systems change and develop. An important element of a corporate records policy is the existence of a mechanism for assessing and strengthening compliance, to assess the extent to which the policy is met and the strategy followed and to provide the basis for monitoring achievement of policy goals (Public Records Office 2001).

2.6.2 Knowledge and Skills

The emphasis in electronic records management shifts from direct management of the record as physical artefact towards design of the infrastructure, in which the record is created, captured and managed by a mix of the individual end user, software systems and management procedures. For records management and information technology staff, this is likely to involve the acquisition of a new range of skills; new records management skills are required by records managers and IT staff to manage new kinds of systems in new contexts (Public Record Office 2001). For organizations, this involves the development of multi-skilled and multi-purpose project and operational teams, bringing together a range of different skills and expertise.

Lack of trained staff in the preservation of e-records is bound to erode the gains that have been made so far in preserving the archival heritage (Ngulube 2001/2002: 32). Furthermore, technological development and its unsettling effect call for continuous reassessment of records and archives management training.

Hedstrom (2000: 163) emphasised that the special attributes of e-records and the lack of experience with this new form of record-keeping present challenges for the management and control of e-records. The reliability and authenticity of e-records may be questioned because e-records are easy to alter without leaving a trace of tampering. Electronic record-keeping systems are subject to human and technological failures, which can result in significant losses of important records. If a system fails, an organization may lose access to vital information that is essential for ongoing operations until the system is restored and if the system does not have adequate backup, information may be lost forever. Computer viruses and malfunctioning software can produce erroneous results or alter the contents of e-records.

2.6.3 Training and Staffing

Staffing is another important ingredient for a total records management programme. Mnjama (1996: 30) explains that, in Africa, one of the deficiencies that places archives and records management programme in “a cycle of poverty” is inadequate staff complements and inappropriate distribution of existing staff between professional and support components.

Training becomes very critical in the context of managing digital information because there are few experts. Ngulube (2001/2002: 32) points out that training should not be training for the sake of training, but for identified needs. It would be important to carry out a training needs assessment before embarking on any human resources capacity-building programme. Effective records and archives management cannot be possible if records managers are not being motivated to perform well. In other words, they need to be encouraged to acquire more skills so as to be more efficient at their jobs.

Many institutions lack qualified and competent record managers. Training must, however, be relevant to local situations and be of high quality. Without adequate training a total records management programme is bound to fail. Modern record managers and archivists require exposure in all areas of information processing and handling. If African

governments are to reap maximum benefits from administrative reform programmes, they cannot continue to ignore the role of records management in effective decision-making. It is for this reason that there is need to develop schemes of service which will not only attract and retain the best record managers available in the field, but attract other professionals within the broader parameters of the information sciences (Mnjama 1996: 31).

2.6.4 Financial Resources

Katuu (2001: 54) identifies two issues. First, there is the cost of getting a specialist or consultant who would advise on how the digitization process should be undertaken. This could be an in-house consultant or sourced from outside. Often, in-house specialists may have limited exposure but will cost much less than someone from outside. Second is the cost of technology, which includes hardware such as workstations, servers, cabling and storage media and software, which includes database programs, operating systems and network managers. With technology comes the constant challenge of maintaining and upgrading in order to avoid obsolescence. One also has to consider the issue of technology dependence, where digitized records created using particular hardware and software may be wholly dependent on that technology to remain accessible.

2.6.5 Storage Media

Many organizations are accumulating vast quantities of e-records in the normal course of business, because their information systems have a great capacity to collect and store information. The accumulation of large volumes of private and public records in electronic form raises concerns about the impact of electronic record-keeping on personal privacy. Organising large volumes of digital information into manageable electronic record keeping systems that will satisfy the demands of both day-to-day operations and future access and retrieval is another significant challenge (Hedstrom 2000: 163).

Storage media are often used to support backups, off-line storage or distribution of electronic content. Spindler (2003: 1019) pointed out that:

The generally accepted reliable shelf life of a compact disk for example, is 5-10 years, depending on several factors, including manufacturers, production materials used, storage conditions, level of use. However, many experts believe that physical obsolescence and incompatibility and non-interoperability of storage media occur faster than the media can physically degrade. It is critically important to move electronic content from old storage media to newer media before the old media fails or becomes unavailable.

Hedstrom (2000: 163) indicated that e-records are also more difficult to maintain and preserve for the long term, because they are stored on magnetic or optical media, which are much more fragile than traditional recording and storage media. The storage media used for e-records are subject to rapid deterioration and catastrophic media loss when the entire contents of a single tape or disk become irretrievable. Recovery procedures are expensive, at best, and there is no guarantee that information stored on media that fail could be recovered.

2.6.6 Technological Obsolescence

The rapid rate of technological obsolescence is a serious problem for organizations that wish to retain their records in electronic form. Devices, processes and software for recording and storing information are being replaced with new products and methods on a regular three-to-five-year cycle, driven primarily by market forces (Hedstrom 2000: 163).

The primary challenge is associated with the basic, but extremely important, recognition that, unlike paper documents, electronic records are logically constructed and often “virtual” entities. Consequently, electronic documents cannot be viewed in the same way as paper records, in which so many of the content, context and structural metadata elements are embedded or else are part of the record (Bantin 2002: 56).

Dollar (2000:33) state it that technology obsolescence results from major changes in technical solutions that supersede or displace established technical solutions. Technology

obsolescence occurs in storage media and storage devices when newer and better storage media displace older, established storage media. Technology obsolescence also occurs in operating systems and software applications as vendors introduce products with new functionalities.

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Developers of IT hardware and software seem to be competing with themselves to introduce into the market new models and versions of their products, frequently. While this helps the companies to make more profits, since the users have to pay for the upgrades, it has not helped in the search for a stable digital archiving solution (Wato 2003). Wato (2003) points out that at present there are no stable electronic storage media that can be considered archival. The main problem surrounding the preservation of authentic e-records is that of technology obsolescence. As changes in technology continue to increase exponentially, the problem arises of what to do with records that were created using old and now obsolete hardware and software. Unless action is taken now, there is no guarantee that the current computing environment and its records will be accessible and readable by future computing environments.

Since technology standards are evolving so quickly, the type of storage media has to be kept up-to-date. While CD-ROMs might survive and store data for a hundred years (this is what some manufacturers claim, but it has not been proven), chances are that no drives capable of reading CD-ROMs will be available at that time, as new forms of storage media will long since have replaced it. New media for storing digital information rapidly replace older media and reading devices for these older media become no longer available. Indeed, technological obsolescence represents a far greater threat to information in digital form than the inherent physical fragility of many digital media (Wato 2003).

Wato (2003) gave some impressive examples of instances when electronic records stored in yester-years could not be retrieved or were lost altogether:

- The computerized index to a million Vietnam War records was entered on a hybrid motion picture film carrier that can no longer be read.

- The Pentagon irretrievably lost all but 36 of the 200 pages of its brief desert adventure during the first Gulf War. Half of the missing files were wiped out when an officer at the Gulf War Headquarters incorrectly downloaded some games into a military computer.
- In June 2002 a Norwegian literary museum admitted losing access to their catalogue system after the database administrator died, taking the password with him. The museum put out a radio call for hackers to help crack the code.

Abbott (1999:36) argued that electronic records are, by nature, dependent upon hardware and software for their existence and their ability to be read. This dependency presents, in the face of continuing technological obsolescence, record managers and archivists with a major challenge in ensuring the long-term preservation and continued accessibility of electronic records. The ease with which changes can be made, and the need to make changes in order to manage the material, means that there are challenges associated with ensuring the continued integrity, authenticity and history of digital materials.

2.6.7 Human Error and Vandalism

Human interaction with electronic information presents important challenges for e-records preservation. At a very basic level, e-records can be intentionally compromised through the actions of individuals who have access to the context or have learned to circumvent data security measures. Records can also be corrupted as an intended or unintended consequence of a computer virus infection. An individual can compromise any encryption and security technology with access to specialized expertise and high-performance computing facilities. Often, violations of system security are undetected until the damaged content or other evidence of the violation is discovered. These threats to e-record keeping can be minimized through the retention and maintenance of off-line backups.

2.6.8 Backups and Snapshots

Reliable backups of e-records are essential for successful short-term retention, since data can easily be deleted or corrupted with the push of a button. Backups are intended to

support recovery from disasters, system failures, or human error, but many data losses can be attributed to improperly managed backups. Backup failure can result from improper backup system configuration, lack of quality control, failure to migrate the content before backup system failure, incompatibility with new backup systems, or simple operator command error. In addition, the rapid increases in storage technology capacity, and the increasing frequency of new backup software releases, make long-term survival of backups unlikely. Accurate file backups must be effectively migrated or emulated for successful long-term preservation. The timing and scope of backups should be established in advance, rigorously followed and tested for accuracy and completeness.

Snapshots are specially designed downloads of websites and they are the key issues for preserving a record of an interactive website, since their scope and timing are critical for capturing a 'record' of the changing content. The timing of snapshots is also important since an interactive website may have certain components that are static and others changing. Snapshot timing needs to be established with some attention to the rate and nature of change in the website. It should be done accurately so that its components and their relationships can be retained.

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Table 1 is a summary of the challenges described by Spindler (2003: 1019).

Table 1: Challenges to e-records preservation

Challenge	Example
1. Physical degradation of storage media	CD does not read anymore since air pollutants have degraded the recording surface.
2. Physical obsolescence of storage media	5.25 inch floppy disc does not fit in CD-R drive
3. Incompatibility/non-interoperability of storage media	One manufacturer's DVD disc will not play in DVD players produced by a different manufacturer.
4. Software, operating system, or encoding incompatibility/non-interoperability	New software release will not run file from old release. New software release opens old file, but contents are corrupted. Software is not compatible with operating system. Product designed for displaying with one internet browser does not look the same in a different browser. Proprietary backup software and storage format not compatible with new release or other backup software. Proprietary codes from HTML editing packages do not convert to XML.
5. Human error/vandalism	Accidental or malicious deletion. Website is vandalized.
6. Backups and snapshots	Backups lost or overwritten. Wrong files backed up. Incomplete snapshot: Video server backed up, Web server not backed up.
7. Metadata	Snapshots of different servers not contemporaneous. Insufficient context to verify source and authenticate content.

Source: Spindler (2003: 1019)

2.7 Strategies and Policies to Manage E-Records

According to Ngulube (2003b), the formulation of preservation policies is an essential step in the preservation of records and archives. The following sections discuss policies and strategies for preserving electronic records.

2.7.1 Policies

A preservation policy gives a public archival institution the strategic direction it requires to initiate measures which are necessary for the protection of public records and archives.

Ngulube (2003b) further explained that policies assist archival institutions to understand the physical needs of records and to meet, or extend, nationally and internationally agreed standards for the preservation of archival materials. At the same time, a policy reminds the formulators of the constraints they must all accept if important records are to be saved for present and future generations. Ranson (1995: 440) provided a definition of policies as:

Policies are statements that are typically expressed both in utterance and textual form. They have a distinctive and formal purpose for organisations and governments; to codify and publicise the values, which are to inform future practice and thus encapsulate prescription for reform. Policies are oriented to change and action, providing public intent of transforming practice according to ideal values.

Menou (1991: 50) defined a national policy as a set of principles that guide a regular course of action. A policy consists of:

- An image of the desired state of affairs, as a goal or set of goals, which are to be achieved or pursued.
- Specific means by which the realization of the goals is to be brought about.
- The assignment of responsibilities for implementing the means.
- A set of rules or guidelines regulating the implementation of the means.

Furthermore, Menou (1991: 50) represented a policy model as:

- *De facto*, that is they can be inferred by observing patterns of action and behaviour among key players.
- *De jure*, that is they are stipulated in documents such as legal acts and regulations; and
- Formalized policies codified in documents originating from stakeholders such as professional associations and organizations.

The present study adopted the '*de jure*' policies. It was in this case that the respondents were asked if the legislation explicitly addressed the management of e-records.

In general, policies set out goals to be achieved, as well as guidelines for implementing them. Policy deals with “why” and “what”, and plan with “how” (Menou 1991: 51). Written policies serve as binding contracts between the information agencies and the stakeholders. They help set standards. Written policies can be used as tools for staff training and evaluation. In addition, they assure continuity and inform staff and users of the scope and goals of the preservation programme. They facilitate a planned response to technological change (Ngulube 2003b). The existence of preservation policies does not guarantee their implementation. Ngulube (2003b) pointed out that:

Policies are important because they can outline explicitly the responsibilities of the archivists for the preservation of archival materials of all types in order to guarantee access to the information they contain, both for the current generation of archives and record users, and for generations to come.

Governments have more influence and an important role to play in policy-making. According to Oppenheim (1998: 47), government is probably the biggest collector, analyst, provider and disseminator of information in any country. Governments can act as an exemplar to other sections of the community by becoming leading-edge technology users, introducing electronic procurement procedures, becoming major purchasers and users of electronic information, becoming significant providers of information on the World Wide Web (WWW) or requiring adherence to national and internationally backed standards.

The extent to which government information resources are available for third party exploitation is also important. Government information is the property of the taxpayers, who pay for its collection, and therefore a government is under an obligation to provide this information equitably and efficiently to the public at large. It is therefore important that government policies represent a compromise between these approaches (Oppenheim 1998: 48). Oppenheim (1998: 48) stated that:

There is increasing interest worldwide in how electronic information and the telecommunications networks for its distribution can be employed to extend participation of citizens in the democratic process at local, regional, national and

even supranational levels. This participation can be enhanced by the provision of materials produced by government in electronic format to those citizens able to access it in, combined with e-mail facilities to permit citizens to communicate with legislators and decision makers at all level of government.

Well-developed policies help organizations to improve the quality and reliability of their electronic record keeping systems and can protect organizations against litigation over improper use of information systems for record keeping purposes (Hedstrom 2000: 167). As a starting point, every organization should determine whether e-records are acceptable in the jurisdictions in which they operate and for the purpose for which the records will be created and used. Hedstrom (2000: 167) points out that policies should define the acceptable uses of information technology for record-keeping purposes, delineate the processes and methods necessary to ensure accuracy and authenticity of e-records, specify provisions for quality control, storage and retention and set parameters under which access to e-records are permitted or denied. E-records policies should spell out the roles and responsibilities of management, systems administration staff and end-users for the creation, maintenance, protection and release of e-records.

2.7.2 Strategies

According to Harvey (2003: 16), technical strategies are based on the principle that digital information can be maintained and kept accessible, regardless of the hardware and software platforms on which it was developed and currently resides. They are:

- **Refreshing** – Moving or copying data (video, image, etc.) from one storage device to another, for example, video to video or CD-ROM to CD-ROM.
- **Migration** – Converting or modifying from one format to another, for example, video to digital or WordStar document to a Microsoft Word document.
- **Emulation** – Using software that can emulate or pretend to be a different software or operating system.
- **Encapsulation** – Grouping together a digital object and anything else necessary to provide access to that object.

2.7.2.1 Refreshing

Deegan and Tanner (2002: 196) explain that digital storage media have short lives, the length of which can be estimated but which is ultimately unknown. They explain that data therefore has to be moved periodically to new media to ensure its longevity. Sometimes this involves a change of medium: CD-ROMs will be copied onto hard disks in a digital data store, floppy disks may be copied on to CD-ROMs; at other times refreshing may take place because a particular substrate has become unstable and the files need to be copied to a newer, more stable version of the same medium. Refreshing copies the bit stream exactly as it is and makes no changes to the underlying data. It is a process that needs to be carried out whatever other preservation strategies are adopted. It is technically relatively straightforward, with low risk of loss if performed and documented properly (Deegan and Tanner 2002: 196).

2.7.2.2 Migration

Migration is the process of transferring digital information from one hardware and/or software setting to another, or from one computer generation to subsequent generations. It specifically addresses the issue of technological obsolescence. For example, moving files from Mac to a PC involves accommodating the difference in the two operating environments. Migration can also be format-based. An example of this would be the moving of image files from an obsolete file format to DOS, to increase their functionality. Migration is common and is practised at basic levels, that is access to word processor files, statistical data files and image files have been maintained by migrating from one format to another, often by the imported facilities of current application (Harvey 2003: 17).

According to Wato (2003), migration is normally criticised because its results are often unpredictable, due mainly to a lack of testing and documentation. When new software is brought out, it is common for many people to simply refresh their documents by recopying. This often results in the loss of information, whether record content, format, behaviour or appearance. The new application reads the record in a different manner from that in which it was designed to be read and, during the migration process, some

processing instructions, content and functionality may be lost or even gained. The loss of this information varies, depending on the extent and nature of the migration performed. Migration results are difficult to predict, unless a substantial amount of work is done in advance on the source and target format specifications. Migration can affect a records status as authentic and any record which is preserved must be preserved authentically, otherwise its meaning and validity cannot be assured.

The complexity of the migration process usually depends on the nature of the digital resource, which may vary from simple text to an interactive multimedia object. Converting data to another software format entails a loss of functionality. Furthermore, the authenticity of the original object is thereby corrupt. When considering migration one needs to address the issue of compatibility. Backward compatibility of software means a newer software version can read and process files created by an older software version. Forward compatibility of software, on the other hand, means that an older software can read and process files created by a newer software version. People most often desire backward compatibility of software to read and process older files, since the software is continually updated. Forward compatibility of the software is less frequently needed, usually required by people who fall behind in software versions, e.g. trying to read an MSWord 97 file with MSWord 95 (Wato 2003).

Rothenberg, cited by Lazinger (2001: 83), contends that migration is not a viable solution for long-term digital preservation, for two reasons. First, migration is too labour-intensive to be feasible. Long-term preservation needs a solution that does not demand “continual heroic effort or repeated invention of new approaches every time formats, software or hardware paradigms, document types, or record keeping practices change”. The second problem with migration arises because it is impossible to predict what it will involve. Paradigm shifts cannot be predicted and may necessitate highly complex conversions that are not affordable, “leading to the abandonment of individual documents or entire corpora when conversion would be prohibitively expensive” (Lazinger 2001: 83). In addition, it is impossible to predict when migration will be necessary, because the cycles

of migration that must be carried out are determined by new formats being released on the market, so the time frame for migration can neither be controlled nor estimated.

2.7.2.3 Emulation

Emulation is using software that can emulate, or pretend to be, different software or operating system. Emulation involves the re-creation of the technical environment required to view and use a digital collection; the recreation on current hardware of the technical environment required to view and use digital objects from earlier time. This is achieved by maintaining information about the hardware and software requirements so that the system can be re-engineered. Emulation has been practised for many years and there are several commercial and public domain emulators for a variety of hardware/operating system configurations. A good example is MS DOS emulation in the Windows NT operating system (Harvey 2003: 17).

Emulation is essentially a way of preserving the functionality of, and access to, digital information, which might otherwise be lost due to technological obsolescence. Because it is impossible for any organisation to retain working examples of every computer and every piece of software, and because the cost of any attempts to do so would be prohibitive, emulation offers a viable alternative strategy to ensure access to digital information in the future.

One of the benefits of emulation strategy, compared with migration, is that original data need not be altered in any way. It is the emulation of the computer environment that will change with time. Another advantage of implementing emulation is its possible efficiency. Once the data is archived with appropriate metadata software, no other action is required, apart from media refreshing, until access is desired. One emulator can also be used as a solution for several data objects requiring the same operating environment. This is especially important because of limited resources to handle each digital object separately and therefore economies of scale are important.

Theoretically, emulation is the most stable model and a conceptually clean solution. In fact, if preserving the original functionality and recreating the look-and-feel of a document is a prime objective, it is the only reliable way. Emulation has attracted similar criticism to migration, on the grounds that it can be costly, highly technical and labour-intensive. The criticism is not always justified, as there is currently no specific methodology for emulation and future costs cannot yet be predicted and may or may not turn out to be less than for migration.

2.7.3 Metadata

Metadata is descriptive data that gives context to electronic documents. Without the necessary descriptive metadata attached a document cannot be considered to be a record. Descriptive metadata gives information about where a document comes from, who the creator was, when it was created, where it is located. Metadata is also information describing data and their systems; that is the background information that describes how and when and by whom a particular set of data or a record was created, collected or received and how it is formatted. It also includes documentation on migration procedures and actions (National Archives and Records Service of South Africa 2003: 14).

Gilliland-Swetland, cited by Lazinger (2001: 143), stated that metadata is needed not only to identify and describe an information object, but also to document how that object behaves, its function and uses, its relationship to other information objects and how it should be managed. To cover all these perspectives, Gilliland-Swetland divided metadata into five distinct categories, namely administrative, descriptive, preservation, use and technical metadata, according to key aspects of metadata functionality. Table 2 describes different types of metadata and their functions.

Table 2: Different types of metadata and their functions

Type	Definition	Examples
Administrative	Metadata used in managing and administering information resources	Acquisition information Rights and reproduction tracking Documentation of legal access requirements Location information Selection criteria for digitization Version control
Descriptive	Metadata used to describe or identify information resources	Cataloguing records Finding aids Specialized indexes Hyperlinked relationship between resources Annotations by users
Preservation	Metadata related to the preservation management of information resources	Documentation of physical condition of resources Documentation of actions taken to preserve physical and digital versions of resources, e.g. data migration and refreshing
Technical	Metadata related to how a system functions or metadata behaves	Hardware and software documentation Digitization information, e.g. formats, compression ratios, scaling routines Tracking of response times Authentication and security data, e.g. encryption keys, passwords
Use	Metadata related to the level and type of use of information	Exhibition records Use and user tracking Content re-use and multi-versioning

Source: Gilliland-Swetland (2000:3)

2.8 Summary

The review of the literature, in Chapter Two highlighted the importance of records management. The archival legislation with regard to e-records management was discussed. The chapter reviewed the IT infrastructure and resources to support records

management. The models for e-records management, proposed by Victorian Electronic Record Strategy (2003) and the South African Electronic Records Management Strategy, proposed by the National Archives and Records Service of South Africa (2003: 20) were discussed in order to identify the model which would be suitable for the present study. The establishment of existing skills and knowledge in the public sector, and the challenges in the management of e-records, were reviewed. Strategies for managing e-records were established.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

The main aim of the present study was to investigate the management of e-records in the public sector in Lesotho, to establish whether the public sector was managing its e-records in accordance with the established principles, practices, strategies and models of e-records management. The study was carried out with the view that there are challenges of managing e-records which the public sector needs to be aware of, in relation to their preservation and access.

Since the public sector is the primary source of records creation, it must have the responsibility of ensuring that future generations have access to public records for future referencing, educational and research purposes. If records are not managed, the memory of the society will be lost. The research questions were formulated from the objectives of the study, which were based on the purpose of the study. The research questions guided the researcher to design the project, in terms of how data was going to be collected, from whom and how it was going to be analyzed.

3.1 Research Design

According to Bless and Higson-Smith (1995: 63), a research design is a specification of the most adequate operations to be performed in order to test a specific hypothesis, under given conditions. Rowley (2002: 18) describes a research design as a logic that links the data to be collected to the conclusions of the study. According to Durrheim (1999: 29) a research design is a plan that serves as a bridge between the research question and the execution or implementation of the research.

Research design is needed because it facilitates efficient implementation of various research operations, thereby making research as effective as possible, yielding maximum information with minimal expenditure of effort, time and money (Kothari 1990:40). Kothari (1990: 40) suggests that research design stands for advance planning of the methods to be adopted for collecting the relevant data and the techniques to be used in

their analysis, keeping in mind the objectives of the research and the availability of time and money.

A good design is often characterized by its flexibility, appropriateness, efficiency and economy. Generally, the design that minimizes bias and maximizes the reliability of the data collected and analyzed is considered a good design (Kothari 1990: 41). Kothari (1990: 41) explained that the design that gives the smallest experimental error is supposed to be the best design. Similarly, a design that yields maximum information and provides an opportunity for considering many different aspects of a problem is considered the most appropriate and efficient design, with respect to many research problems. The question of good design is related to the purpose or objective of the research problem and also the nature of the problem to be studied. According to Kothari (1990: 44), there are different research designs. They can be categorized into three, namely exploratory, descriptive and hypothesis testing.

The main purpose of exploratory design is that of formulating a problem for more precise investigation, or of developing the working hypothesis from an operational point of view. The major emphasis in such studies is on the discovery of ideas and insights. There are three methods in the context of exploratory design, namely the survey of literature, which deals with the research problem or developing the hypothesis. In this case the researcher reviews the work already done by others, to develop the relevant hypothesis. The other method is that of surveying people who have practical experience with the problem to be studied. The object of a survey is to obtain insight into relationships between variables.

Descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual, or of a group, whereas diagnostic research studies determine the frequency with which something occurs, or its association with something else. In descriptive and diagnostic studies, the researcher must be able to define clearly what he wants to measure and must find adequate methods for measuring it; along with a clear definition of the 'population' he wants to study. Hypotheses testing are generally known as experimental study. The researcher tests the hypotheses of causal

relationships between variables. Such studies require procedures that will not reduce bias and increase reliability, but will permit drawing inferences about causality. Experiments usually meet this requirement (Kothari 1990: 49). The following section will deal with the various aspects of research design that are relevant to the current study.

3.2 Case Study Method

The research methodology selected for this study was descriptive research, utilizing the case study approach. This method is called descriptive because it seeks to make sense of the situation being investigated from a descriptive point of view (Wimmer and Dominick 1994: 130). Descriptive research studies are those that are concerned with describing the characteristics of a particular individual, or of a group, whereas diagnostic research studies determine the frequency with which something occurs or is associated with something else. The studies concerning whether certain variables are associated are examples of diagnostic research studies. Studies concerned with predictions, with the narration of facts and characteristics concerning individuals, groups or situations are examples of descriptive research studies. Most social research comes under this category (Kothari 1990: 66-67). The case study was applied by utilizing the survey with interview schedules as the main data collection.

According to Yin (1994: 13), the case study is defined as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used. Mouton (2001:49) pointed out that case studies are appropriate for studies that aim to provide an in-depth description of a small number of cases. The case study focuses on a single unit or case and seeks to describe the situation in order to achieve a comprehensive understanding of the events under study. The present study was conducted using the survey research. It was suitable, as it was mainly concerned with describing the situation of a particular phenomenon. In this case the unit of analysis was the public sector in Lesotho. The following section describes survey research.

3.3 Survey Research

Dane (1990: 120) points out that survey research involves obtaining information directly from a group of individuals. Surveys are concerned with collecting standardized data about occurrences or incidence of events or instances in varying situations and circumstances (Judd, Smith and Kidder 1991: 519). According to Fink (1995: 14), surveys are ways of producing “information to describe, compare, and predict attitudes, opinions, values, and behaviour based on what people say or see and what is contained in records about them and their activities”. The study adopted the survey method to describe respondents’ opinions and perceptions, current conditions, knowledge and attitudes.

Babbie (1995: 273) argued that surveys in general have advantages in terms of economy and the amount of data that can be collected. The standardization of the data collected represents another special strength of survey research. Survey research has the weakness of being somewhat artificial and potentially superficial. It is difficult to gain a full sense of social processes in their natural settings through the use of surveys (Babbie 1995: 277). Nevertheless, the survey research design was considered to be the most appropriate method because the study required collection of data on the opinion and views of registry supervisors in the public sector in Lesotho and those of the national archivist.

3.4 Population

In social scientific research there is a wide range of variation in what or who is studied, what are technically called units of analysis. Units of analysis or population are those units or things we examine in order to create summary descriptions of all such units and to explain differences among them (Babbie 1995: 87; Bless and Higson-Smith 2000: 84). This may be characterized in terms of individuals, groups, organizations and social artifacts. Although it is desirable to study the whole population, sometimes cost and time considerations make it impossible. A sample is usually studied if the population is large. According to Leedy (1997: 211), there is little point in sampling populations of less than 100. A census approach is normally applied for small populations.

The population of the study was identified from the Lesotho Government Official Website (2003). The registries that were used in this study were identified from the list of the 19 ministries that constitute the Government of Lesotho. It was found that the records management personnel who are dealing or connected with the records creation, maintenance or management in general were found to be records supervisors who were the relevant respondents, and the national archivist, as she oversees the management of records and archives in Lesotho.

3.5 Data Collection Instruments

An appropriate tool is one that can collect information economically, within the available time (Chinyemba 2002: 64). There are various tools that can be used to collect data. These tools include questionnaires, interviews and observations. The researcher identified the tool, which was suitable for the study and identified what was required to answer the research questions. The researcher used a literature search, which assisted in identifying the research methodologies and interview method. Observations were also used.

3.5.1 The Literature Review and Search

According to Kaniki (1999: 17, 20), a research project does not exist in isolation. Before embarking on a project, a researcher should review previous work in that field. Such a review commonly encompasses recently published research, but could include a review of historical and oral material. A literature review involves identifying relevant literature or sources of relevant information (bibliographic access), physically accessing the most relevant literature (document delivery), reading and analyzing these works and writing up the literature review.

A literature survey is a necessary component of any research conducted in the social sciences, for several reasons. The search for relevant literature enables the researcher to find out what else has been done in relation to the problem to be investigated and makes the duplication of existing studies less likely (Aitchison 1998: 58). Familiarity with related research also makes the interpretation of the results of a study more meaningful, as they can be discussed in the light of what has gone before (Gay 1976: 25). Chapter

Two discussed the relevant literature from various sources such as journals, books, conference papers and electronic resources.

3.5.2 Interviews

The objective of the interviews was to gain information about the mechanisms, challenges and problems presented by e-records and how these can be dealt with in the future. According to Gay (1981: 134), an interview is essentially an oral, in-person administration of questionnaires to each member of a sample. Interviews involve direct personal contact with the participant who is asked to answer questions. It gives the researcher the opportunity to know people quite intimately, and this permits the researcher to understand respondents better, that is how they feel or think (Bless and Higson-Smith 2000: 107). Interviews were selected because the researcher wanted to achieve a high response rate. The main attraction of the interviews was to eliminate the constraint of time and to overcome the problem of misunderstandings and misinterpretations of words or questions.

3.5.2.1 Advantages of Interview Protocol

The interview presents a number of advantages to collect data:

- In the interview protocol, misunderstandings and misinterpretations of words or questions can be overcome. Clear answers can be obtained because in cases of doubt on the side of the respondent, the researcher can always explain further. In case of doubt on the side of the researcher, the respondent can make his/her answer clearer.
- Using the interview protocol, interviewers can ensure that all items on the questionnaire have been considered and respondents do not omit difficult questions. The respondents are also encouraged to persevere (Bless and Higson-Smith 1995: 107).

- Interviews are good and represent an excellent technique when no comparison is sought between the responses of different participants, but when each participant is considered separately, such as in a case study (Bless and Higson-Smith 1995: 107).
- During the interview protocol, it is possible to use a cassette recorder. This permits the interview to progress quickly and responses are recorded as given, which avoids any words or sentences being changed.
- Using the interview protocol eliminates the constraints associated with waiting for the response. Responses are obtained immediately, in contrast to the self-administered questionnaires sent or returned by mail.

3.5.2.2 Disadvantages of the Interview Protocol

It is true that the interview protocol presents several advantages, but it also has some disadvantages:

- Unlike questionnaires, which can be administered directly to the respondent or can be mailed to him/her, the interview protocol can only be administered directly, because there must be person to person discussion.
- Making appointments with potential respondents may not be easy. They may not all be available at the time desired by the interviewer. It can be costly, because of the need to move and go to meet the interviewees. It may be inconvenient if they are not staying together (Gay 1976: 30).
- With the interview protocol, there is a possibility that the responses can be biased by the presence of the interviewer (Bless and Higson-Smith 1995: 63). The presence of the interviewer can be a handicap as far as anonymity and respect for the private life of respondents are concerned. The respondents may feel embarrassed to talk freely and honestly, whereas they would answer freely if the

questionnaire were left for them to fill in privately (Bless and Higson-Smith 1995: 111). Social status and age can affect the answers from respondents.

- Using the interview protocol requires training on the part of the interviewer, who should have skills in communication and interpersonal relations. Poor recording can result in incomplete and subjective information.

According to Wilkinson (2000: 47) interviews vary in their structure. They can be focused on a given set of pre-defined questions that are covered in turn (this is known as a structured interview), or they can focus on a pre-defined theme or area and allow discussion to take place between the researcher and the interviewee on the theme (this is known as an unstructured interview).

3.5.2.3 Types of interview

There are a variety of interviews, which include personal interviews, focus group interviews and telephone interviews (Cohen, Manion and Morrison 2000: 287). Arksey and Knight (1999: 7) describe personal interviews as varying from structured, semi-structured to unstructured. In the structured interview the researcher strictly adheres to the interview schedule. Semi-structured interviews are less formal than structured ones in that the interviewer can explore issues that emerge by asking follow-up questions. In an unstructured interview, the interviewer may be allowed the discretion to ask questions at the end of the interview, to explore interesting ideas. The present study adopted the structured interview.

Structured interviews entail reading straightforward information, essentially a list of standard questions. Structured interviews are mostly used for quantitative research. The most structured form is the schedule-structured interview, in which the questions, their wording and their sequence are fixed and identical for every respondent. This was done to make sure that when variations appear between responses they could be attributed to the actual differences between the respondents and not to variations in the interview.

3.5.3 Observations

As part of the research, observations can be used for a variety of purposes. They may be employed in the preliminary stages of a research project to explore an area, which can then be studied more fully utilizing other methods. They can be used towards the end of a project to supplement or provide a check on data collection in interviews or surveys (Foster 1996: 58). According to Foster (1996: 59), observation as a research method has a number of clear advantages over interviews and questionnaires. First, information about the physical environment and about human behaviour can be directly recorded by the researcher, without having to rely on the retrospective or anticipatory accounts of others.

Secondly, the observer may be able to 'see' what participants cannot. Many important features of the environment and behaviour are taken for granted by participants and therefore are difficult for them to describe. Thirdly, observation can provide information on the environment and behaviour of those who cannot speak for themselves and therefore cannot take part in interviews or complete questionnaires, because they do not have time or because they object or because they fear the consequences.

According to Foster (1996: 81), observations may be more structured or less structured. The nature of these two categories and procedures varies according to the aims of the research and the particular behaviour to be observed. Structured observation allows the researcher to locate the behaviours in time and to record their frequency and duration and also where they occur in a particular sequence of behaviours. There are three methods involved in recording observations in a more-structured manner, namely continuous, time and events.

3.5.3.1 Structured observation

The researcher may be interested in observing eye contact in interpersonal interaction. Foster (1996: 81) explained that in this case the researcher is interested in frequency and duration of eye contact between two interacting individuals. Using video recordings, observers note on a time sheet the period over which one, both or neither subject was engaging in eye contact. However, continuous recording may be difficult where

behaviour changes frequently and rapidly, as, for example, with question and answer sequences in a school classroom. It is also difficult to record more than one variable, or category of a variable at a time.

Time is involved with coding of behaviour, which is occurring at regular times. The observer can record the behaviour occurring at what is a representative sample of time and can therefore estimate the proportion of time taken up by particular behaviours. Time sampling can also involve coding the behaviour which occurred at regular, timed periods. At a time signal, the observer notes down whether particular behaviours occurred during the preceding period. The advantages of this method are that a large number of behaviours or events can be recorded and some indication is gained of their minimum frequency. The problem is that the methods will under-estimate the frequency of behaviours, which are clustered in time, and will reveal little about the duration of behaviours.

The other method involved is focusing on events. Whenever the behaviour of interest occurs, its nature, and sometimes the time at which it occurs, is recorded. The advantage of event recording is that it gives data on the frequency of events or behaviours, and possibly where they occur in time in a sequence of behaviours. However, the method does not usually give information on the duration of behaviours and may prove difficult to operate when events of interest occur frequently, in rapid succession (Foster 1996: 83).

3.5.3.2 Less structured observation

Foster (1996:84) describes the aim of less structured observation, that is to produce detailed qualitative data on behaviour as part of a rounded description on the culture of a particular group of people. The emphasis is on flexibility. Data include records of conversations, discussions and interviews, as well as the observed behaviour of subjects. The usual method of recording data is in the form of field notes. These notes are taken during observation itself, when it is possible, or shortly afterwards, and they form a running record of the researcher's observation.

According to Foster (1996: 84), what is written down depends on the initial research questions and the stage the research has reached. Also, it is very important to record as much as possible about what was said verbally and non-verbally. It is also important to record as much as possible about the physical, social and temporal context in which the behaviour occurred. A major influence on the accuracy of field notes is when they are made. Foster (1996: 84) stresses the point that notes should be made as soon as possible after the observations.

The less structured observation was adopted for the present study. The observation technique was used to gather supplementary data that helped to further interpret findings obtained during the interviews. The technique had the advantage of recording behaviour as it occurred. The selected ministries were observed through their registries. The observations included building conditions, infrastructure such as computers, telephone lines, printers, storage facilities, fire protection, filing equipment and others. The notes were recorded soon after each observation. The observation schedule is at Appendix 4. Cohen, Manion and Morrison (2000:309) point out that structured observation provides useful numerical data and they supplement data in a non-verbal way.

There are, however, limitations to observation as a research method. The environment, event or behaviour of interest may be inaccessible and observation may simply be impossible. This may be because the social norms surrounding the event or behaviour do not usually permit observation, because the behaviour deliberately avoids observation, because the observer is barred from access to the event or behaviour, or the event or behaviour happened in the past. Sometimes events and behaviour are not open to observation. Another limitation is that people may, consciously or unconsciously, change the way they behave because they are being observed and therefore observational accounts of their behaviour may be inaccurate representations of how they behave 'naturally' (Foster 1996:59).

Though the method has limitations, the researcher used the method to physically observe the working environment that is infrastructure, resources and storage facilities and

equipment used, in relation to the management of e-records. The data from the observations supplemented the information from other sources.

3.6 Interview Schedule Design and Structure

With structured interviews a standard schedule is used for each respondent. The questions have the same wording and are asked in the same order (Wilson 1996: 94). The ability of the interviewer to vary the wording of questions, or the order in which they are asked, is strictly limited. In the present study the interview schedule was divided into four sections. The first section of the instrument covered issues related to archival legislation. The objectives of these questions were to ascertain the availability and use of archival legislation in respective ministries. Related to these sections were questions on policy and guidelines concerning the management of e-records.

The IT infrastructure in the public sector was surveyed in the second section. The availability of IT resources was explored in questions relating to whether they were available in registries offices. Section three covered storage methods and formats, which included database format, image, word processing and other formats. The last section included issues relating to existing skills and knowledge. Questions including qualifications and staff development and training, were asked.

There are two types of questions which are used in interview schedules, namely open and closed questions (Newell 1993: 103). Both types of questions were used in the study. Some of the questions were adopted from the research instruments used by Chiyemba (2002: 143-144) and Ngulube (2003a). The questions were adopted from these instruments, because both projects were dealing mainly with the management of records, that is storage methods and formats, policy, legislation and the preservation and management of records.

3.6.1 Closed Questions

Closed questions are where a list of categories is supplied for respondents to choose from (Bless and Higson-Smith 1995: 122). The advantages of closed questions are that “they

can be pre-coded and responses can easily be entered in a computer, saving time and money” (Newell 1993: 101) and they are “less time-consuming for the respondent to complete” (Newell 1993:101). The disadvantages of closed questions are that they “force the respondent to choose between the answers provided”. Newell (1993) also makes the point that limited option questions should always provide the respondent with the option to choose an “other” category, in case an appropriate pre-coded response has not been offered (Newell 1993: 102). In the present study most of the questions asked were closed because the researcher attempted to design the interview schedule to save the time of the respondents and to facilitate organization and analysis of data in a simple way.

3.6.2 Open Questions

Open-ended questions are “those that allow individuals to respond in any way they wish” (Newell 1993: 102). Open questions were used in the interview schedule. Respondents were given an opportunity to raise issues that they thought were significant. The drawback of open questions is that they require the respondent to spend time considering an answer and they are time-consuming to code and analyze (Newell 1993: 103). These were included in the instrument in order to give respondents freedom to answer questions in their own words, which closed questions do not provide (see Appendix II).

3.7 Validity and Reliability

Validity of the study refers to its ability to measure what it sets out to measure (Newell 1993: 99). Fink and Kosecoff (1998: 27) state that one should pilot test a survey to see if it can be administered easily and according to plan. The main goal is to obtain reliable and valid information. Reliability refers to the consistency of the information one gets and validity refers to the accuracy of the information. Since the researcher made some preliminary visits to some of the government ministries, she made some observations and the information gathered during the visits assisted her to formulate relevant questions that reflected what was actually happening in the ministries.

Leedy (1997: 160) stipulates the different forms of validity as face validity, criteria, and construction validity. For the purpose of the present study, the researcher found that face

validity was important. This refers to the subjective judgement of the researcher and addresses questions on whether the instrument in fact measures what it is supposed to measure and whether the sample is representative of the population being studied. Sampling was not used in this study, as the researcher surveyed the *entire* population. The researcher was able to elicit data from the public sector in Lesotho. Pre-testing is also used to establish validity.

The validity of the interview schedule was based on the types of questions asked. Questions were related to the topic and linked to the objectives. The researcher made use of closed and open-ended questions. The questions asked were generic and were not unique to any particular ministry. The survey instrument could thus be used again by anyone wanting to survey management issues related to e-records in the public sector.

According to Leedy (1989: 30), reliability refers to the accuracy of the instrument. If the study were to be duplicated using the procedures and techniques described above, the same results should be obtained. A frequently used method for evaluating an instrument is its degree of reliability. In survey research, reliability is mainly about trying to reduce interviewer bias so that the findings can be trusted (Arksey and Knight 1999: 53). In the present study, reliability was measured by making sure that all respondents were asked the same questions and were given the same clarification. The findings would be unreliable if it turned out that some questions were explained to some respondents who were puzzled by them, but not to other puzzled respondents.

3.8 Pre-Testing

Powell (1997: 105) stresses the importance of pre-testing. A pre-test gives the researcher an opportunity to identify questionnaire items that tend to be misunderstood by the participants. The pre-test offers certain advantages beyond helping refine the data collection instrument. It can permit a preliminary testing of the hypothesis, point out a variety of problems, not anticipated, relating to design and methodology, facilitate a practice run of the statistical procedure to be used and perhaps even indicate that the final study may not produce any meaningful results and therefore should be rethought or

abandoned (Powell 1997: 105). Babbie (1995: 153) stresses that, no matter how careful one is in the design of a data collection instrument such as a questionnaire, there is always the possibility, indeed the certainty, of error. Pre-testing should be used on people who are at least relevant. Dane (1990: 127) describes the purpose of pre-testing as to “fine tune the instrument in much the same way that a bench check allows a technician to evaluate a part before installing it”.

An important purpose of pre-testing was to devise a set of codes or response categories for each question which will cover, as comprehensively as possible, the full range of responses which may be given in reply to the questions in the main investigation. In addition, the time factor was taken into consideration when pre-testing. For this to work effectively, the pre-testing was done on individuals who represented a variety of people, which the main study was intended to cover.

Pre-testing was done at the University of Natal, where the researcher is a student. Ten people who are involved in records management were involved in the process. The pre-testing took three days. The researcher went through all the responses to the pre-test and found that there were corrections that needed to be made to the instrument. Those who were pre-tested raised the issue of some of the questions being too technical. The researcher realised it was not a major problem, since she was going to be there to conduct face to face interviews. If there was a need to explain those technical words, she would be able to explain them. When it came to the time factor, it was found that an interview took about twenty minutes. The corrections were made and the instrument was successfully administered.

3.9 Interviewing Process

After the corrections from the pre-testing were checked and corrected, the interview schedule was compiled (see Appendix II). Though the researcher introduced herself to the respondents, as it was a face-to-face interview, an introductory letter explaining the purpose of the research was attached to the schedule. A letter from the Information Studies Programme (see Appendix III) introduced the researcher and confirmed that she

was currently carrying out a study on e-records management practices in the public sector in Lesotho. This was done so that the researcher would be given any necessary assistance to facilitate the conduct of the study. The researcher made some preliminary visits to some of the nineteen government ministries and was assured of their co-operation. She observed that all the ministries were accessible, since they were all located in the capital city, Maseru.

Before leaving South Africa, the researcher made appointments with some of the personnel in the ministries, through e-mail and the telephone. This made it easier to carry out the interviews. Before an interview could take place, the person in charge, that is the registry supervisor, introduced the researcher to all the records management staff and the interviewer was asked to introduce herself in front of the whole staff. The interviews were first held on 18 August 2003 and ended on 22 August 2003. On the first day the researcher interviewed four respondents. The following day, 19 August, she interviewed six individuals and, on the 20 August, three. On the 21 August the researcher interviewed four respondents and three people were interviewed on 22 August. Each interview took almost twenty minutes, which the respondents found very fair, since people do not want to be kept for longer than half an hour. Questions for the archivist dealt mainly with management and legal issues, in terms of policy implementation and guidelines governing e-records in the public sector in Lesotho.

3.10 Data Analysis

Data comes in many shapes and forms. The role of analysis is to bring data together in a meaningful way and enable researchers to interpret or make sense of it (Saunders 2000: 77). According to Kothari (1990: 151), “there is a distinction between data processing and analysis”. He explained that, technically speaking, processing implies editing, coding, classification and tabulation of collected data, so that they are amenable to analysis. The term analysis refers to the computation of certain measures, along with searching for patterns of relationships that exist among data-groups (Kothari 1990: 151). Powell (1997: 67) stated that data is analysed to describe the characteristics of the units

of analysis, to make predictions about specific relationships, and to test associated relationships.

The statistical approach was adopted for data analysis. Powell (1985: 145) points out that the basic purpose of statistical analysis is to summarize observations or data in such a manner that they provide answers to the hypothesis or research question. Statistical methods are applied for descriptive purposes and for statistical inference. The researcher used descriptive statistics, which mainly dealt with the tabulation of data, graphs and the calculation of descriptive measures.

Before data was analyzed, it was evaluated. This process is sometimes called data editing (Cohen, Manion and Morrison 2000: 265). The purpose is to check for ambiguity, completeness, comprehensibility, internal consistency, relevance and reliability (Powell 1997: 63). The researcher checked the data in line with errors in recording, handwritten notes and to check whether or not there was an answer to every question. The following section describes how data was coded.

3.11 Data Coding

According to Powell (1985: 160), SPSS is the most widely available statistical package. The SPSS system is a comprehensive, relatively easy-to-use computer program for statistical analysis, report writing, tabulation and general-purpose data management. SPSS provides simple tables to multivariate analysis. The researcher resorted to using this package because of its features, which include a colour graphic package and a conversational software system that allows interaction between the data and the user (Powell 1985: 160). A coding key was drawn, in which numerical values were assigned to all closed-ended questions such as 'yes' and 'no' responses. Data was entered on a data matrix design, using the SPSS for Windows Version.

A combination of content analysis and qualitative coding was used to interpret the open-ended type of responses. The method consisted of two steps: the first step involved identifying different concepts as they appear in the responses to questions in the set of

interview schedules and, secondly, steps involved in sorting the concepts into categories (Fielding 1993: 227).

3.12 Evaluation of the Research Methodology

As mentioned in previous chapters, the purpose of the research was to investigate the management of e-records in the public sector in Lesotho. The investigation was conducted in order to provide information for planners and policy-makers. The whole idea was to make meaningful recommendations for managing e-records and archives for access and preservation.

The study utilized the survey research design. As descriptive research, the research was designed to answer questions that would describe and compare variables to a particular standard, or summarise the relationships between a particular standard, or summarise the relationships between two or more variables. The survey design was utilized because of its strengths insofar as it is economical and there is a rapid turn-around time in data collection (Creswell 2003: 154).

The major limitation is that survey research cannot provide information on cause-effect relations such as experimental studies. In addition, all survey methods are handicapped by non-response (Goyder 1987: 63). Non-response is not only affected by the percentage of the units of analysis, but by the way respondents respond to questions, the uneven impact of interview schedule structure and question wording. Pre-testing the instrument before the actual interviewing was one of the ways to minimize the ambiguity of the data collection instruments.

There is no single best way of collecting data. The method chosen depends on the nature of the research questions posed and the specific questions that one wants to ask respondents. The aim of the method was to obtain valid and reliable data and to answer the research questions, which can be used as the basis for credible conclusions.

Though self-administered questionnaires are considered to be a highly structured data collection method, the investigator has no control over the conditions in which the data are elicited (Wilson 1996: 102). It may not be the designated respondent who actually completes the questionnaire, it may be a group effort, or the designer may complete the questionnaire in any order that the respondent likes, despite the careful ordering of the questions. Interview schedules in this study were selected to avoid such problems linked to the questionnaires. Where clarification was needed, the researcher was able to provide it and the respondent was motivated to continue to answer further questions.

Researchers should understand strategies, approaches and techniques available, to justify the choices they make. Since there was no sampling the researcher wanted to get as much information as possible. The data collection method applied was appropriate in this case.

3.13 Summary

The research methodology was discussed. The population of the study was described. Data collection methods were explained and the data collection instrument was discussed. The advantages and disadvantages of interviews as a data collection technique were given and the design and structure of the schedule used were discussed. A description of the interview process was made. Other issues examined in Chapter Three included the validity and reliability of data collection methods and the analysis of data. The chapter concluded by evaluating the research methodology.

CHAPTER FOUR: PRESENTATION OF FINDINGS AND INTERPRETATIVE DISCUSSION

4.0 Introduction

The results of the survey of the management of e-records in nineteen (19) government ministries in the public sector in Lesotho are discussed, together with the National Archivist's response. The survey was carried out using the interview and observation methods to collect data. The areas covered in the schedule were:

- Information on respondents
- Archival legislation
- E-records management
- Managing e-mail
- IT infrastructure and resources
- Storage formats and methods
- Existing skills and knowledge

The research objectives were:

- To identify the existing information technology (IT) infrastructure and resources in the registries, in relation to the management of e-records.
- To establish what e-records were currently being created.
- To identify strategies and policies used in managing e-records.
- To assess how archival legislation affected the management of e-records.
- To identify the existing skills and knowledge of the public sector staff in managing e-records.
- To identify models for the management of e-records that would be suitable for Lesotho.
- To make recommendations on the management of e-records in the public sector in Lesotho.

4.1 Response Rate

Twenty (20) interviews were conducted. The face-to-face interview gave the researcher an opportunity to explain the purpose of the study, by emphasizing the importance and value of information they were about to give. This gave the respondents motivation to respond honestly to the questions. The most contributing factor to the high number of responses is that they were all located in the capital city, Maseru, and most of the offices were situated at the government complex. The interview schedule had fifty-six questions in all (see Appendix 2).

4.2 Information on Respondents

The first part of the interview schedule provided information about the respondents. There were five questions. The first part of the schedule was about the name of the participating institution, secondly, the name of the respondent, thirdly, the job title of the respondent, fourth the date of the interview and lastly the place where the interview was carried out. The information was required to assist the researcher when analysing data, for identification and to avoid any confusion and mixing-up of results. Informants from 19 ministries and the National Archivist were interviewed, making a total of 20 responses.

The following section presents findings on areas covered in the study.

4.3 Existing Information Technology Infrastructure and Resources for Managing E-Records in the Public Sector in Lesotho

This section will look at the IT infrastructure and resources that are required for the management of e-records. Table 3 presents findings on IT infrastructure available in the public sector in Lesotho.

4.3.1 IT Infrastructure for Managing E-Records

Table 3: Infrastructure facilities

Facilities	YES	%	NO	%
Computers	4	20	16	80
Laser printers	4	20	16	80
Dot-matrix printers	0	0	20	100
CD-ROM drive	3	15	17	85
Microfiche readers	0	0	20	100
Stabilizers	0	0	20	100
UPS	0	0	20	100
Scanners	0	0	20	100
Generators	0	0	20	100
Telephone line	20	100	0	0
Fax Machine	3	15	17	85
Telex	0	0	20	100
Radio	4	20	16	80
Other (Photocopier)	3	15	17	85

Table 3 shows the results of the IT infrastructure that was available in registries. The majority of respondents (16 or 80%) indicated that they did not have computers and only 4 (20%) did have them. Infrastructure such as microfiche readers, stabilizers, Uninterrupted Power Supply, scanners and generators were also not available since 20 respondents (100%) said they did not have them. The findings revealed that 20 (100%) had a telephone line. Three (15%) had fax machines and a photocopier and 17 (85%) did not have. The majority of respondents (16 or 80%) indicated that they did not have radio and only 4 (20%) had a radio in their respective offices.

The survey, carried out by Mutiti (2001b: 58) in the ESARBICA region on the assessment of the use of new technologies, with particular attention to access, provision of information services on the internet through websites, making finding aids electronically available and the amount of progress in the area of managing e-records created by public institutions, revealed that the study was limited in the amount of progress made in the area of managing e-records created by public institutions. The following is a summary of the results of Mutiti's (2001b: 58) study.

- The most common technologies were computers. Mutiti (2001b: 58) stated that all the ESARBICA countries that responded to the questionnaire had personal computers, though Lesotho and Mozambique did not respond.
- The study revealed that there were hardly any digitization programs in place. In addition, most countries had no specific legal or administrative framework within which to operate an e-records programme. It was often assumed that the National Archives legislation would serve that purpose.
- Only three national archives received e-records created by other institutions and only one national archive had put in place rules and regulations to govern the management of e-records, irrespective of whether these records were created by national archives or other public institutions.

The fact that this study established that only four registries in ministries had computers showed that the public sector in Lesotho is to some extent lagging behind in terms of IT. It is an indication that resources are not fully exploited in terms of IT technology. This undermines the exploitation and use of computers for records management purposes.

Lack of IT infrastructure in the registry offices could hamper registry offices from fully exploiting IT resources for record-keeping and research purposes. As discussed in the literature review, it is important that the government ministries in Lesotho realise the need to support records management, since they are the record creators.

4.3.2 Resources for Managing E-Records

Table 4 shows the results of resources for managing e-records in registries.

Table 4: Resources

ITEM	YES	%	NO	%
M10, 000 – M49, 000	2	10	18	90
M50, 000 – M99, 000	0	0	20	100
M100, 000 – M249, 000	1	5	19	95
M250, 000 – M499, 000	1	5	19	95
More than – M1, 000,000	0	0	20	100

* Maloti (Lesotho currency M1.00 = R1.00 in South African currency)

Of the twenty respondents, only 4 (20%) were able to manage their own budget. A follow-up question was asked to respondents, in which the researcher wanted to find out the budget categories, in terms of money, in which each office fell. It was found out that 2 (10%) respondents indicated that their budget did fall between M10, 000 – M 49, 000 and 18 (90%) did not fall into the category. Only 1(5%) budgeted for M100, 000 – M 249, 000 category. Only 1 (5%) indicated that they had a specific line budget for management of information.

Mnjama (2002: 39) pointed out that many archives and records management programmes fail due to inadequate funding. Funds are needed for the purchase of specialized storage equipment, payment of staff salaries, restoration facilities, maintenance costs, archival boxes, insurance and acid-free paper.

A study carried out by Tafor (2001:41) revealed that all members of ESARBICA experienced problems related to budgets in one way or another. Tafor (2001: 40) emphasised that:

One of the fundamental aspects that determines and influences the success of any records management and archival institution is budgetary allocation for managing such an institution. Consequences of budgetary constraints can also be witnessed when it comes to matters such as staff development and training, acquiring appropriate equipment, paying wages and salaries, and other office activities. If archives have to succeed in their mission, budgetary constraints would have to be surmounted.

The results presented were compared with other IT infrastructure and resources in the country to assist in carrying out the records management activities effectively. Records management is a discipline governing records matters. Advances in technology suggest that the management of records in the traditional environment is no longer suitable for records in electronic formats, which have their own distinct characteristics.

The ever-increasing development of information and communication technologies in the recent past resulted in the automation of the office environment. The rise of

e-records presents a unique opportunity for growth and development. Archivists and record managers cannot afford to ignore the threat facing them from developments in electronic record keeping (Ngoaketsi 2003).

The survey results have revealed that only 4 (21%) registries had computers. It is evident that the public sector is still far from realizing how important registries are. Here we are talking about an office that runs the daily basis of record-keeping, yet 16 (84%) of these offices did not have computers, even though the departments and sections within their ministries created e-records.

Bailey (2001: 47) cautioned that, given the nature of an e-record, a certain bare minimum of technology is required before an archivist or a record manager can even begin to access the information stored on the magnetic or optical medium. If an archival programme can acquire a desktop computer, basic types of software, such as a word processor, spreadsheet and database package, then the record manager or archivist has gained the ability to examine and perhaps begin to acquire e-records. It is therefore important that registries should have the necessary infrastructure that supports records management to enhance the access, transfer and facilitation of information. If the infrastructure is inadequate, it will be very difficult to manage e-records produced in government departments.

The 20% who had computers mentioned that these computers were donations from the United Nations Development Programme, through their projects. These computers end up not being properly maintained, due to lack of knowledge. Four (21%) registries had computers; this means that record managers had realised and were aware of the new technologies. The implication is that if registries do not have such infrastructure it will be difficult to store files or create records management systems, such as databases. The importance and need for computers in registries in this regard is clear.

New ICT implementations are often unsuccessful, where an organization lacks knowledge accumulated by previous experience. Because it is common for much of the

work to be done by consultants, implied knowledge is lost when the consultants leave (Barata, Kutzner and Wamukoya 2001: 35). In cases like this there is a tendency in the civil service where, after the project is completed, equipment and other resources are not properly handled, due to lack of qualified personnel. It is important always to have a “plan B”, that is staff who are trained and qualified for the job, so that when the project phases out, things look normal, as usual.

Mutiti (2002: 114) stated that, though the application of IT to archival processes is not a panacea for the information storage and retrieval problems that haunt most archival services, it could bring about great benefits when undertaken properly. Most archival institutions have acknowledged the need to computerise archival functions in order to enhance efficiency, accuracy and rapidity in their operations (Mutiti 2002: 114). Mutiti (2002: 114) further pointed out that once the decision to computerize has been made, several issues have to be taken into account in order to ensure that the programme is undertaken efficiently. Some of these issues include an evaluation of the manual system to ensure that it is operating efficiently, a needs assessment to determine areas of immediate concern, selecting appropriate software and hardware and meeting training needs.

Almost every office had a telephone line. Respondents were asked to comment about every facility that they had. When it came to telephone lines, they complained that, though they were there, they were not direct lines and if they wanted to make an official call, they first had to go through the reception, which they said was at times, annoying because one might not get through at the desired time.

In the case of whether buildings should be protected, 20 (100%) respondents indicated that there was a need for protection where government records were kept. There were no fire extinguishers in many offices.

Storage facilities serve the purpose of protecting documents and ensuring the ease of storage and retrieval of records (Akussah 2002: 157). The researcher observed that this

was not the case in the public sector in Lesotho. The researcher observed that most of the registries surveyed were using sub-standard equipment to hold their records. Most of the office furniture was old wooden and metal filing cabinets. Most of metal cabinets had become rusty. Follow-up observations revealed that some offices were very dusty and files were not well arranged. Semi-current records were mixed up with archives that were not taken to the national archives where they belong. Akussah (2002: 159) warned that if records are exposed to agents of degradation at a very early stage, they make long-term preservation a very difficult task. Since it has been a problem to manage paper-based records, and because more and more records are generated without any traditional paper versions, e-records should have adequate resources and infrastructure to defeat the challenges of e-records, such as technological obsolescence and adequate, trained and qualified staff (Yahaya 2002: 63).

A follow-up observation revealed that, after the files were closed, they were not taken to the records centre because there were no records centres. The researcher asked respondents about the situation. She wanted to know what happened to those files before they could be taken to the national archives. It was revealed by most respondents that the files were kept in cabinets and, as far as the researcher could see, they were kept haphazardly. In most of the offices, files which were no longer active, were kept in paper boxes were very dusty. Thus it is obvious that before these records could be taken to the national archives they would already have suffered external influences such as bad storage conditions and handling.

During the investigation some respondents mentioned that, although they were told that there was money for their office, it was difficult to get access to it, even if they requested it. Those who were in power had a bad attitude towards the registries. They perceived them as having little importance and manned by an unqualified group of people who did not know anything. This situation does not encourage staff to engage in activities pertaining to records management. Recommendations will be discussed in the following chapter.

4.4 E-Records Created in the Public Sector in Lesotho

One of the research objectives was to establish what e-records were being created in the public sector in Lesotho. Mutiti (2001b: 57) defined e-records as codes recorded on media such as disk, tape or optical media, diskettes and CD-ROMS. The following section presents and discusses records created and devices used to store e-records.

Table 5: Types of e-records created

Record type	Frequency	%
Mail	20	100
Reports/monthly, yearly	20	100
Press releases/statements	20	100
Official speeches	20	100
Policy documents	20	100
Court proceedings	1	5
Minutes of official meetings	20	100
Tax Invoices	20	100
Business plans	16	80
Workshop/conference papers	20	100
Government forms	20	100

Table 5 shows the type of e-records created in the public sector in Lesotho. It was indicated that all respondents 20 (100%), in their respective ministries, had records in the form of mail, reports, press statements, official speeches and policy documents. Only 1 (5%) had court proceedings. It was also found that minutes and invoices were mentioned by all the respondents. Business plans were found in 16 (80%) and conference papers and workshop papers were present in all the ministries. Different government forms were also found in all the ministries.

Records that are generated in offices during business practices include word-processed files, spreadsheets, images and electronic mail. These were combined to permit texts to be drafted and re-drafted and transmitted to their recipients without ever appearing in

hard copy form. Word processing has spawned a revolution in document creation that has eliminated the typewriter, formerly the revolution in document preparation. This development presents archivists and record managers with serious professional challenges of how to preserve e-records for both short-term and medium operational needs and long-term archival purposes (Ngoaketsi 2003). This is the case with the public sector in Lesotho.

Table 6: Types of devices used to store e-records

ITEM	YES	%	NO	%
Hard drive	4	20	16	80
Magnetic tape (open reel)	4	20	16	80
Magnetic tape (cassette or cartridge)	3	15	17	85
CD-ROM (Compact Disk-Read Only Memory)	4	20	16	80
Optical Disk (Re-writable)	1	5	19	95
WORM Optical Disk (Write-Once-Read-Many)	1	5	19	95

Table 6 presents results of question 40 in which the researcher wanted to discover which devices were used to store digital records. It was indicated by 4 (20%) respondents that they stored on a hard drive, while 16 (80%) did not store on a hard drive. It was indicated by 4 (20%) respondents that they stored on magnetic tape devices, which is on the open reel, while 3 (15%) used the cassette or cartridge. CD-ROMs were indicated by 4 (20%) respondents, while 16 (80%) did not use CD-ROM. WORM optical devices were indicated by 1 (5%) respondent who used it. The devices presented above pose a serious challenge in that they need to be properly taken care of, as they are very fragile. Four (20%) respondents indicated that the storage methods used for materials received in digital form were stored as received. If these records are stored as received, and not transferred to other digital media, they pose a threat that will lead to technological obsolescence.

Digital media such as floppy disks, hard disks, magnetic tapes and CD-ROMs are generally not as stable as traditional media such as paper. Unlike paper records, e-records on their own do not have a recognizable form. Software and equipment are required for digital information to have a form. The main focus on e-records management includes the

rapid changes that take place in the development of digital technologies. Marcum (1996:452) stated that:

Rapid change in the means of recording information, in the formats for storage and in the software for use, threaten to shorten the life of information in the digital age in a few years. The threat is that much digital information will be, if not lost already, lost.

Ngoaketsi (2003) stressed that increased awareness regarding technical obstacles to adequately manage e-records must be achieved throughout an organization. Since the world is moving towards ICT-driven technology, it is not a solution to retain the old technology. Ngoaketsi (2003) further stated:

However, we must start thinking of the best practices and cheap way of protecting our data, records and other security related procedures regarding our information management practices. This exercise must bring confidence to the authorities, value and ethics to ordinary people instead of being a nightmare.

The nature of e-records is such that archives can never obtain all of the supporting technology they need before they start to acquire records. To do so would require archivists to have the ability to predict the changing nature of the e-record while, or even before, changes occur within the computer industry (Bailey: 2001: 48). Bailey (2001: 48) emphasized that archival programmes of e-records in electronic form must be constantly aware of changes in the technical environments in which they exist and be able to adapt quickly to those changes.

Table 7: Action regarding archival valued records

ITEM	YES	%	NO	%
Print to paper	4	20	16	80
Maintain and file	4	20	16	80
Transfer to other media and file	4	20	16	80

As a follow-up, to which devices were used to store e-records, the researcher wanted to discover, in general, the action that was taken regarding archival valued records. The results showed that 4 (20%) printed to paper, while 16 (80%) said they did not. Four

(20%) are maintained and filed. When it came to transferring records to other media, it was found that 16 (80%) did not transfer and 4 (20%) did transfer to other media. The implications for appraisal of records are many. It is clear that the problem of technological obsolescence impinges on appraisal of records for long-term preservation, as it does on everything else to do with electronic record-keeping. The study found that appraisal of e-records was not carried out.

Bailey (2001: 54) outlined three steps on appraisal methodology within the life cycle concept. The first step would require emphasis on the appraisal of computerized information, as soon after its creation as possible. In the second step, if a machine readable record has already been assessed as being valuable in the first stage of appraisal, then it will be necessary to separate it from the non-essential records around it and much time and energy will be saved. The third stage outlined is the reappraisal step. Records conceivably lose their value and data files should be reappraised occasionally to ensure that their archival values have not been overemphasized. Bailey (2001: 54) considers that the first stage in the appraisal process is most important, because there is no guarantee that all e-records will survive until the second stage when inactive records are appraised.

One of the objectives was to discover what strategies and policies are used in managing e-records in the public sector in Lesotho. The following section presents and discusses the results concerning strategies and policies.

4.5 Strategies and Policies Used in Managing E-Records in the Public Sector in Lesotho

Strategies and policies are a key to preserving digital information. They preserve the integrity and accessibility of e-records. Hedstrom (2000: 167) pointed that institutions should focus on addressing policies that deal with digital storage. Information policy encompasses both public and information science, which adheres to the economic theory of property rights and resources to be collected, protected, shared, manipulated and managed. Herson and Relynea (2003: 1300) defined information policy as a set of interrelated principles, laws, guidelines, rules, regulations and procedures guiding the

oversight and management of the information life cycle: the production, collection, distribution/dissemination, retrieval and use, and retirement, including preservation, of information. Information policy also embraces access to, and use of, information and records. Records relate to the conduct of government business and provide an audit trail for holding government accountable. Collectively, policies form a framework that profoundly affects the manner in which an individual in a society, indeed a society itself, makes political, economic and social choices.

The absence of an IT policy undermined the exploitation of IT resources in the public sector in Lesotho. IT resources can be utilized for the training of record keeping professionals. To achieve this, there is a need to have in place an appropriate IT infrastructure. Wamukoya and Kemoni (2001: 105) stated:

In recognition of this fact, the United Nations in 1995 launched a special initiative for Africa in partnership with the World Bank, UNESCO and the Economic Commission for Africa, titled “Harnessing Information Technology for Development”. Some of the areas the programme was to cover included securing the necessary policy reform to enhance Africa’s participation in the information age and the setting up of infrastructure to full Internet connectivity in selected African countries.

Table 8: E-mail management policies and guidelines

Management Area	YES	%	NO	%
E-mail policy	0	0	20	100
E-mail saving guidelines	0	0	20	100
E-mail retrieval guidelines	0	0	20	100
E-mail storage guidelines	0	0	20	100

Respondents were asked if there were written e-mail policies and guidelines. All respondents revealed that there was no policy governing the management of e-mail.

Respondents were asked if there was a policy on saving, retrieval and e-mail storage. All respondents said there was no policy in their respective offices.

4.6 E-Mail Management

The use of e-mail has become increasingly prevalent in the way that the public sector conducts business. A significant amount of information that may have previously existed in hard copy form now often exists as part of an e-mail message, in electronic form. According to Gibbs (2002), e-mail systems create e-records but do not manage them very well. There is a danger that important corporate records may be lost if they are not properly managed.

The least technological approach to managing e-mail as a record is to print and file e-mails in the appropriate corporate files. This means that e-mails that are records would be available for others to read, they would be located with other relevant records, they would be at a reduced risk of being tampered with and they would be safe from technological obsolescence. According to Gibbs (2002), e-mails created or received can generally be divided into three different types. The present researcher concentrated only on corporate e-mail.

- Personal e-mail – e-mail which is of a personal nature and which has no relevance to the business of the agency. It relates to a private or personal matter. Examples of personal e-mail include e-mail dealing with topics such as lunch, family arrangements or jokes not related to staff work responsibilities.
- Ephemeral e-mail – e-mail which is used to facilitate agency business, but which does not need to be retained for business purposes. These e-mails facilitate the organization's business but do not need to be retained for business purposes. Examples include internal work-related e-mail received by carbon copy (cc) or blind carbon copy (bcc), copies of reports or newsletters and copies of minutes.
- Corporate e-mail, which relates to the business of the agency and which must be retained as a record. Corporate e-mail forms part of the public record. It is e-mail that documents the business activities. Examples of e-mail that forms part of the public record includes a communication between staff in which a formal approval

is recorded, direction for an important course of action and business correspondence received from outside the organization.

Table 9: Systems used for storing e-mail records of enduring value

Systems used	YES	%	NO	%
Print to paper	4	20	16	80
Store in e-mail system	4	20	16	80
Store in electronic filing system	0	0	20	100

Respondents were asked to indicate which systems they used for storing e-mail records of enduring value, since there was no policy regarding e-mail management. Four respondents (20%) indicated that they print e-mails and store them as paper records. It was found that 4 (20%) respondents stored in an e-mail system.

Of importance is the problem of technological obsolescence. It is highly likely that e-mail kept in most e-mail systems will be unreadable within a short time. This may be important for some records, which are required for more than 2 or 3 years, but will be very important for other records, especially those deemed to be important records of the state that must be preserved forever.

The unavailability of policy and guidelines governing e-mail management led to the deletion of some vital e-mail records. According to Wato (2003), some professionals delete vital e-mail messages when their servers fill up, due to ignorance of records management issues. While deleting these e-mails they are not subjected to appraisal in order to preserve the valuable ones. Since the public sector in Lesotho does not have guidelines, this kind of mistake was evident. This mistake usually comes out of ignorance of the fact that e-mail messages used to conduct official business are official records. The public sector in Lesotho is charged with the responsibility of the formulation of policies and guidelines for the management of e-records and these policies must be tailored

accordingly, to meet specific requirements and must define sound e-records management principles in a way that can be implemented by people and machines.

The results revealed that there were no strategies covered by policies. Since there were no policies, it was very difficult for record managers to commit themselves fully, to carry out their responsibilities in a proper way. Emulation, migration, refreshing, creation, retention, appraisal, maintenance and metadata were the strategies that were investigated. All of the respondents (100%) indicated that such strategies were not covered by policies. Bearman, cited by Ngoaketsi (2003), states that record retention decisions are risk management decisions and responsible for the retention of ongoing accessibility of e-records. It is therefore necessary for records managers to retain physical control over e-records and to be able to ensure retention, preservation of functionality, security and confidentiality. Bearman, cited by Ngoaketsi (2003), further states that policy objectives and guidelines can be achieved by focusing on application systems as the loci of records policy implementation and by practising documentation as a means of control. Increased awareness regarding technical obstacles to adequate management of e-records must be achieved throughout organizations.

Technical strategies such as migration, emulation and others that were based on digital information were not covered in a policy. All 20 respondents indicated in all categories that there were no strategies covered by a policy. It is important that policy-makers, when working on or drawing up policies on e-records and strategies, should first look at which strategies would be suitable for which environment. This would also depend on the type of records created. For example, refreshing would be most suitable for records which are stored on CD-ROM, so that copying can be from one CD-ROM to another or video to video. Migration is suitable for word-processed documents. The survey results indicated that most records were in word processing files. Appraisal determines the value of records to be kept or retained for business needs. The retention rules should be included in the policy, because retention scheduling determines the identification of records for disposal, which should require the legal requirements of, and needs for, access to records. Maintenance strategy would cater for issues such as legal or research purposes. The

maintenance stage supports such activities for the requirements of accountability. Having explained the importance of the strategies, it is imperative that policies and guidelines should include such issues.

Table 10 presents results on the e-records guidelines. The section sought to find out if there were guidelines for e-records activities that are outlined in the Table.

4.7 E-Records Management Guidelines

Table 10: Management guidelines

Management Area	YES	%	NO	%
E-records guidelines	0	0	20	100
Written policy document	0	0	20	100
E-records identification	0	0	20	100
E-records creation	0	0	20	100
E-records registration	0	0	20	100
E-records directories and structures	0	0	20	100
Records maintenance on removable media	15	75	5	25
Semi-active storage	0	0	20	100
Labelling of media	0	0	20	100
Protection and security	0	0	20	100
Disposition	0	0	20	100
Guidelines for identification of archival value	0	0	20	100
Guidelines for preservation of archival value	0	0	20	100

Respondents were asked if there were any written guidelines regarding the management of e-records and, if present, if they written in any policy document. Of importance is the problem of technological obsolescence. It is highly likely that e-mail kept in most e-mail systems will be unreadable within a short time. This may be important for some records, which are required for more than 2 or 3 years, but will be very important for other records, especially those deemed to be important records of the state that must be preserved forever.

All respondents (100%) indicated that there were no adequate guidelines for managing e-records. Guidelines included identifying e-records, creation of such records and records

activities such as registration. Other issues included directories and structures and guidelines dealing with semi-active records. Although there are no written guidelines regarding the storage of e-records in the public sector, it is a common practice for information to be stored in diskettes and other storage media. It was evident that there were some guidelines, but they were inadequate and were not written in any document.

The implication in this regard was that respondents were not able to put into practice these guidelines, because they were not aware that such guidelines existed. If guidelines for managing e-records are not written in any policy document, it would be very difficult for staff to systematically put them into practice. Menou (1991: 51) argued that policies might be present and not be documented. These results were an indication that some guidelines were present, but were not documented. For this reason, policies should be documented and stakeholders should be contacted to show how policy is formulated and identify issues to bring about an understanding of information policy regarding e-records in particular. According to Hernon and Relyea (2003: 1311):

Given the impact of information policies on many facets of one's work and no-work situations, a listing of stakeholders involved in policy formulation and review would be endless. It is important that different stakeholders be willing to work with each other and, when necessary, to compromise.

Information policy conveys a sense of national purpose and represents guiding principles leading to the integration of all publicly available government information. One of the purposes of a national information policy is to improve the dissemination of government information and to bring pertinent government information resources produced to the public sector. Therefore the public sector in Lesotho should face the challenge for the future to improve information dissemination. Indeed, Saffady, cited in Mnjama (2002: 35), stated that the effective and efficient management of records must be supported by an infrastructure of policies, structures, procedures, tools, training and resources.

It was found that all respondents (100%) mentioned that they had no written guidelines on the protection and security of e-records. There were no written guidelines for series

before disposing of records. The researcher wanted to find out whether there were guidelines regarding the identification and preservation of records that were of archival value. Also, 20 (100%) respondents indicated that there were no guidelines when it came to identifying and preserving records of archival value.

Ngulube (2003b) stressed that:

The formulation of policies on the management of e-records is an essential step in facilitating continued access to SSA's cultural heritage. Policies give archival institutions the strategic direction they require to initiate any measures, which are necessary for the protection of public records, and archives. At the same time, a policy reminds the formulators of the constraints they must all accept if important records are to be saved for present and future generations. Evidently, the existence of policies does not guarantee their implementation. However, policies are important because they can outline explicitly the responsibilities of the archivists for the preservation of archival materials of all types in order to guarantee access to the information they contain, both for the current generation of archives and record users, and generations to come.

One of the major constraints to effective e-records management in the public sector was lack of guidelines, as presented in Table 10. Since e-mail records are produced in abundance, the researcher decided to find out if there were policies and guidelines for e-mail management. The following section presents the findings of the section on e-mail management.

4.8 Storage Methods and Formats

The present researcher felt it was important to establish what formats were used to store digital information, so that strategies can be identified which would be suitable for management. Table 11 shows the results on the type of formats used.

Table 11: Types of record formats

FORMATS	YES	%	NO	%
ASCII files	0	0	20	100
Text files with mark-up (SGML, HTML, XML, etc.)	4	20	16	80
Word processing format (e.g. MS Word, etc)	4	20	16	80
Database format (Access, FoxPro, etc.)	3	15	17	85
Spreadsheet format (Excel, etc.)	4	20	16	80
Image format (GIF, JPEG, TIFF, etc.)	3	15	17	85
Audio	3	15	17	85
Video/Moving Images	1	5	19	95

Four of the respondents (20%) had record formats in text files with mark-up (SGML, HTML, and XML). The word processing format was found to be more popular than other formats, because 4 respondents (20%) did have such formats. Spreadsheet formats were found to be in the majority, with 4 (20%). Only 3 (15%) used the database format. The image format was used by 3 (15%) respondents, while 17 (85%) did not use such a method. Only 3 respondents (15%) had records in the form of audio. The researcher also wanted to know if there were records in the form of video or moving pictures. Fifteen (75%) indicated that there were such records.

The discussion in Chapter Two indicated that if e-records management programmes were to be established, the requirements should ensure accessibility for the future, since the main aim of preserving and managing the information is access to and use of the information. Hunter (2000: 18) identified the main modes of information as text, images, sound, numbers and instructions. This applies to the findings, namely that such principles apply to the records created in the public sector in Lesotho. Therefore their preservation depends on the ministries concerned to make them accessible in good condition, since some of the devices are too sensitive to handle, and their storage facilities should be taken into account. Environmental effects such as exposure to sunlight, wind, dust and water should be considered when environmentally friendly storage conditions are created for them.

Table 12: Methods applied for preserving e-records

METHOD	YES	%	NO	%
Refreshing	0	0	20	100
Migrating	0	0	20	100
Emulating	0	0	20	100

Respondents were asked to indicate what established methods for preserving e-records they applied. Twenty (100%) of the respondents did not apply any method. According to Tafor (2001: 60), even though records were generated electronically, he found in his study that 33.3% indicated that they had a policy specifically aimed at managing such records, whereas 66.6% had no policy that caters for e-records. Lesotho, like other ESARBICA countries, lags behind regarding e-records policy. It was an indication that the public sector has not yet made an effort to be fully and actively involved in the information age, where technology is generating records electronically and where methods of preserving them are applied.

In both the public and private sectors business records are being produced in electronic format. It has thus become imperative that appropriate records management programmes be put in place in order to save electronic memory, so that it does not become unmanageable and/or be lost for good. Abbott (2001: 62) cautioned that although there has been a significant financial commitment to investing in electronic systems within the public sector in South Africa it is still difficult to manage e-records. The creation and management of these information systems has not been effectively controlled within government bodies and few are geared to the effective management of e-records.

The present research revealed that there were inappropriate and inadequate e-records guidelines and they were not written in any policy document. Yet e-records were produced in quantities every day when business was conducted. Returning to the archival legislation, the Archives Act of Lesotho interprets “records” that include not only written records but records conveying information by any other means. This does not give specific powers to e-records management. There was an indication from the findings that, even though there were no written guidelines, e-records were created. The results showed

that, although there were no written guidelines, some of them were applied, which gave the researcher the idea that the guidelines were inappropriate and inadequate. Some of these guidelines might have been applied because records personnel felt that there was a need, especially regarding the type of record being dealt with. Guidelines are needed to ensure that e-records management activities are performed to achieve the maximum benefit for the nation. It is therefore vital that records professionals understand the policymaking and guidelines process, so that they can make a contribution towards the formulation of a good public records policy.

The increasing use of e-mail in organisations can be explained by noting that e-mail shares characteristics that are distinctive from other communication media and that make it attractive. This medium aids in changing the way people seek information from others and the way they interact with their colleagues and superiors. Panteli (2002: 76) mentioned that although asynchronous, e-mail is fast and messages sent from all over the world reach their destination quickly. E-mail can reach multi-recipients and therefore enhances opportunities for the simultaneous sharing of information. The use of e-mail in organisations reduces the need for face-to-face communication.

The results showed that, with regard to e-mail, there were no written policy and guidelines. Only 8 of the offices (40%) store e-mail records in an e-mail system. All 20 (100%) indicated that they print these e-mails to paper and store them as paper records. This means that there are many records being created from e-mail. It is evident that guidelines are necessary to be able to follow the procedures and principles of e-mail management. The present results revealed that when it comes to saving, retrieving and storing e-mails, there are no guidelines. The implication is that some vital records are being lost, because they are not saved. Retrieval of such records would not be possible.

For the public sector in Lesotho, it is very difficult to carry out important activities such as the creation and maintenance (including preservation and use) of the life cycle of the records because there are no clear guidelines. In the present study it was observed that life cycle activities were not being efficiently managed. There were many files scattered

randomly in registries. Some of them were very old and they have not been appraised, and here the researcher is referring to the paper-based records.

This section therefore concluded that the formulation and implementation of preservation policies and plans, and the enforcement of preservation principles in archival institutions, will be possible if the archives and records staff are armed with the appropriate and preferably the most up-to-date knowledge on preservation issues (Ngulube 2003a: 130).

4.9 Archival Legislation and the Management of E-Records in Lesotho

Legislation plays an important role in archival theory and is the most important part of ensuring the preservation of all records of enduring value. The following section presents the findings in terms of the objective of the study that assessed the archival legislation concerning e-records management.

Table 13: Knowledge of archival legislation

ITEM	YES	%	NO	%
Legislation to manage records	20	100	0	0
Knowledge when it was passed	6	30	14	70
Knowledge if legislation has been amended	20	100	0	0
Legislation specification for e-records	0	0	20	100

Table 13 presents the findings on archival legislation. Questions were intended to find out whether respondents had any knowledge of archival legislation and when the legislation was passed. The results revealed that all 20 of the respondents had knowledge that there was legislation for managing records in general. Only 6 (30%) respondents knew when the legislation was passed and 14 (70%) did not know. Regarding the amendment of legislation, the results indicated that 100% had knowledge about amendments to the legislation. A follow-up question was asked, so that respondents could explain, if the legislation clearly covered e-records management. All respondents explained that there

was no clause in the legislation that clearly and explicitly specified or dealt with e-records management.

The next section on archival legislation aimed to discover to what extent different media were covered in the legislation. The section also aimed at establishing whether or not these different media were clearly defined. The results are presented in Table 14.

Table 14: Legislation coverage of different media

MEDIUM	YES	%	NO	%
Electronic records	0	0	20	100
Microfilm	0	0	20	100
Paper	20	100	0	0

Table 14 presents the results in which the study sought to ascertain if legislation covered records of different media such as e-records, microfilm and paper. All 20 respondents indicated that paper-based records were fully covered. Though the definition of records in the Act explained that a record is information regardless of the media, it does not clearly and specifically mentions e-records. In other words, it is too general and broad. When e-records systems first came into use it became clear that the archives laws of most countries either excluded the records generated by them, or failed to include them unambiguously (Harris 1999/2000: 6). Furthermore, Harris (1999/2000: 6) pointed out that those definitions of “record” in these laws tended to assume or specify physical properties and media, thus missing virtual spaces, which e-records “inhabit”.

From the 1970s, archival laws were amended or rewritten to address this reality. Most countries have been through this process, but the work is by no means complete. Therefore it is important that the attributes of “records” and “record-keeping systems” be defined especially for electronic environments. From the observation and interviews carried out, it was clear that records are still in paper form.

According to Mutiti’s (2002:115) study on access to archives and electronic repositories, the responsibility for managing e-records systems is vested in the national archives. In

institutions in Botswana, Kenya, South Africa and Zimbabwe, these mandates are derived from the national archives legislation, whose definition of the word “record” is all-embracing. The South African legislation is more explicit, in that it clearly stipulates that the National Archivist shall determine the conditions subject to which electronic record systems shall be managed. In her study, Mutiti (2002:115) revealed that in Mozambique, Seychelles, Tanzania and Zambia, the responsibility for managing e-records system is not clearly defined. Only South Africa had established and enforced procedures for the management of e-records in public institutions. The results also revealed that in Kenya and Malawi, individual departments took on this responsibility, whilst in Swaziland the Ministry of the Public Service and Information was responsible. This implies that most African countries are still behind the times in addressing archival law that deals with e-records.

For records departments to manage their records efficiently and effectively, there should be legislation to govern such a programme. All respondents indicated that indeed there is legislation to manage records. Only 6 (30%) indicated that they knew when the legislation was passed. The other 14 (70%) did not know when the legislation was passed. Lack of knowledge or ideas with regard to the passing of the Archival Act, was worrying, in the sense that respondents who were actually dealing with records did not know and this implies that they may not be aware that Acts should be amended, with time, to accommodate new challenges. This was an indication that they did not have exposure to the emerging world of technology. The level of education of respondents may have an influence, because most of them had only a matriculation qualification, which is a high school certificate.

For any government to be accountable there is a need for good record-keeping. Records are the memory of an organisation. In the field of e-records, it is important that archival requirements are addressed during the design of information systems and that e-records are carefully controlled throughout their life cycle. According to Hurley, cited by Harris (1999/2000: 7), it is evident that it is a challenge faced by the record creators. A good example of such archival law is South Africa’s National Archives Act of 1996, which

gives the national regulatory authority over all public records from the moment of their creation. The Act provides a separate definition of “electronic records systems” and accords the National Archives specific powers in relation to their management. According to Harris (1999/2000:7), the other significant challenge is that the Act brings within the National Archives’ jurisdiction those categories of record-creators commonly allowed exclusion, namely the security establishment, public services outside formal structures of government, and public service agencies. It is therefore important that the archival legislation be revisited in order to accommodate the growing and advancing computer environment.

According to the International Records Management Trust (2004), information is a vital resource for any modern society. Without information, neither the government nor its citizens can function effectively; hence the process of planning, controlling and using information is an important activity, critical to the success or failure of the organization. It is often assumed that information management concerns only information and data created by or stored in computers. That is not true; the most effective information systems manage all the information available to an organization, regardless of its source or whether or not it has been processed electronically. Records and archives are major sources of information, and it is important that they should be properly managed. Unless they are properly managed, there will be no archives.

The National Archives is the permanent home for government records with enduring value, but those records will not reach the National Archives if they are not well managed throughout their life (International Records Management Trust 2004). When they are well managed, the authenticity and security of the records and of the information, which they contain, is respected.

4.10 Skills and Knowledge of Staff that Manage E-Records in Lesotho

The management of e-records needs people who are qualified and skilled. The lack of expertise in the field is not exclusive to the developing world (Hedstrom and Montgomery 1998). Technological development, and the unsettling effect it produces,

calls for continuous reassessment of records and archives management training. Education and training are concerned with the development of knowledge, skills and attributes necessary for individuals to live meaningfully and to contribute positively to society. According to Yusof and Chell (1999:25), training relates to specific processes and procedures. It should provide people with techniques on how to apply rules and standards. It covers how principles are applied, in a practical programme. In the context of the present study, training relates to general principles and abstract theories of e-records management. Ngulube (2003a: 133) pointed out that the preservation of records irrespective of their format and the media that they are captured on, to a great extent hinges on records managers and archivists with necessary skills and knowledge to deal with the records at every stage of their use by society.

Wamukoya and Kemoni (2001: 106) noted that the need for archival schools in Africa to produce graduates with skills in IT and management of e-records was created after a major international seminar held in Kenya in 1996 and entitled “Making the transition to the Electronic Age: Managing Electronic and Paper Records as a Strategic Resource for Good Government”. One of the recommendations of the seminar was that the need for archival schools in Africa to design and implement curricula that inculcated IT skills into its graduates be addressed. To address this issue, the Department of Archives and Records Management at Moi University, Kenya, has, since its inception, endeavoured to train graduates who were conversant with ways of managing both paper and e-records based on the records life-cycle and continuum concepts. Since its establishment, the faculty remains one of the leading information science education and training bodies in Africa.

Unless the government realises how important records management is, nothing will change the service rendered by registry offices. Seven (35%) respondents felt that government should give records management a high priority in their planning. Most of the respondents (80%) were of the opinion that there is need for proper buildings and equipment. Respondents felt that they are demotivated because they are paid low salaries and because their work or responsibility is not taken seriously, in the sense that they are

classified as mere clerks. It is not surprising to find that some registry staff are paid on the same scale as a cleaner or a messenger.

4.11 Qualifications of Staff

Table 15 shows the results of categories of qualifications of staff in registries.

Table 15: Qualifications of staff in registries

Qualifications	No. of Staff	%
Degree in Records Management	0	0
Degree in another field	5	5
Post-Graduate Diploma in Information Studies	0	0
Post-Graduate in another field	0	0
Diploma in Records-related field	15	15
Certificate in Information Studies	0	0
Matriculation	52	54
Other	24	26
Total	96	100

There were no individuals who had a degree in records management. Only 5 (5%) individuals had a degree in another field. There was no one in the categories of post-graduate diploma in information studies or post-graduate diploma in another field. Only 15 (15%) had a diploma in a records related field. Fifty-two, or 54%, had matriculation and 24 (26%) had other qualifications.

According to Mnjama (1996: 31), most African countries have paid little attention to the training of archivists and record managers. The study carried out by Tafor (2001: 64) revealed that only 36.7% of staff had qualifications directly related to either library and information science, or records and archives management; 63.2% of the staff had qualifications that were unrelated to library and information science, or archives and records management. This could have a negative impact on service delivery, because some of the staff members had not received appropriate training to effectively perform records management and archival administration duties. Though the study focused on national archives, the same applies to registries when it comes to lack of staff with

necessary qualifications to deal with the duties and functions that are expected of them. Tafor (2001: 64) stated that:

This is an indication to the fact that some of the national archives of ESARBICA were not only understaffed in terms of numbers, but also as far as qualifications are concerned. The consequence of lack of qualified manpower is obviously detrimental to the management of archival services and records management activities.

The following section presents results concerning staff development. The objective of the section was to find out which area of development they were trained in and whether they carried out in-service training in e-records management. The results are given in Table 16.

Table 16: Staff development areas

ITEM	YES	%	NO	%
Staff development	20	100	0	0
In-service training in e-records	0	0	20	100

Respondents were asked if they, as record managers had undergone any form of staff development. It was found that all 20 respondents had undergone such a development. Though there was such a programme, it did not include in-service training in e-records and all 20 of the respondents indicated that their offices did not conduct in-service training on e-records management.

According to Kiondo (2002: 22), human resources are central to any organization, because they are expected to undertake the activities spelt out in strategic planning documents. In order to provide modern, quality, innovative and dynamic services in the information age, there is need to strategically mobilise human resources in a systematic way. Human resources mobilization refers to attracting and maintaining qualified staff, and to training and retraining of current staff, in order to empower them to cope with the

rapidly changing electronic information services environment. In the above context, human resource mobilization should involve drawing up human resource development strategies, motivating staff financially and psychologically to enable them to make tangible contributions towards the realization of records management programmes.

Table 17: Forms of staff development

ITEM	YES	%	NO	%
Seminars	1	5	19	95
Workshops	4	20	16	80
Refresher courses	20	100	0	0

As a follow-up to staff development, respondents were asked to indicate what form of staff development they had undergone. Only 1 (5%) indicated that they had attended seminars, while 19 (95%) had not attended seminars. Workshops were indicated by 4 respondents (20%), while 16 (80%) had not attended workshops. All respondents (100%) indicated that they had attended refresher courses.

The research sought to determine staff development issues that were being undertaken. According to Mutiti (1999:14), the idea of personnel management is that of continuing professional development, considered to be the third pillar on which successful personnel management rests. Concerning staff development, Tafor (2001:67) revealed that 75% of members of ESARBICA carried out staff development. This was revealed in the study on the management of public records in the ESARBICA region. The training channels provided included training in an educational institution, seminars, workshops, refresher courses, in-house training and conferences.

The level of the qualifications of staff in registries is very low. The survey revealed that there were no individuals who had a degree in records management. Only 5% of the individuals had a degree in another field. The majority (52 or 54%) of personnel fall under the category of “Matriculation”, those with other qualifications totalled 24 (26%). The implication of this is that government ministries have not realized that records

management is an important exercise. The gap between the categories needs to be filled in the form of training, in order to have qualified and skilled personnel. From the researcher's point of view, it was not sufficient to conduct workshops or short courses. Education/training considerations should include formal education requirements such as diplomas, degrees or specific course completion requirements such as records management, human resource and specific skills required for the position. Ricks, Swafford and Gow (1992: 42) stressed that all records management personnel with the desire to advance must continuously upgrade skills and knowledge. This may be accomplished through in-house courses, or classes offered through educational institutions. Records managers in the public sector should therefore take measures to fill the gaps between qualifications.

The public sector was not aware of the value of records management and was not prepared to motivate and train professionals to remain and perform efficiently in their archives, nor to provide training for registry personnel in records and archives management. The fact that 54% of the staff had matriculation was very alarming, because if government records were handled by such unqualified staff, who did not have any idea of the significance of such records, it means public records are not protected and even private matters can slip through their fingers very easily and fast. It means that there could be a negative impact on records administration, since they had not received appropriate training.

A successful and flexible e-records programme, able to deal with the rapidly changing technology of modern record keeping, is due, to a large extent to the skills and experience of the staff that work within it and their own ability to adapt to a changing environment (Bailey 2001: 52) It is stated that archives rely upon the skills and expertise of two types of professional, archivists and computer specialists, to work together in a partnership to manage archival e-records. Technical expertise is required to develop standards and methodologies for record-processing retention, to facilitate information exchanges within public institutions and to select suitable storage and preservation media. It is necessary to

gain sufficient knowledge and expertise to spearhead an e-records management programme, with the support of IT technocrats (Mutiti 2001b: 57).

Bailey (2001: 53) pointed out that, first and foremost, the archivist must have good basic computer skills and a working knowledge of computers, particularly the types of hardware and software used by the creators of the records they deal with. Such familiarity should include an understanding of the basic principles of the software, so that they may be applied to archival situations, regardless of the scale of the system. For example, if an archivist knows how a commonly available database package (e.g. Microsoft Access) works, and can themselves create a small relational database, they will be able to translate their knowledge of the principles and terminology of databases to the appraisal and preservation of a larger database in a government department. The archivist should know and understand the types of documentation that have been, and are now, associated with computer systems. By understanding the nature of the documentation and the technical language that it contains, the archivist can be more certain in dealings with the creator and their technical staff that they will receive the information necessary to acquire, process and make the records available.

Respondents were asked if they had comments regarding the management of e-records in the public sector in Lesotho. Table 18 presents the results of comments made by respondents.

Table 18: Suggestions by respondents regarding e-records management in the public sector in Lesotho

VARIABLES	FREQUENCY	%
Low salaries	8	40
Need for Formal Training	20	100
Need for IT infrastructure and resources	9	45
Lack of knowledge and skills	18	90
Government to put Records Management as a priority	7	35
Registry offices to draw their own budget	9	45
Registry offices under-staffed	4	20
Liaison with National Archives	8	40
Building and equipment maintenance	16	80
Legislation to accommodate e-records	20	100

Table 18 summarised the suggestions given by respondents. Respondents were asked to remark on the overall management of e-records in the public sector in Lesotho. From the responses obtained, it was clear that staff were willing to learn and further their education. All 20 felt there was a need for training in a formal institution. Most of the respondents felt that there was need to accommodate the management of e-records in the legislation. Eight (40%) respondents felt that registries should liaise with the national archives so that every party can to draw their requirements when it comes to responsibility sharing. A large number (18 or 90%) felt that due to the improper management of e-records, there were no adequate skills and knowledge, since most of the registry staff were only trained up to high school.

The management of records is very often given low priority in organizations (Mnjama 2002: 32). According to Stabbins (1998), provision of education for record managers in South Africa is very poor, but the need to offer archival studies and/or records management is recognised by a number of tertiary education facilities. In Lesotho, there were no institutions offering records management courses at certificate, diploma or degree level. Even the National University of Lesotho (NUL), which is the only university in the country, did not offer such programmes. The effects on the qualification of staff were the true mirror of the situation. Lack of qualified staff would impact on the records personnel's ability to intervene effectively in all aspects of records management practices. Mnjama (2002: 40) pointed out that a records management programme would never develop fully without appropriate publicity that clearly delineates the advantages of a sound programme for the administration of institutional operating records and its role. Moreover, the interest of potential users must be aroused and maintained through an effective and efficient records service.

An essential ingredient for managing e-records is at least a basic understanding of modern office automation technology and an ability to converse with technologists in their own language. The disadvantage that many archivists and record managers face in South Africa, particularly in the public sector, is that they have traditionally worked in technology-poor environments and have not had an opportunity to develop these

capabilities (Abbott 2001: 66). There is also the reality that the majority of records and archives professionals are in terms of their professional skills, competencies and experiences, far more familiar with the paper environment.

4.12 Summary

Chapter Four presented findings of the study and analysis of the results. The objectives of the study were adopted and used as a foundation for the analytical framework. The study was conducted to investigate if the public sector in Lesotho was managing its e-records according to the principles and procedures for effective records management. The results revealed that the infrastructure and resources needed to manage e-records were inadequate. The study also established what e-records were being created and stored in formats in which they created. Archival legislation was assessed and the objective was to determine how it affected the management of e-records. It was found out that legislation did not explicitly accommodate e-records. The findings demonstrated that strategies and policies used in managing e-records were inadequate and were not documented. The existing skills and knowledge of the public sector in managing e-records were found to be inadequate. In general, the study indicated that the public sector was not properly managing its e-records to ensure access for the present and the future.

CHAPTER FIVE: SUMMARY OF FINDINGS, RESEARCH CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

Based on the findings of the study, this chapter provides the summary of findings as well as the conclusions and recommendations that were made. The objective of the study was to investigate the management of e-records in the public sector in Lesotho. The following research questions guided the study:

- What IT infrastructure and resources exist in the registries in relation to the management of e-records?
- What e-records were currently being created?
- What strategies and policies were being used in managing e-records?
- How does archival legislation affect the management of e-records in Lesotho?
- What skills and knowledge does the public sector staff have in managing e-records?
- What model or models would be suitable for managing e-records in Lesotho?
- What can be done to improve management of e-records in the public sector in Lesotho?

Interviews and observations established that the public sector was generating e-records that should be managed for access and use in the future. The following section presents conclusions of the main findings, in terms of the above research questions. Recommendations are made on the basis of the models found in the literature and the findings of the research.

5.1 Conclusions

Based on the findings, the study made the following conclusions.

5.1.1 IT Infrastructure and Resources in the Public Sector in Lesotho

The study intended to find out what IT infrastructure existed in the public sector in Lesotho. It was found that that there were few computers and the budget allocation of

funds was limited. If the public sector in Lesotho is to manage its records efficiently, it needs to consider investing more in IT infrastructure to enhance records services. Archival institutions should take advantage of IT to enhance their operations. Areas where IT can be used to enhance operations include the storage of very large amounts of information about the holdings, control of archival holdings, generation of various reports, cross-referencing of information, retrieval and document image processing.

5.1.2 E-Records Created in the Public Sector

The study established that records that were created in the public sector included text files, data files and image files. These records were in the form of monthly to yearly reports, press statements, official speeches, minutes of official meetings and other business records. There were no guidelines in place to identify records of archival value. Regarding the archival valued records, the majority of offices did what they thought was best, printed to paper and filed them.

5.1.3 Strategies and Policies in Managing E-Records

There were no written policies and guidelines with regard to technical strategies such as refreshing, migration, emulation and metadata standards. It was concluded that policies were inadequate because guidelines were not applied consistently. With regard to e-mail records, there were no policies and guidelines for long-term value e-mails.

5.1.4 Archival Legislation and the Management of E-Records

The study established that in the present archival legislation e-records were not specifically accommodated. There was no clause that clearly specified or dealt with e-records management. The study also revealed that the legislation is very old. According to the archivist's responses on legislation regarding e-records, it was clear that it could take a while to address the problem.

5.1.5 Skills and Knowledge of Staff that Manage E-Records in Lesotho

The study intended to find out what skills and knowledge staff in the public sector had in managing e-records. It was concluded that the public sector was lacking practical

experience in terms of the theory and practice of e-records management. This is attributed to the fact that the public sector has not made an effort to address e-records management, due to lack of skills, experience, knowledge and probably resources. It was found that there was lack of manpower and lack of staff with the necessary qualifications to fulfil records management duties.

The overall management of e-records was not addressed because of lack of planning and policies, strategies, infrastructure, skills and knowledge.

5.2 Recommendations

Based on these conclusions, the study makes a number of recommendations.

5.2.1 IT Infrastructure and Resources in the Public Sector in Lesotho

There is a need for the provision of adequate financial resources to upgrade the systems, migrate e-records and train staff and users. Since technology is changing rapidly and because e-records are hardware and software dependent, the public sector will need to provide adequate financial resources to cater for the needs that were identified by the study.

It is crucial that the technological infrastructure necessary to support the management of archival electronic holdings be guided by a complete archival agenda. As Powell (1995) recommended:

Individuals responsible for an e-records program must recognize that the world of electronic record keeping and information systems is constantly changing due to technological advances and the increasingly complex uses of these systems by record creators, and this unrelenting change must be met with a willingness to experiment with different ways of doing things, including different ways of organizing work. While archives are affected by changes taking place in their environment, they must also be prepared to initiate change themselves, when such change would enhance their ability to preserve records of continuing value.

It is recommended that the government should review salaries, so that records personnel be better remunerated. The review of salaries would be a good starting point for motivating records staff to perform well. Information and records management should have a specific budget, to build and initiate resources for capacity building programmes in the field of e-records.

5.2.2 E-Records Created in the Public Sector

It is recommended that standards be designed for the creation and capturing of e-records. Ensuring compliance with records management standards in the creation, use and disposal of e-records is necessary. Engaging stakeholders and records creators in the public sector to formulate comprehensive guidelines and best practices for digital preservation can achieve these. This will ensure the preservation of e-records, as well as provide a continuum of access.

5.2.3 Strategies and Policies in Managing E-Records in Lesotho

There is a need for the public sector to enact a records management policy to cover e-records. Such a policy will be able to address the existing problems inherent in the management of e-records activities, will address some of the management aspects of e-records, such as their creation, maintenance, appraisal, disposition and preservation. Strategies and policies should be developed for maintaining and managing e-records over time to ensure that they are retrievable and usable. These policies must be documented.

The National Archives, in conjunction with the public sector, needs to plan the electronic systems or record-keeping systems to ensure that records that are created, captured and maintained are managed by such systems. Guidelines for these activities should be clearly indicated, so that record creators can be aware of the functional requirements. The migration, emulation and refreshing processes need to be supervised, to determine the value of the records to be migrated, as well as ensuring the capturing of all the metadata during the migration and other processes.

Policy guidelines should provide guidance to governmental bodies, to assist them to comply with legislative requirements regarding e-records as an integral part of the strategic management of records. Without such a strategy, the records of governmental bodies will be insecure and the effective functioning and accountability of bodies, based as it is on the information held in their own records, will be jeopardised. Therefore there will be no long-term social memory in the custody of the national archives.

The formulation of policy should effectively guide and assist in managing e-mails. Policies regarding e-mails should be able to ensure that access to appropriate information for decisions is granted. E-mails that form part of the corporate record should be read by anyone who has sufficient access privileges. Authorized staff should be able to read e-mails that are relevant to their business, regardless of which e-mail inbox it was sent from or to. Policies should make sure that records are not altered; otherwise they may not be considered reliable evidence. An important component of e-mail management is classification. E-mails should be filed so that they are related to other documents (paper or electronic) on the same subject. If this is done, it is possible to build up a complete picture over time of events related to a particular subject or client. If this is not done, and related e-mails are scattered across the department of ministry, it is very difficult to guarantee that all e-mails that are relevant will be found.

It is crucial for the appraisal of e-records to take place at an early stage. Appropriate appraisal, scheduling and disposal procedures should be applied to e-records. If not, records needed for litigation or investigation purposes, or to comply with an access of information request, might be inadvertently destroyed.

5.2.4 Archival Legislation and the Management of E-Records in Lesotho

It is recommended that the archival legislation of Lesotho have provisions regarding the archival custody of e-records. The national archives should promote the e-records programme. The national archives must embark on awareness campaigns to sensitise public servants to good care and handling of e-records. The situation could be improved

if policy-makers see public records a national resource and make adequate financial provisions for their care.

Since the management of e-records is a relatively new subject in the records management profession, the national archives in conjunction with the public sector, should organize records management seminars and workshops to sensitize records staff, administrators and possible e-records creators on how these records should be managed and the challenges they must address in order to effectively manage e-records.

5.2.5 Skills and Knowledge of Staff that Manage E-Records In Lesotho

The government should put in place an accelerated programme to recruit trained records personnel into public institutions, as they would have a better appreciation of preservation issues. The role of record managers should be recognized and appreciated. Record managers should involve themselves particularly in e-records management and in the overall management of e-records. It is further recommended that registry personnel be trained in records management at formal institutions, so that it is clear that the importance of records is appreciated and acknowledged.

There is a need to provide training for the existing records staff, to prepare them for an electronic records environment. It was evident that the existing records staff did not have records management skills to manage the existing e-records. Training should focus on acquisition of records management and IT skills. Such training can be conducted through in-house workshops and seminars, or through formal training in records management institutions within the African continent or abroad.

In an electronic records environment, creators of e-records will be required to possess records management skills. Such skills will enable them to make records management decisions, such as those relating to appraisal and disposition, security and preservation. Such training can be conducted through in-house seminars and workshops, attachment and short visits.

In order to foster an e-records environment, all new records staff to be recruited should possess relevant qualifications in records management and IT. Professional records managers at graduate level should also be recruited to be in charge of records management services. Records management services within the public sector can only be run efficiently and effectively if professionally trained records managers are recruited.

5.3 Model Recommended for E-Records Management in the Public Sector in Lesotho

The South African model has been identified and recommended as the overall model suitable for e-records management in an African environment, because the functional requirements of the model necessitated the need for the improvement and management of e-records in the public sector in Lesotho. The comparison of the other models does not cover the practical implementation of an ERMS. Related issues such as digitization and other means of creating e-records are outside the scope of the functional requirements. It is therefore recommended the Lesotho adopt the South African model to ensure the proper creation, maintenance, use and disposal of records to achieve efficient, transparent and accountable governance.

As discussed in the literature review, this model has been build on the strategy that the archives be involved in e-records management systems, from creation to disposal. The model has fourteen key areas that are the responsibilities of governmental bodies:

- Establishment of e-records management policies and procedures.
- Assignment of responsibility for e-records management.
- Introduction of e-records systems by the National Archives and Records Service.
- Implementation of an Integrated Document Management System.
- Formulation of an e-records preservation plan.
- Accessibility of e-records.
- Identification of e-records.
- E-mail management
- Websites and web-based activities management

- Maintenance and migration procedures
- Appraisal of records.
- Transfer of archival electronic records into archival custody.
- Disposal authority by National Archivist.
- Data Warehouse and Geographic Information Systems

Records managers and archivists should make arrangements with creating bodies to ensure the proper management of e-records. The model is therefore suitable, since the National Archivist in Lesotho will have good liaison and relationship with creating bodies.

5.4 Suggestions for Future Research

The study looked at the public sector of Lesotho. It is suggested that if need be, the research should be extended to the private sector, to establish what e-record keeping systems they have adopted, so that there can be a comparison in order to establish practices and procedures of good records management. If there is a follow-up to this study, it is recommended that preservation strategies for records in Lesotho be investigated, since it is one of the greatest challenges. Future research should take into account the creation of authentic records, technological obsolescence and the development of staff expertise in the management of e-records. From the legal and technological point of view, authenticity of e-records should also be an area of research. Information contained in records is a means of ensuring accountability; it may need to be produced as evidence in a court of law.

At present the InterPARES Project (Canadian, American, European, Italian, Australian, Asian) is involved in developing methodologies for preserving authentic e-records and metadata. Preservation of metadata with the specific electronic document gives context to the document. Without the necessary context attached the electronic document will not be a record. It is therefore suggested that future research looks into these areas from an African perspective.

REFERENCES

Abbott, B. S. 1999. Preserving electronic memory: an investigation into the role played by the National Archives of South Africa in the management of electronic records of central government. MIS thesis. Pietermaritzburg: University of Natal.

Abbott, B. S. 2001. The state of electronic records management in South Africa: an overview. *ESARBICA Journal* 20: 62-70.

Aitchison, J. M. H. 1998. Access to books and journal articles by postgraduate students on a course-work Master's programme in Information Studies at the University of Natal, Pietermaritzburg. MIS thesis. Pietermaritzburg: University of Natal.

Akotia, P. 2003. Public sector records systems in Ghana: some lessons in development management. *African Journal of Library, Archives and Information Science* 13(2): 107-117.

* Akussah, H. 2002. Records management and preservation in government ministries and departments in Ghana. *African Journal of Library, Archives and Information Science* 12(2): 155-165.

Arksey, H. and P. Knight. 1999. *Interviewing for social scientists: an introductory resource with examples*. London: Sage.

Babbie, E. 1995. *The practice of social research*. 7th ed. Belmont: Wadsworth.

Bailey, C. 2001. Preserving the bits and bytes of history: lessons from the governmental electronic records programme at the National Archives of Canada. *ESARBICA Journal* 20: 43-56.

+ Bantin, P. 2002. Electronic records management: a review of the work of a decade and a reflection on future directions. In: Kent, A. (ed.) 2002. *Encyclopaedia of library and information science* 71(34): 47-73.

Barata, K., Kutzner, F. J. and J. Wamukoya. 2001. Records, computers and resources: a difficult equation for Sub-Saharan Africa. *The Information Management Journal* 35(1): 34-42.

Bearman, D. 1996. Virtual archives. Paper presented at the ICA Meeting, September 1996, Beijing, China.

Bellardo, L. J. and L. L. Bellardo (comps). 1992. *A glossary for archivists, manuscripts, curators, and records managers*. Chicago: The Society of American Archivists.

Bless, C. and C. Higson-Smith. 1995. *Fundamentals of social research methods: an African perspective*. 2nd ed. Kenwyn: Juta.

Bless, C. and C. Higson-Smith. 2000. *Fundamentals of social research methods: an African perspective*. 3rd ed. Kenwyn: Juta.

Cathro, W. S. 1999. Digital libraries: a national library perspective. Available: <<http://www.csu.edu.au/special/online99/proceedings99/300c.htm>> Accessed 03-04-2003.

Chinyemba, A. 2002. Management of university records: a case study of the University of Natal, Pietermaritzburg. MIS thesis. Pietermaritzburg: University of Natal.

Cohen, L., Manion, L. and K. Morrison. 2000. *Research methods in education*. 5th ed. London: Routledge Falmer.

- ✂ Creswell, J. W. 2003. *Research design: qualitative and quantitative approaches*. Thousand Oaks: SAGE.
- Dane, F. C. 1990. *Research methods*. California: Brooks Cole.
- Deegan, M. and S. Tanner. 2002. *Digital futures: strategies for the information age*. London: Library Association.
- Dollar, C. 2000. *Authentic electronic records: strategies for long-term access*. Chicago, Illinois: Cohasset Associates.
- Duranti, L. 2001. Concepts, principles and methods for the management of electronic records. *Information Society* 17(40): 271.
- Durrheim, K. 1999. Research design. In: Terre Blanche, M. and K. Durrheim (eds). 1999. *Research in practice: applied methods for social sciences*. Cape Town: University of Cape Town Press, pp. 29-55.
- Fielding, J. 1993. Coding and managing data: In: Gilbert, N. (ed.) *Researching social life*. London: Sage, pp. 218-238.
- Fink, A. 1995. *The survey kit*. Thousand Oaks, CA: Sage.
- Fink, A. and J. Kosecoff. 1998. *How to conduct surveys: a step-by-step guide*. Thousand Oaks, CA: Sage.
- Foster, P. 1996. Observational research. In: Sapsford, R. and V. Jupp (eds). 1996. *Data collection and analysis*. London: Sage, pp. 57-93.
- Fujitsu, A. 2003. Document and content management. Available: <http://uk.fujitsu.com/services/infmanagement/docmanagement/>
Accessed 24-07-03.

Gay, L. R. 1976. *Educational research: competencies for analysis and application*. Columbus, Ohio: Merrill.

Gay, L. 1981. *Educational research: competencies for analysis and application*. 2nd ed. Ohio: Merrill.

Gibbs, R. 2002. E-mail as records: advice to Victoria government agencies. Public Record Office Victoria. Available:

<http://www.vers.com.au>

Accessed 29-06-03.

Gilliland-Swetland, A. J. 2000. Defining metadata. In: Lazinger, S. S. 2001. *Digital preservation and metadata: history, theory, practice*. Englewood, Colorado: Libraries Unlimited, pp. 143-144.

Goyder, J. 1987. *The silent minority: nonrespondents on sample surveys*. Cambridge: Polity.

Harris, V. 1999/2000. Law, evidence and electronic records: strategic perspective from the global periphery. *S.A. Archives Journal* 41: 3-19.

Harvey, R. 2003. Now you see it, now you don't: maintaining your school website for the future. *Access* 17(1): 14-18.

Hedstrom, M. and S. Montgomery. 1998. Digital preservation needs and requirement in RLG member institutions. Available:

<http://www.rlg.ac.uk/preserve/digpres.html>.

Accessed 22-03-2003.

Hedstrom, M. 2000. Electronic record-keeping. In: Kent, A. and C. M. Hall (eds). *Encyclopedia of library and information science* 74. New York: Marcell Dekker, pp. 160-169.

Hernon, P. and H. C. Relyea. 2003. Information policy. In: Drake, M. (ed.) *Encyclopedia of library and information science*. 2nd ed. New York: Marcel Dekker, pp. 1300-1312.

Hunter, G. S. 2000. *Preserving digital information: a how-to-do-it-manual*. New York: Neal-Schuman.

International Council on Archives. 1997. Guide for managing electronic records from an archival perspective. Available:

<http://www.ica.org/biblio/cer/guide_eng.html>

Accessed 24-07-03.

International Records Management Trust. 2004. Introduction to records and archives legislation. Available:

<<http://www.irmt.org/evidence/wbediscussion.html>>

Accessed 09-03-04.

Judd, C. M., Smith, E. R. and L. H. Kidder. 1991. *Research methods in social research relations*. 6th ed. Fort Worth, Texas: Harcourt Brace Jovanovich.

Kaniki, A. 1999. Doing an information search. In: Terre Blanche, M. and K. Durrheim (eds). *Research in practice: applied methods for the social sciences*. Cape Town: University of Cape Town, pp. 17-27.

Katuu, S. 2001. Ensuring the authenticity of records: from seals to digital signatures. *ESARBICA Journal* 20: 2-42.

Kemoni, H. and J. Wamukoya. 2000. Preparing for the management of electronic records at Moi University, Kenya: a case study. *African Journal of Library, Archives and Information Science* 10(2): 125-138.

Kenosi, L. 1999. Records management in Botswana. *African Journal of Library, Archives and Information Science* 9(2): 119-127.

Kiondo, E. 2002. Resource mobilisation for library and information services development in Africa. *African Journal of Library, Archives and Information Science* 12(1): 15-26.

Kirkwood, C. and L. Venter. 1999/2000. Strategy for the management and appraisal of electronic records in the public sector. *S. A. Archives Journal* 41:29-40.

Kothari, C. R. 1990. *Research methodology: methods and techniques*. 2nd ed. New Delhi: Wishwa Prakashan.

Landry, M. and C. Banville. 1992. A disciplined methodological pluralism for management information systems research. *Accounting, Management and Information Technology* 2(2): 77-97.

Lazinger, S.S. 2001. *Digital preservation and metadata: history, theory, practice*. Englewood, Colorado: Libraries Unlimited.

Leedy, P. D. 1989. *Practical research: planning and design*. 4th ed. New York: Macmillan.

Leedy, P. D. 1997. *Practical research: planning and design*. 6th ed. Upper Saddle River, NJ: Merrill/Prentice Hall.

Lesotho Archives Act. 1967. National Archives Act of 1967. *Archivum* 20: 69-73.

Lesotho Government Official Website. 2003. Available: <<http://www.lesotho.gov.ls>>
Accessed 02-05-2003.

Marcum, D. B. 1996. The preservation of digital information. *Journal of Academic Librarianship* 22: 451-454.

Menou, M. 1991. National information policy in the less developed countries: an educational perspective. *International Library Review* 23: 49-64.

Mnjama, N. M. 1996. National archives and the challenges of managing the entire life cycle of records. *S. A. Archives Journal* 38: 24-32.

Mnjama, N. 2002. Managing University records. *ESARBICA Journal* 21: 32-40.

* Mouton, J. 2001. *How to succeed in your master's and doctoral studies: a South African guide and resource*. Hatfield, Pretoria: Van Schaik.

Musembi, M. 2003. National Archives. In: Feather, J. and P. Sturges (eds). 2003. *International encyclopedia of information and library science*. 2nded. London: Routledge, pp. 440-441.

Mutiti, N. M. 1999. ESARBICA in the next millennium: the perspective of the National Archives of Zambia. *ESARBICA Journal* 18: 13-16.

Mutiti, N. M. 2001a. Computerization of archives and records in the ESARBICA region. Paper presented at the ESARBICA General Conference, Harare, Zimbabwe, 23-27 July 2001.

Mutiti, N. M. 2001b. The challenges of managing electronic records in the ESARBICA region. *ESARBICA Journal* 20: 57-61.

Mutiti, N. M. 2002. Computerization of archives and records in the ESARBICA region. *ESARBICA Journal* 21: 114-119.

Nachmias, C. and D. Nachmias (eds). 1982. *Research methods in the social sciences*. London: Edward Arnold.

National Archives and Records Service of South Africa. 2003. *Managing electronic records in governmental bodies: policy guidelines*. Pretoria: National Archives and Records Service of South Africa.

National Archives of Australia. 2003. Record keeping aims. Available:
<<http://www.naa.gov.au/recordkeeping/dirks/dirksman/part1.html#bg4>>
Accessed 27-07-03.

Neumann, L. 2000. *Social research methods: qualitative and quantitative approaches*. 4th ed. Boston: Allyn and Bacon.

Newell, R. 1993. Questionnaires. In: Gilbert, N. (ed.) *Researching social life*. London: Sage, pp. 94-115.

Ngoaketsi, M. J. 2003. A review of national archives and records service of South Africa's policy on the management of electronic records in governmental bodies: policy guidelines. Paper presented during the XVII Eastern and Southern African Regional Branch of the International Council on Archives (ESARBICA). General Conference on Society and Good Governance, Maputo, Mozambique, 22-26 July 2003.

Ngulube, P. 2000. Challenges to preservation of our archival heritage. Paper presented at the South African Society of Archivists. Conference on Renaissance in Archives, Technikon SA, Johannesburg, 11-13 Sept. 2000.

Ngulube, P. 2001. Strategies for managing digital records and documents in the public sector in Sub-Saharan Africa. Paper presented at the 67th IFLA Conference in Boston, Massachusetts, USA, August 16-25, 2001.

Ngulube, P. 2001/2002. Challenges to preservation of our archival heritage. *S.A. Archives Journal* 42: 27-36.

Ngulube, P. 2003a. Preservation and access to public records and archives in South Africa. PhD thesis. Pietermaritzburg: University of Natal.

Ngulube, P. 2003b. Implications of technological advances on access to cultural heritage of countries in Sub-Saharan Africa. *Government Information Quarterly* (Forthcoming).

Okunoye, A. 2001. Information technology infrastructure and knowledge management in Sub-Saharan Africa: an empirical investigation. MSc Thesis. Finland: University of Jyväskylä.

Oppenheim, C. 1998. Current UK and EU information policy. In: Grieves, M. (ed.) *Information policy in the electronic age*. London: Bowker Saur, pp. 45-70.

Panteli, N. 2002. Richness, power cues and email text. *Information and Management* 40(2): 75-86.

Penn, I. A., Pennix, G. B. and J. Coulson. 1994. *Records management handbook*. Aldershot, Hants: Gower.

Powell, R. R. 1985. *Basic research methods for librarians*. Norwood, New Jersey: Ablex.

Powell, R. R. 1991. *Basic research methods for librarians*. 2nd ed. New Jersey: Ablex.

Powell, R.R. 1997. *Basic research methods for librarians*. 3rd ed. Greenwich, Connecticut: Ablex.

Powell, S. 1995. Elements of an integrated archival electronic records program. Internal National Archives of Canada Reports, Unpublished report.

Prytherch, R. (comp.) 2000. *Harrod's librarians' glossary: and reference book*. 9th ed. Aldershot: Gower

Public Record Office. 2001. E-government policy framework for electronic records management. Available:

<http://www.pro.gov.uk/recordsmanagement/>

Accessed 22-04-03.

Qobo, C. 1996. The role of national archives and archivists in a changing political environment. In: Moshoeshe-Chadzingwa, M., Kakoma, A. K. and M. M. Lebotsa (eds). *Libraries and information services in the 21st century and beyond. Proceedings of the 12th Standing Conference of Eastern, Central and Southern African Librarians (SCECSAL XII), Maseru, Lesotho, 9-13 Dec. 1996*. Maseru: Lesotho Library Association, pp.284-292.

Ranson, S. 1995. Theorising education policy. *Journal of Education Policy* 10(4): 440-445.

Ricks, B. R., Swafford, A. J. and K. E. Gow. 1992. *Information and image management: a record system approach*. 3rded. Cincinnati: South Western.

Robek, M. F., Brown, G. F. and D. O. Stephens. 1995. *Information and records management: document-based information systems* 4th ed. New York: McGraw-Hill.

Roe, K. D. 1988. Public programs. In: Bradsher, J. G. (ed.) 1988. *Managing archives and archival institutions*. London: Mansell, pp. 218-227.

Rowley, J. 2002. Using case studies in research. *Managing Research News* 25 (1): 16-25.

Seabo, D. T. 1994. The role of the registry in the management of records and information. *ESARBICA Journal* 14: 41-49.

Schellenberg, T. R. 1956. *Modern archives: principles and techniques*. Chicago: University of Chicago Press.

Saunders, M. 2000. Data handling and reduction. In: Wilkinson, D. (ed.) *The researcher's toolkit: the complete guide to practitioner research*. London: Routledge Falmer, pp.47-50.

Spindler, R. P. 2003. Electronic records preservation. In: Drake, M. (ed.) *Encyclopedia of library and information science*. 2nd ed. New York: Marcel Dekker, pp. 1016-1022.

Stabbins, P. 1998. Professional development of records managers in South Africa. Paper presented at 4th International Records Management Congress, Edinburgh, April 1998.

Tafor, V. F. 2001. The management of public records in the member countries of the Eastern and Southern African Regional Branch of the International Council on Archives (ESARBICA). MIS thesis. Pietermaritzburg: University of Natal.

✈ Thurston, A. 1996. Records management in Africa: old problems, dynamic new solutions. *Records Management Journal* 6(3):187-199.

Victorian Electronic Records Strategy. 2003. Available:

<http://vers.imagineering.com.au/basic_concepts/what%20is%20vers.htm>

Accessed 29-06-03.

Walne, P. (ed.) 1998. *Dictionary of archival terminology*. Munchen: Bowker-Saur.

* Wamukoya, J. and H. Kemoni. 2001. Educating record keeping professionals in Africa: the case of Moi University, Kenya. *ESARBICA Journal* 20: 105-110.

Wato, R. 2003. Challenges of archiving electronic records: the imminent danger of a “digital dark ages”. Paper presented during the XVII Eastern and Southern African Regional Branch of the International Council on Archives (ESARBICA). General Conference on Archives, Society and Good Governance, Maputo, Mozambique, 22-26 July 2003.

Wells, G. 2002. Needed: librarians, archivists, and record managers for the organization, access, and preservation of government information in the electronic era. Paper presented at the International federation of Library Associations’ Section on Government Libraries pre-Conference, London, England, 15 Aug. 2002.

Wiggins, B. 2000. *Effective document management: unlocking corporate knowledge*. Aldershot: Gower.

Wilson, M. 1996. Asking questions. In: Sapsford, R. and V. Jupp. (eds). 1996. *Data collection and analysis*. London: Sage, pp. 94-120.

Wimmer, R. D. and R.J. Dominick. 1994. *Mass media research: an introduction*. Belmont, CA: Wadsworth.

Yahaya, D. H. Z. 2001. Preservation, access and technology challenges: archives and records of the 21st Century. Paper presented at the 16th General conference of the Eastern and Southern African Regional Branch of the International Council on Archives 25-27 July 2001, Harare, Zimbabwe.

Yahaya, D. H. Z. 2002. Keynote address. *ESARBICA Journal* 21: 63-68.

- *Yin, R. K. 1994. *Case study research, design and methods*. 2nd ed. Newbury Park: Sage.
- Yusof, Z. M. and R. W. Chell. 1999. Managing business records in Malaysia: awareness and attitudes among business managers. *Information Development* 15(4): 228-233.

APPENDICES

Appendix 1: Lesotho Government Ministries that were the population of the study

1. Ministry of Agriculture and Food Security
2. Ministry of Communication, Science and Technology
3. Ministry of Defence and National Security
4. Ministry of Education and Training
5. Ministry of Employment and Labour
6. Ministry of Finance and Development Planning
7. Ministry of Forestry and Land Reclamation
8. Ministry of Foreign Affairs
9. Ministry of Gender, Youth and Sports
10. Ministry of Health and Social Welfare
11. Ministry of Home Affairs and Public Safety
12. Ministry of Justice and Human Rights
13. Ministry of Law and Constitutional Affairs
14. Ministry of Local Government
15. Ministry of Natural Resources
16. Ministry of Public Service
17. Ministry of Public Works and Transport
18. Ministry of Tourism, Environment and Culture
19. Ministry of Trade and Industry, Cooperatives and Marketing (Lesotho Government Website 2003).

Appendix 2: Interview schedule

CASE NO...

I am a student at the University of Natal, Pietermaritzburg doing a Masters Degree in Information Studies. As part of the course, I am doing a research project entitled “An Investigation into the Management of Electronic Records in the Public Sector in Lesotho.” The main purpose of the project is to investigate the steps that have been taken to manage and preserve e-records in the public sector in Lesotho.

The survey is designed to gather data about the existing information technology infrastructure and resources in the public sector, records being created and what formats are used in the electronic environment, strategies, policies and models used to manage e-records, archival legislation and existing skills and knowledge in the management of e-records.

The data will be treated in aggregate and no individual ministry will be identified.

NAME OF MINISTRY:.....

NAME OF RESPONDENT.....

JOB TITLE:.....

DATE OF INTERVIEW:.....

PLACE OF INTERVIEW:.....

ARCHIVAL LEGISLATION

1. Does your organization have legislation to manage records?

- a. Yes []
- b. No []

2. How old is the legislation or when was it passed?.....

3. Has the legislation ever been amended since it was passed?

- a. Yes []
- b. No []

4. Does the legislation clearly cover the management of records in the following media?

- | | | |
|-----------------------|---------|--------|
| a. Electronic records | Yes [] | No [] |
| b. Microfilm | Yes [] | No [] |
| c. Paper | Yes [] | No [] |

5. Please explain your answers to any of the options given above.

.....
.....
.....
.....

6. Does your legislation specifically address the management of e-records?

- a. Yes []
- b. No []

E-RECORDS MANAGEMENT

7. What type of e-records are being created in your ministry? (You can give more than one answer).

- a. Mail []
- b. Reports/monthly, yearly etc. []
- c. Press releases/statements []
- d. Official speeches []
- e. Policy documents []
- f. Court proceedings []
- g. Minutes []
- h. Tax invoices []
- i. Business plans []
- j. Workshop/conference papers []
- k. Government forms []

8. Does your office have any written guidelines concerning the management of e-records?

- a. Yes []
- b. No [] If no, go to question 12.

9. Are these guidelines outlined in a written policy document?

- a. Yes []
- b. No []

10. Are the guidelines adequate to meet your needs?

- a. Yes []
- b. No []

11. Please give reasons for your answer:.....

.....
.....
.....

12. Does your office have guidelines for the identification of e-records?

- a. Yes []
- b. No []

13. Are there any guidelines in your office, which encourage the creation of only those e-records needed for business?

- a. Yes []
- b. No []

14. Does your office have guidelines on activities for which e-records should be created?

- a. Yes []
- b. No []

15. Does your office have guidelines on the registration of all e-records?

- a. Yes []
- b. No []

16. Does your office have guidelines on how to organize e-records into directory and other structures?

- a. Yes []
- b. No []

17. Does you office store semi-active e-records separately from active ones?

- a. Yes []
- b. No []

18. Does your office maintain e-records on removable media e.g. diskettes?

- a. Yes []
- b. No []

19. If “yes”, are there guidelines on the labelling of the media?

- a. Yes []
- b. No []

20. Does your office have any written guidelines on how to protect and secure e-records?

- a. Yes []
- b. No []

21. Does your office have a list specifying how long each e-record series can be kept before being disposed of?

- a. Yes []
- b. No []

22. If ‘yes’ does your office have a mechanism for checking compliance with these schedules?

- a. Yes []
- b. No []

23. Does your office have guidelines specifying which e-records should be disposed of when they are no longer needed for business?

- a. Yes []
- b. No []

24. Does your have guidelines specifying the method of disposition once an e-record is no longer needed for conducting business?

- a. Yes []
- b. No []

25. Does your office have guidelines for the identification of e-records, which are considered to be of archival value?

- a. Yes []
- b. No []

26. Are there any guidelines for the preservation of e-records of archival value?

- a. Yes []
- b. No []

27. At present, what action is taken with regards to e-records that are considered to be of archival value? (You can give more than one answer).

- a. Print to paper and treat as paper records []
- b. Maintain as e-records and file accordingly []
- c. Transfer to other media (e.g., microfilm) []
- d. Save to removable electronic media and file accordingly []
- e. Other, please specify.....

MANAGING ELECTRONIC MAIL (E-MAIL)

28. Does your office have a written policy on the use of e-mail in the transaction of official business activity?

- a. Yes []
- b. No []

29. Does your office have guidelines on how to save an e-mail message as a record?

- a. Yes []
- b. No []

30. Does your office have guidelines on how to store and retrieve e-mail?

- a. Yes []
- b. No []

31. Which of the following systems does your office currently use for storing e-mail records of enduring value? (You can give more than one answer).

- a. Print to paper and file as paper records []
- b. Store in electronic mail system []
- c. Store in a separate electronic filing system []
- d. Other, please specify.....

32. Does your office have guidelines for the identification of e-mail records of long-term value?

- a. Yes []
- b. No []

INFORMATION TECHNOLOGY INFRASTRUCTURE AND RESOURCES

33. Please indicate the information/communication facilities that are available in your personal office by completing the table below:

ITEM	NO.	MODEL	DATE	OPERATING SYSTEM	REMARKS
Computers					
Laser printers					
Dot-matrix printers					
CD-ROM drive					
Microfiche readers					
Stabilizer					
UPS*					
Scanners					
Generator					
Telephone line					
Fax machine					
Telex					
Radio					
Modem					
Other (specify)					

* Uninterruptible Power Supply

34. Does your office manage its own budget?

Yes []

No []

35. If "yes", into which categories does your office's annual budget fall? (include salaries, building maintenance, utilities, etc., devoted to the management, storage, and use of records)

a. M10,000 - M49,000

b. M50,000 - M99,000

c. M100,000 - M249,000

d. M250,000 - M499,000

e. M500,000 - M999,000

f. More than - M1,000,000

g. If your annual budget is more than M1,000,000, please supply the figures.....

36. Does your office have a specific budget for the management of information?

- a. Yes []
- b. No []

37. If “yes”, what percentage of the budget is devoted to the management of e-records?

.....

STORAGE FORMATS AND METHODS

38. Which of the following formats are present in the digital holdings for which your ministry assumes management and preservation responsibility? (Please tick all the applicable options)

- a. Flat ASCII files []
- b. Text files with mark-up (e.g. SGML, HTML, XML, etc.) []
- c. Word processing format (e.g. MS Word, etc.) []
- d. Database format (e.g. Access, FoxPro, etc.) []
- e. Spreadsheet format (e.g. Excel etc.) []
- f. Image format (e.g. GIF, JPEG, TIFF, etc.) []
- g. Audio []
- h. Video/ Moving Images []
- i. Other, please specify.....

39. What methods do you use to store e-records, that is, those materials received in digital form? (Please tick all the applicable options).

- a. Store as received []
- b. Transfer to other digital storage medium, []

40. Which of the following devices do you use to store digital records? (Please tick all the applicable options).

- a. Hard drive []
- b. Magnetic tape (open reel) []
- c. Magnetic tape (cassette or cartridge) []
- d. CD-ROM (Compact Disk- Read Only Memory) []
- e. Optical Disc (Re-writable) []
- f. WORM Optical Disk (Write-Once-Read-Many) []
- g. Other method, please specify.....

41. Does your office have an established method for preserving e-records?

- a. Yes []
- b. No []

42. Does your office ever refresh any e-records?

- a. Yes []
- b. No []

43. If "yes", describe frequency/method:.....

44. Does your office migrate e-records?

- a. Yes []
- b. No []

45. If "yes", please describe frequency/method:.....

46. Does your office emulate e-records?

- a. Yes []
- b. No []

47. If "yes", please describe frequency/method:.....

48. Which of the following strategies of e-records management are covered by your policies?

- a. Emulation []
- b. Migration []
- c. Refreshing []
- d. Creation []
- e. Retention []
- f. Appraisal []
- g. Maintenance []
- h. Metadata []
- i. Other, please specify.....

EXISTING SKILLS AND KNOWLEDGE

49. How many records management staff members do you have in your office?.....

50. How many records management staff has any of the following qualifications?

- a. Degree in Records Management.....
- b. Degree in another field.....
- c. Postgraduate Diploma or Certificate in Information Studies.....
- d. Postgraduate Diploma or Certificate in another field.....
- e. Diploma in Records-related field.....
- f. Certificate.....
- g. Matriculation (Form Five).....
- h. Other qualification, please specify.....

51. Do records managers undergo any form of staff development?

- a. Yes []
- b. No []

52. If “yes”, what form of staff development is carried out?

- a. Formal training in an institution []
- b. Seminars []
- c. Workshops []
- d. Refresher courses []
- e. Other, please specify

53. Does your office conduct any in-service training in managing e-records?

- a. Yes []
- b. No []

54. If ‘yes”, please provide a brief description of the training that is provided.....

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55. Do you have any comments, regarding the overall management of e-records in the public sector in Lesotho?

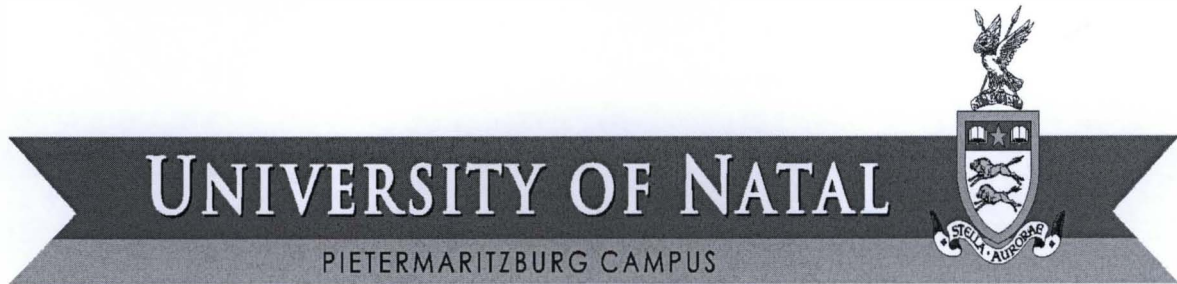
- a. Yes []
- b. No []

56. If “yes”, please comment:

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Thank you very much for your time.

Appendix 3: Letter of introduction from supervisor



School of Human and Social Studies
Information Studies Programme
Private Bag X01, Scottsville 3209
Pietermaritzburg

14 August 2003

TO WHOM IT MAY CONCERN

Letter of introduction: Ms. Lefuma Sejane Student No. 201500344 (Information Studies Programme)

This letter serves to introduce Ms Lefuma Sejane who is registered as a Masters student at the University of Natal. Ms Sejane is currently carrying out a study on electronic records management practices in the public sector in Lesotho. The objective of the study is to produce a description of the current practice of electronic records management in the public sector in Lesotho. The information obtained and the resultant recommendations could assist in decision-making.

In order to undertake the study Ms Sejane will need to carry out some interviews among staff responsible for records within government ministries. In that light, the Information Studies Programme kindly requests you to render any possible assistance to Ms Sejane in order to facilitate the conduct of the study.

If you require any clarification pertaining to the study, please, feel free to contact Dr. Patrick Ngulube, who is the supervisor of the research, on telephone 27332605972. Thank you in advance in anticipation.

Yours faithfully

Patrick Ngulube (Supervisor).
Senior Lecturer

Appendix 4: Observation schedule used at selected registries

- File Arrangement
- Fire Protection
- Office Furniture
- Storage and Filing Space
- IT Infrastructure