MANAGEMENT OF ELECTRONIC RECORDS AT MOI UNIVERSITY ELDORET, KENYA

BY

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DECLARATION BY CANDIDATE

This thesis is my original work and has not been presented for a degree in any other university. No part of this thesis may be reproduced without the permission of the author and/or Moi University.

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DEDICATION

This work is dedicated to My Lord and Saviour

JESUS CHRIST.

In the Potters hand, He makes something out of nothing.

Thank you, Father, for your faithfulness, Grace and Mercy.

To God be the Glory.

To my awesome Joseph - a husband who is gifted in caring and patience

and

my great Kids,

Arthur, Kellen and Abby,

Thanks for all your Support,

Love, and Laughter.

ABSTRACT

The advent of ICTs and in particular the computer, has altered the ways in which records are created, received, maintained, used and disposed of. Moi University has embraced the use of computers as a critical tool for information management and communication in support of its business transactions. However, despite embracing the use of computers in creating and receiving information, the management of electronic records remains a neglected area of the university record keeping system. The aim of the study was to examine the management of electronic records at Moi University within the context of the continuum principle with a view to recommending a framework that can be used to manage electronic records.

The specific objectives of the study were to: conduct a business process analysis of Moi University and ascertain the electronic records generated and received by the institution; determine and evaluate the strategies used for managing electronic records; ascertain the professional knowledge and skills of staff responsible for managing electronic records; determine the adequacy of the existing ICT infrastructure and resources to cater for the management of electronic records; identify the challenges encountered by staff in the management of electronic records and propose a framework for improving and sustaining the efficient and effective management of electronic records at Moi University.

The study was based on the Records Continuum Model. The elements of the framework take into account the dynamic nature of electronic records and include record keeping issues which the current study investigated. The model emphasizes the importance of managing records on a continuum of care.

The study used both qualitative and quantitative research methods. The study population consisted of 60 respondents drawn from Moi University Main Campus, Chepkoilel Campus and Town Campuses. Purposive sampling technique was used to select respondents from university management, ICT, general administration, records/accounts and secretarial staff. Data was collected using semi-structured interview schedules supplemented by observation. Statistical data was presented in the form of tables and graphs and content analysis was used to organize data collected through interviews.

The major findings of the study were that: policies and procedures to guide the management of electronic records were non-existent; staff devised their own strategies for managing electronic records; the ICT infrastructure was not adequate and the computers did not have a record keeping system. Staff faced many challenges which included: lack of knowledge and skills in records management and in particular electronic records management; poor handling of storage devices and lack of connectivity.

The recommendations of the study include: the development and implementation of a policy framework for managing electronic records; equipping staff and especially those responsible for managing electronic records with knowledge and skills in records management and in particular electronic records management; staff and users be equipped with ICT skills to enable them work in an electronic environment and the university should raise awareness amongst staff on the importance of electronic records management. A proposed policy framework for managing electronic records is provided.

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LIST OF ABBREVIATIONS AND ACRONYMS

ARMA	:	Association of Records Managers and Archivists
AS 4390	:	Australian Standard
BPA	:	Business Process Analysis
CAMiLEON	:	Creative Archiving at Michigan and Leeds: Emulating the old on the new
CDs	:	Compact Disks
DIRKS	:	Design and Implementation of Record Keeping System
DVC	:	Deputy Vice Chancellor
EDMS	:	Electronic Document Management Systems
EDRM	:	Electronic Document and Records Management
E-Mail	:	Electronic mail
ERA	:	Electronic Records Archive
ERMF	:	Electronic Records Management Framework
ERMP	:	Electronic Records Management Programme
ESABIRCA	:	East and Southern Africa Regional Branch of the International Council on Archives
ICA	:	International Council on Archives
ICTs	:	Information Communication Technologies
IFLA	:	International Federation of Library Associations
InterPARES	:	International Research on Permanent Authentic Records in Electronic Systems
IRM	:	Information Resource Management
IRMT	:	International Records Management Trust
ISO	:	International Standards Organization

ISP	:	Internet Service Provider
IT	:	Information Technology
Kbps	:	Kilobyte per Second
KENet	:	Kenya Educational Network
KNDS	:	Kenya National Archives and Documentation Service
LANs	:	Local Area Networks
MHO	:	The Joint Financing Programme for Cooperation in Higher Education
Mbps	:	Megabytes per Second
NARA	:	National Archives and Records Administration
NSW	:	New South Wales
NUFFIC	:	Netherlands Organization for International Cooperation in Higher Education
PC	:	Personal Computer
PSSP	:	Privately Sponsored Students Programme
SGML	:	Standard Generalized Markup Language
SITA	:	State Information Technology Agency
SPSS	:	Statistical Package for Social Sciences
UBC	:	University of British Columbia
UN	:	United Nations
USA	:	United States of America
VERS	:	Victorian Electronic Records Strategy
XML	:	Extensible Markup Language

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Finally, I am profoundly grateful to members of my family for their prayers, support and encouragement. I do offer my deepest acknowledgement to my husband Joseph Kiplang'at for his invaluable support that has finally made me realize **my dream**. No words can express my appreciation to you.

Proverbs 3:5-6

"Trust in the LORD with all your heart and lean not on your own understanding; in all your ways acknowledge him, and he will make your paths straight"

MAY GOD BLESS YOU ALL

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

This chapter provides background information to the study. It discusses the impact of information technology on record keeping**,** an overview of electronic records management, current state of computerization at Moi University, current Moi University records management set-up, the role of a university registry in an electronic environment and statement of the problem. Other issues discussed include: aim and objectives of the study, research questions, assumptions of the study, significance of the study, scope and limitations and ethical considerations.

For any organization to function effectively and carry on with its services there must be one form of record or another. Records are synonymous with every human activity. Records have existed since the creation of man and they play a crucial role in most human endeavours and are essential to all of our business and social interactions. Government functions and accountability, medical treatment and scientific research and virtually all spheres of human life and business engagements depend on records (Durranti, 2005).

Though the form of keeping these records has changed as man has evolved, today, the principles of records management are themselves developing. Records management is the discipline of applying well-established techniques and procedures to the control of those sources of information, which arise internally within an organization as a result of its own activities (Elwhiwhu, 2005).

Universities are service oriented institutions offering a variety of services which include teaching and learning, research and extension services (Elwhiwhu, 2005). A large university such as Moi University generates vast quantities of records in paper and in electronic formats. With the use of Information Communication Technologies (ICTs) such as, computers to carry out the business activities of the university, manual operations are reducing and faster information services to users at the right time in the right format and at a reduced cost are being provided. Records therefore, enable institutions such as Moi University to keep track of events and activities of the institution and particularly, to enhance research and development of the university.

According to Kemoni and Wamukoya (2000), electronic records management at universities is a new development in Kenya. Ngulube (2003) noted that there is evidence from the literature that policies and guidelines pertaining to electronic records management are non-existent in developing countries. Elwhiwhu (2005) observed that university records support the administrative and educational research of the institution and the objectives of the university to support teaching, research and services in the university. The author further noted that a university's records are its life's memory.

Records are used to supplement human memory, but the increase in records in electronic format that are created, processed and stored in computers in our modern times have caused far reaching organizational consequences for administration. Without reliable electronic records, colleges and universities will be unable to manage and defend themselves. They will lose their memories and be at a significant risk (McGovern and Samuels, 1998).

According to Moi University Strategic Plan, (2005-2015), the objectives of Moi University include to:

- Pursue excellence in teaching, research and outreach;
- Produce well informed, practical and self-reliant graduates capable of contributing to development in rural and urban areas;
- Offer expertise in areas of national development;
- Participate fully in the promotion of culture and develop individuals who are responsive to the needs and wellbeing of others;
- Offer a range of opportunities for training through continuing education and;
- Secure and manage resources to achieve the above goals efficiently

In order to achieve the objectives stated above, the university depends to a large measure to availability of, and access to, university records by the university community and other stakeholders. Records in whatever format therefore, constitute an essential instrument of administration without which operational processes and functions cannot be executed. In

their absence, management is incapacitated in its decision making process. In addition, lack of records impairs orderly methods of information communication and utilization in an organization or institution (Abe, 1994).

Records are necessary documents needed in the smooth running of any organization or institution (Abe, 1994). The recognition of records as vital tools in executive decision-making activities underlines the existence of records management. Information and records management are pillars of any business activity, hence electronic records management is aimed at helping institutions solve problems caused by modern technology such as computers.

Moi University is increasingly becoming part of the digital world. Increasingly, electronic records are becoming a reality as the use of computers as information management tools are being embraced by schools, departments and various administrative offices. This has in turn led to records being created, used, maintained and disposed of electronically. Examples of university records generated electronically include: policy documents, students records, library records, human resource records, medical records, financial records such as, the payroll and records emanating from catering services, among others.

The registry department of the university is charged with the responsibility of managing university records. However, with the introduction of ICTs and in particular the introduction of the Personal Computer (PC) into the university operations, records in

electronic format are being created, received, used, maintained and disposed of electronically by the various schools, departments and administrative offices. This has in turn led not only to decentralization of the custody of records but also potential loss of control of this vital information.

Electronic records just like paper-based records are vital records and are required for the smooth running of the university. Electronic records serve as major information tools that are useful in achieving the goals of the administrative functions of the university and as such they must be carefully controlled and organized and those that are no longer needed must be effectively disposed of. The recognition of electronic records as vital tools in decision-making activities underlines the importance of electronic records management at Moi University.

1.2 IMPACT OF INFORMATION TECHNOLOGY (IT) ON RECORD KEEPING

According to International Records Management Trust (IRMT) (1999), in the early 1980s most data processing was done on mainframe computers. With the advent of Personal Computers (PC), computer technology and applications have advanced rapidly. Today, many organizations including universities are creating records in electronic format through the use of office automation tools such as word processing, spreadsheets, electronic mail (e-mail) and database software, all running on personal computers.

The University of Toronto (2006) noted that Information technology had revolutionized the way in which university offices create, store, and manage their records. Information

has moved from paper letters to email messages. Calendars, annual reports and other publications are now more likely to be accessed through web sites. With these new technologies, come questions on how to efficiently manage electronic records.

Despite advances in technology, few automated systems have eliminated the use of 'hardcopy' documents (documents printed on paper from computer applications) and instead computers have accelerated the creation of paper records. The IRMT (1999) noted that the contents and functions of electronic records and paper records are usually closely related and this therefore calls for the co-ordination of paper and electronic records management. Thurston and Cain (1995) observed that a comprehensive records management programme must focus first on analysis of the information in records and then on the medium on which the information is stored.

Traditionally, the form of records and medium on which they were produced were inseparable. Records were managed by controlling the physical record. Today however, in an electronic environment, it is necessary to treat content and medium separately. Bantin (2002) pointed out that, unlike paper records, electronic records are logically constructed and often '*virtual*' entities. Consequently, Bantin (2002) states that electronic records cannot be viewed in the same way as paper records in which the content, context and structural metadata elements are embedded or are part of the record.

Abbot and Water (2001) noted that electronic records by their nature are dependent upon the hardware and software for their existence and their ability to be read. This

dependency in addition to technological advances presents a major challenge to organizations in ensuring the long-term access and preservation of electronic records. It is therefore, important that personnel charged with the responsibility of managing records such as records managers participate in the early planning and design stages of computerized systems or risk losing control of records. This can occur from either records not being kept in the first place or because they will be irretrievable or unreadable if they are kept.

Thurston and Cain (1996) noted that technological changes are forcing records and archives professionals to re-examine their traditional roles and to re-consider their approach to creation, management and use of records. It is imperative therefore, that electronic records are managed throughout their life-cycle following a continuum of care. The authors further pointed out that records and archives staff must become increasingly involved with the process of records creation, use and maintenance. In addition, records and archives professionals can no longer wait for creators to finish using current records and pass them along for storage and preservation because paper records and electronic records are usually part of a single system.

Mutula (2007) concurs with Thurston and Cain (1996), that ICTs are transforming the way organizations work. He pointed out that in order for records to survive in the 21st Century and beyond and be useful in supporting the functions of organizations and preserve a cultural record of the past, the concept of passive reception will have to change

to one of active involvement at the point of creation. This he noted was especially so in an electronic environment.

1.3 RECORDS MANAGEMENT

Kemoni (2007) quoting Yusof and Chell (1999) noted that there is no a universally accepted definition of the term 'records management'. The author noted that scholars have defined records management from various perspectives.

Johnson and Kallaus (1987) defines records management as the process of planning, staffing, directing and controlling all steps involved in the life of a record from creation until final disposal. IRMT (1999) noted that records management was that area of general administrative management concerned with achieving economy and efficiency in the creation, maintenance, use and disposal of the records of an organization throughout their entire life-cycle and in making the information they contain available in support of the business of that organization.

ISO 15489 Standards on Records Management (2001) defines records management as the field of management responsible for the efficient and systematic control of the creation, receipt, maintenance, use and disposition of records, including the processes for capturing and maintaining evidence of and information about business activities and transactions in the form of records.

According to the National Archives and Records Service of South Africa (2006), records management is a process of ensuring the proper creation, maintenance, use and disposal

of records to achieve efficient, transparent and accountable governance. Sound records management therefore, ensures that all records that Governmental bodies create in the conduct of their official business are, and remain, authoritative and authentic.

Records management as a discipline has attracted attention in recent years, mainly as a result of the increase in Governmental and institutional activities that have led to enormous amount of data output requiring harnessing for effective use. Keakopa (2002) observed that many researchers in their contributions have found that records which form part of a wide range of information resources, are as important to organizations as are human and financial resources, and that their management is equally important.

According to ISO 15489-1 (2001), World Bank (2005) and IRMT (2005), the benefits of effective records management include:

- Effective management of state resources;
- Supporting accountability by providing reliable records of actions and decisions;
- Assigning responsibilities and authorities;
- Protection of rights and entitlements;
- Providing services to citizens;
- Providing continuity in the event of a disaster;
- Meeting legislative and regulatory requirements and;
- Maintaining corporate, personal or collective memory

1.3.1 ELECTRONIC RECORDS MANAGEMENT

According to Roper and Millar (1999), electronic records are perceived as digital records that can be manipulated, transmitted or processed by a computer. IRMT (2004), refer electronic records to recorded information, documents or data that provide evidence of policies, transactions and activities carried out in e-Government and e-Commerce environments. Data processed and stored on computers constitute e-records (Cain and Millar, 2004; Mutula and Wamukoya, 2007).

Digital records are records created, communicated and maintained by means of computer technology. They may be 'born digital' (created using computer technology). Or they may have been converted into digital form from their original format for example, scans of paper documents (National Archives of Australia, 2004).

Roper and Millar (1999) noted that as logical entities, electronic records have three attributes: content, context and structure. Cain and Millar (2004) caution that electronic information is not a record without content, structure and context which help to authenticate electronic records as evidence of business transactions. The authors pointed out that unlike paper records whose content, context and structure is embedded on the document and can be read with the naked eye, electronic records cannot be read without the hardware and software that created the record. Electronic records therefore, require metadata for authentication (Cain and Millar, 2004). Metadata is critical for documenting any alterations made to the record.

According to Barry (2003) and Mutula and Wamukoya, (2007) types of electronic records vary from those born digital to those that are scanned, digitized or microfilmed and they include: databases, word processed documents and e-mail, workstation applications such as word processing, spreadsheets, presentations and e-mail to agency applications such as financial systems, human resource systems and databases. Dollar (2002) contends that electronic records are the window into the future. Barry (2003) concurs with Dollar (2002) that sustainable organizations (both public and private) sector have no choice but to take deliberate steps to maximize the technological revolution while minimizing the technological risks.

Electronic records management on the other hand is used to describe policies and procedures for systematic management of records in electronic format (Roper and Millar, 1999). Effective management of e-records reduces costs to an organization, improves delivery of services and support accountability. In addition, it enables an organization as a whole to ensure that adequate e-records are made, captured and maintained to meet business accountability requirements thus, reducing reliance on paper records as well as minimizing the risks associated with inadequate records of business conducted electronically (New South Wales, 1998).

The management of electronic records has many challenges which include: vulnerability to manipulation, are harder to authenticate and their legal status is difficult to determine compared with paper-based records (Mutula and Wamukoya, 2007). Mutula and Wamukoya, (2007) further noted that weaknesses of not managing electronic records can

have far reaching consequences such as, records not being available when needed for decision making.

Wamukoya and Mutula (2005) observed that the growing use of ICTs in both Government and business continues to have profound impact on the lives of these organizations especially on the way they do business. ICTs, especially computers are today common instruments of Government and business. Increasingly they are becoming the everyday tools for records creation and management. With increasing decentralization of computing power from mainframe computers to desktop computers, there is not only decentralization of the physical custody of records but also loss of intellectual control of information.

Abbott and Water (2001), noted that for a long time both public and private organizations used traditional methods to document their decisions, transactions, communication and other official transactions. The traditional nature of records management meant that the policies and methods that were developed to manage records resulting from these transactions were largely suited to operating in paper-based environments. Today however, reliance on traditional paper-based systems is rapidly changing owing to the use of technology that consists of networked personal computers, file servers, electronic mail systems, databases and other decentralized information technologies.

With the evolution from paper records to electronic records, new requirements for the collection, storage, and long-term retention of records in digital form are emerging. The

implementation of sound records management practices for electronic records can result in a number of benefits for organizations. One of the more important benefits is to ensure the creation, preservation and retention of accurate and reliable electronic records (Abbott and Water, 2001). This benefit allows agencies to fulfill legal mandates regarding the protection of their records. Other benefits include ensuring the legal acceptability of an agency's electronic records, reducing costs for the retrieval of records no longer needed to be maintained on the system, reducing the burden of paper record keeping, identifying appropriate means for the movement of records to successive generations of technology and systems, and improving citizen access to public information (Abbott and Water, 2001).

1.4 BACKGROUND INFORMATION

1.4.1 MOI UNIVERSITY

The origins of Moi University can be traced to January, 1981 when a presidential working party was formed by the Government of Kenya to look into the establishment of a second university in Kenya and to determine the future of the university in the context of the priority development needs of the country. The decision to establish a second university was necessitated by the ever increasing demand for higher education, and the consequent pressure which this demand was exerting on the University of Nairobi which was the only public university in the country at that time. It was against this background that the working party undertook its tasks and, in September 1981, presented its report to the president. Moi University Act was passed by parliament on 30 May 1984 and received the president's assent on 8 July 1984. The then president, Daniel arap Moi inaugurated Moi University Council on 9 July 1984.

The first group of 83 students in forestry department was admitted on 1st October 1984. Some of these students were transferred from University of Nairobi to form the nucleus of the academic programme of Moi University. Moi University has 12 campuses, namely: Main campus, Chepkoilel campus, Town campuses, Nairobi campus, Kitale campus, Narok University campus, Kericho campus, Mount Kenya campus, Kabianga campus, South Nyanza campus, Rongo and Odera Akang'o campus (Moi University report, 2008). Moi University currently has thirteen schools namely:

- School of Agriculture and Biotechnology
- School of Business Economics
- School of Education
- School of Information Sciences
- School of Engineering
- School of Science
- School of Natural Resource Management
- School of Medicine
- School of Public Health
- School of Law
- School of Environmental studies
- School of Arts and Social Sciences
- School of Human Resource (Moi University Report, 2008).

Moi University has a student population of over 17,000 students comprising 15,876 undergraduate and 1,210 postgraduate students (Moi University Newsletter, 2008). These students are registered in 121 programmes consisting of 40 undergraduate, 53 master of philosophy, 23 Doctor of philosophy and five postgraduate diploma programmes (Moi University Report, 2008).

- **Vision.** To be recognized nationally and internationally as the university of choice in nurturing innovation and talent in science, technology and development. (Moi University Strategic Plan, 2005-2015).
- **Mission.** To preserve, create and disseminate knowledge and conserve and develop scientific, technological and cultural heritage through quality and relevant teaching and research; to create a conducive work and learning environment; and to work with the Government and the private sector for the betterment of the society (Moi University Strategic Plan, 2005-2015).
- **Core values.** According to Moi University Strategic Plan 2005-2015, the core values of Moi University are:
  - § Promotion and defense of intellectual and academic freedom, scholarship and relentless search for truth;
  - § Fostering teamwork, collaboration, creativity and innovation, effective communication, tolerance, perseverance, and a culture of peace;
  - § Embracing excellence, openness, consultation and consensus building, efficiency and effectiveness;
  - § Practicing professionalism, meritocracy, exemplary leadership, equality, integrity and social justice;
  - § Maintaining a sense of self-respect, discipline, responsibility, international loyalty and national patriotism and;
  - § Continuous improvement of services in order to remain competitive.

1.5 CURRENT STATE OF COMPUTERIZATION AT MOI UNIVERSITY

The objectives of Moi University Ten Year Strategic Plan (2005-2015) envisage to fully integrating ICTs in all its functions in order to enhance efficiency and minimize its operational costs. Through past projects, key IT infrastructure has been put in place around Moi University campuses. However, there is need to improve and expand existing ICT facilities in order to cope with the high demand for ICT services. In addition, there is an urgent need for Moi University to reinvent itself by taking advantage of the window of opportunity in ICTs.

Information Communication Technology (ICT) implementation within the university has largely been donor/sponsor driven. The major donors are the World Bank and MHO. MHO is a Dutch abbreviation standing for The Joint Financing Programme for Cooperation in Higher Education. It is managed by the Netherlands Organization for International Cooperation in Higher Education (NUFFIC).The objectives of the programme are: to develop and strengthen the functioning of institutions of higher education in developing countries and to remedy quantitative and qualitative manpower deficiencies at the national level.

As a result of this ongoing project, Moi University has generated vast quantities of information in electronic format. Traditional records management strategies established for paper records will have to be altered significantly to accommodate electronic records emanating from these systems to be effective in the digital world. Currently the paper records are managed without a policy and a records management programme. The

university management will have to implement new techniques and methodologies for instance devising new strategies for addressing some of the basic issues such as, how to identify and capture records; how to ensure that complete records are captured and when, at what point, to undertake these tasks. In the current technological and information age, an academic and research institution such as Moi University cannot afford not to connect to the information superhighway and thus, be able to communicate worldwide with other academic and research institutions across the globe.

1.5.1 INFORMATION COMMUNICATION TECHNOLOGY CENTER (MOI UNIVERSITY)

The Information Communication Technology (ICT) Center plays the role of implementing and managing all ICT projects in all campuses of Moi University. Despite the center's functions being largely non-academic, it supports academic programmes through the provision of ICT services. According to New-Look Information and Communications Technology Center (2008), the role of the ICT Center include but not limited to:

- Advising the university on information communication technology implementation;
- Interpreting Moi University ICT policy;
- Handling connection and maintenance of ICT facilities in the three campuses (Moi University Main Campus, Chepkoilel Campus and Town Campuses);
- Handling installation, maintenance and upgrading of software and hardware components;

- Implementing, operating and maintaining the data communication infrastructure for administrative and academic functions and;
- Carrying out in-service information and communication technology training (for Moi University staff).

The ICT center provides the following services to the university community:

- E-mail services;
- Internet access;
- Data communication infrastructure backbone and computing hardware technical support;
- Information communication technology training;
- Database systems operations, administration, maintenance and management;
- Information and communication consultancy and;
- User application systems development, among others (New-Look Information and Communications Technology Center, 2008).

As a result of the above services, ICTs and particularly the introduction of computers as a business communication and information management tool in the work place has led to generation of vast quantities of records in electronic format. This is evident at the various schools, departments and administrative offices in all the university campuses. In addition, the use of computers has led to an increase in paper-records through computer printouts. It is therefore, important that the management of electronic records be addressed within the broader context of policies, standards and practices that deal with the management of all forms of recorded information such as paper records. Mnjama and

Wamukoya (2004) observed that many Governments had systems and procedures for managing paper-based records but the same could not be said of electronic records.

1.5.2 INTER-CAMPUS CONNECTIVITY

Moi University Main Campus connection is through 128 Kbps bandwidth (Information Communication Technology Center, Moi University, 2008). Through the Kenya Educational Network (KENet)[1] initiative, the Main Campus and Chepkoilel Campus are connected via a radio link with a bandwidth capacity of 14 Mbps. This has provided an opportunity for the two campuses to transact business electronically. Connection between the Main Campus and Town Campuses is through KENet, VSAT equipment installed in the learning resource center which currently houses the School of Public Health. The equipment offers a down-link channel at 2 Mbps. Main Campus is connected to Eldoret West campus via a leased line that is, dial up connection to Telekom/Internet service provider (ISP) (Information Communication Technology Center, Moi University, 2008). Table 1.1 indicates internet connectivity at Moi University.

[1] **KENet** is a donor funded project whose stakeholders include Educational Institutions and Telecommunication Companies in Kenya.

TABLE 1.1: INTERNET CONNECTIVITY AT MOI UNIVERSITY

Name of School /Campus	Connection status	Mode of connection	Proposed mode of connection
Inter-Campus connection with Main Campus			
Main Campus	Connected	Radio	
Chepkoilel Campus	Connected	Radio	
Town Campus	Connected	VSAT /JamboNet	
Town Annex –LAW	Not connected	-	ADSL or Radio
Eldoret West Campus	Not connected	-	ADSL or VSAT
Inter-School connection with Main Campus			
Main Admin Building	Connected	Fibre	
Margaret Thatcher Library	Connected	Fibre	
Information Sciences	Connected	Fibre	
Student affairs – Main Campus	Connected	Fibre	
Engineering	Connected	Fibre	
Environmental Studies	Connected	Fibre	
Art and Social Sciences	Not connected	-	Fibre
Education	Not connected	-	Fibre
Economics and Business	Not connected	-	Fibre
Human Resource Development	Not connected	-	Radio or Fibre
Medicine	Connected	Radio	
Public Health	Connected	Radio/VSAT	
Law	Not connected	-	ADSL or Radio
Name of School /Campus	**Connection status**	**Mode of connection**	**Proposed mode of connection**
Inter-School connection with Principal's office Chepkoilel Campus			
Library	Connected	UTP LAN	
Agriculture and Biotechnology	Not connected	-	Radio
Natural Resource Management	Not connected	-	Wireless LAN
Science	Not connected	-	Wireless LAN

Source: Information Communication Technology Center, Moi University (2008).

Table 1.1 shows that internet connectivity has a bearing on the management of electronic records.

1.6 RECORDS MANAGEMENT SET-UP AT MOI UNIVERSITY

Moi University has various registries distributed across its 12 campuses. The registries are generally responsible for controlling all incoming and outgoing official recorded information. According to the University of Canberra (2007) a university registry is charged with the responsibility of managing corporate records throughout their life-cycle.

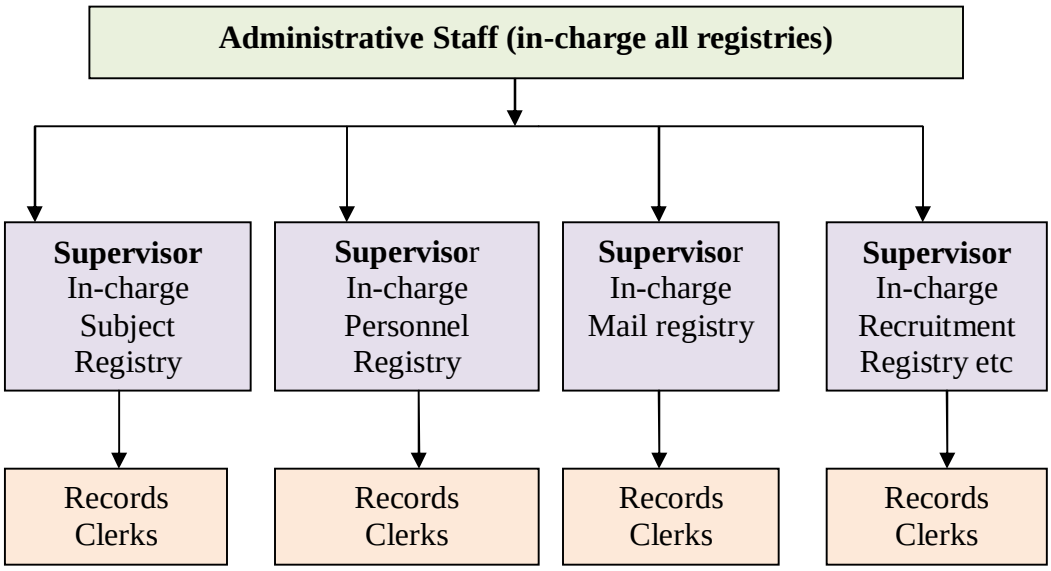
Moi University Main Campus registry comprises the central registry which is divided into: the mail registry, personnel registry and the subject registry. Other registries include: examinations, students admissions and recruitment and training, among others. Chepkoilel and Town campuses have registries that handle official communication of the respective campuses. Various schools, departments and administrative offices create and receive records in paper and in electronic formats.

Moi University registries have not been facilitated with computers. Schools, departments and administrative offices are increasingly using computers to perform records management tasks that were initially done manually. For example, electronic records are created in the form of documents such as, word processed documents, spreadsheets, electronic mail, fax and images, among others. These transactions have in turn generated vast quantities of electronic records in addition to an increase in paper-based records through the production of hard copies. It is important therefore that records management principles be applied to safeguard this vital information and ensure their availability over time.

Records in whatever format reflect business processes or individual activities hence, they are not just a collection of data, but are a consequence or products of events. A guiding principle is that information should be managed as an important institutional asset. Consistent with this principle, information technology is an indispensable tool of any modern business activity that Moi University is expected to seek opportunities to increase the quality of the services it provides and reduce the overall running costs.

Figure 1.1 indicates the organizational chart of Moi University registry while Table 1.2 shows the current composition of Moi University records staff.

FIGURE 1.1: ORGANIZATIONAL CHART OF MOI UNIVERSITY REGISTRY



Source: Author's own conceptualization (2008)

TABLE 1.2: COMPOSITION OF MOI UNIVERSITY RECORDS STAFF

DESIGNATION OF STAFF	MAIN CAMPUS	CHEPKOILEL CAMPUS	TOWN CAMPUSES		
			SCHOOLS OF MEDICINE & PUBLIC HEALTH	ELDORET WEST	ANNEX CAMPUS
Administrative Officer (s) **(In-charge Records)**	2	1	-	-	-
Registry Supervisor (s)	1	1	1	1	-
Records Staff	10	3	2	1	1

The registry at the main campus, deals with all correspondence to and from the university which is channeled via the mail registry. The personnel registry handles records dealing with a number of subjects such as, staff annual leave, leave of absence, gratuity, renewal of contracts and medical payments. The subject registry handles general correspondence received from the mail registry such as, internal memos, incoming mails and application for employment. The recruitment registry deals with job application letters in response to Moi University job advertisements. It also handles records that deal with staff training. The records include: personal particulars, doctor's medical certificates, letters from previous employers and staff movement letters, among others. Some of these records are received via electronic mail.

The admissions registry handles students' records such as, personal details, copies of admission letters, medical certificates, deferments letters, among others. In addition to records in paper formats they receive printed copies of electronic records such as electronic mail and fax messages. Examinations registry handles records that dealt with student's transcripts and certificates. Chepkoilel Campus registry deals with all correspondence to and from the campus. Other registries include: Town Campuses (Eldoret West- one records staff, Law Campus- one records staff and School of Medicine and School of Public Health- two records staff). These registries handle student's and personnel records that pertain to the individual campuses. The registries have not been facilitated with computers and there is a need to computerize the records in order to facilitate faster service delivery to the university community.

1.6.1 THE ROLE OF A UNIVERSITY REGISTRY IN AN ELECTRONIC ENVIRONMENT

Good records management is essential for a university to function effectively. A university registry is regularly asked to advice on records management and this is not the case with Moi University registries as they have not automated their processes. The registries operate manually and hence lack the capacity to manage records in a variety of formats.

Information is every organization's most basic and essential asset, and like any other business asset, recorded information requires effective management. In an electronic environment a university registry ensures that:

- Information can be accessed easily;

- Information can be destroyed routinely when no longer needed and ;
- It enables the university to function properly on a day- to- day basis

An effective registry system enables the organization to fulfill its legal and financial requirements. By preserving university records both paper and electronic, the registry ensures that the institution can be held accountable for its actions and allows access to important resources for future decision making.

Moi University is increasingly producing vast amounts of information in electronic formats. The registry can play an important role in ensuring that records are captured, managed and preserved in an organized system that maintains the records integrity and authenticity. The university registries have an important role to play in ensuring control over volumes of records produced through the use of disposal schedules, which details the time period for which different types of records should be retained by the university.

The growth of electronic communication and data from e-mails to databases presents new challenges. Such records can be managed by the same records management principles that are applied to paper records. Lack of a records management programme including a records management policy for paper and electronic records at Moi University has hampered the effective management of the university records. This does not augur well especially in an e-environment. Sound records management is an essential basis for transition to Electronic Document and Records Management (EDRM) that many organizations are embracing.

Moi University registry needs to manage their paper records according to records management principles so that the current problems do not migrate to the new systems. Modern society has rising expectations concerning the accessibility of information. Moi University is no exception and the university community expects efficient and speedy responses to requests for information. This can only be achieved through the automation of the university registries.

1.7 STATEMENT OF THE PROBLEM

Wamukoya (1999) noted that the advent of new technologies and their growing adoption and use in organizations is rapidly changing the way organizations work, make decisions, communicate and even document their activities. Kemoni and Wamukoya (2000) pointed out that for a university to run its affairs in an open, democratic, transparent and accountable manner, it needed to put in place an efficient records management system especially since the rights, privileges and obligations of a university community is dependent upon good record keeping regimes.

Computerization of Moi University's business processes has led to generation and receipt of electronic information. Much of this electronic information is used for decision making and therefore it must be managed as a record. Such records emanate from schools, university committees, senate, student welfare, council, planning, medical services, catering services, human resources, establishment and finance. The use of computers to create and receive records has created both problems and opportunities for records management. The unique and fragile nature of electronic information demands a re-evaluation of the way the university manages its records.

The management of electronic records poses one of the greatest challenges to usability, processibility, accessibility, authenticity, integrity and preservation of the corporate business records and memory. For example, Mutiti (2001) observed that first; the media was unstable compared with 'traditional' information carriers such as, paper and microfilm. Secondly, access to electronic records is dependent on machines and software and if appropriate technology is not available, humankind cannot read or use the records.

The use of computers at Moi University has led to generation of vast quantities of records in electronic format that emanate from: desktop computers used to support general office tasks; an integrated on-line Library Information Systems (LIS), an integrated Academic Records Information Systems (ARIS); an integrated Financial Management Information System (FMIS) and a Human Resource Information System (ARIS). This has in turn led to an increase of paper records emanating from the printing of electronic records from these systems and the decentralization of the management of records. It is therefore important that policies be developed to ameliorate this decentralized and uncontrolled situation of the electronic record keeping system.

Barata, Kutzner and Wamukoya (2001) observed that in developing countries strategies for maintaining electronic documents were of a less priority. Similarly, despite Moi University embracing the use of information technology in creating, receiving, maintaining and storing information, electronic record keeping has remained a neglected area of the university record keeping system. Urgent measures need to be taken to

address issues relating to the management of electronic records or the university risks losing vital information due to:

- Careless deletion of important records partly attributable to staff's lack of knowledge and skills in records management and in particular electronic records management;
- The Staff's use of individual strategies to manage electronic records;
- Careless handling of storage media and;
- Lack of logical and physical security

Urgent measures are required as the situation poses severe consequences for the preservation of the corporate memory in addition to making the university transparent and accountable. Moi University records are to be found in a variety of media from creation to disposition which has made the task of properly accounting for the official record increasingly complicated.

Coupled with this, are changes in application of computing to work processes which have had profound influence on the way the university operates. For example, it has resulted in changes in the workflow and communication that affect the provenance, ownership and physical location of records. Moi University electronic records are evidence of official transactions hence, they need to be well managed to enable the university run its affairs smoothly in addition to retaining the integrity and authenticity of records. Any approach to the management of electronic records must incorporate accepted standards to adequately preserve the "official" record as certifiably authentic.

Very few studies have been conducted on the state of electronic records management at Moi University. Kemoni and Wamukoya (2000) undertook a study entitled **"Preparing for the Management of Electronic Records: a case study of Administrative and Personnel Records at Moi University"**. The study was confined to administrative and personnel records and sought to determine issues that underpinned the management of these records. One important finding of the study was that of the changing role of the records staff in an electronic records environment. Since Kemoni and Wamukoya study was conducted a lot has since changed especially the use of computers in various schools, departments and administrative offices to create, use, maintain, store and dispose of electronic records. E-records are important as they represent an explicit corporate memory for the organization (Public Records Office, 2001).

The present study sought to investigate issues that were not addressed by Kemoni and Wamukoya study. The study focused on all official records generated and received electronically and especially those that are used to carry out Moi University's business transactions. These records include: policy documents, financial records, students' records, human resource records, records emanating from catering services and medical services. The study included three campuses, namely: Moi University Main Campus, Chepkoilel Campus and Town Campuses. The aim of the study was therefore to investigate the management of electronic records at Moi University within the context of the continuum principle with a view to recommending a framework that can be used to manage electronic records.

1.8 AIM AND OBJECTIVES OF THE STUDY

1.8.1 AIM

The aim of the study was to investigate the management of electronic records at Moi University within the context of the continuum principle with a view to recommending a framework that can be used to manage electronic records.

1.8.2 OBJECTIVES OF THE STUDY

The specific objectives of the study were to:

- Conduct a business process analysis of Moi University and ascertain the electronic records generated and received by the institution;
- Determine and evaluate the strategies used for managing electronic records;
- Ascertain the professional knowledge and skills of staff responsible for managing electronic records;
- Determine the adequacy of the existing Information and Communication Technologies (ICTs) infrastructure and resources to cater for the management of electronic records;
- Identify the challenges staff faced in the management of electronic records;
- Make recommendations and propose a framework/model that can be used to manage electronic records at Moi University.

1.9 RESEARCH QUESTIONS

In order to address the objectives of the study, answers to the following research questions were sought:

- What are the business activities of Moi University?
- What records are generated and received electronically?
- What strategies are used to manage electronic records?
- What professional knowledge and skills do staff responsible for managing electronic records possess?
- How adequate are the ICT infrastructure and resources to cater for electronic records management?
- What challenges do staff face in the management of electronic records?
- How can management of electronic records be improved at Moi University?

1.10 ASSUMPTIONS OF THE STUDY

Assumptions are guesses, expectations, or suppositions that a researcher makes as a prelude to the study (Mugenda and Mugenda, 1999). They are facts that a researcher takes to be true without actually verifying them. They help in shaping the direction the research takes and are usually required for data analysis and conclusions.

The study was based on the following assumptions:

- Although Moi University has embraced computerization no adequate systems have been put in place to manage electronic records according to accepted records management principles;

- The existing strategies used to manage electronic records at Moi University do not conform to accepted best practice standards in view of the changing electronic environment and;
- Lack of a records management policy for paper and electronic records has hampered the efficient and effective management of records

1.11 SIGNIFICANCE OF THE STUDY

The study is likely to be significant in several ways namely:

- The study intends to create an understanding and appreciation of the need for the effective and efficient management of electronic records at Moi University, in enhancing delivery of public services and programmes to the university community;
- The study is expected to create awareness on the challenges associated with the management of electronic records among university staff/users and especially as general administration, records/accounts and secretarial staff who are responsible for managing records;
- The study will sensitize university staff on the importance of electronic records to the business activities of the university and;
- The study has proposed a policy framework/model to manage electronic records at Moi University

1.12 SCOPE AND LIMITATIONS OF THE STUDY

The study investigated the management of electronic records at Moi University Main Campus, Chepkoilel Campus and Town Campuses (Annex Campus, Schools of Medicine and Public Health and Eldoret West). Although Moi University has 12 campuses, the study focused on Moi University Main Campus and two campuses because these campuses had automated most of their business transactions. The other nine campuses are in their early stage of automation and newly established. The scope of respondents was limited to the following categories: Management, ICT, General Administration, Records/Accounts and Secretarial staff. These categories of staff are responsible for all aspects of records at Moi University.

Literature relating to management of electronic records in public universities was scanty hence; literature review was borrowed from the public sector. The study was confined to electronic records (those that are directly linked to the university's business activities). It did not therefore address itself to other types of electronic records such as, personal electronic mail. The study is expected to offer insight into electronic records management at Moi University and how these records can be managed to enhance service delivery to the university community.

1.13 ETHICAL CONSIDERATIONS

Ethics are norms for conduct that distinguish between acceptable and unacceptable behaviour. Ethics is a method, procedure, or perspective for deciding how to act and for analyzing complex problems and issues (Resnik, 2007). There are several reasons why it is important to adhere to ethical norms in research. First, some of these norms promote

the aim of research, such as knowledge, truth, and avoidance of error. For example, prohibition against fabricating, falsifying, or misrepresenting research data promotes the truth and avoids error (Resnik, 2007).

Secondly, since research often involves a great deal of cooperation and coordination among many different people in different disciplines and institutions, many of these ethical standards promote the values that are essential for collaborative work, such as trust, accountability, mutual respect, and fairness. Most researchers want to receive credit for their contributions and do not want to have their ideas stolen or disclosed prematurely (Resnik, 2007).

Thirdly, many of the ethical norms help to ensure that researchers can be held accountable to the public**.** Fourthly, ethical norms in research help to build public support for research. Organizations or individuals are more likely to fund research projects if they can trust the quality and integrity of research and, many of the norms of research promote a variety of other important moral and social values**,** such as social responsibility, human rights, compliance with the law, and health and safety among others (Resnik, 2007). Essentially, a sound thesis is a product of ethically obtained and scientifically valid data (Burns, 2000). Questions of access, harm, secrecy and confidentiality are all issues that the researcher has to consider and resolve in any research context (Cohen, Manion and Morrison, 2004).

Informed consent occupies a central place in the ethics literature. According to Mugenda and Mugenda (1999), some of the ethical issues related to both the researcher and research subjects include: avoiding plagiarism, mis-using privileges, such as, using

collected data to stigmatize or entrap somebody, and maintaining confidentiality and privacy of human subjects. According to Moi University Research Draft Policy Document (2004), researchers need to adhere to ethical guidelines and avoid acts of misconduct in research such as data fabrication, falsification and plagiarism.

The study was carried out in adherence to the following ethical issues:

- The researcher sought the consent and permission of all participants who were included in the study before the actual study began and the purpose of the study was explained;
- Permission was sought to gain access to and use official documents that were required to provide information for the study;
- The researcher re-assured the participants of the study that the information given would not be divulged or used to the detriment of the participants;
- All sources used in the study were acknowledged and;
- Official permission to carryout research was sought from all the concerned.

The findings of the study were presented honestly without deliberate distortions. In presenting the findings of the study the researcher bore in mind that other researchers would use the results of the research to carry out further research and therefore, if analysis of data was not correct, other researchers would be misled. The researcher ensured that the outcome of the results did not harm any of the respondents and all assistance and sources from which information was borrowed from were acknowledged to the best of the author's ability.

Sloan Work and Family Research Network (2001) noted that if a researcher does a study and writes an article which sits on the shelf in the library, then the researcher really had not done the work because he/she had not disseminated the findings far and wide. To this end therefore, the researcher will take advantage of several avenues available to be able to disseminate the findings of the research so that interested parties can benefit from new knowledge accrued from the research. The researcher will use avenues such as: presenting the findings at conferences (preliminary findings of the study were presented during the 2nd Annual International Conference at the School of Information Sciences, Eldoret, Kenya on 6 July, 2009). The researcher will organize key findings of the study and sell them to Moi University management. Other avenues will include presenting the findings of the study in workshops and seminars and a copy of the thesis will be made available at the university library.

1.14 DEFINITION OF OPERATIONAL TERMS

DIGITAL RECORDS

Records created, communicated and maintained by means of computer technology. They may be 'born digital' (created using computer technology). Or they may have been converted into digital form from their original format for example, scans of paper documents (National Archives of Australia, 2004).

ELECTRONIC RECORDS

Recorded information, documents or data that provides evidence of policies, transactions and activities carried out in e-Government and e-Commerce environments. An e-record is perceived as a digital record that can be manipulated, transmitted or processed by a computer (Mutula and Wamukoya, 2007).

ELECTRONIC RECORDS MANAGEMENT

Electronic management of electronic records and non-electronic records contained in an information technology system using computer equipment and software according to accepted principles and practices of records management (Mutula and Wamukoya, 2007).

ELECTRONIC RECORDS MANAGEMENT SYSTEM

An electronic system that contains business rules to manage records to ensure that they are authentic and reliable (Mutula and Wamukoya, 2007).

ELECTRONIC MAIL

A system that enables users to compose, transmit, receive, and manage electronic messages and images across networks and through gateways connecting the other local area networks (National Archives of South Africa, 2005).

METADATA

Background and technical information, that is, information stored electronically (Roper and Miller, 1999).

MOI UNIVERSITY RECORDS

All recorded information regardless of physical format or characteristics that are generated or received and maintained by the university in pursuance of its mission, objectives and obligations under Moi University Charter and statutes and in transacting university businesses (Wamukoya and Kemoni, 2000).

RECORD KEEPING SYSTEMS

Record keeping systems are systems that capture, manage and provide access to records over time. They document and preserve the content, structure and context of the records (Mutula and Wamukoya, 2007).

RECORDS MANAGEMENT

The field of management responsible for the efficient and systematic control of creation, receipt, maintenance, use and disposition of records, including processes for capturing

and maintaining evidence of information about business activities and transactions in the form of records (Shepherd and Yeo, 2003).

UNIVERSITY RECORDS

University records are any documents created in the course of the university's business activities that is, recorded evidence of the activities such as letters, memos, reports, computer database files, e-mails, video tapes or films, photographs, maps, drawings and any other thing on which information is recorded and stored (Elwhiwhu, 2005).

1.15 OUTLINE OF THE THESIS

The thesis is divided into Five Chapters. **Chapter One** covers the introduction and background to the study. Definitions of key terms used in the study are given. Other issues presented in the chapter include: the impact of information technology (IT) on record keeping; an overview of records management and electronic records management; background information of Moi University; current state of computerization at Moi University; records management set-up at Moi University; the role of a university registry in an electronic environment; statement of the problem; aim and objectives of the study; research questions; assumptions of the study; scope and limitations of the study and ethical considerations. Chapter One was important because it lays the foundation for other chapters in addition to narrowing down the issues to be investigated.

Chapter Two presents the theoretical framework of the study. The chapter discusses the purpose of literature review in research; existing electronic records management models including the records continuum and its relevance to the study. Other issues discussed in the chapter are: business process analysis and record keeping; an overview of the management of electronic records in Europe, North America, Australia and a few selected African countries; importance of managing electronic records; challenges of managing electronic records; strategies for managing e-records; on-going initiatives on the management of e-records; guidelines and standards for managing e-records and finally a review of empirical studies.

Chapter Three presents the study research design. The issues discussed are the use of qualitative and quantitative research methods; the study population and justification; population sampling; data collection instruments; validity and reliability of the research instruments and procedure for data collection. Other issues addressed in the chapter are: problems encountered during data collection; data analysis and interpretation and ethical considerations.

Chapter Four presents, analyses and provides an interpretation of data in line with the study's aim, objectives and research questions. Chapter Five provides a summary of the research findings, conclusion and recommendations. The chapter provides the proposed policy framework/model for managing electronic records at Moi University. Finally, suggestions for further research are provided. Appendices are placed at the end of the thesis and they include: an introductory letter from the Head of Department Library, Records Management and Information Studies and data collection instruments.

1.16 SUMMARY

Chapter One provides the introduction and background to the study. Other issues presented in the chapter include: the impact of information technology (IT) on record keeping; Records management, electronic records and electronic records management; background information of Moi University; current state of computerization at Moi University; records management set-up at Moi University; the role of a university registry in an electronic environment; statement of the problem; aim and objectives of the study; research questions; assumptions of the study; scope and limitations of the study; ethical considerations, definition of operational terms and an outline of the thesis.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter provides the theoretical framework upon which the study was based, as well as a review of literature and empirical studies. Although the research wished to review literature in public universities, the literature was not available hence, the literature review was borrowed from the public sector. This chapter highlights the purpose of literature review in research and presents an overview of some of the existing electronic records management models. It discusses in detail the Records Continuum Model which formed the theoretical framework of the study, including its relevance to the study.

The review of literature covers the following themes as they relate to the objectives of the study: business process analysis and record keeping; an overview of the management of electronic records in Europe, North America, Australia and a few selected African countries; importance of managing electronic records; challenges of managing electronic records; strategies for managing e-records; on-going initiatives on the management of electronic records; guidelines and standards for managing electronic records and finally a review of empirical studies.

2.2 PURPOSE OF LITERATURE REVIEW IN RESEARCH

Literature review is a summary of materials that have been published by accredited scholars and researchers on a certain topic. It provides background on a topic for those

unfamiliar with the subject. In addition, it is meant to convey what knowledge and ideas have already been established as well as the strengths and weaknesses of those ideas (Connors Writing Centre, 2008). According to Fink (1998), literature review is a systematic and responsible method of identifying, evaluating and interpreting the existing body of recorded work produced by researchers, scholars and practioners. In writing a literature review, the researcher's purpose is to convey to his/her readers what knowledge and ideas have been established on a topic, and what their strengths and weaknesses are.

Birmigham (2003) pointed out the benefits of conducting a literature review:

- Placing the research in a context related to the existing research and theory;
- Providing a framework for establishing the importance of the study as well as establishing tools for comparing the results of the study with other findings;
- Ensuring that one's research would contribute to a better understanding of the phenomenon under study;
- Identifying the main methodologies and research techniques that have been used;
- Providing an opportunity to discuss relevant research carried out on the same topic or similar topics and;
- Helping to avoid pitfalls and mistakes made by others.

According to Kaniki (2002) in Kemoni (2008), there are various types of literature review namely:

- **Historical reviews** which consider the chronological development of literature, and breaks the literature into stages or phases;

- **Thematic reviews** which are structured around different themes or perspectives, and often focus on debates between different schools;
- **Theoretical reviews** which trace the theoretical developments in a particular area, often showing how each theory is supported by empirical evidence and;
- **Empirical reviews** which attempt to summarize the empirical findings on different methodologies.

The study reviewed various sources of literature, for example, electronic journals, periodicals, thesis and dissertations. Others included: key professional textbooks, scholarly journals and conducted internet searches, among others. The literature was reviewed to establish information sources and content in relation to the research problem of the study. The literature reviewed was divided into sections that focused on themes that related to the objectives of the study and the research questions. Thematic and empirical review approaches to literature review were used as advanced by Kaniki (2002) in Kemoni (2008).

2.3 THEORETICAL FRAMEWORK

A theory is a system for explaining phenomena which states constructs and the laws that interrelate the constructs to one another (Mugenda and Mugenda, 1999). Models can be used to explain theories (Kemoni, 2008). Upwards (2001) noted that models are ways of seeing things and their acceptance or otherwise in an area like records management depends upon how much contact they make with the practical consciousness of those who undertake tasks that are considered part of that activity.

Many records management models have been developed by international records and archives management organizations, archival institutions and records and archives management scholars. A literature search reveals that all the records management models originated from the life-cycle model and the records continuum approaches (Shepherd and Yeo, 2003). These models focus on the management of electronic records, while others focus on the management of paper and electronic records.

2.4 THE RECORDS LIFE-CYCLE MODEL

The records life-cycle model is the dominant model in records management theory and practice. Shepherd and Yeo (2003) observed that since 1950s, many record keeping models have emerged most of them modeled on the life-cycle model. The life-cycle model was conceived in 1956 by Theodore R. Shellenberg. His philosophical view was that the life-cycle of records was not static and that records had a life similar to a biological organism. Records are born, live through adulthood and eventually die. The life-span of a record referred to the creation, maintenance, and use and final disposition. Some of the record keeping models that have come into existence aim to show the life-cycle or life span as a progression of actions occurring at different times in the life of a record, that is, creation, maintenance, use, storage and disposition.

According to Xiaomi (2001), the records life-cycle uses a birth analogy to describe records as passing through a series of stages where a record was created, used as long as it had continuing value and was subsequently transferred to a national archive or destroyed. The records life-cycle concept had four phases, namely: creation, distribution, maintenance, and use, appraisal and disposition. Though the records life-cycle model has

influenced the development of records management and archives in many parts of the world many scholars have labeled criticism at the model. For example, Xiaomi (2001) observed the following:

- That the records life-cycle model provides a fragmented framework for record keeping in artificially dividing the mission of records and archives management;
- It dismantles the responsibilities of records managers and archivists into divided roles and ;
- It views records as tangible physical objects in a paper world.

Similarly, proponents of the Records Continuum Model among them Upwards (2001) and Mckemmish (2002) pointed to the following shortcomings of the life-cycle concept:

- The model's suggestion that records die. They noted that not all records die and some are retained indefinitely because of their enduring value;
- Because of the divisions of the records life-cycle into compartments or stages or phases for example, the three ages model and progression models, this, they argue is artificial since the stages of records weave into one another;
- Mckemmish (2002) argues that the life-cycle concept perpetuates an artificial distinction between records maintained for business and those maintained for cultural, historical and informational purposes. By extension this represents an artificial division between the work of records managers and archivists and;
- She further noted that the life-cycle model is too focused on records as physical entities rather than as intellectual and logical entities which in itself excludes electronic records.

The life-cycle's view of a record as a physical entity having a series of distinct and separate phases of usage runs into difficulties with electronic records. Electronic records must be located where the hardware and software systems that provide their 'living environment' are located, thus defying the traditional repository and custodial orientation of the life-cycle.

Of significance among the characteristics of electronic records are their logical rather than their physical nature. The records life-cycle model would therefore be more applicable to the management of paper-based records. An ideal model would be that which appropriately reflects the special characteristics of electronic records. Moi University has embraced computer technology as an information management tool thus, generating records in electronic format. In addition, as technology changes, electronic records are prone to transformation requiring conversion and migration, among others.

Yusof and Chell (2000) noted that the records-cycle concept was not suitable for managing electronic records and needed to be replaced by a model which appropriately reflected the special characteristics of electronic records. The study noted the weaknesses of the records life-cycle concept especially, its application in the management of electronic records. These weaknesses led to the development of the Records Continuum Model which the researcher considers more applicable to the present study.

2.5 MODELS FOR ELECTRONIC RECORDS MANAGEMENT

Developed countries such as Australia, Canada and United States of America (USA) have long recognized the importance of electronic records and have developed projects to

address the challenges of managing electronic records. According to Victorian Electronic Records Strategy (2004), the following models have been proposed for the management of electronic records. They include but are not limited to:

- Victorian Electronic Records Strategy (VERS) Model (2004);
- Design and Implementation of Record Keeping Systems Model (DIRKS) Model (2000);
- National Archives and Records Administration (US NARA) Model (2004);
- University of Pittsburgh Electronic Records Management Model (2004);
- International Council on Archives Electronic Management Model (2005) and;
- The Records Continuum Model (2001)

In the discussion that follows, each of the above models are presented including their key elements and relevance to the present study. A detailed discussion of the Records Continuum Model which forms the theoretical framework of the study is presented in Section 2.5.6.

2.5.1 VICTORIAN ELECTRONIC RECORDS STRATEGY (VERS) MODEL (2004)

The Victorian Electronic Records Strategy (VERS) Model (2004) is the Victorian solution for electronic record keeping of the Australian Government. The Victorian Electronic Management Strategies (VERS) developed by the Government of Victoria in Australia came up with a best practice for managing electronic records. This is a framework of standard guidance and an implementation project centered among others on archiving electronic records created and managed by the Victorian Government in Australia. Its functionality include: long-term format for capture of electronic records to

facilitate use and methods of securing electronic records so that unauthorized changes are detected.

2.5.2 DESIGN AND IMPLEMENTATION OF RECORD KEEPING SYSTEMS (DIRKS) MODEL (2000)

The Australian Design and Implementing of Record Keeping Systems (DIRKS) methodology was produced by the National Archives of Australia in conjunction with the State Records Authority of New South Wales (The State Records New South Wales, 2005). DIRKS is an eight-stage methodology for the improvement of record keeping systems. The Model highlights the need for archivists and records managers to work as partners with information technology specialists; making records accessible and sustaining environments in which electronic records can continue to function over time as evidence for governance and accountability.

There have been tremendous efforts in electronic record keeping strategies aimed at drawing up policies and standards to codify and register a wide range of record keeping metadata needed to manage records from creation and ensure their accessibility. Moi University's records are its life's memory. They are used to supplement human memory and their mis-management especially electronic information in these modern times can cause far reaching organizational consequences.

2.5.3 NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA) MODEL (2005)

NARA has developed a strategy known as the Electronic Record Archive (ERA) to address the question of electronic information. ERA is NARA's strategic response to electronic records challenge. ERA is focused on identifying and developing ways to preserve and provide access to electronic records within a comprehensive and stable architecture. The basic concepts within ERA and VERS are similar. Both are in agreement that technology will change over time and that components of any solution must be replaced.

2.5.4 UNIVERSITY OF PITTSBURGH ELECTRONIC RECORDS MANAGEMENT MODEL (2004)

The model was developed as a result of a research project undertaken by the School of Library and Information Sciences at the University of Pittsburgh (USA). The model is integrated and built upon existing branches of knowledge that includes: business process improvement; information systems development and electronic records management and archival requirements. The model aims at integrating records and archives management requirements and systems development methodologies in an electronic records management environment. The model is more suitable to studies dealing with the design and implementation of electronic records management systems.

2.5.5 ICA ELECTRONIC RECORDS MANAGEMENT MODEL (2005)

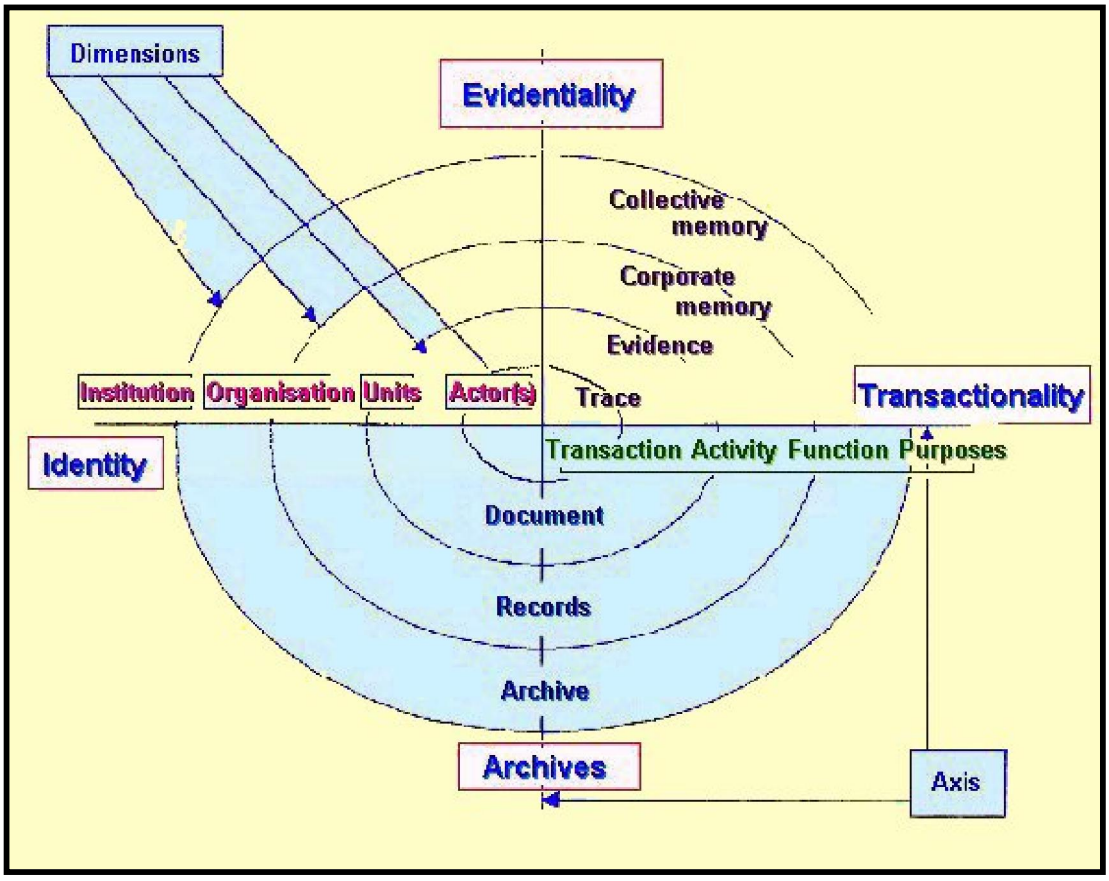
The International Council on Archives (ICA) (2005) came up with a committee on electronic records and was designed to help archival institutions reposition themselves to address the management of archival electronic records. The model discusses the

technological, organizational and legal trends that impact on the ability of organizations, including archives to keep and manage records that are in electronic form. Among the key elements are: records and archives in the electronic age; strategies for managing electronic archives; preservation of electronic archives and access to legal and policy implications for electronic archives , among others.

2.5.6 THE RECORDS CONTINUUM MODEL (2001)

The Records Continuum Model (RCM) forms the theoretical framework of the study. A definition of the Records Continuum is given in the Australian Records Management Standard AS4390 that refers to “a consistent and coherent regime of management processes from the time of the creation of records (and before creation, in the design of a record keeping system) through to the preservation and use of records as archives” (AS4390:2004 part 1: clause 4.22). This definition suggests an ideal of integration for documents, records and archives management. (Figure 2.1 illustrates the Records Continuum Model).

FIGURE 2.1: THE RECORDS CONTINUUM MODEL



Source: Xiaomi, An (2001). *A Chinese view of Records Continuum Methodology and Implications for Managing Electronic Records*. [Online] Available at: *http://www.caldeson.com/RIMOS/xanuum.html*. (Accessed 7 September, 2008).

The following discussion presents the model as discussed in the literature by different authors highlighting the reasons as to why the model was ideal for the management of electronic records. Section 2.5.6.1 discusses the relevance of the model to the present study.

The Records Continuum as a model way of thinking was formulated in the 1990s by Australian Archival Theorist Frank Upward. In the Records Continuum Model, records professionals need to be involved in the earliest planning stage of the information systems. The concept 'record' includes records of continuing value (archives) and stresses the uses for transactional, evidentiary and memory purposes. This in turn unifies approaches to archiving and record keeping whether records are kept for a split second or a millennium (McKemmish, 2002). McKemmish (2002) observed that the Records Continuum Model focuses on records as logical rather than physical entities regardless of whether they are in paper or in electronic form. The model therefore emphasizes the need to integrate record keeping into business, societal processes and purposes.

In a continuum, Flynn (2001) argues that there are no separate stages or phases or steps. The life of an electronic record is seen as one continuous process whereby one element in a continuum automatically weaves into the next. The elements in the continuum are not time-based or bound; they merely represent different perspectives in the life of a record. The model aims at developing record keeping systems that capture, manage and maintain records with sound evidential characteristics for as long as the records are of value to the organization, any successor or society.

According to Atherton (1985) all stages of records are interrelated forming a continuum in which both records managers and archivists are involved to varying degrees in the ongoing management of recorded information. The continuous purpose-oriented systems approach to records management changes the role of record keeping. Instead of being

reactive, managing records after they have been created becomes proactive. In partnership with stakeholders, records of an organization's business activities that need to be retained are identified. Business systems are implemented with in-built record keeping capability that ensures the capture of records of evidential quality as they are created. Built-in-capture means that records of value are created in the first place whenever electronic systems are used for business transactions. With appropriate metadata, it ensures that records are accurate, complete, reliable and usable. The records therefore have the necessary attributes of content, context and structure as evidence of business activity.

McKemmish (2002) observed that the model provides a graphical tool for framing issues about the relationship between records managers and archivists, past, present and future, and thinking strategically about working collaboratively and building partnerships with other stakeholders. Xiaomi, (2001) noted that to provide coherent and consistent service to satisfy the needs of users has long been a challenge to records managers and archivists throughout the world. This was particularly so when we meet such needs in the digital world. She noted that the model had gained acceptance worldwide as the best practice model for managing records and archives, including electronic records.

Xiaomi (2001) pointed out that in a continuum there are no separate steps. Managing records is seen as a continuous process in which one element of the continuum passes seamlessly into another. She adds that the continuum model or matrix as developed by

Frank Upward is presented in the form of cycles that reflects different perspectives in the life of the record (see Figure 2.1). Those perspectives are:

- *Creation of records (transactionality of activities).* This in itself is a reflection of the transactional business activities whereby records are important as a form of documentation.
- *Capture of evidence.* This is in order to provide an accurate, reliable and trustworthy account of what took place.
- *Capture of records in a recognized record keeping system.* This helps to preserve the records reliability, accuracy, integrity, usability and trustworthiness and;
- The *Capture of corporate, individual, collective and societal memory.*

All the above are ongoing and not bound by time and space (Shepherd and Yeo, 2003). Many records professionals especially in Australia and Canada have promoted the continuum as representing a more holistic way of record keeping (Xiaomi, 2001). This is in recognition that the growing adoption of Information Communication Technologies (ICTs) and especially computer technology in both public and private sector have given birth to a new type of record - the *electronic record*, which calls for new approaches in its management.

McKemmish (2002) noted that the model embraces the view that records operate simultaneously as an organization's business resource for decision making while at the same time as tools of societal memory right from creation. The model takes a higher order intellectual view of records, since it follows an integrated model rather than one

made up of stages. The integrated record keeping framework would facilitate provenance; underpin accountability; constitute memory; constitute identity and provide authoritative sources of value-added information (McKemmish, 2002). The author noted that records managers and archivists are brought together under an integrated record keeping framework with the same goal to guarantee reliability, authenticity and completeness of records.

Marshall (2000) noted that knowing from the outset which electronic records must be kept for the longer term means that records can be migrated across systems as hardware and software upgrades occur. It is for this reason that the continuum is considered as a flexible; all inclusive model for transactions regardless of format and is therefore, suitable for paper and electronic records (Xiaomi, 2001).

However, the Records Continuum Model has generated certain concerns and fears amongst them as noted by Picot (1999) being that the model and notions of its theory that records managers and archivists shared both territory and professional competencies and thus, posed a threat to their autonomy. The author noted that the model could be used to justify restructuring, job cuts or changes in workplace practices.

The rationale for choosing the Records Continuum Model for use in the present study was that the researcher considered the model as all encompassing and it included all electronic records management issues that the current study intended to investigate. In addition, it covers the aspects taken into account by other existing electronic records management models as discussed under (Section 2.4).

2.5.6.1 RELEVANCE OF THE RECORDS CONTINUUM MODEL TO THE STUDY

The elements of the Records Continuum Model have relevance to the present study since it emphasizes the importance of managing records at each stage of the life-cycle on a continuing basis. The model enhances the life-cycle stages by taking into account the dynamic nature of electronic records that includes dependence on time and circumstances. In other words, a record is not simply created, passed to a records manager for storage and then passed to an archivist for permanent retention. Instead each person's activities will affect all others in the continuum (Xiaomi (2001) and McKemmish (2002).

The study examined the strategies used for managing electronic records. The model applies itself to identifying accountable acts and ensures that reliable evidence is created by capturing records of related/supporting transactions. The model is suitable for electronic records created and received by the university as they are records of business transactions created and received as part of the business communication process. The Records Continuum Model is a tool for planning the management of records covering the whole extent of a record's existence. Moi University can use this model to establish a consistent and coherent regime of management of its electronic records from the time of creation of records (and before creation in the design of record keeping systems) through to the preservation and use of the records as archives.

The Continuum Model anticipates that records managers and archivists will work closely with records creators even before a record is created to develop a comprehensive

electronic records management strategy (McKemmish, 2002). By using the Records Continuum Model, the university will ensure that staff charged with the responsibility of managing e-records are involved in the planning stage. They will use their expertise in advising records creators and enlighten the ICT staff on issues related to electronic records management for example, on how to include electronic records management functionalities.

The model can be used to streamline many record keeping functions at the university so that they are not labour intensive (and therefore, costly) as they are in the traditional record keeping environment (Xiaomi, 2001). For example, the university using the continuum model of management, records disposal activities can be automated and records can be appraised at or before creation, and their management planned for accordingly. This will ensure that records are created where and when appropriate and their value as evidence protected over time. Appraisal therefore, will become part of the design of the university record keeping system.

Not all records have uses beyond the reasons that they are created for. Majority of records that are created at the university have no use beyond their original purpose for example, a memo calling for a meeting. By applying the Records Continuum Model the university will be able to gain perspectives about how it creates, uses and effectively manages records. The model will enable the various schools, departments and administrative offices to determine what records need to be created and retained for the university's business activities and for accountability purposes.

The model will ensure that the university adheres to a consistent approach to efficiently manage the university's electronic records. For example, those that are required for business will be retained and those not required will be disposed of either by retention as archives or by destruction if no longer required by the university. The Records Continuum Model emphasizes the systematic control of records from creation thus, eliminating the proliferation of ephemeral records. Unlike the life-cycle concept, the continuum model is suited to managing records in all formats including electronic records (Xiaomi, 2001). It is therefore ideal for managing records (both paper and e-records) at Moi University.

Issues investigated by the study include: conducting a business process analysis to establish electronic records generated and received at Moi University; determining and evaluating the strategies used for managing electronic records; ascertaining the professional knowledge and skills of staff responsible for managing electronic records, examining the adequacy of the existing Information and Communication Technologies (ICTs) infrastructure and resources to cater for the management of electronic records; identifying the challenges staff faced in the management of electronic records; make recommendations and propose a policy framework/model for improving and sustaining the efficient and effective management of electronic records at Moi University.

The Records Continuum Model was therefore, found to be ideal in addressing the above issues. This framework provides a common understanding, consistent standards and unified best practice criteria for managing electronic records. The model has gained

acceptance worldwide as the best practice model for managing records and archives including electronic records (Xiaomi, 2001).

2.6 BUSINESS PROCESS ANALYSIS AND RECORD KEEPING

Business Process Analysis (BPA) is a powerful tool that an organization can use to streamline its processes, eliminate redundant tasks and improve efficiency. Business process analysis enables an organization to find solutions that address record keeping at all stages of the records life-cycle and more importantly within the context of the business process which the records support (Kansas Electronic Records Management Guidelines, 2002).

Huth (2003) noted that it was necessary to undertake a business process analysis to identify requirements for creating, managing and promoting access to records that support an organization's business needs including legal and evidential requirements. Similarly, University of Toronto (2009) noted that undertaking a business process analysis was an excellent opportunity to reconsider record keeping practices since it often identifies problems which could be alleviated by new information systems. For example, it may identify areas where electronic records are printed and filed unnecessarily because there is no provision in the system to capture records electronically and transfer them to an electronic record keeping system.

If record keeping requirements are identified during a business process analysis effective procedures and automated routines can be built into the processes to handle records more effectively. Huth (2003) observed that business process analysis was closely related to a needs assessment. It examines and describes a work process in order to design an

improved process that may or may not use technology. The author further noted that BPA focuses on workflow and policy issues and it is used when the root cause of a problem is unknown.

Undertaking a business process analysis is a good choice if the problem an organization hopes to solve stems from inefficient or outdated business processes. It is necessary when one does not have a good sense of how to solve the problem. In addition, it is necessary if an organization has considered a technological solution before it has determined the root cause of the problem it is trying to solve. According to NARA (2005) an organization that uses BPA to determine its business requirements can be confident that it is capturing the right records in all formats required to meet its business needs. It will ensure that the organization is creating, maintaining, protecting and providing appropriate access to authentic, reliable and trustworthy records throughout the records life-cycle.

The study conducted a business process analysis to establish the electronic records that were generated and received by Moi University. This enabled the study to identify specific record keeping requirements such as, the need for a policy to guide the management of electronic records and the need for staff responsible for records management to be equipped with knowledge and skills in records management and specifically, electronic records management.

Undertaking a business process analysis enables an organization to identify the specific record keeping requirements that cannot be identified in any other way. An agency that undertakes a business process analysis will feel confident that it is capturing the right

records for its business processes and that it is maintaining, protecting and providing appropriate access to records in a trustworthy way (Benchmarking Report on Business Process Analysis and System Design for Electronic Record keeping, 2005).

2.7 MANAGEMENT OF ELECTRONIC RECORDS IN EUROPE, NORTH AMERICA, AUSTRALIA AND SELECTED AFRICAN COUNTRIES

According to the International Records Management Trust (IRMT) (2004) electronic records management programmes in most Governments around the world have been motivated in part by the ongoing public sector reforms. Governments are recognizing the need to facilitate access to public services through e-Government. IRMT (2004) further noted that e-Government has led to generation of vast quantities of e-records. Research in the management of electronic records has received a lot of attention in the developed countries with investigations focusing on practical solutions to the management of records (Keakopa, 2009).

Countries such as Australia, Canada and the United States of America have long recognized the need to develop programmes geared towards the management of e-records throughout their life-cycle. The Australian Federal Government has made remarkable strides in automating registry controls through re-invented records management programmes. The country has a thriving local automation software industry for records management (Mutula and Wamukoya, 2007). The authors further noted that the National Archives of Australia provides guidance on the management of electronic records.

In the United Kingdom, the Public Records Office (PRO) has developed a strategy that provides guidelines and standards on the management and preservation of e-records. The

strategy covers requirements for the transfer of records in electronic form from creating agencies (Public Records Office, 2001).

In Canada the Government has provided guidance and national standards for managing electronic records in order to meet evidentiary requirements in a court of law. A national standards for e-records management known as “The Electronic Records as Documentary Evidence” has been put in place. The standard establishes requirements for organizations to follow when creating e-records. This standard has enabled agencies to demonstrate the authenticity of e-records and the integrity of the system that recorded and stored the electronic records (Mutula and Wamukoya, 2007). In the USA the Government has implemented a strategy to provide guidance on the management of e-records in order to enable agencies transfer e-records to the national records center (NARA, 2002).

Although Africa is lagging behind compared to developed countries, efforts have been made to enhance the management of e-records. It is worth noting that today many countries in Africa such as South Africa and Kenya have enacted national ICT policies which recognize e-records just like paper records. To promote strategies for the appropriate management of electronic records, the National Archives and Records Service of South Africa Act of 1996 contains two provisions specifically regarding electronic records systems. The Act states that the National Archivist shall determine the conditions subject to which electronic records systems shall be managed and electronic records may not be disposed of without the written authorization of the national archivist (National Archives and Records Service of South Africa, 2006).

2.8 IMPORTANCE OF MANAGING ELECTRONIC RECORDS

All organizations need to document and keep records of business decisions and transactions. Records are kept for the purpose of meeting the demands of corporate accountability and they provide evidence of an activity or transaction and therefore, demonstrate accountability, trust and transparency (Wamukoya, 2007). The author further noted that all organizations, public or private create records as a result of the day- to- day official work and records need to be captured, managed and safeguarded in an organized record keeping system if they must retain their value and integrity as formal records.

Similarly, New South Wales (1998) noted that computerization in many organizations today has led to the creation of records in electronic formats which require new ways of management and good electronic record keeping reduces costs to an organization; improves service delivery and support accountability. In addition, it helps an organization as a whole to ensure that adequate electronic records are made, captured and maintained to meet business and accountability requirements. It reduces reliance on paper records as well as minimizing the risks associated with inadequate records of business conducted electronically (New South Wales, 1998).

Mutula and Wamukoya (2007) pointed out that sound management of paper and electronic records was important in order to avoid organizational gaps in public archives. Mnjama (2002) noted that e-records need to be captured and preserved as electronic archives so that they can be accessible to the public just as with paper-based archives.

The author further noted that good e-records management is important as it aids Governments to be open, transparent and accountable.

Mnjama and Wamukoya (2004) pointed out that records are valuable assets that need to be managed and protected. They further noted that besides providing essential evidence of organizational activities, transactions and decisions, records supported business functions and were critical for the assessment of organizational performance. Without reliable records an organization cannot effectively manage its resources such as, finances and human resources, among others. In addition, without accurate and reliable records and proper management of these records, organizations cannot be held accountable for their decisions and actions with their rights including those of stakeholders would be compromised. Good electronic records management therefore, is important in aiding Governments to be open, transparent and accountable (Mutula and Wamukoya, 2007).

Mutula and Wamukoya (2007) pointed out that electronic records played a significant role in a democratic process in many ways that include:

- Providing evidence to support the rule of law;
- Supporting the accountability of Government administration;
- Providing evidence of the interaction between the people and their Governments and;
- Documenting the history and culture of a nation

Ngulube and Tafor (2006) highlighting the importance of records noted that public records and archives contained information which was a cornerstone of holding Governments accountable and fostering good governance. Without good electronic records management in place, Governments or organizations cannot not be held accountable.

Government of South Australia (2005) in Kemoni (2008) noted that there are a multitude of benefits that can be expected from agencies and authorities achieving adequate records management such as:

- The ability to mitigate the considerable risks associated with inadequate records management practice, specifically, accountability, transparency, sound corporate governance, and public sector efficiency;
- Compliance with statutory requirements;
- The ability to provide enterprise-wide access to documents, records and information resources contained within multiple databases;
- The ability to manage electronic documents and records as inviolate and credible evidence;
- Knowledge of fundamental records management practices and how they relate to Freedom of Information and Information Privacy principles and;
- Increased productivity and individual accountability

There are many problems that occur when electronic records are not managed effectively. For example, Kansas State Historical Society (2002) pointed out that failure to manage

records properly led to inadequate records and record keeping which resulted in problems such as:

- Fraud, impropriety, political embarrassment and inability to defend the state in cases of legal action or claims against Government;
- Arbitrary destruction of records so that they cannot be found when required;
- Failure to identify and retrieve the authentic version of records when multiple versions exist and;
- Failure to maintain records for the period of time necessary to meet specific accountability requirements

Similarly, IRMT (1999) pointed out that if electronic records are not managed in a structured and comprehensive manner, the organization will be exposed to many risks such as:

- The uncontrolled accumulation of records, documents and data;
- The in advent destruction of records;
- Un-authorized tampering of records and;
- The absence of system documentation and metadata

IRMT (1999) further noted that these risks can lead to serious consequences to the organization which include:

- Loss of valuable records and archives;
- Increased risk of security breaches;
- Unauthorized alteration or deletion of records (loss of evidence);

- Public embarrassment, for example if the organization is unable to produce key records in court because they are maintained using obsolete technology;
- Un-necessary delays and breakdowns in the business process;
- Lack of public accountability and;
- Difficulty in accessing information, among others.

With an electronic records management programme in place, it would minimize the above stated risks and electronic records would become an integral component in an organizational strategy for electronic transactions (IRMT, 1999).

2.9 CHALLENGES OF MANAGING ELECTRONIC RECORDS

Electronic records are widely used in most organizations. Studies concerned with the use of ICTs in record keeping have found the management of e-records to be associated with many challenges which if not addressed can lead to great risks for organizations (Keakopa, 2007). Keakopa (2009) further noted that while it has emerged that the use of ICTs has in some ways eased the work of archivists and records managers, dependence on it has at the same time created problems.

In agreement with Keakopa (2009) Wamukoya (2009) posit that the emergence and growing importance of e-records as a means of communicating and preserving corporate information posed new challenges hitherto unknown to corporate managers as well as records managers. The author pointed out that unless these challenges were continually addressed, corporate agencies including Governments stood to lose valuable information,

and thereby exposing themselves to un-warranted risks such as, business, legal and financial, among others.

Cloanan (1993) noted that there were many challenges associated with the preservation of electronic records which needed to be addressed to ensure continued accessibility. First, the media is unstable as compared with “traditional” information carriers such as paper and microfilm. Secondly, access to electronic records is dependent on machines and software. The author pointed out that if appropriate technology was not available, humankind could not read or use electronic records. The author further noted that rapid technological changes in the electronic environment and market inevitably led to media obsolescence. Thirdly, electronic data deteriorate over time, especially when it is not compliant with generic standards such as Extensible Markup Language (XML) and Standard Generalized Markup Language (SGML). Thus, data emulation and migration are necessary to maintain the integrity of the data. Consequently, the need to guarantee “technological access” is one major challenge posed by the electronic formats ushered in by the information age.

Keakopa (2009) observed that arguments in the literature seem to imply that e-records that can be accessed using one software programme now may fail to be accessed in the future because the programme may be outdated and a new one available on the market. This the author noted, raises the need for constant migration of records with continuing value across change in software, hardware and media to ensure that records remain accessible for as long as they are needed.

Barata, Kutzner, and Wamukoya (2001) noted that challenges remained in developing social, cultural, political, and technical solutions for the maintenance and use e-records. While describing the fact that developing countries were turning to new technologies, the authors noted that the necessary infrastructure to make adequate use of electronic records was far from being established. They further noted that despite heroic efforts of organizations such as the International Records Management Trust (IRMT), there was need for basic education, resources and appropriate experience.

In a meeting held in Johannesburg, South Africa in 2002 that brought together archival educators and national archivists from 38 English speaking countries to discuss strategies to meet the challenges of the changing information environment, the following emerged as the challenges bedeviling the management of e-records:

- The low profile of and limited support for records professionals as key players in information and records management, particularly in the electronic age;
- The absence of legislation and policies for management of information technologies and e-records;
- The lack of standards and systems for the management and preservation of information technology products and electronic records;
- The lack of adequate training and human resource development for records personnel and;
- The need for increased funding for records and archives work not just for technology oriented approaches to records creation and management (Evidence-Based Governance Project, October 2002 to April, 2003).

When records must be kept for ten years or longer, the problems of technological obsolescence are likely to become acute. Creating and maintaining records technologically is expensive compared to paper records. In virtually every other aspect, the cost of keeping electronic records is higher because they require dedicated computer equipment, stringent environmental control and specialist staff (IRMT, 1999).

IRMT (2003) noted that as Governments around the world embraced the tremendous potential of ICTs, there were problems in managing documentary evidence in electronic format. They pointed out that there was insufficient capacity and training to articulate electronic records issues and provide guidance and input to policy makers and planners. Similarly, Mutula and Wamukoya (2007) noted that Government authorities often had little knowledge about the management of e-records. They observed that officials were unsure as to whether electronic information they created and received constituted official records and if so how they were to deal with it. The authors further noted that, IT experts tended to promote the use of technology to create and share electronic information while paying little or no regard to the preservation of this information as un-changeable evidence over time.

Additionally, the situation was complicated further at policy level by senior officials and legislators who are often unaware of the requirements to manage e-records over time so that the evidence base of Government will be secure when needed by authorized users (Wamukoya and Mutula, 2005). Wamukoya and Mutula (2005) noted that electronic records and systems that support e-records were complex and fragile.

Other challenges include:

- E-records are created and maintained using technology platforms and standards that change frequently;
- E-records are stored on media that deteriorates over time and are often supported by weak accountability and management framework practices;
- Problems of in-compatibility of hardware, software, data formats and storage media;
- Lack of metadata to provide contextual information and;
- Lack of clearly assigned responsibilities and resources for long-term preservation (IRMT, 2004).

Challenges posed by technology to the management of electronic records have led to the commissioning of a number of electronic preservation projects by Governments and organizations in developed countries (Walters and Garret, 2001). According to Bikson and Law (2000) organizations such as United Nations (UN) have commissioned studies to investigate the management of electronic information. In a study carried out in Ghana, Uganda, and Zimbabwe, it was discovered that these countries did not have the capacity to manage electronic records (Cain and Thurston (1999). Mutiti (2001) came to the same conclusion in her study of the technological infrastructure needs carried out in Botswana, Kenya, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania and Zimbabwe.

Some cases have been reported whereby vital electronic information has been lost into obsolete hardware and software. For example, according to Cain and Thurston (1999), in Zimbabwe the Salary Service Bureau lost all information created and stored on computer tapes between 1980 and 1994. The problem surfaced when a newly introduced computer-based information system could not read most of the older computer tapes.

Studies conducted by Ngulube (2001), Mutiti (2001), Kimberly *et al* (2001), IRMT (2003), Kemoni, Wamukoya and Kiplang'at (2003), Mnjama and Wamukoya (2004), McLeod, Hare and Johare (2004), Johare (2006) and Wamukoya (2009) noted the following challenges that Governments and institutions faced in the management of paper and electronic records:

- Absence of organizational plans for managing e-records;
- Low awareness of the role of records management in support of organizational efficiency and accountability;
- Lack of stewardship and coordination in handling paper as well as electronic records;
- Lack of the capacity to manage electronic records;
- Absence of core competencies in records and archives management;
- Poor security and confidentiality controls;
- Lack of records retention and disposal policies;
- Absence of migration strategies;
- Lack of standards, practices and procedures for managing electronic records;
- Inability to determine hardware and software;

- Lack of infrastructure;
- High Government tariffs;
- Low digital literacy levels and lack of awareness and skills;
- Lack of funding;
- The digital divide ;
- Lack of education and training in the management and preservation of e-records;
- Difficulties in identifying appropriate hardware and software together with costs of purchasing;
- Inadequate training in the use of information technology;
- Protection of data from unauthorized access and;
- Poverty and illiteracy, among others.

On the whole Mnjama and Wamukoya (2004) noted that many problems faced in the management of e-records especially in ESARBICA member countries emanated from the fact that most of them have largely operated in a paper-based environment for a long time. Consequently, the authors noted that the change processes from paper to electronic systems was bound to be complex than was often realized. They further pointed out that first there was need to fix the paper mess before contemplating automation. Secondly, it was necessary to maintain for a period of time some sort of hybrid systems which would allow parallel or complimentary paper and electronic systems to co-exist. Thirdly, there should be a gradual integration of the manual paper system with the computerized system by focusing on specific products to support the business process.

2.10 STRATEGIES FOR MANAGING ELECTRONIC RECORDS

To effectively manage e-records, Governments and organizations especially in developing countries should consider putting in place measures that will enhance good electronic records management and ensure their accessibility over time (Roper and Miller (1999), Beck and Fischer (2000), Barry (2001), State Archives Department (2004), Mutula and Wamukoya (2007) and Tufts University (2010).

According to Roper and Miller (1999), electronic records do not exist in isolation. They are created by organizations and individuals for specific purposes. As a strategy to manage electronic records the authors noted that to be readily accessible to others, electronic records need to be captured in a record keeping system. They further noted that one of the most significant problems facing organizations that create and use electronic information is that electronic systems are seldom designed to keep records. A record keeping systems ensures the capture of structural and contextual information or *metadata* that describes how a record was created, how it is arranged (its form), who created it and what business function and transaction led to its creation. First is the risk that, without information about the record's or data's structure, it may be difficult if not impossible to retrieve it in future if the software and hardware used to create it becomes obsolete. Second, without context, the record is meaningless.

Beck and Fischer (2000) noted that today large organizations are faced with an increasingly growing blizzard of electronic and paper documents that clog the channels of communication and block the flow of work. The result is hardening of these

organizational arteries that can send productivity and quality plummeting. To solve this problem the authors noted that many companies had turned to electronic record keeping systems such as, Electronic Document Management Systems (EDMS) as a strategy for managing electronic records.

EDMS consist of a set of products and services that enables users to store, locate, filter, retrieve, share, publish, and track document based information throughout the document's life cycle electronically. EDMSs can reduce costs, minimize errors, and improve the quality of products and services. EDMSs help to improve productivity, considering the average worker spends half of his or her day working with documents. EDMSs therefore provide benefits in any area where access and control of documents is required. Done correctly, EDMSs reduce costs, minimize errors, and improve the quality of products and services. By reducing the time it takes to create, find, and distribute documents among work groups or throughout the enterprise, EDMSs significantly increase productivity, ensure quality, and help speed products and services. These are competitive advantages most organizations can ill-afford to ignore (Beck and Fischer, 2000).

Barry (2001) suggested that to manage e-records effectively there was need to have the following:

- Regulations and standards to cover their definition; creation; capture; use; preservation and disposal;
- Organizational business processes and;
- Application of retention schedules and capture of content and context

State Archives Department, Minnesota Historical Society (2004) noted that the arrival of the information age meant that much of today's history is now recorded in electronic format including agencies activities. It pointed out that it was imperative to develop strategies for managing electronic records. They recommended that an electronic records management strategy should encompass the following:

- A legal framework such as, providing public accountability;
- Distinguishing public from not public records;
- Creating retention schedules and carrying out disposal actions;
- Developing and sustaining a trustworthy process for electronic records management and;
- Long-term storage and access needs (both legal and operational)

There is need for capacity building if benefits of using ICTs are not to be compromised. Failure to address this will lead to increased operating costs, gaps in recorded memory and weakened capacity for decision making (Mutula and Wamukoya, 2007). The authors further noted that, the competencies and skills that are required include: technology skills, e-records management skills that include skills to create, capture, classify, index, store, retrieve, track, appraise, preserve, archive and dispose of records in an electronic environment.

A sound e-records management strategy will reflect the relationship between records management and the organization's operations and thus ensure that management of electronic records support the daily work, support long-term operational needs and meets legal requirements (State Archives Department, Minnesota Historical Society, 2004).

Similarly, Mutula and Wamukoya (2007) pointed out that Governments and agencies with statutory responsibility especially in developing countries, should consider the following actions to enhance good e-records management practices:

- Identify automation needs;
- Determine current status of e-records management;
- Assess policy, legislative and regulatory framework;
- Identify capacity-building requirements including creating awareness and training needs;
- Develop a financial plan;
- Determine institutional framework and capacity to implement electronic records management plans and;
- Identify appropriate standards and metadata for electronic records management, among others

According to Tufts University (2010), electronic records, like any other records, must be maintained in a reliable and secure format for the entire retention period. Electronic records are machine-readable hence; they require hardware and software to be interpreted. Hardware and software is constantly evolving. If the retention period is longer than five years, then an organization needs to have a plan for migrating or converting the records to a new format and/or storage medium. Rapid changes in technology mean that file formats can become obsolete quickly and cause problems for the organization's records management strategy. It is therefore important for organizations wishing to maintain records in an electronic format for more than five years

to have a migration /conversion plan in place to ensure that records are maintained in a readable format.

The following are some reformatting strategies that Moi University can use. They include but not limited to:

- **Digitizing or Microfilming** Moi University paper records may be an effective strategy for managing electronic records. Microfilming saves space, increases access, reduces retrieval time, or creating back-ups. Microfilming is therefore a compact way to manage and store long-term records. The institution will only need a light source and a magnifying glass to read the microfilms. The format avoids the technological obsolesce problems that electronic records and digitized documents face. For example if a department or office uses high quality microfilm, stores them in a stable and secure environment, and keeps track of them, microfilms can easily last well over 100 years.
- **Digital Imaging** is a way of converting paper records to digital files. This process can drastically reduce storage costs by ending the need to store the paper records that have been digitized. The process improves retrieval efficiency by enabling searching capabilities that are not possible in a paper environment. Digital imaging therefore is ideal for records that would take up an extensive amount of space in paper form and require regular and rapid retrieval (Tufts University, 2010).

2.11 ON-GOING INITIATIVES ON THE MANAGEMENT OF ELECTRONIC RECORDS

Recognizing the challenges of managing records in electronic formats many projects have been undertaken. A number of research activities mainly in Europe, Australia, USA and Canada have come up with projects aimed at addressing the challenges of managing electronic records and most of these have been successfully implemented (Keakopa, 2009).

The following is a discussion of some of the ongoing initiatives to manage electronic records as discussed in the literature (Keakopa, 2009; World Bank and IRMT, 2005; InterPARES Project I, II and III, 2001-2012; CAMiLEON, 2008; Cornell University Project PRISM, 2007 and Evidence-Based Governance Project, 2002).

According to Keakopa (2009) the International Records Management Trust (IRMT) has been assisting developing countries in improving paper-based record keeping systems and the establishment of electronic record keeping systems. IRMT projects in developing countries, and ESARBICA in particular, have helped establish integrated records management systems for controlling public sector records. The author noted that IRMT had developed web-based training materials for professionals in institutions in the ESARBICA region.

IRMT projects have been successful in bringing together a global network of institutions to tackle problems in the management of electronic records. In addition, this has helped in ensuring that public records are efficiently managed to ensure accountability, good

governance and transparency. The projects have been able to put in place the kind of foundation that will help developing countries come up with policies, training programmes and other strategies for the management of electronic records (Keakopa, 2009).

Concerned with the problems associated with the management of paper and electronic records, the IRMT and World Bank aimed at addressing challenges associated with the management of e-records. The aim of the project was to develop a tool that would assist corporate agencies to assess their e-records readiness against internationally accepted standards and to provide information intended to assist organizations develop plans and strategies aimed at improving both their paper-based and electronic records environments, among others. The IRMT e-readiness tool was issued in 2004.

InterPARES project is an international research initiative intended to develop a reservoir of knowledge essential to the long-term preservation of authentic records and archives and records maintained in digital form. The other aim of the project was to provide a framework consisting of standards, strategies and plans of action to ensure the longevity of e-records that will enable a user trust their authenticity. The project is based at the School of Library, Archival and Information Studies at the University of British Columbia (UBC) in Vancouver, Canada. The project is divided into three phases, namely:

- **InterPARES I.** It was initiated in 1999 and lasted until 2001. It focused on theory of theoretical framework for ensuring the preservation of authentic records

created and maintained in databases and document management systems. This was to ensure that preservation of electronic records created in the course of administrative and operational business activities was achieved.

- **InterPARES II.** It was initiated in 2002 and lasted until 2006. This project focused on investigating issues of authenticity, reliability and accuracy of electronic records in their entire life-cycle. It also addressed issues of e-records produced in complex digital environments such as, scientific, technological and e-Government environments.
- **InterPARES III.** It was initiated in 2007, and is estimated to last until 2012. It builds on the research findings of InterPARES I and II and takes into cognizance other digital preservation projects worldwide. The primary objective of this project is to put theory into practice and is intended to operationalize the findings of InterPARES I and II. Besides working with archival institutions it aims at targeting small and medium archives and records within organizations. The project aims at developing teaching and training modules for in-house training programmes; training materials and teaching materials for universities and other academic institutions.

CAMiLEON (Creative Archiving at Michigan and Leeds: Emulating the Old on the New, 2008) is a project investigating the viability of emulation as a preservation strategy that maintains the intellectual content, structure and “look and feel” of software-dependent complex digital objects. Researchers are assessing user preferences of different versions of emulators that vary considerably in how they reproduce those objects. For example,

the project is analyzing how users define the authenticity of objects running in their native software environment running under emulation and delivered in migrated versions (University of Michigan and University of Leeds, 2008).

Cornel University's PRISM project focuses on policy enforcement for ensuring information integrity in the areas of preservation, reliability, interoperability, security and meta-data. PRISM is investigating the long-term survivability of digital information, reliability of information resources, services and inter-operability, security including the privacy rights of users of information and the intellectual property rights of content creators and the metadata that make it possible to ensure information integrity in digital libraries (Cornell University, 2007).

Managing and Preserving Electronic Records at McGill University was a project launched in 2003. It is a McGill University Archives initiative, promoting the collaborative, strategic, long-term management and preservation of McGill University's electronic records. The initiative was born out of the need to take on the challenges of managing electronic records 'born digital' or converted to digital for business interests. It was aimed at developing strategies to preserve electronic records in collaboration with the university's IT sector for research interests. The goal of the project was to gather information to determine the extent of electronic records on campus; examine and select software solutions and review and develop new policies; to raise awareness on campus and advice on e-mail best practice, among others.

Evidence-Based Governance Project (2002) is a project aimed at coordinating a global network of institutions to define strategies for improving records systems so that they provide complete and trustworthy information particularly in electronic environments. The project includes building awareness among records professionals, Government officials and donors and lenders, creating capacity building tools mapped to the International Standard on Records Management (ISO 15489). This is meant to measure the strength of records systems against public sector requirements and preparing training materials to meet global needs.

2.12 GUIDELINES AND STANDARDS FOR MANAGING ELECTRONIC RECORDS

Many records management guidelines and standards have been developed by records/ archives professionals and various records and archival organizations to address the management of paper and electronic records. Apart from giving guidelines on the management of electronic records they also discuss the trustworthiness and integrity of electronic records.

The following is a discussion of some of these guidelines and standards.

1) NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA) GUIDELINES (2005)

The NARA Records Management Guidelines (2005) has provided a checklist of issues record keepers should consider as part of document management strategies to meet end-user needs in paper and electronic systems.

The checklist include:

- Managing objects from source applications such as, e-mail, desktop applications and the web;
- Creating software for contributors, those who create, file, classify, search and retrieve records;
- Managing retention and disposition and;
- Having a programme of long-term management and retention of electronic records, among others

2) NEW SOUTH WALES (NSW) RECORDS MANAGEMENT GUIDELINES (2005)

These guidelines are based on Designing and Implementation of Record Keeping Systems (DIRKS) strategy. Unlike NARA Records Management Guidelines (2005), the New South Wales guidelines are meant for electronic records. They provide for:

- Records access and security;
- Identification of records access and security requirements that will ensure that record keeping systems support access and security;
- Assessment of existing records management systems to determine whether or not the systems employed appropriate metadata, how and by whom records had been accessed, among others

3) UNITED NATIONS DOCUMENT MANAGEMENT STRATEGY GUIDELINES (2005)

The guidelines are applicable to both records and archives in electronic form. The guidelines provide proposals for strategies to manage records in electronic formats by providing:

- Online access to stored documents along with tools and descriptive data to support a range of users and uses;
- Preservation of electronic records along with contextual and descriptive data in ways that support evidential values;
- Establishment of rights and restrictions on access within and outside the organization and ensuring the authenticity and integrity of electronic documents;
- Implementation of electronic document management systems with technology that conformed to international standards to enable information exchange across organizations over time and;
- Identification of the organizational entity or entities responsible for acting in a corporate capacity to ensure that high-level electronic document management requirements are met, among others

4) NATIONAL ARCHIVES AND RECORDS SERVICE OF SOUTH AFRICA RECORDSMANAGEMENT GUIDELINES (2005)

The guidelines provide guidance to Governmental bodies to assist them comply with legislative requirements regarding electronic records as an integral part of the strategic management of their records resources. It includes components of a sound records

management programme and guidelines for the development of an e-mail management policy.

5) KANSAS ELECTRONIC RECORDS MANAGEMENT GUIDELINES (2002)

The guidelines are about maintaining accountability and preserving important historical records in the electronic age. They are designed to provide guidance to users and managers of computer systems about:

- The problems associated with managing electronic records, special record keeping and accountability concerns that arise in the context of electronic Government;
- Archival strategies for the identification, management and preservation of electronic records with enduring value;
- Identification and appropriate disposition of electronic records with short-term value, and;
- Improving access to Government records

Other guidelines on electronic records management include:

- The Public Records Office (PRO) Records Management Guidelines (2001);
- International Council on Archives (ICA) Records Management and Archives Guidelines (2005) and ;
- International Records Management Trust (IRMT) Guidelines (2004), among others

6) ISO 15489 STANDARD (2001)

ISO 15489 Standard-2001 is recognized worldwide as establishing the baseline for excellence in records management programmes regardless of size, type or location of the organization, and regardless of record format or content. The standard provides a blueprint for the establishment, structure, monitoring and auditing of a best practice records management programme. It allows an organization to efficiently and effectively record and retrieve information thus, enhancing decision making, productivity, accountability and at the same time reduces information risk exposure. The standard has the potential to add a stamp of global legitimacy to records management as a business practice and elevate it to a new level. The standard is published in two parts:

- **Part One: General** -is the standard *per se* and it provides guidance on managing records. It outlines a set of principles and elements to ensure that adequate records are created, captured and managed (ISO 15489, 2001a, Clause 1)
- **Part Two- Guidelines**- referred to as Technical Report. It is an implementation guide to ISO 15489-1 for use by records management professionals and those charged with the responsibility of managing records in their organizations (ISO/TR 15489b, Clause 1)

ISO 15489 Information and Documentation- records management attempts to standardize records management policies and procedures to ensure that appropriate attention and protection is given to all records, and that all the evidence and information they contain can be retrieved more efficiently and effectively.

ISO 15489 Standard-2001 is applicable to all organizations irrespective of sector and all records irrespective of media and provides a benchmark for best practice. It is designed to be understood by all who will use it that is, records creators and users and records managers. It details the ideal characteristics of a record and a records management system. The standard describes records management good practice and states what characteristics a record and a records management system should have in terms of reliability, integrity and authenticity.

7) AUSTRALIAN STANDARD AS ISO 15489 - RECORDS MANAGEMENT (2002)

The Standard represents recognized international best practice guidance on records management. The standard is an Australian codification of the International Standard on Records Management, ISO 15489. The Standard is in two parts:

- **AS ISO 15489.1-2002, Records Management - Part 1: General** - this part of the Standard provides guidance on managing records of originating organizations, public or private, for internal and external clients. It contains discussions of the:
    - § Benefits of good records management;
    - § Issues of regulatory environments;
    - § Need for records management policies and assigned records management responsibilities;
    - § Principles of records management programmes;
    - § Characteristics of a record;
    - § Characteristics of a records system;

- Steps to be taken in designing and implementing a records system;
- Records management processes and controls;
- Records management monitoring and auditing and;
- Records management training.

- **AS ISO 15489-2-2002, Records Management - Part 2: Guidelines** -this part of AS ISO 15489 is an implementation guide to AS ISO 15489:
  - For use by records management professionals and those charged with the responsibility of managing records in their organizations and;
  - The Standard provides a detailed and step- by-step guidance on each of the areas contained within Part 1.

8) ARMA INTERNATIONAL STANDARDS (2010)

Standards and best practices development is a major activity for ARMA International at both the national and international levels. The production of standards is made possible through the volunteer work of records and archives professionals.

ARMA International Standards and Best Practices include:

- Controlled language in records and information management: an introductory guideline and discussion;
- Establishing alphabetic, numeric, and subject filing systems;
- Evaluating and mitigating records and information risks;
- Glossary of records and information management terms;
- Guideline for evaluating offsite records storage facilities;

- § Guideline for outsourcing electronic records storage and disposition;
- § Records and information management for IT professionals;
- § Records management responsibility in litigation support;
- § Requirements for managing electronic messages as records;
- § Retention management for records and information;
- § The Digital records conversion process: program planning, requirements and procedures;
- § Vital records programs: identifying, managing, and recovering business critical records;
- § Website records management and;
- § Working collaboratively in an electronic world.

2.13 ELECTRONIC RECORDS MANAGEMENT: REVIEW OF EMPIRICAL STUDIES

As many organizations automate their business processes, electronic records are increasingly replacing paper records. Several studies addressing the management of electronic records in developing countries and especially the ESARBICA region have been published. The studies are highlighted in the following paragraphs.

Katuu (2000) conducted a study on the management of electronic records which noted that with the increasing use of ICTs in the public sector a lot of information was being generated and disseminated in electronic form. The study established that almost 60% of information within Governments was electronically generated. Kemoni and Wamukoya (2000) noted that the ICT infrastructure in the African region was inadequate to support

electronic records management. They further noted that lack of an IT policy undermined the exploitation of ICT resources within the public universities.

A study conducted by Mutiti (2001) on challenges of managing electronic records in the ESARBICA region found that electronic record keeping systems were absent. The responsibility of managing electronic records was delegated to archival institutions. The study pointed out Botswana, Kenya, South Africa and Zimbabwe as countries where this practice was rampant. The study established that many archivists were not conversant with issues pertaining to the management of e-records. The study recommended the need to conduct national surveys of public institutions to take stock of the e-records. One of the objectives of the present study was to conduct a business process analysis to determine the electronic records generated and received at Moi University and the challenges that staff faced in the management of electronic records.

Mnjama (2002) noted that the proliferation of records in electronic formats posed a unique challenge for universities to develop and adopt campus-wide integrated records management programmes. The author recommended that a university should have an archives and records management policy which sets out the objectives and maps out a plan for the programme. Other recommendations include: placement of the archives/records management function within the university administrative hierarchy; appointment of a university archivist/records advisory committee, an access policy and adequate funds.

Mnjama (2002) conducted a study at the University of Botswana which revealed that the university lacked policies and procedures governing the creation, maintenance and disposal of its records. He pointed out that this scenario had led to the university accumulating large quantities of records since its inception. The author further noted that there was need to transfer these records for permanent preservation. Mnjama's study found that this had proved difficult because records had not been sorted, appraised, arranged and listed.

Mnjama and Wamukoya (2004) observed that many Governments had procedures for managing paper records but lacked the same for e-records. They recommended that policies and procedures be put in place and a critical examination of laws be carried out to support e-Government. The present study sought to establish whether there was a policy for managing e-records at Moi University.

Sejane (2004) conducted a study that investigated the management of e-records in the public sector in Lesotho. The study established that management of e-records was not effective and it did not have legislation that specifically dealt with management of electronic records. The study found that there are no written policies, strategies and guidelines for managing e-records. The study further established that staff working in the public sector lacked expertise and skills to enable them manage e-records effectively. Similarly, the present study investigated the issues that were investigated by Sejane (2004).

A study was conducted by Ngulube (2004) to establish how e-records were managed in Sub-Saharan Africa. One of the major findings was that there was shortage of staff trained to manage records emanating from computer technology. The study noted that only South Africa had legislation addressing electronic record keeping issues. Among the study's recommendations was the need to equip staff with skills to manage e-records and Governments needed to come up with legislation to protect e-records. Similarly, the present study investigated whether staff responsible for managing e-records at Moi University had knowledge and skills in e-records management.

Wato's (2004) study on challenges of archiving electronic records established that archival institutions lacked the ability to preserve e-records. This was attributed to lack of specialized storage facilities, poor environmental conditions and lack of skills amongst staff. While countries such as Kenya, Tanzania, South Africa, Mozambique and Zambia had adequate infrastructure, the study observed that Zambia, Swaziland and Zambia had a poor ICT infrastructure. The present study sought to determine the adequacy of the ICT infrastructure and resources to cater for electronic records management at Moi University. Among the Wato's recommendations was that: archival institutions should pay more attention to managing e-records; there was a need to upgrade the skills of staff working in these institutions particularly archivists to enable them create, use, maintain and preserve electronic records and there was need to establish standards to guide the management of e-records.

A study conducted by Wato in 2006 investigating e-readiness in the National Archives in the ESARBICA region established that only Tanzania and Mozambique had national ICT policies. South Africa has an Archives Act. The study noted that IT skills among staff was lacking. It is important to note that Kenya enacted an ICT policy in December, 2008. The policy recognizes e-records just like paper records. While Wato's (2006) investigated e-readiness in the EASRBICA region, the present study investigated the management of electronic records at Moi University.

A survey into the management of e-mail in Botswana, Namibia and South Africa and challenges archivists and records managers faced conducted by Keakopa in 2007 found that most Government agencies in Botswana and Namibia did not have policies to guide the creation and management of e-mails. However, the study found that policies for managing e-mails existed in South Africa. The study established that greater reliance by organizations on electronic mail systems as a primary business application had become a producer of large amounts of records. This had in turn necessitated demands for archivists and records managers in the three countries to be actively involved in facilitating the proper management of e-mails as part of the organizational record keeping system.

Venson (2007) in a survey of e-mail management practices in selected organizations in Gaborone, Botswana established that while e-records were considered to be official records that deserved proper management, the capacity to manage these records was generally lacking. The study noted that this had resulted in disjointed practices in e-mail

management. The present study was not specific to e-mail management however; management of official e-mail created and received by Moi University was included.

Wekalao (2007) established that electronic records and the infrastructure faced two broad types of threats: physical and logical. The author noted that physical threats were the vulnerabilities militating against electronic records because of physical weaknesses while logical threats were system oriented dangers which crippled the operations of the information system. The author recommended that organizations be called upon to develop and implement programs that are geared towards achieving total security of their electronic resources.

A study conducted by Kemoni (2007) established that policies and practices for managing records in Government ministries in Kenya were not effective and affected service delivery. The author noted that registry staff faced many challenges in managing electronic records especially with regard to preservation of electronic data; security of data; lack of computer skills on the part of registry staff and users; lack of an electronic records management policy and the registries lacked dedicated budgets. Among the recommendations made by Kemoni were the provision of adequate resources to Kenya National Archives and Documentation Service (KNDS) to enable it discharge its record keeping responsibilities within the public sector and action officers should facilitate education and training in records and archives management to all registry personnel and other staff such as suppliers, among others.

Moloi and Mutula (2008) investigated the management of e-records in an electronic Government setting in Botswana. The study showed that whereas electronic records management in developed countries was receiving great attention, the same could not be said of Botswana. The study noted that e-records management in Botswana though at its infancy and fairly new lacked an e-records management policy which made it difficult to identify, maintain and preserve e-records. The study recommended among other things the need to benchmark against best practices of developed countries with regard to systematic management of e-records.

In a study conducted by Nengomasha (2009) on the status of records management in the public service of Namibia revealed that the situation of Namibia was not different from other countries such as, Kenya, Ethiopia and Zimbabwe (Sturges, 2000). The study noted that the poor culture of managing paper records had been transferred to the management of e-records. The author pointed out that if electronic records were to be managed well, the culture had to change. The study found that the environment in which e-records were being carried out in public services in Namibia like other developing countries was not e-ready and therefore, any strategies for improving electronic records management in such an environment could not be done in isolation of paper records. Wamukoya (2009) noted that many developing countries moved to electronic environments without taking into account the preparations required to make the transition from paper to electronic systems and the implications such as, reliability and trustworthiness for managing records in electronic formats.

2.14 SUMMARY

Chapter Two presented the theoretical framework of the study. The review focused on the purpose of literature review in research; existing electronic records management models including the records continuum and its relevance to the study. Other issues discussed were: business process analysis and record keeping; management of electronic records in Australia, Canada, United States of America and selected African countries; importance of managing electronic records; challenges of managing electronic records; strategies for managing electronic records; on-going initiatives on the management of electronic records; guidelines and standards for managing electronic records and a review of empirical studies.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter presents the research study design. The issues covered include: study population and justification; population sampling; data collection instruments; validity and reliability of research instruments; procedure for data collection; problems encountered during data collection; data analysis and interpretation and ethical considerations.

The following discussion presents each of the above issues.

3.2 RESEARCH DESIGN

Kothari (2004) pointed out that decisions regarding what, where, when, how much, by what means, concerning an inquiry or research study constituted a research design. A research design according to Oliver (2004) is the blueprint of fulfilling objectives and answering questions. It is a plan, structure and strategy of investigation so conceived as to obtain answers to research questions or problems. Boquiren (2003) noted that research design involved determination of the study population and how it was obtained, sampling procedures, the source of data to employ, the techniques of data collection and controls of use, the tools to use and their design and how data will be processed and analyzed.

3.2.1 QUALITATIVE AND QUANTITATIVE RESEARCH

Anderson (1998) asserts that there are two main research paradigms which can be used by researchers to carry out their research, namely: qualitative and quantitative research. The author defines qualitative research as a form of inquiry that explores phenomena in their natural settings and uses multi-methods to interpret, understand and bring meaning to them. Quantitative research on the other hand, entails the collection of numerical data. It focuses on measuring and testing relationships between variables systematically and statistically (Kerlinger and Lee, 2000).

Although there is a pedagogical debate over the relative merits and demerits of qualitative and quantitative research approaches, the study used a combination of both qualitative and quantitative methodologies. This study is an in-depth investigation of the management of electronic records at Moi University within the context of the continuum principle with a view to recommending a policy framework/model that can be used to manage electronic records. Data was collected through face to face interview supplemented by observation.

Qualitative research is mainly concerned with participants' perspectives of the topic under study which focuses on the process and verbal descriptions. The use of ICTs and especially computers in creation, receipt, use, maintenance and disposal of electronic records requires people to in-put data. The researcher included open-ended questions in the interview schedule where respondents were expected to freely express their views concerning the management of electronic records at Moi University.

Qualitative research method generates non-numerical data. It is concerned with describing, recording, analyzing and interpreting conditions which exist or were in existence at one time. For example, respondents such as management, general administration, records and accounts and secretarial staff's description of the strategies used for managing e-records and the challenges they faced generated data that was non-numerical. Hancock (2000) observed that in collecting qualitative data one uses direct encounters with individuals, through one on one interviews or group interviews.

Kothari (2004) noted that in qualitative research the researcher does not manipulate variables but rather deals with conditions, evident events and processes that are going on. The researchers are usually concerned with the present events since many types of behaviour that interest them cannot be re-arranged in a realistic setting. Qualitative research is therefore designed to tell the researcher how (process) and why (meaning) things happen as they do. It enables the researcher to understand the different meanings that people place on their experiences often delving more deeply into hidden interpretations, understandings and motivations.

To Zaidah (2007) qualitative research has many strengths such as: it produces more in-depth and comprehensive information; it can bring out unexpected and surprising information; the researcher gains an insider's view of the topic being discussed that is, by the researcher being there they can see and document social interactions and it allows the researcher to see things in ways other than what they look on the surface by getting different perspectives and the underlying factors. The descriptive and narrative styles

used in presenting and reporting qualitative data may be of particular benefit to the practitioner, leading to results of studies being used in action unlike numeric presentations. For instance the university management can get interested in reading the staff's narratives of problems encountered in the management of e-records.

Several limitations of qualitative research have been advanced Burns (2002), Babbie (2005), Corden and Sainsbury (2006) and Zaidah (2007). A researcher needs to spend considerable time in the research setting (Babbie, 2005 and Burns, 2000). The nature of presenting and reporting qualitative data may compromise anonymity (Corden and Sainsbury, 2006). Data collection and analysis takes a lot of time. The researcher's presence may have an effect on the study subjects. It is very difficult to prevent or detect a researcher's induced bias and its scope is limited due to the in-depth and comprehensive data gathering approaches required (Zaidah, 2007).

The researcher took into consideration the strengths and limitations of qualitative research method. However, the application of qualitative research method enabled an in-depth analysis of electronic records management at Moi University to be conducted with greater accuracy and precision. Secondly, it accommodated different data gathering techniques including face to face interviews and observation. Thirdly, it was chosen because the researcher was not interested in manipulating independent and dependent variables but rather on describing the situation as it was. Silverman (2000) support the use of this method when a researcher seeks data which is both valid and reliable.

The study utilized some elements of quantitative research in data collection and analysis. A quantitative study measures a phenomenon using numbers in conjunction with statistical procedures to process data and summarizes results (Creswell, 2003). A quantitative approach generalizes and predicts findings based on the use of formal instruments such as interview schedules. According to Bryman (2008) the differences between the two approaches are technical rather than epistemological. In practice researchers can 'mix and match' methods according to what best befits the questions under study. In other words, the differences between the two paradigms in approach and purpose do not mean that qualitative research and quantitative research are mutually exclusive. The paradigms can be used together to demonstrate concurrent validity (Cohen, Manion and Morrison, 2004).

In quantitative research data is in the form of numbers from precise measurement and theory is largely casual and deductive. Quantitative research procedures are standard and replication is assumed. Analysis proceeds by using statistics, tables or charts and discussing how the researcher relates to hypotheses (Bryman, 2008). According to Newman (2006), qualitative and quantitative styles of research differ in many ways but in other ways they complement one another.

In this regard both qualitative and quantitative research paradigms were used for the overall design of the study because the type of data required was both quantitative for example gender and qualitative (opinion and views of respondents). More specifically

quantitative methods and data analysis techniques contributed to understanding the management of electronic records at Moi University in a number of respects.

3.3 STUDY POPULATION AND JUSTIFICATION

A population is described as the total collection of elements about which researchers wish to make some inferences. Population is also known as the universe and is the total or aggregate of all the units' possessing certain characteristics on which the sample seeks to draw inferences (Cooper, 2006). According to Mugenda and Mugenda (1999), population refers to the entire group of individuals, events and objects having common observable characteristics.

The study population consisted of 60 respondents (see Table: 3.1). The unit of analysis for the study was Moi University Main Campus, Chepkoilel Campus and Town Campuses.

Moi University Main Campus comprises the following schools:

- Human Resource Development;
- Arts and Social Sciences;
- Business Management and Economics;
- Education;
- Information Sciences;
- Engineering; and
- Environmental Studies including the Dean of Students' Office.

Chepkoilel Campus comprises the following schools:

- School of Agriculture and Biotechnology;
- School of Science; and
- School of Natural Resource Management.

Town Campus comprises the following schools:

- Schools of Medicine and Public Health;
- Eldoret West Campus (School of Business Management and Economics) and;
- Annex Campus - (School of Law).

Since the study aimed at investigating the management of electronic records at Moi University, it was therefore important to get information from the collective membership in each campus charged with the responsibility of managing university records and those who created and received electronic records as part of the university's business activities.

Table 3.1 illustrates the study population from each of the campuses.

TABLE 3.1: STUDY POPULATION AT MOI UNIVERSITY AND ITS CAMPUSES (N=60)

Category	Respondents	Main Campus	Chepkoilel Campus	TOWN CAMPUSES		
				Schools of Medicine & Public Health	Eldoret West	Annex
1.	Management staff	4	-	-	-	-
2.	ICT staff	3	2	1	-	1
3.	General Administration staff	7	4	1	1	1
4.	Secretarial staff	10	7	1	1	1
5.	Records /Accounts staff	7	4	1	2	1
Total 60		**31**	**17**	**4**	**4**	**4**

Table 3.1 indicates there were five major categories of staff that comprised the study population. Category One comprised of management as the key informants. The following offices and departments were included, namely: Offices of the Vice Chancellor, Deputy Vice Chancellor (s), Chief Academic Officer and Chief Administrative Officer. The justification for involving this category of staff was because their offices generated vast quantities of records in electronic format and were deemed as key informants.

The records include:

- Policy documents;
- Appointments letters;
- Student's admission letters;
- Minutes of management and senate meetings;
- Communication between the Moi University and stakeholders, among others.

These records are key to the functions of Moi University and hence they need to be well managed from creation to disposition. In addition, they provided data relating to policy issues that pertained to the management of records at Moi University. The information included the role of electronic records in meeting the mission, vision and core values of the university and training of staff in electronic records management, among others.

Category Two comprised Information Communication Technology (ICT) staff. ICT staff are charged with the responsibility of handling technical issues that related to ICT infrastructure and resources at Moi University. These include: maintaining the hardware and software, upgrading the systems and internet connection, among others. They provided data related to upgrading of the computers, challenges staff faced in the management of electronic records, among others. Other information sought by the study included access, security, integrity, storage, preservation and disposition of e-records, among others.

Category Three comprised of general administration staff. General administration staff were charged with the responsibility of managing records (both paper and electronic) at the various schools and administrative offices. They were therefore in a position to provide data relating to how electronic records were created, received, used, maintained and disposed of, among others.

Category Four comprised of secretarial staff. They were charged with the responsibility of creating and receiving official communication both from within and outside the university such as electronic mail and faxes as part of their day to day business activities. They were therefore in a position to provide information relating to the creation, use, maintenance, storage and disposal of electronic records.

Category Five comprised of records and accounts staff working at the various registries, schools, departments including the Finance Department at Moi University, Chepkoilel Campus and Town Campuses. Records staff and accounts staff were included in the study because they are charged with the responsibility of managing official university records including financial records. Records included those that were generated internally and those that were received from external agencies. Financial records included those generated internally within the university and those transacted between the university and other stakeholders such as commercial banks, students and staff.

Although the university registries were not facilitated with computers, the registries did receive vast quantities of printed formats of electronic records that were maintained at the

registries. They included copies of official electronic mail (e-mail) and fax messages. This category of staff therefore provided relevant data related to how records were managed. The Finance Department had automated 90% of its financial management processes and was therefore in a position to give vital information on how they managed electronic records. Other information sought include: creation and receipt of e-records; strategies used for managing e-records; adequacy of the ICT infrastructure and resources to cater for the management of electronic records and challenges staff faced in managing electronic records, among others.

The lists that served as a sampling frame for the above mentioned categories were obtained from the central registry and the respective offices.

3.4 POPULATION SAMPLING

The basic idea of sampling is that by selecting some elements in a population, we may draw conclusions about an entire population (Cooper, 2006). According to Keya, et al (1989), sampling involves selecting some elements of a population, having similar features to the underlying population, as representative of the total population so as to make certain observations of these elements and make conclusions regarding the entire population. Patton (2002) noted that there are no rules for a sample size in qualitative inquiry, and that the sample size depends on: what one wants to do; the purpose of the inquiry; what will be useful; what will have credibility; and what can be done with the available resources.

The study used non-probability sampling where the researcher is not compelled to determine the sample size in advance (Neuman, 2000). Examples of non-probability sampling are purposive, snowball, quota and deviant sampling, among others. The sample for the study was obtained by use of purposive sampling method. Purposive sampling is a sampling technique that allows a researcher to use cases that have required information with respect to the objectives of his or her study (Mugenda and Mugenda, 1999). Cases of subjects are therefore handpicked because they are informative or they possess the required characteristics.

This sampling technique was adopted because specific categories of staff were charged with the responsibility of managing university records. It allowed the researcher to select a sample that provided data needed from the different categories of respondents. The power and logic of using this technique lies in selecting information rich cases for in-depth study (Layder, 1998). The researcher handpicked respondents from the different categories because they were believed to have information about the central issues under investigation.

The researcher noted the strengths of purposive sampling and it was against this background that respondents were purposively selected from the categories indicated in Table 3.1. Out of 52 respondents the respondents were divided into five categories (see Table 3.2).

Table 3.2 indicates the size of the sample derived from each stratum.

TABLE 3.2: DISTRIBUTION OF SAMPLE SIZE AT MOI UNIVERSITY MAIN CAMPUS, CHEPKOILEL CAMPUS AND TOWN CAMPUSES (N=52)

Strata	Sampling Method Used	Main Campus	Chepkoilel Campus	TOWN CAMPUSES		
				Schools of Medicine & Public Health	Eldoret West	Annex
Management	Purposive	4	-	-	-	-
ICT Centre	Purposive	2	2	1	-	1
General Administration Staff	Purposive	5	3	1	1	1
Secretaries	Purposive	8	7	1	1	1
Records/Accounts Staff	Purposive	6	4	1	1	1
Total = 52		**25**	**16**	**4**	**3**	**4**

When sampling the researcher took into consideration the fact that management staff were busy persons and therefore getting all of them to participate in the study was fairly difficult. However, the representatives of these offices were consulted. Purposive sampling therefore, enabled the researcher to select people who were involved in the creation, receipt, distribution, maintenance, use and disposal of electronic records. In addition, purposive sampling provided adequate data for analyzing the various sub-populations or strata.

3.5 DATA COLLECTION INSTRUMENTS

Data collection instruments included the use of interviews and observation. These methods provided precise and adequate data relevant to the objectives of the study. Interview schedules included semi-structured questions to facilitate in-depth probing and prompting. An observation checklist was used.

3.5.1 INTERVIEWS

According to Oka and Shaw (2000) interviews are the primary data collection techniques for gathering data in qualitative methodologies. Interviews are based on the number of people involved during the interview, the level of structure, the proximity of the interviewer to the participant, and the number of interviews conducted during the research. The interviewer chooses either:

- **Unstructured interview**- no specific questions or order of topics to be discussed, with each interview customized to each participant: generally starts with a participant narrative;
- **Semi structured interview** -generally starts with a few specific questions then follows the individuals tangent of thought with interview probes or;
- **A structured interview question order and a specific way-** in which the questions are asked, but questions generally remain open-ended

Structured interviews permit more direct comparability of responses, question variability is eliminated and thus, answer variability is assumed to be real. In the structured interview, the interviewer's neutrality is maintained. Most qualitative research relies on unstructured or semi structured interviews. Many interviews are conducted face-to-face,

with the obvious benefit of being able to observe and record nonverbal as well as verbal behaviour (Oka and Shaw, 2000).

Busha and Harter (1980) noted that interviews are always the best method for collecting data about the respondents themselves: their experiences, opinions and attitudes, their reactions to trends and developments, and their knowledge. They go on to say that well-planned interviews and carefully worded questions usually produce the most useful information as well as supplementary, insightful observations and opinions from respondents. Hancock (2000) observed that in collecting qualitative data (such as for the present study) one uses direct encounters with individuals, through one to one interviews. The study sought to obtain data that was both reliable and valid, and one of the ways to make this possible was through interpersonal exchanges of information, hence, the use of personal interviewing method. Silverman (2000) support the use of this technique when a researcher seeks data which is both valid and reliable.

Concurring with Busha and Harter, (1980), Punch (2000) and Wisker (2001) noted that interviews are an ideal way of seeking people's perceptions and when looking for information based on insiders. Interviews when well conducted can produce in-depth data that may not be possible with questionnaire (Gay and Airasian, 2003). This is mainly made possible by the use of probes and prompts on issues raised by participants (Cohen et al, 2004). Berends (2006) explains that elaborating and clarifying questions makes it possible to get more information from respondents. The use of probes in this study was useful when interviewing the management staff. They assumed that since the researcher

worked was an employee of Moi University, the researcher understood the issues being addressed. They therefore tended to give information that lacked depth. The researcher had to probe to get the in-depth information.

3.5.1.1 FACE TO FACE INTERVIEWS WITH THE RESPONDENTS

The study used face to face interviews to supplement data obtained through the use of the observation checklist. Face to face interview approach was selected because it was more reliable in obtaining accurate data from the respondents. It allowed for clarification of issues, which were not well understood by respondents, and at the same time, it provided personal contact with the interviewees. Face to face interviews were psychologically satisfying since they made participants feel part of, and contributors to the study (Kothari, 2004). It made it possible to interview 52 respondents out of the targeted 60 thereby making the response rate higher than would have been the case with the use of mailed questionnaire. Eight respondents were not available for interviews due to their busy schedules.

Data was collected from Management, ICT, General Administration, Records/Accounts and Secretarial staff. The questions were structured in such a way that they addressed the aim and objectives of the study. The questions were both open and closed-ended and before their application the research instruments were pre-tested. Open-ended questions were meant to provide free responses from the respondents without providing suggestions to their reply while allowing in-depth probing of the interviewees. It enabled the researcher to probe respondents and clarify issues pertaining to the management of electronic records. According to Kerlinger (1999), open-ended questions enabled

researchers to ascertain ambiguity and at the same time encourage cooperation of the interviewees. The interview method provided an opportunity for more flexibility in questioning and responses since the parties were present in the dialogue.

The interviews achieved a high response rate (86.7%) besides being effective in collecting a body of reliable and comprehensive information as was intended. The interviews provided a unique experience both for the researcher and interviewees as they both displayed a marked enthusiasm in the process. Face to face interviews were suitable for the study because of various reasons. For example, with respect to the structure of questions, the face to face interview made it possible to standardize the interview situation so that the interviewer was able to ask the same questions in the same manner and order.

The interview schedules acted as a guide during the interview sessions so that questions were not necessarily followed in the order that they appeared in the schedules. Answers to some questions determined the next question because some of the answers given invalidated some of the subsequent questions. Face to face interviews allowed the researcher to gain useful insight into what was said by the respondents in addition, to enabling the researcher control the interviewing process and circumstances under which the interview was conducted.

3.5.2 OBSERVATION

According to Oliver (2004) the term observation is used to indicate that the object or subject of investigation is being subjected to close, usually visual-surveillance and that information obtained, that is, the observations in the form of recorded data will then be related to more general propositions or theories.

The study used an observation checklist to guide data collection. The observation was found to be appropriate as it provided first hand information regarding the management of electronic records at Moi University. The advantage of observation as a technique of data collection is its directness that permits a researcher to collect data from real situations (Wegner, 2000). Robson (1997) classifies observation into formal and informal gathering techniques. Formal approaches impose a large amount of structure and direction on what is observed. On the other hand informal approaches are less structured and allow an observer considerable freedom in what information is gathered and how it is recorded. The study used the informal approaches

During visits to the schools, departments and administrative offices the researcher focused mainly on the types of ICTs and resources and their adequacy in catering for the management of electronic records, availability of computers, environmental conditions under which storage devices were kept and security of electronic records, among others. All the data collected was recorded and the data was used to compare and contrast with the data obtained from the interviews with the respondents. Observation method strengthened the findings obtained through the interviews in addition, to overcoming the

limitations of the self-report method of data collection for it enabled the verifying and confirming stated facts. It was therefore, befitting that observation was used together with face- to- face interviews because it elicited accurate data when used together in the study.

3.6 VALIDITY AND RELIABILITY OF THE RESEARCH INSTRUMENTS

According to Neuman (2000) validity is concerned with what a survey tool measures and its appropriateness. There is a general agreement among researchers that however careful one is in construction of instruments for data collection, they cannot be perfect, hence the need to test before administering them to the study respondents Babbie (2005) and Cohen et al. (2004). This is achieved by respondents giving feedback on clarity of questions, content, language, relevance of items to the intended group, redundant questions, layout and length.

A pilot study was undertaken prior to the main study to pre-test the data collection instruments and to ascertain their clarity, reliability and validity. The pilot study was conducted at Moi University Main Campus and it involved one management staff, two general administration staff, two records/accounts staff and two secretarial staff. The pre-test of the instruments was done between 13 October and 27 October, 2008. The interviews were conducted to test the interview schedule's effectiveness and appropriateness and also to help identify any weaknesses.

Suggestions from the respondents were very important in shaping the final instruments that were used. For example, some respondents made comments to the effect that some questions were too long and some issues such as appraisal and disposition of e-records

were complex and needed an explanation in order to respond to the questions. This information enabled the researcher to clarify some issues to the respondents during data collection. The researcher took into account all the views of the respondents who participated in the pre-testing of the research instruments and incorporated all the corrections put forth and then made the final version of the research instruments.

The corrections enabled the study to address the study objectives and research questions comprehensively. All respondents were thanked after every interview. Validity was further confirmed by requesting the supervisors to assess the suitability of the research instruments for the study. Their corrections and suggestions were incorporated into the research instruments.

According to Manion and Morrison (2000) reliability refers to the instrument's ability to give the same results all the time it is applied. To improve on this, the researcher conducted most of the interviews in the morning so as to reduce the effect of respondents fatigue on reliability of instruments. The interview schedules were made brief and simple as much as possible to enhance a uniform understanding among the respondents. This improved on the reliability of the instruments. In addition, the study ensured that the population sample covered all the campuses under investigation.

3.7 PROCEDURE FOR DATA COLLECTION

The actual data collection was carried out in Kenya at Moi University between 7 January and 14 March, 2009. Two instruments were used to collect data. They included interview schedules and an observation checklist. To facilitate the process, the researcher obtained an introductory letter from the Head Department of Library, Records Management and Information Studies at Moi University to enable the research to be carried out. The researcher then visited the various campuses, schools, departments and administrative offices identified for the study and explained the purpose of the study and sought their assistance, especially in relation to booking appointments for interviews. Interviews were conducted on the appointed dates and before each interview, the researcher reminded the interviewees the purpose of the study.

The interviews were guided by the general themes that were used in the interview schedules. However, this did not limit respondents from discussing any other relevant issues. Upon completion of data collection, a summary was prepared for all questions contained in the interview schedules including observations made from the observation checklist.

3.8 PROBLEMS ENCOUNTERED DURING DATA COLLECTION

During data collection the researcher experienced challenges which included: un-availability of some respondents especially management staff due to their busy schedules occasioned by many meetings they had to attend and telephone interruptions during the interviews; some respondents kept re-scheduling the interviews while others were hesitant in granting interviews and some respondents lacked adequate knowledge and

appreciation of electronic records management to clearly understand the questions posed by the researcher.

Records staff were not able to give much information pertaining to e-records management because the university registries were not facilitated with computers. In view of this, applying the observation checklist did not elicit much information from records staff. Most of the General Administration, Accounts and Secretarial staff were busy persons and the presence of the researcher on some occasions interfered with their work. Frequent interruptions from clients and frequent telephone calls interfered with the interviews. On some occasions the researcher had to re-schedule the interviews or leave the interview schedule with the respondents. This enabled the respondents to familiarize themselves with the questions and interviews were then conducted on subsequent visits. This made the interviews shorter and the respondents were more responsive.

Despite the challenges encountered during the data collection, the study was able to interview 52 respondents out of the targeted 60 respondents. Sufficient data was obtained which adequately addressed the research objectives and provided the basis for analyzing and interpreting of data collected.

3.9 DATA PRESENTATION ANALYSIS AND INTERPRETATION

Data analysis is the process of bringing order, structure and meaning to the mass of information collected (Mugenda and Mugenda, 1999). According to Burns (2000), the purpose of data analysis and interpretation is to find meaning in the data which is done through systematic arranging and presenting the information. Obure (2002) points out the

processes that a researcher has to go through in analyzing data to include: sorting data, editing, coding, cleaning, and processing and interpretation.

After collection of data, the researcher organized, categorized and relationship between the categories were established. The data collected was both qualitative and quantitative. An attempt was made to familiarize with issues arising from the data. Themes and categories were generated describing the emerging issues. Some questions were not coded and data emerging from them was presented in the form of single quotations.

Data was checked for accuracy and then content analyzed and presented in the form of frequency distribution tables generated using Microsoft Excel Windows XP. Tables were used because they conserved space, reduced description to a minimum and at the same time facilitated clear cross comparison of data at a glance. Pie-charts were used to analyze some of the structured questions that formed part of the study to vary data presentation.

Analysis took cognizant of the objectives and research questions of the study and thus, involved evaluating the usefulness of the information that was used in answering research questions. After a careful and critical examination of the results obtained during analysis, data was interpreted. This involved stating what the results revealed, their meaning and significance in relation to the problem under study. An attempt was made to avoid subjectivity and bias in interpretation of data.

3.10 ETHICAL CONSIDERATIONS

The main aim of research is to search for new knowledge. While researchers aim at producing new knowledge, they must ensure that their participants are protected from harm that might arise as a result of the researchers' activities. It is for this reason that associations whose members conduct research with human beings come up with codes of ethics to guide their members. The researcher adhered to research ethics when conducting research and abided by **Moi University Research Draft Policy, 2004**. The policy states that a researcher needed to adhere to ethical guidelines and avoid acts of misconduct in research. This include: data falsification, falsification and plagiarism, among others. The study therefore, adhered to ethical guidelines as described in Chapter One section 1.13.

An introductory letter from the Head of Department Library, Records Management and Information Studies was obtained, the aim and purpose of the study was explained to the respondents in order to obtain their consent to grant an interview. The researcher assured the respondents that information collected was to be treated with utmost confidentiality and was to be used for research work only. Where consent was not given, the researcher respected the wishes of the respondents.

Pre-testing of the research instruments was done to ensure that research questions were specific to the aim and objectives of the study. The study avoided any form of plagiarism and all sources cited were acknowledged. Data that was collected was presented and analyzed as accurately as was humanly possible. Individuals including the supervisors of the study who contributed to the success of the study were acknowledged.

Upon completion of the research, the researcher will take advantage of several avenues available to disseminate the findings of the research so that interested parties can benefit from the findings of the research. The researcher will use avenues such as: presenting the findings at conferences, workshops and seminars.

3.11 SUMMARY

Chapter Three has discussed the research design. The issues presented include: the study population and justification; data collection instruments and problems encountered during data collection. Others include: procedure for data collection; data presentation, analysis and interpretation and ethical considerations. This chapter forms the basis for data presentation, analysis and interpretation.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

This chapter presents, analyses and interprets data collected from 52 respondents from the study population. In order to simplify the understanding of factors investigated, and to ensure ease of matching patterns, associations, concepts, and explanations in the data, each set of data is presented, analyzed and interpreted separately under each section or sub-section in line with the study aim and objectives. The chapter also presents data that was derived from the use of the observation checklist.

Statistical data has been presented in the form of tables and pie- charts. Content analysis was used to organize data collected through interviews. This was achieved by examining terms and phrases used by respondents and grouping them into themes. Data from interviews and observation addressing a particular research theme, in relation to the study objectives are presented together to enable collating of research findings.

To ensure respondents anonymity, data presented was not attributed directly to any respondent but rather a general picture of respondents' views was presented as they related to the management of electronic records at Moi University. The observation checklist was applied in all the schools, departments and administrative offices.

The following sequence was used in data presentation, analysis and interpretation:

- Characteristics of respondents and response rate;
- Business process analysis and records generated and received electronically;
- Strategies used for managing electronic records;
- Professional knowledge and skills of staff responsible for managing electronic records;
- Adequacy of the ICT infrastructure and resources to cater for the management of electronic records;
- Challenges faced by staff in the management of electronic records and;
- Recommendations on ways of improving and sustaining the management of electronic records at Moi University.

4.2 CHARACTERISTICS OF RESPONDENTS AND RESPONSE RATE

The researcher interviewed 52 respondents out of the targeted 60 respondents. Eight (13.3%) respondents were not able to grant interviews due to their busy schedules. The response rate was therefore 86.7%. Respondents were asked questions relating to the name of the campus, school/ department/administrative office and their gender. This information is captured in Tables 4.1, 4.2, 4.3 and Figure 4.1.

TABLE 4.1: DISTRIBUTION OF RESPONDENTS BY CAMPUSES (N=52)

Campus	Management Staff	ICT Staff	General Administration Staff	Records/ Accounts Staff	Secretarial Staff	No. of Respondents	Percentage
Main Campus	4	2	5	6	8	25	40.1
Chepkoilel Campus	-	2	3	4	7	16	30.8
School of Law	-	1	1	1	1	4	7.7
Eldoret West Campus	-	-	1	2	1	4	7.7
Schools of Medicine &Public Health	-	1	1	1	1	3	5.8
Total	**4**	**6**	**11**	**13**	**18**	**52**	**100**

Table 4.1 presents the distribution of respondents by campus. Moi University Main Campus totaled 25 (40.1%), Chepkoilel Campus 16 (30.8%), School of Law had four (7.7%), Eldoret West Campus had four (7.7%), and Schools of Medicine and Public Health had three (5.8%). Management staff were drawn from Moi University Main Campus because that is the center of administration. Moi University Main Campus has seven schools, Chepkoilel Campus has three schools while Town Campus has four schools which include the School of Medicine and School of Public health, School of Law and School of Business Management. The campuses were therefore, well represented in the study.

TABLE 4.2: DISTRIBUTION OF RESPONDENTS BY SCHOOLS/ DEPARTMENTS/ADMINISTRATIVE OFFICES (N=52)

Schools/ Departments/ Administrative Offices	Mgt. Staff	ICT Staff	General Administration Staff	Records/ Accounts Staff	Secretarial Staff	No. of Respondents
VC's Office	-	-	-	-	1	1
Deputy VC's Office	-	-	-	-	1	1
Principal's Office-Chepkoilel Campus					1	1
Chief Academic Officer's Office	-	-	-		1	1
Chief Admin. Officer's Office	2	-	-	-	-	2
ICT Dept.	-	2	-	-	-	2
Public Health	-	-	-	-	1	1
Law	-	1	1	1	1	3
Medicine	-	1	-	-	1	2
Business & Economics	-	-	1	-	1	2
Environmental Studies	-	-	-	-	1	1
Education	-	-	2	-	2	4
Information Sciences	-	-	1	-	1	2
Science	-	-	1	-	-	1
Natural Resources	-	-	1	-	1	1
Engineering	-	-	-	1	1	2
MU Library Services	1	1	-	-	1	3
Human Resource	-	-	1	-	1	2
MU Registry	-	-	1	2	-	3
MU Catering Department	-	-	-	-	1	1
MU Pension Office	-		-	-	1	1
Finance Department	1	-	-	9	-	10
Examinations Department	-	-	1	-	-	1
Admissions Office	-	-	1	-	-	1
Total	**4**	**6**	**11**	**13**	**18**	**52**

Table 4.2 shows the distribution of respondents by schools, departments and administrative offices. Ten schools, seven departments and six administrative offices were investigated. This therefore, shows that schools, departments and administrative offices were well represented in the study. The distribution of respondents by designation is presented in Table 4.3.

TABLE 4.3: DISTRIBUTION OF RESPONDENTS BY DESIGNATION (N=52)

Category of Staff	Number of Respondents
Secretarial Staff	18
Records/Accounts Staff	13
General Administration Staff	11
ICT Staff	6
Management Staff	4
Total	**52**

Table 4.3 shows that the distribution of respondents by designation comprised 18 Secretarial staff, 13 Records/Accounts staff, 11 General Administration, six ICT staff and four Management staff. Secretarial, Records/Accounts and General Administration staff were charged with the responsibility of managing records both (paper-based and in electronic formats) generated and received in the day to day business activities of the university. ICT staff were charged with the responsibility of maintaining the ICT

infrastructure and resources. Management staff dealt with issues relating to formulation of policies (including ICT programmes). This therefore shows that the categories of staff included in the study were able to provide data relating to the management of electronic records at Moi University.

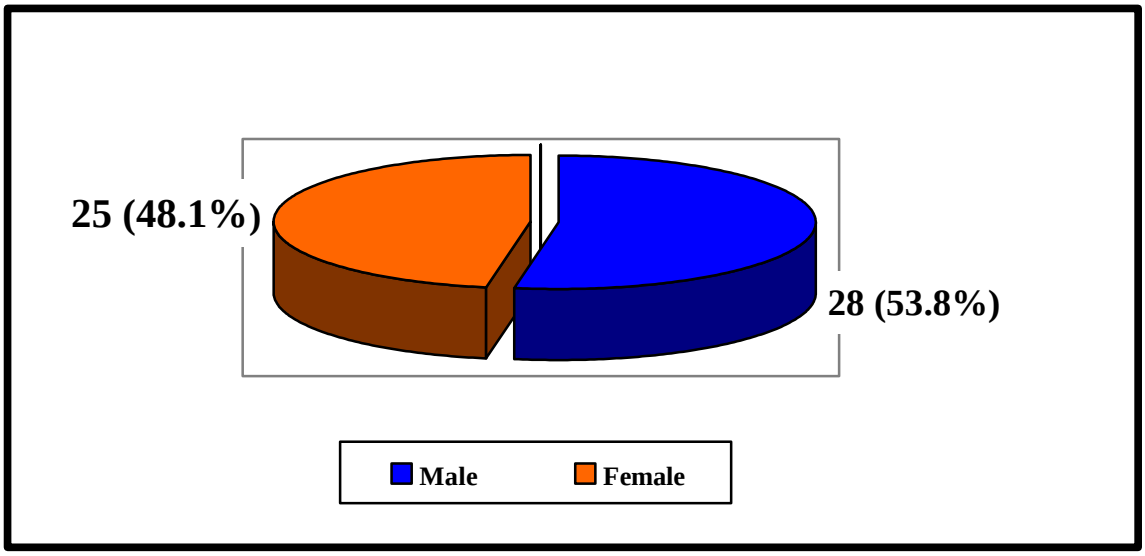


FIGURE 4.1: RESPONDENTS DISTRIBUTION BY GENDER (N=52)

Figure 4.1 presents the distribution of respondents by gender. Out of 52 respondents, 28 (48.1%) were male while 25 (53.8%) were female. The gender balance in the study was therefore ensured.

4.3 BUSINESS PROCESS ANALYSIS AND RECORDS GENERATED AND RECEIVED ELECTRONICALLY

The first objective of the study was to conduct a business process analysis to establish the records that were generated and received electronically at Moi University. This information was meant to help the researcher gain insight into the activities the university

was involved in and the records that were generated and received electronically. The following data was collected from the respondents.

4.3.1 DATA FROM MANAGEMENT STAFF

When asked to state broadly the business activities of Moi University, the four management staff who were interviewed stated that the university's business activities in general related to education and research, knowledge generation and dissemination, learning and teaching including policy formulation, planning, development and implementation (including ICT programmes). The study noted that management staff were not involved in the day to day management of electronic records. However, together with deans' of schools and heads of departments they had a final say on the design and implementation of all important services, programmes and projects (including those related to ICTs at Moi University).

4.3.2 DATA FROM GENERAL ADMINISTRATION STAFF

Eleven General Administration staff were asked to state the business activities they conducted in their day-to-day work. The study found that they were mainly involved with academic matters in various schools, departments and administrative offices which included processing students' results, registration and preparing admission letters for new students.

4.3.3 DATA FROM RECORDS AND ACCOUNTS STAFF

In general, Records/Accounts staff were responsible for the systematic and continuous management of all university records between the university and the university community including stakeholders regardless of the records medium. According to one respondent, Moi University had automated 90% of its financial transactions and therefore, accounts staff were charged with the responsibility of managing electronic records emanating from within and from stakeholders such as commercial banks.

Other records staff were charged with the responsibility of managing administrative records, personnel records and medical records. They include: registry staff and medical records staff. The study observed that Moi University registries had not been facilitated with computers. However; the administrative officer in-charge of the registry at Moi University Main Campus had been facilitated with a standalone computer. The registry staff reported that the department received vast quantities of printed copies of electronic records such as, electronic mail (e-mail) and fax messages.

4.3.4 DATA FROM SECRETARIAL STAFF

Secretarial staff at the various schools, academic and administrative offices used computers to create, receive and store records of official communication both from within and outside the university such as electronic mail and fax messages as part of their day to day business activities.

Management, General Administration, Records/Accounts and Secretarial staff were further asked to indicate the records they generated and received electronically as they transacted official business at the university. ICT staff were not required to respond to this question because they mainly dealt with the provision and maintenance of the ICT infrastructure and resources. Table 4.4 shows the cited records.

TABLE 4.4: RECORDS GENERATED AND RECEIVED ELECTRONICALLY (N=46)

Category of Staff	No of Respondents	Records Generated Electronically	Records Received Electronically
Secretarial Staff	18	§ E-mail; § Students academic transcripts; § Memos and; § Minutes of meetings	§ Official e-mail and; § Communication from stakeholders.
Records and Accounts Staff	13	§ Financial records; § Student's invoices; § Pay slips; § Income tax return forms and; § Library records	§ Correspondence from students; § Official E-mail and; § Fax messages.
General Administration Staff	11	§ Examinations results; § Class lists; § Student's related correspondence; § Memos; § Fee statements; § Reports and; § Certificates	§ E-mail or enquiry on student's performances especially from universities abroad and firms wishing to employ former or current students
Management Staff	4	§ Students fee records; § Records of deans meetings; § Records of senate meetings; § Records of council meetings and; § Changes of curriculum	§ E-mail correspondence from within and outside the University
Total	**46**	-	-

An analysis of Table 4.4 indicates that Moi University generates vast quantities of records in electronic formats. The study noted that there is an increase of paper records that emanates from the printing of e-records.

The business process analysis at Moi University established that records were generated and received electronically. It was apparent that computerization at Moi University had led to the university transacting business electronically. The study noted that the university was rapidly working towards a situation in which electronic records will become the most complete evidence of its business process and paper records will function as convenience copies. The study noted that the university operated a hybrid system, that is, an integration of paper and electronic records. Records regardless of format are important to support the business activities of any organization including universities.

In a study conducted by Ngulube (2004), it was noted that organizations keep records of their activities to fulfill the demands of corporate accountability and business needs. Similarly, Mutula and Wamukoya (2007) observed that records are valuable assets that need to be managed and protected. The authors further noted that electronic records generated and received electronically provided essential evidence of organizational activities, transactions and decisions in addition, to supporting business functions and assessment of organizational performance.

The research findings concur with those of Ngulube (2004) and Mutula and Wamukoya (2007). The study established that electronic records contributed to the functions of the university and this was corroborated by all the respondents in Table 4.4 who enumerated the records they generated and received electronically in their day to day business activities at Moi University.

4.3.5 IMPORTANCE OF ELECTRONIC RECORDS TO THE FUNCTIONS OF MOI UNIVERSITY

The study sought the views of the respondents on the importance of electronic records to the functions of the university. The respondents comprised of Management, ICT, General Administration, Records/Accounts and Secretarial staff. The respondents' remarks are captured in Table 4.5.

TABLE 4.5: RESPONDENTS REMARKS ON THE IMPORTANCE OF ELECTRONIC RECORDS TO THE FUNCTIONS OF MOI UNIVERSITY (N=52)

Category of Staff	No. of Respondents	Remarks from Respondents
Secretarial Staff	18	§ "Used for referencing and record keeping"; § "Exchanging information with stakeholder"; § "For effectiveness and efficiency of provision of services"; § "Safety of documents"; § "Sharing of information via electronic mail"; § "Better quality work compared to the manual system" and; § "Enhances security of information through the use of passwords"
Records and Accounts Staff	13	§ "They are important to the day to day running of the university"; § "Facilitates faster access to information"; § "Enables the storage of vast quantities of data"; § "Enables faster and accurate financial management" and; § "Facilitates epidemiological survey"
General Administration Staff	11	§ "Electronic records are accurate and timely" ; § "Easy to access information"; § "Enhances faster service delivery"; § "They occupy less space compared to paper records" § "Easy to prepare, store, retrieve and disseminate to intended users"; § "Reduces paperwork" and; § "Convenient especially in a case where networking is in use"
ICT Staff	6	§ "The enable high speed and better organization of records"; § "Ease of access"; § "Electronic records have reduced paperwork hence, saving on costs"; § "Ease of retrieval"; § "Flow of information from source to destination is easily monitored for example, websites" and; § "Students and staff can access journals online"
Management Staff	4	§ "They enhance faster communication for example, writing memos"; § "They are flexible to use and store"; § "Easy to update and retrieve information"; § "Electronic records help in forecasting future performances"; § "E-records are used for research and teaching"; § "The facilitate the production of reports" and ; § "Electronic records are used for decision making"
Total	**52**	

From an analysis of the remarks made by the respondents in Table 4.5, the study established that electronic records were important to the functions of Moi University. The study observed that at the various schools, departments and administrative offices computers were used to generate and receive records in electronic formats. From the respondents remarks therefore, it is deducible that electronic records contribute to the functions of Moi University.

4.4 STRATEGIES USED FOR MANAGING ELECTRONIC RECORDS

The second objective of the study sought to determine and evaluate the strategies used for managing electronic records at Moi University. This question was directed at General Administration, Records/Accounts and Secretarial staff whose responsibility include: creation and receipt, use, maintenance and disposal of electronic records as part of their day to day business activity at the university. Management and ICT staff were not required to respond to the question because they were responsible for policy issues, provision and maintenance of the ICT infrastructure respectively.

The specific factors investigated were:

- Creation and receipt of electronic records;
- Access to electronic records;
- Security and integrity of electronic records;
- Storage of electronic records;
- Preservation of electronic records and;
- Appraisal and disposition of electronic records

4.4.1 CREATION AND RECEIPT OF ELECTRONIC RECORDS

Eleven General Administration, 13 Records/Accounts and 18 Secretarial staff were asked to indicate the strategies they used to create and receive official electronic records at the university. Their responses are captured in Table 4.6.

TABLE 4.6: STRATEGIES USED TO CREATE AND RECEIVE ELECTRONIC RECORDS AT MOI UNIVERSITY (N=42)

Strategy	No. citing strategy	Percentage
Create and make printed copies	39	92.9
Make printed copies after receipt	39	92.9
Create and save on computer files	29	69
Receive and save on the computer hard disk	16	38
Create and save on storage devices such as, flash disks and CDs	10	23.8
Receive and store on storage devices	8	19

***Multiple responses were possible**

Table 4.6 shows that 39 (92.9%) respondents out of 42 respondents made printed copies of the electronic records they created while 39 (92.9%) made printed copies of the official records they received. Twenty nine (69%) respondents saved records they generated electronically on computer files while 16 (38%) saved electronic records they received on the computer hard disks. Electronic records received at the university included official electronic mail (e-mails), fax messages and official communication from

stakeholders such as, commercial banks. Ten (23.8%) respondents stored information they generated on storage devices while eight (8%) stored electronic data received on storage devices. The study observed that the storage media used by the respondents included: flash disks, CDs and floppy diskettes.

It can be concluded from the research findings that majority of respondents made printed copies of records they created and received. This could be attributed to the fact that despite computerization of some of the business transactions, the university had not done away with the use of paper records as a means of transacting business. The study observed that Moi University operated a hybrid system that is, electronic records along with paper records.

The study established that not all respondents maintained soft copies of the electronic records they created and received. The study noted that once a printed copy was made of the e-record, the soft copy was no longer considered important to the business transaction that led to its creation or receipt. Only a small percentage of the respondents saved the electronic records they created or received on storage media for future reference.

The study further established that the strategies used to create and receive official electronic records at the university were individual measures that were undertaken by the respondents without necessarily involving the university. It was apparent therefore, that the creation and receipt of electronic records did not adhere to any records management principles or policy. This had in turn, resulted in instances where vital information got

lost through deletion before printed copies were made or the information saved on computer files or on storage devices.

The use of ICTs and especially computers at Moi University are here to stay and therefore cannot be ignored. What is required is the ability to take an informed view of the exact records being created and received and then consider realistic approaches to maintaining them. Lack of guidelines for creation and receipt of electronic records implies that staff may fail to create records which are complete as stipulated by ISO 15489-1 (2001) which states that:

> A record should correctly reflect the content, authenticity, reliability, integrity and usability.

The study noted that Moi University was operating in a highly risky e-environment characterized by the accumulation of paper records generated after creation and upon receipt of electronic records.

The study observed that staff tended to view the e-records they created and received as something personal and some even referred to them as *my records.* The study observed that some respondents kept printed copies of e-records in desk drawers and cabinets without necessarily filing the records. This was especially notable in the Finance Department in all the campuses that were investigated. Another observation made by the study was that paper records had continued to clog the office space thus, resulting in the in-accessibility of records whenever they were required for reference.

According to Kansas Electronic Records Management Guidelines (2002):

> Records are fundamental tools in the business of Government and their absence can lead to inefficiencies or failure in operational procedures

On the whole, these findings indicated that there was no control measures after the creation and receipt of electronic records. Registration, classification, indexing and tracking of electronic records was non-existent. The study noted that records created and received by the university were not accompanied by meta-data. Metadata is critical for documenting changes made to e-records such as, alteration or destruction of records. Metadata explains how electronic records were captured and verifies their authenticity in addition to making them admissible as evidence of business transactions.

Mutula and Wamukoya (2003) describe the need to re-examine how we determine what to capture as records in creation of electronic records. The authors pointed out that electronic records are not physical like paper-based records and need to be captured without compromising their content, context and structure. From a records management point of view the study noted that poor record keeping practices in the creation and receipt of electronic records had led to records getting lost and this can be attributed to lack of guidelines and standards that staff can adhere to. After the creation and receipt of electronic records, it is important to manage these records in a manner that will ensure continued access as long as the records are required.

4.4.2 ACCESS TO ELECTRONIC RECORDS

The study sought to establish how staff/users including stakeholders accessed information contained in electronic records. Forty two respondents comprising 11 General Administration, 13 Records/Accounts and 18 Secretarial staff were interviewed and their responses are presented in Tables 4.7 to 4.9.

1) DATA FROM GENERAL ADMINISTRATION STAFF

General Administration staff reported that they used various strategies to facilitate access to information contained in electronic records. Their responses are captured in Table 4.7.

TABLE 4.7: STRATEGIES USED TO ACCESS ELECTRONIC RECORDS (N=11)

Strategy	No. citing strategy	Percentage
Making information available on hard copies	11	100
Storage devices	9	81.8
Back Up	8	72.7
Electronically via e-mail	3	27.3
Saving on microfilm	0	0

***Multiple responses were possible**

Table 4.7 shows that all the 11 respondents made printed copies of the e-records and filed the copies manually in folders to facilitate access while nine (81.8%) respondents used storage devices such as flash disks and CDs as a strategy for ensuring that whenever this information was required it was made available. Eight (72.7%) respondents ensured that

they back up electronic records they created and received as a means of facilitating access to the information whenever it was required by users, students and stakeholders. Only three (27.3%) respondents distributed the information electronically to those who were authorized to access such as, action officers. None of the respondents used microfilming as a way of facilitating access to electronic information.

The study established that although Moi University was making a transition from traditional paper-based records to electronic records, making this information accessible to users and stakeholders was mainly done by maintaining printed copies of electronic records. Access to e-mail was minimal and this was attributed to lack of internet connectivity between the various schools, departments and administrative offices. However, the study observed that offices of the Vice Chancellor, Deputy Vice Chancellor, Chief Administrative Officer, Chief Academic Officer, Dean's offices including offices of senior administrative and heads of departments used e-mail as a means of communicating with clients within and outside the university.

Although some respondents used modern storage devices such as flash disks and CDs to store information, the study noted that some staff continued to hold information on floppy diskettes. The study further noted that the computers that were currently in use did not have floppy disk drives to read the information contained in the floppy diskettes. Some of the floppy diskettes contained vital information pertaining to the retrenchment of staff. If this information is not transferred to newer mediums such as flash disks and CDs the university could lose vital information. The study noted that this can have serious legal

implication for the university especially if the retrenched staff contested their retrenchment in a court of law.

2) DATA FROM RECORDS/ACCOUNTS STAFF

Responses from Records and Accounts staff did not differ significantly from those of General Administration staff. The respondents gave varied strategies as shown in Table 4.8.

TABLE 4.8: STRATEGIES USED TO ACCESS ELECTRONIC RECORDS (N=13)

Strategy	No. citing strategy	Percentage
Making hard copies	13	100
Use of storage devices	12	92.3
Storing Back Ups	10	76.9
Electronically via e-mail	1	7.6
Saving on microfilm	1	7.6

***Multiple responses were possible**

Table 4.8 shows that all the 13 respondents made information contained in electronic records available by distributing printed copies to authorized staff and stakeholders. Twelve (92.3%) respondents used storage devices such as flash disks and CDs to store electronic records as a means of ensuring that whenever the information was required, it was made available. Ten (76.9%) respondents backed up the information they created and received electronically as a means of facilitating access to information whenever it was

required by staff, users and stakeholders. Only one (7.6%) respondent reported to use electronic mail to facilitate access to electronic records. This was attributed to lack of internet connection between Moi University campuses, schools, departments and administrative offices. One (7.6%) respondent reported that electronic records were microfilmed after creation and receipt. This was the case with e-records created and received by the Finance Department.

The study noted that the Finance Department had fully computerized the payroll and had automated 90% of its financial management processes. This finding concurs with the study by Kimberly, Kutzner and Wamukoya (2001) who noted that in Sub-Saharan Africa financial functions were the first to be computerized. However the study noted that despite automating most of the financial process, to facilitate access to records, making of printed copies was the preferred method. This was attributed to lack of internet connection between the various campuses, schools, departments and administrative offices.

The study observed that not all staff and students had access to computers to facilitate access to electronic information. The problem was compounded further by lack of information technology (IT) skills by some staff, students and users to enable them access electronic records. The study noted that some staff did not have e-mail addresses and even those with e-mail addresses, rarely checked their mailboxes.

A total of 12 (92.3%) respondents used storage devices such as flash disks and CDs to store e-records. The study noted that some of the storage media were not well cared for. Staff kept the storage media in desk drawers along with their personal effects while others kept the devices in cabinets along with folders and register books. In order to ensure access to e-records the storage media should be kept under proper storage conditions. Poor environmental conditions can adversely affect the ability to read the information. The study further noted that whenever staff were transferred to other departments or sections, they did not surrender storage devices to the new incumbents. The staff instead moved with the information to their new offices while others reformatted the storage media to create room for more information.

Although 10 (76.9%) of the respondents backed up electronic records as a strategy to facilitate access to e-records, the study established that there were no clear guidelines or procedures followed in backing up this information. For example, to be done on a daily basis, weekly or monthly. The study therefore, was not able to establish how often this was done. Microfilming was used by the Finance Department to ensure that financial records were available and accessible whenever required. Electronic financial records deemed to be of long-term fiscal value to the university were also microfilmed. The study observed that the microfilms were stored at the basement of the administration building at Moi University Main Campus. The microfilms were exposed to environmental hazards such as water and fire. Microfilming technology has been evolving over the years and despite these changes the university had not moved the microfilms to newer platforms.

It was apparent that staff treated the information they stored in the storage media as personal information and not as official information. The study established that most staff bought the storage media using their own money which made them feel not obliged to handover the storage media whenever they were transferred to new offices. Moi University needs to put in place strategies for retaining e-records and associated meta-data to ensure that the records remain accessible throughout the entire period of their retention.

Barata, Cain and Routeledge (2001) pointed out that strategies for accessing e-records must be restricted to protect the integrity of the information therefore, personal information and privacy including confidentiality and security of property is essential. The university should identify who has the right of access to particular information and define the regime of restrictions. E-records must be useable throughout their lifetime. Access should be restricted to authorized individuals to protect the integrity of records and individuals who create and receive e-records should control access to the storage facilities such as backups and storage media in accordance with prescribed access rules.

3) DATA FROM SECRETARIAL STAFF

They study interviewed secretarial staff to ascertain how staff and users accessed the records they created and received electronically. Their responses are captured in Table 4.9.

TABLE 4.9: STRATEGIES USED TO ACCESS E- RECORDS (N=18)

Strategy	No. citing strategy	Percentage
Making hard copies	18	100
Use storage devices	12	66.7
Store in back-Ups	10	55.6
Electronically via e- mail	5	27.8
Saving on microfilm	0	0

***Multiple responses were possible**

Table 4.9 shows that secretarial staff used various strategies to facilitate access to electronic records. All the 18 respondents made printed copies to distribute to staff and users as a way of accessing electronic records while 12 (66.7%) respondents used storage media such as flash disks and CDs to facilitate access to electronic records. Ten (55.6%) respondents used backups. Five (27.8%) respondents used electronic mail to distribute electronic records to staff and users. None of the respondents reported the use of microfilming as a means of facilitating access to electronic records.

Moi University has made remarkable strides towards automation of its business processes. The study noted that some secretarial staff were facilitated with computers while others in addition to computers had ICT resources such as, printers and fax machines. The study however, noted that access to e-records was made available through printed copies. This method however, negates all the flexibility and positive features of the digital version especially in the case of dynamic multimedia formats which upon making printed copies lose most of their unique digital attributes.

The study noted that back up of information did not adhere to any guidelines and it was upon staff to back up the records whenever they opted to. Secretarial staff and especially those working in senior management offices used e-mail to communicate with clients and stakeholders such as, commercial banks. The study noted that although secretarial staff were facilitated with PC's, only few schools/departments/administrative offices were connected to the internet. The study however, observed that offices with internet connectivity continued to make printed copies of e-records to facilitate access to information. It was established that senior management staff had been facilitated with blackberry mobiles whereby they could access information electronically. However the study found that senior managers preferred being presented with printed copies of any official communication that needed their action.

The present study concurs with a study conducted by Venson (2007) where the author noted that even though organizations acknowledge the importance of e-mails as corporate records, there was very little effort to suggest that these records are valued like the paper records. The study noted that paper records were more valued compared to e-records. However, it was evident from five (27.8%) respondents who acknowledged the use of electronic mail that e-mail was beginning to make inroads as a means of official communication at Moi University. However the study found that like other electronic records such as word processed documents, strategies used to manage e-mails were un-coordinated and lacked uniformity.

The study further noted that respondents failed to constantly change their passwords while others did not care to switch off their PCs especially when they attended to errands outside their respective offices. This in turn resulted to un-authorized users accessing electronic information and even deleting and altering vital information.

4.4.3 SECURITY AND INTEGRITY OF ELECTRONIC RECORDS

The study sought to establish the strategies used to ensure security and integrity of electronic records was maintained. Forty two respondents out of 52 respondents comprising 11 General Administration, 13 Records/Accounts and 18 Secretarial staff were interviewed and their responses are captured in Table 4.10.

TABLE 4.10: STRATEGIES USED TO ENSURE THE SECURITY AND INTEGRITY OF ELECTRONIC RECORDS (N=42)

Strategy	No. citing strategy	Percentage
Use of passwords	42	100
Use of anti-virus	39	92.9
Use of Back Ups	20	47.6
Burglar proofing	12	28.6
Physical security	5	11.9
Entrusting responsibility and authority to people of integrity	5	11.9
Maintaining a list of persons who access the office	1	2.3
Encryption	1	2.3

***Multiple responses were possible**

Table 4.10 shows that 42 (100%) respondents used passwords to secure and ensure the security and integrity of e-records while thirty nine (92.9%) respondents used anti-virus. Twenty (47.6%) respondents backed up information they created and received electronically. Twelve (28.6%) respondents used burglar proofing to safeguard the hardware and software while five (11.9%) respondents used physical security (Moi University guards) to deter un-authorized persons from accessing the office area. Five (11.9%) respondents said that authority to create and receive official electronic records was entrusted to people of integrity. One (2.3%) respondent reported that they made recordings of persons who accessed the office while one (2.3%) respondent

acknowledged the use of encryption as a measure of ensuring security and integrity of electronic records.

The study noted that the use of passwords was the most common form of securing and ensuring the integrity of e-records and was used by all the 43 respondents. Passwords are the most common form of security used by many organizations and a user is normally required by the computer to enter his/her secret code before one can gain access to electronic information. The study noted that 20 (47.6%) respondents back up electronic records to the university server as an important fall back and as a security measure. In addition, electronic records/information was backed up in storage devices such as, CDs and flash disks. The study further noted that although entrusting responsibility and authority to people of integrity was one of the measures used to secure e-records, this was not a *must* for all staff charged with the responsibility of creating or receiving electronic records. This was done in offices that dealt with sensitize information such as the Examinations and the Finance Department.

It was established that anti-virus was used to curb viruses as a security measure. Wide ranges of antivirus software have been developed which can identify and remove or repulse known viruses. Some schools, departments and administrative offices maintained a register listing all persons who accessed the offices. This was a security measure undertaken to ensure that people did not enter office (s) as they wished and their mission to the respective offices was recorded. Besides, the register, only authorized staff were issued with keys to access the offices upon signing against their names in a register. The

study further noted that some offices had burglar proofing to deter un-authorized staff from accessing the offices. This measure ensured that only authorized staff were allowed access to the offices. The research findings revealed that some offices engaged the services of the university security personnel to ensure that e-records/information was secure from un-authorized persons.

Encryption was another security measure that was reported by one (2.3%) respondent. Purser (1993) defines encryption as the coding or scrambling of data before it is transmitted over a communication link. The opposite of encryption is decryption which is decoding of received data. The study noted that encryption was undertaken especially when transmitting confidential information such as staff emoluments to commercial banks. In this case, a terminal transmits plain text to an encryption device which encrypts or scrambles it, turning it into cipher text before sending it. At the end of the communication link, the cipher text is decrypted by a decryption device and sends onto a host computer clear text or message as originally transmitted. This checks against eavesdropping and guarantees security of the electronic information without fear of security breaches.

It was apparent that challenges of securing and maintaining integrity of e-records were many and complex as the study noted that securing electronic resources was no mean achievement as it was costly in terms of time and money. In fact, there was no 100% secure system and any attempt to secure e-records was for reduction rather than complete eradication. Mutonyi (2003) noted that complete and secure systems are untenable. The

author pointed out that no organization can claim that its electronic records or network is completely secure and even those organizations who claim full proof security find themselves targets of hackers and crackers trying to prove that they can penetrate any security perimeters. Moi University is no exception as the study established that electronic records are faced by many security threats both physical and logical. Physical threats were vulnerabilities militating against e-records because of physical weaknesses while logical threats were system oriented dangers which could cripple the operations of the information system.

The study observed that physical security in some offices was inadequate and anybody could easily access the e-records. For example, in some sections at the Finance Department there were no counters or burglar proofing to prevent visitors going beyond a certain point. The study noted that logical security was lacking because many staff rarely used their passwords and those who did, failed to regularly change their passwords. This had in turn, led to unlawful access to e-records thus, exposing the data to hacking. Staff complained of theft of storage devices such as flash disks and CDs and viruses were noted to be a security risk to electronic information. One respondent made the following comment:

> There are many instances where we have lost data due to attacks by viruses and the reconstruction of this data proved difficult because the paper records could not be retrieved among the masses of paper records that clog our office

The above comment exemplified the frustrations felt by some staff with regard to problems they experienced in their work caused by constant virus attacks. Moi University is well aware of the value of records including the threats and risks involved during the

electronic records life-cycle. Security and integrity of e-records is paramount and the university has to re-think the current strategies used by staff *vis avis* security of e-records in the cyberspace era so that they maximize the driving forces propelling them to exploit the potential benefits of computerization, while at the same time minimize the negative and or constraining forces acting as a barrier to frustrate exploitation.

As computers take on a larger and larger share of business transactions at Moi University, the need for data security and integrity has become evident. Hardly a memo, minute or invoice is written today without the assistance of computers. Ensuring the security and integrity of electronic records is therefore, crucial due to increased threats to the systems and the records they process, store and transmit.

4.4.4 STORAGE OF ELECTRONIC RECORDS

The study sought information on strategies used to store electronic records created and received in the transaction of business at Moi University. A total of 42 respondents out of 52 respondents comprising 11 General Administration, 13 Records/Accounts and 18 Secretarial staff were interviewed. Their responses are captured in Table 4.11.

TABLE 4.11: STRATEGIES USED TO STORE ELECTRONIC RECORDS (N=42)

Strategy	No. citing strategy	Percentage
Print and file a hardcopy	42	100
Store in storage devices	39	92.9
Store to personal folders on the computer	30	71.4
Transfer to Back Ups	20	47.6
Use microfilm	1	2.3

***Multiple responses were possible**

Table 4.11 shows that all 42 respondents printed hardcopies of electronic records they created and received as a way of ensuring that information was stored for future reference. Thirty nine (92.9%) respondents used storage devices while 30 (71.4%) respondents created personal folders on computers to store e-records. Twenty (47.6%) respondents back up information they created and received electronically while one (2.3%) respondent used microfilming as a means of storing e-records.

It is apparent that the respondents used a variety of strategies to store e-records. It was established that all 42 respondents made printed copies of e-records they created and received and filed them in normal filing systems. Making printed copies was therefore, a means of ensuring that e-records were made available whenever required. The study noted that 39 (92.9%) respondents used storage media to store e-records. This can be attributed to the fact that these devices were not always provided for and it depended on who was able to go out of his/her way to raise money to acquire the storage devices.

It was established that 30 (71.4%) respondents who used personal folders to store electronic records did so as a personal initiative and gave the folders names that were only known to them. The study further established that there were no controls in place to provide guidance on the management of computer files to prevent their misuse. It was established that without the personal assistance of records creators or the persons who received the e-record, it was impossible to access or retrieve the information.

It was established that even records creators were at times unable to retrieve the information they stored on computer folders because they had forgotten the name(s) and the location of the folder(s). It is apparent that records creators should have a list of names and location of these folders on the computer and maintain copies on a manual folder for reference in case they forgot the folder(s) name or on occasions when they were away for example, on annual leave. The study observed that some staff did not seem to be aware of the requirements for naming and storing computer files to aid retrieval.

Twenty (47.6%) respondents who backed up information created and received electronically did so as a personal initiative. The study noted that there was no guidance on when backing up was to be done and it depended on who was willing to do so. The one (2.3%) respondent who used microfilming reported that this was a strategy that was used by the Finance Department to store records that were of fiscal value to the university.

The requirements for storing records in a digital form are more complex than paper records (Barata, Cain and Routledge, 2001). The study noted that information in some of the storage media was un-readable because of scratches especially, on CDs due to the manner in which they were carelessly stored in desk drawers, cabinets and on window panes.

A study conducted by Wato (2004) noted that e-records were easy to delete, amend or update and both their survival and readability can easily be endangered in the electronic environment. The research findings revealed that staff experienced problems when storing electronic information due to in-adequate supply of storage devices. The research findings of the study concurs with Kemoni (2007) who noted that inadequate storage would compromise security of records leading to their loss, theft and alteration thus, making them unavailable when required by action officers. Although the author was referring to paper records the same was true for electronic records.

It was observed that all respondents retained printed copies as a means of storing electronic records. However, the study observed that this had in turn led to an increase in paper records and at times multiple copies were made of the same e-record. Another observation made by the study was that staff did not label storage media such as, floppy diskettes and CDs and hence, it was difficult to know what information was contained in the devices unless one scrolled through the contents which in turn took a lot of time especially, when the information was required urgently. The study noted that documents were not named or stored in ways that make version control and retrieval efficient or

even possible at times. This called into question the reliability of the information of 30 (71.4%) respondents who reported that they used personal folders to store e-records in their personal computers.

The study observed that some staff, continued to keep information on floppy diskettes without migrating the information to newer storage devices such as flash disks or CDs that can be read by the current systems. A study conducted by Wato (2004) noted that technology standards were evolving at an enormous rate and the type of storage media had to be kept up-to-date because new media and reading devices for older media would become un-available. Moi University was likely to lose information stored in floppy diskettes as the study observed that most computers at the university did not have diskette drives and hence, if measures are not taken to transfer the information to newer storage devices the information could be lost forever.

It is imperative therefore, that the university provides proper storage facilities for electronic records to avoid scratches and careless deletions. An appropriate storage condition ensures that records are protected, accessible and managed in a cost effective manner (ISO 15489-1, 2001).

4.4.5 PRESERVATION OF ELECTRONIC RECORDS

The study sought information from respondents comprising 11 General Administration, 13 Records/Accounts and 18 Secretarial staff on the strategies that were used to preserve electronic records. Their responses are captured in Table 4.12.

TABLE 4.12: STRATEGIES USED FOR PRESERVING ELECTRONIC RECORDS (N=42)

Strategy	No. citing strategy	Percentage
Making printed copies	42	100
Use storage devices	39	92.9
Use Microfilm	1	2.3

***Multiple responses were possible**

Table 4.12 shows that all the 42 respondents made printed copies as a strategy for preserving e-records. Thirty nine (92.9%) respondents used storage devices while one (2.3%) respondent reported to use microfilming as a means of preserving electronic records.

It was established that all the 42 respondents made printed copies that were filed manually as a means of preserving e-records. Making printed copies of e-records created and received was a means of ensuring that e-records of long-term value were preserved for future reference. The study noted that 39 (92.9%) respondents used storage media such as flash disks and CDs to preserve e-records. The study noted that some staff still

held information in floppy diskettes. The one respondent who used microfilming reported that this was a strategy that was used by the Finance Department to preserve financial records of long-term value.

Nowadays, vast amounts of information is created, stored and accessed electronically bringing with it enormous advantages. But digitally stored information brings preservation problems (Ngulube, 2003). It was established that most of the respondents used similar strategies for storing and preserving e-records. A study conducted by Ngulube (2003) noted that despite the fact that digital documents were becoming prevalent, many organizations had not addressed the issues of long-term preservation and use of digital information in a serious fashion. The present study concurs with Ngulube (2003) as the study noted that there were no efforts being made by Moi University to address preservation of paper and electronic records.

It was observed that paper records were kept in storage rooms which had poor storage conditions such as, dust and poor ventilation. The study observed that in some storage rooms paper records were kept on the floors thus exposing them to dust and water. In addition, the study observed that staff continued to store information on floppy diskettes which could not be read by the current hardware and software. Ngulube (2003) pointed out that newer versions of software and hardware render older versions obsolete. Staff keeping information in older storage devices should transfer the information to the newer media such as flash disks and CDs. The continued use of obsolete hardware will render the information inaccessible and un-usable in future.

4.4.6 APPRAISAL AND DISPOSITION OF ELECTRONIC RECORDS

The study sought information from respondents comprising 11 General Administration, 13 Records/Accounts and 18 Secretarial staff on whether electronic records were appraised and the strategies that were used to dispose of e-records. Their responses are captured in Table 4.13.

TABLE 4.13: STRATEGIES USED TO APPRAISE AND DISPOSE OF ELECTRONIC RECORDS
(N=42)

Category of Staff	Strategies	
	Appraisal	**Disposal**
General Administration Staff	§ No appraisal or disposal, e- records are printed and consigned to storage rooms; § Disposal by saving on storage devices; § No policy to guide appraisal	§ Delete when no longer required and; § Information not required is deleted from the computer to free space and memory
Records and Accounts Staff	§ No appraisal has been done so far	§ Financial records are destroyed after six years; § Disposal done by saving the information on storage devices; § Financial records of long-term value are microfilmed
Secretarial Staff	§ No appraisal done	§ Disposal by saving on storage devices such as, flash disks and CDs; § Shredding and burning up hardcopies; § By considering the most outdated and unnecessary records, then dispose of by deleting from the system or reformatting the computer; § Disposal done by sending the record to the re-cycle bin; § Delete at random; § Deleting from the computers including external backups and ; § Destroy after a decade

From an analysis of the responses in Table 4.13, It was established that all the 42 respondents did not appraise records and there were no guidelines for appraisal. The study noted that respondents were not conversant with the records management concepts of appraisal and disposition. This was attributed to the fact that majority of respondents did not have basic training in records management. The respondents pointed out that as records creators they needed to be equipped with records management skills if they were to be able to effect decisions regarding appraisal and disposition.

The respondents used various strategies to dispose of e-records. The study noted that the strategies used to dispose of e-records were ad hoc and did not adhere to any policy or standards. However, staff in the Finance Department reported that all records both paper and electronic formats were not disposed of and instead they were microfilmed and transferred to the basement of the administration building at Moi University Main Campus for safekeeping. The study established that the university did not have retention schedules. Records retention schedules help to determine how long records should be kept or how soon they should be disposed of (Ngulube and Tafor, 2006) and perhaps this explains why many offices used various strategies to dispose of e- records while others such as, the Finance Department microfilmed their records.

Without a controlled approach to disposal, records required as evidence may not be kept, and other records may be kept longer than they are needed. The current methods of disposal hindered the efficient retrieval of records when required because, in many instances, the records were found to have already been deleted. Moreover, the study

established that the university had in the past lost vital information through careless deletion by some staff because they were not able to determine e-records of long-term value.

A research project undertaken by the University of Indiana noted that staff charged with the responsibility of managing electronic records such as records professionals needed to make significant changes in the way they did business. In particular, the research project pointed out that there was need to develop strategies and techniques with clear-cut criteria for appraising and disposing of electronic records. The present study concurs with these findings in that unless Moi University puts in place a records management programme for paper and electronic records, it will not be able to adapt to the changing e-environment and consequently meet the challenges associated with e-records management. It will also lead to the university losing its ability to account for its business activities.

From observations made by the researcher, the respondents only deleted e-records from their desktops. Electronic records must be deleted irretrievably as delete instructions on the desktop are not sufficient to ensure that all links to the data incorporated into the system have been destroyed. Backup of data need to be reformatted or re-written.

Fifty two respondents comprising four Management, six ICT, eleven General Administration, 13 Records/Accounts and 18 Secretarial staff who were interviewed by

the study were asked whether the university had a policy to guide the management of electronic records.

The patterns that emerged from the data are presented in Figure 4.2.

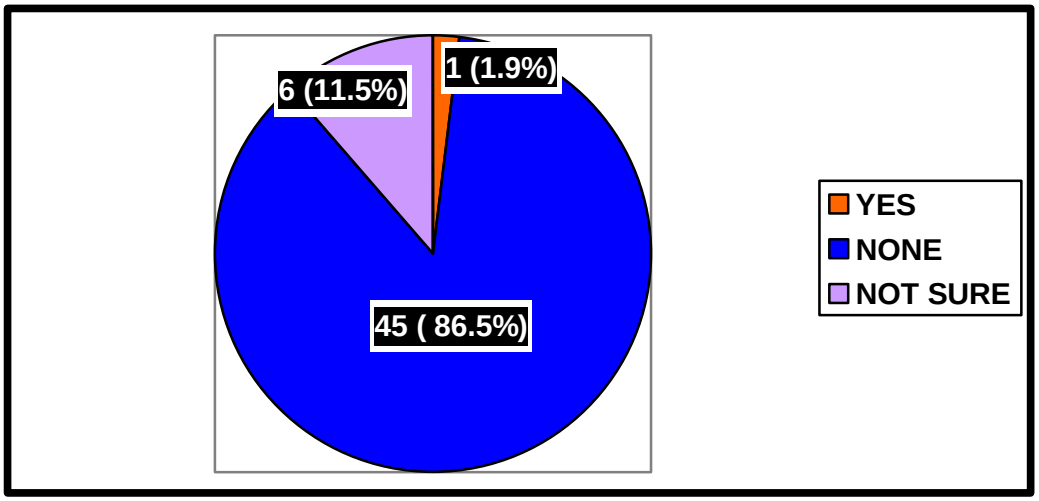


FIGURE 4.2: RESPONSES REGARDING THE EXISTENCE OF A POLICY FOR MANAGING ELECTRONIC RECORDS (N=52)

A total of 45 (86.5%) respondents acknowledged the non existence of a policy for managing electronic records. One (1.9%) respondent acknowledged the existence of a policy but did not know the major areas the policy covered while six (11.5%) respondents were not sure whether a policy for managing electronic records existed.

The study confirmed that a policy for managing e-records was non-existent. The study established that the ICT department had developed an **ICT Policy (Council Draft), 2010** which awaited the approval of the university Council. However, the study noted that this policy did not address electronic record keeping issues. The policy addresses issues such as, the ICT infrastructure policy, policy compliance and sustainability and procurement,

maintenance and disposal of ICT infrastructure and systems. To enhance the management of electronic records at Moi University the ICT policy should provide guidelines for the creation, receipt, use and maintenance, storage, security and integrity and disposal of electronic records. Policies are important in guiding the proper management of e-records from creation to disposition. Without a policy it becomes difficult to manage records in an electronic environment.

In a study conducted by Wato (2004), the author noted that most countries in Africa have developed National Information and ICT policies. However, the study pointed out that the ICT policies did not address records management issues. Wato (2004) further noted that this was dangerous because ICTs and especially computers led to the creation of more records and if proper care of these records was not addressed, there was the possibility of such records disappearing without trace. Kemoni (2007) noted that the absence of records management policies have negative implications for public service delivery as it would be difficult to have in place efficient records management systems that support decision-making.

The present study concurs with Wato (2004) and Kemoni (2007) studies as it was established that the ICT Policy (Council Draft), 2010 did not address electronic record keeping issues that can guide the management of electronic records. Furthermore, the study noted that the current strategies used for managing e-records at the university were un-coordinated and therefore, some records emanating from these systems could not be relied on to support decision making.

4.5 PROFESSIONAL KNOWLEDGE AND SKILLS OF STAFF RESPONSIBLE FOR MANAGING ELECTRONIC RECORDS AT MOI UNIVERSITY

The third objective of the study sought to establish the professional knowledge and skills of staff responsible for managing electronic records. Data to address this objective was obtained from General Administration, Records/Accounts and Secretarial staff.

4.5.1 DATA FROM GENERAL ADMINISTRATION STAFF

It was established that all the eleven General Administration staff interviewed lacked professional knowledge and skills in records management. The study established that the staff had education and training in different fields of specialization such as education, psychology, human resource and secretarial studies. These staff reported that knowledge and skills in records management was not considered a prerequisite by Moi University for one to manage records. The study noted that the respondents were computer literate and some were secretaries by profession but had undertaken degree courses in other fields of specialization. General Administration staff who had training in secretarial work were well versed with creation, receipt, use and disposition of electronic records but only from a secretarial point of view. The researcher noted that one General Administration staff from the School of Engineering was a technician by profession hence; he was well versed with hardware and software maintenance.

It was apparent that education and training alluded to the General Administration staff did not appear to refer to formal education and training that is specific to electronic records management but rather to general information technology training. The study noted that some of the staff did not have an understanding of electronic records

management to enable them to manage electronic records effectively. Moi University has the School of Information Sciences with lecturers who are professionals in Records and Archives Management. These lecturers can be requested to educate and train staff on how to manage electronic records. This can be done through seminars and workshops. The School of Information Sciences offers degree courses at undergraduate and master level in records and archives management and staff should be encouraged to pursue these courses to acquire knowledge and skill in records management including electronic records management.

4.5.2 DATA FROM RECORDS/ACCOUNTS STAFF

It was established that five (38.5%) respondents had knowledge and skills in electronic records management while nine (69.2%) did not. The five (38.5%) respondents who had knowledge and skills in managing electronic records reported that they got the knowledge and skills from colleges and universities that offered education in information sciences. The colleges include: Moi University, Kenya Polytechnic University, Inorero University and Sigalagala Technical Institute. Nine (69.2%) respondents had knowledge and skills in accounting including financial record keeping. The study established that Accounts staff adhered to financial instructions (FO26 and FO27) to manage financial records. FO26 and FO27 are instructions that guide financial record keeping in Government ministries and parastatals.

The study established that the Administration Officer in-charge of the registry did have knowledge and skills in records management. A study by Musembi (2004) underscored the need for registry staff to acquire relevant skills and knowledge. The author noted that

a registry supervisor who is not adequately knowledgeable in aspects of records management cannot provide the necessary leadership. This study concurs with Musembi (2004) views because Moi University registries have staff with education and training at degree and diploma level in information sciences with specialization in records and archives management and yet their knowledge and skills were not utilized. The study further noted that due to their designations it was not possible to advice their supervisor needless to say that the supervisor may not even grasp record keeping issues.

The study noted that staff who had knowledge and skills in electronic records management manned the university registries and were currently incapable of putting their knowledge and skills into use because the registries did not have computers. Moi University should make use of such personnel by computerizing records at the university registries in all its campuses. The researcher observed that some records received at the university registries were printed copies of official e-mail. In this regard, the staff could not determine whether the printed copies were true copies of the original record or whether any alteration had been made to the records. This scenario poses severe consequences to preservation of the corporate memory of the university, in addition to ensuring that records provide evidence to support transparency and accountability.

4.5.3 DATA FROM SECRETARIAL STAFF

The responses from secretarial staff were similar to those of the General Administration staff. The eighteen secretarial staff interviewed lacked professional knowledge and skills in records management. However, the study noted that they understood some issues

pertaining to electronic records such as: electronic records creation and receipt, use, storage and disposal but from a secretarial point of view. The secretarial staff who understood some of the issues had done so as part of their professional training as secretaries where computer courses are integrated into the curriculum.

A study by Johare (2006) pointed out the need for creators and users of electronic records to understand methods of managing records they created and/or used. The author noted that creators of records needed to be updated with knowledge and skills necessary to meet the challenges posed by electronic records. This study concurs with Johare (2006) as it established that the use of computers as a business and information management tool at the university had decentralized the management of records and especially electronic records. It was therefore important that the university equip records creators with skills and knowledge in electronic records management to enable them manage records from creation to disposition.

The university should not assume that records creators have the prerequisite knowledge and skills to manage electronic records they create and receive. Efforts should be made to train staff from all categories and levels in the management of records and in particular, electronic records. Electronic records like paper records are evidence of official transactions and unless they are well managed, the university will not be able to run its affairs smoothly. In addition, it will not be able to retain the integrity and authenticity of its records.

The study observed that electronic records were created and received at the various schools, departments and administrative offices in all the campuses that were investigated. However the study noted that the university registries did not have control over these records. The study observed that there was no uniformity in the creation, storage, preservation and security of electronic records at the university and this had in turn led to careless deletions and alteration of information. This can be attributed to the staff's lack of knowledge and skills in electronic records management.

The study sought information from management staff on where staff obtained professional knowledge and skills specifically, in records management. A list of choices was provided and their responses are captured in Table 4.14.

TABLE 4.14: MANAGEMENT STAFF'S VIEW REGARDING PROFESSIONAL KNOWLEDGE AND SKILLS OF STAFF RESPONSIBLE FOR MANAGING E-RECORDS (N=4)

Source	No.	Percentage
College/University	4	100%
On the Job	3	75%
Through Workshops/ Seminars	2	50%

***Multiple responses were possible**

Table 4.14 shows that four (100%) respondents reported that knowledge and skills were acquired through going to colleges and universities while three (75%) respondents reported that staff acquired knowledge and skills on the job. Two (50%) respondents

indicated that staff acquired knowledge and skills through attending workshops and seminars.

The study noted that management staff had the notion that once a staff was facilitated with a computer they were capable of creating, receiving, using and maintaining electronic records. Kemoni (2007) noted that effective management of records was dependent upon staff responsible for records receiving education and training in records management. This study concurs with the author's view as records and especially electronic records management is a specialized area of records management which one cannot grasp through orientation.

Education and training in e-records management led to staff acquiring the necessary knowledge and skills which is prerequisite for effective management of electronic records. In addition to being facilitated with computers, management should ensure that staff are sensitized on the importance of electronic records in addition to equipping them with knowledge and skills in electronic records management. Failure to do so, would lead to the university losing vital records through careless deletions and alterations of electronic records.

The study established that the university had on some occasions sponsored some staff to pursue degree and diploma courses in Information Sciences while others had been granted study leave with pay. The study further established that some staff had been awarded scholarships such as DAAD scholarships to purse postgraduate courses in the

field of information sciences. The study commends Moi University for this gesture. The study noted that the university in conjunction with lecturers from the School of Information Sciences had on some occasions organized seminars and workshops for registry staff to equip them with knowledge and skills in records and archives management.

The researcher observed that despite some records staffs' knowledge and skills in records and archives management, they had not been able to put their knowledge and skills into practice because the university had not facilitated them with computers and the university lacked a policy or guidelines for managing paper and electronic records.

The study sought information from ICT staff on whether they equipped staff and users with knowledge and skills to enable them use ICTs and resources available at the university. Six ICT staff were interviewed. They reported that in addition to providing and maintaining the ICT infrastructure, they provided the following services:

- Day to day , one on one training through end user support;
- Organized ICT group training for specific categories of staff and;
- Practical training on how to use computers.

In order to enable staff manage electronic records effectively, staff and users need to be equipped with knowledge and skills on issues that pertain to the management of electronic records. They need to be informed of their roles and responsibilities as regard the management of electronic records. The study noted that the training provided by the

ICT staff was too general and was not specific to the management of electronic records. This was attributed to the fact that ICT staff were not well versed with electronic records management issues. This was evident in the **Information and Communication Technology Policy (Council Draft), May, 2010** which the department had developed for it did not address electronic record keeping issues.

Ngulube (2001) provides strategies that should be utilized by records educators when designing education and training on records management. They include: development of guidelines and standards that suit indigenous environment and use of standards to enable learners to be portable as well as being able to compete in the digital economy. Katuu (2003) suggested that within the strategies, procedures and standards, education and training strategies should be given priority to ensure people responsible for record keeping infrastructure have prerequisite knowledge, skills and ability to manage these records**.**

This study concurs with the views expressed by Ngulube (2001) and Katuu (2003) as the study noted that the university was more concerned with improving the ICT infrastructure and not equipping the human resources with the prerequisite knowledge and skills to enable them manage records generated and received electronically. Moi University would realize many benefits if staff responsible for managing university records were trained in records management and especially e-records management. For example, the training would ensure that the vision, mission, objectives and core values of the university are

achieved because the records will be secure, accessible, complete, authentic, complete and available whenever required.

The study noted that the ICT staff needed to form partnerships with record keepers such as records staff and professional records and archives management staff when designing the systems so that record keeping functionalities can be incorporated in the system. A system complete with a record keeping system will ensure that only those records required by the university are created. It will maintain the record's metadata and audit trails to hold staff accountable for their actions.

4.6 ICT INFRASTRUCTURE AND RESOURCES TO CATER FOR THE MANAGEMENT OF ELECTRONIC RECORDS

The fourth objective of the study sought to determine what ICT infrastructure and resources that were available to cater for the management of e-records. Respondents' views are captured in Table 4.15.

TABLE 4.15: RESPONDENTS' VIEWS ON THE AVAILABLE ICT INFRASTRUCTURE AND RESOURCES TO CATER FOR THE MANAGEMENT OF E- RECORDS (N=52)

Adequacy of ICTs & Resources	No. of Respondents
Adequate	33(62.2%)
Barely Adequate	21(39.6%)
Quite Adequate	6(11.3%)
No Opinion	4(7.5%)

***Multiple responses were possible**

Table 4.15 indicates the respondents' views on the available ICTs and resources that were available at Moi University to cater for the management of electronic records. It was established that ICTs and resources were not adequate. Thirty three (62.2%) respondents reported that they were adequate while 21 (39.6%) reported that ICTs and resources were barely adequate to cater for the management of e-records. Six (11.3%) respondents reported that the ICTs and resources were quite adequate and four (7.5%) did not respond to the question.

It was established that the ICTs and resources that were available at Moi University were not equipped with e-records management functionalities. The study observed that the ICTs and resources were not uniformly distributed across the schools, departments and administrative offices. Some schools and administrative offices had adequate ICT infrastructure which include: computers, printers and internet connection. For example, senior management offices had adequate high speed computers, printers, storage devices including connection to the internet.

The study observed that Moi University registries were not facilitated with computers while in other offices staff had to share a single PC amongst several staff. Lack of adequate ICTs and resources include: lack of storage space for paper records that resulted in congestion and in-appropriate storage for semi-current and non-current records; lack of computers, internet connection, fax machines and printers. The in-adequacy was attributed to lack of adequate funds and the fact that most of the ICTs such as computers were donations from friends of the university and donor communities. Management of

electronic records depends on a well-developed infrastructure and the availability of such infrastructure is a good indication of any institution's progress towards achieving efficiency in the management of its records.

It was established that lack of ICTs and especially computers and storage devices resulted in staff deleting records haphazardly in order to create space for more information. Staff interviewed reported that they needed to transfer non-current records to Moi University Archives but there was no policy or guidelines on how to move the records. In addition, some staff were hesitant to move the records to Moi University Archives because they were not sure of the security of the records.

The study further sought information from the respondents on whether they were consulted before and after the installation of ICTs and resources. The ICT staff were not required to respond to this question because they dealt with the maintenance of the ICT infrastructure. A list of choices was provided and the respondents' views are indicated in Table 4.16.

TABLE 4.16: VIEWS FROM RESPONDENTS REGARDING THEIR INVOLVEMENT BEFORE AND AFTER THE INSTALLATION OF ICTs AND RESOURCES TO CATER FOR THE MANAGEMENT OF ELECTRONIC RECORDS (N=46)

Views of Respondents	No. of Respondents from Management Staff	No. of Respondents from General Administration Staff	No. of Respondents from Records/Accounts Staff	No. of Respondents from Secretarial Staff
Not Incorporated	0	11 (100%)	13 (100%)	18 (100%)
Incorporated	4	0	0	0
No Opinion	0	0	0	0
Total	**4 (100%)**	**11 (100%)**	**13 (100%)**	**18 (100%)**

Table 4.16 shows that 11 (100%) respondents from General Administration staff were not involved while four (100%) respondents from Management staff were involved. Thirteen (100%) respondents from Records and Accounts staff were not involved and 18 (100%) respondents from Secretarial staff were not involved.

Management staff were the policy makers at the university including approving ICT programmes hence, they were involved before and after the installation of the hardware and software. General Administration, Records/Accounts staff and Secretarial staff were not involved. Nevertheless, some respondents reported that they were inducted on how to use the new systems after installation. The study noted that ICT technicians did attend to complains such as computer breakdowns whenever called upon although at times they took long.

The study sought information from the respondents on how often the upgrading of the hardware and software was done. A list of choices was provided and the respondents' views are indicated in Table 4.17.

TABLE 4.17: RESPONDENTS VIEWS ON UPGRADING OF THE SYSTEMS (N=46)

Upgrading	No. citing	Percentage
Not often	25	54.3
On request	15	32.6
I don't know	10	21.7
Often	4	8.7

***Multiple responses were possible**

Table 4.17 shows that twenty five (54.3%) respondents reported that upgrading of the systems was not oftenly done while 15 (32.6%) respondents reported that upgrading was done upon making a request to the ICT department. Ten (21.7%) respondents did not know whether upgrading was done. Four (8.7%) respondents reported that upgrading was oftenly done.

It was established that management staff were facilitated with the latest hardware and software. The study established that whenever new hardware and software were acquired either through purchase or through donations the ICT department ensured that senior management staff offices got new computers. The study further established that offices in

various campuses, schools and departments had computers of different technologies. Others had the latest technology such as, offices of senior management staff and the School of Law while others used old computers that were slow. The study therefore, concurs with the 25 (53.2%) respondents who reported that upgrading was not oftenly done.

The study noted that the procedure for upgrading the systems entailed making a request in writing to the ICT department and at times it took several weeks or even months. Ten (21.3%) respondents who reported to not knowing whether upgrading was done were staff who detested having to learn how to operate new hardware and software. They therefore never requested for their hardware and software to be upgraded.

It was apparent that the upgrading of the systems was not constantly done and this led to poor service delivery in some departments such as the Examinations Department where the computers were slow. As a result students had to wait for long hours before they received their examinations transcripts. The study noted that some staff embraced the new hardware and software immediately it was installed with some staff failing to migrate data from the old computers onto the new ones and this led to loss of data.

Six ICT staff who were interviewed reported that the department undertook upgrading of the systems depending on the availability of hardware and software. They attributed the delay in upgrading the systems to lack of enough technical staff and lack of adequate funds. The study noted that the ICT department had attached technical staff to some

schools in the various campuses however, the study observed that there was need to have technical staff in all schools, departments and administrative offices so that they can attend to technical problems promptly.

The research findings revealed that there was no specific time frame for upgrading the systems. With technological changes, it is important that Moi University sets aside a budget that will cater for the upgrading of the hardware and software. Individuals charged with the responsibility of managing e-records such as general administration, records/accounts and secretarial staff and ICT staff who are charged with the responsibility of maintaining the ICT infrastructure should recognize that the world of record keeping and information systems was constantly changing due to technological advances. These changes require that hardware and software be upgraded in order to preserve Moi University records of continuing value.

The study sought information from the respondents on whether computers had a record keeping system. The respondents responses are captured in Figure 4.3.

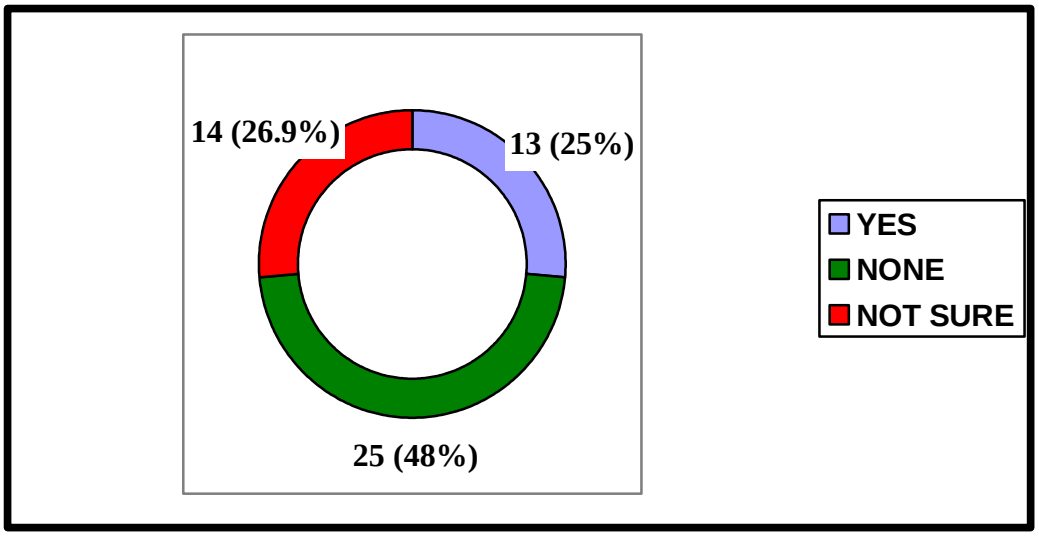


FIGURE 4.3: RESPONDENTS RESPONSES ON WHETHER COMPUTERS HAD A RECORD KEEPING SYSTEM (N=52)

Figure 4.3 shows that 25 (48%) respondents reported the computers did not have a record keeping system, 13 (25%) respondents reported that the computers had a record keeping system while 14 (26.9%) respondents were not sure.

When the 13 (25%) respondents who acknowledged to the existence of a record keeping system were prodded further to furnish the name of the record keeping system, interestingly, they all responded by giving different names. The names of the record keeping system included:

- Mwogisoft;
- Alumni Database;
- HURIS (a database for staff records);
- Mails server for electronic mail;
- Peachtree (a financial software);

- Management Financial Information;
- Modular Integrated Record keeping System;
- Index card;
- Diskettes;
- Envelopes;
- Microsoft Works;
- Drive A;
- Drive S and;
- Desktop.

An analysis of the names given to the record keeping system, however, revealed that the respondents did not quite understand what a record keeping system was. The study established that the computers did not have a record keeping system for managing electronic records.

4.7 CHALLENGES FACED BY STAFF IN THE MANAGEMENT OF ELECTRONIC RECORDS

The fifth objective of the study sought to identify the challenges staff faced in the management of electronic records. Data was collected from 48 respondents comprising of six ICT staff, eleven General administration staff, thirteen Records/Accounts staff and 18 Secretarial staff.

4.7.1 DATA FROM GENERAL ADMINISTRATION STAFF

Eleven General Administration staff were interviewed by the study and they were asked to cite the challenges they faced in the management of electronic records from a list of choices provided. Their multiple responses are captured in Table 4.18.

TABLE 4.18: CHALLENGES FACED BY GENERAL ADMINISTRATION STAFF IN THE MANAGEMENT OF ELECTRONIC RECORDS (N=11)

Challenge	No. indicating challenge	Percentage
Lack of knowledge & skills in electronic records management	11	100%
Security	11	100%
Preservation of electronic records	11	100%
Lack of an electronic records management policy	11	100%
Hardware and Software obsolescence	3	27.3%
Lack of computer skills	-	-

***Multiple responses were possible**

Table 4.18 shows that lack of knowledge and skills in electronic records management, security, preservation of electronic records and lack of an electronic records management policy were cited by respondents as the challenges they faced in managing electronic records with a score of 11 (100%). Three (27.3%) cited hardware and software obsolescence. None of the respondents reported lack of computer skills as a challenge in the management of electronic records.

The study established that all the respondents 11 (100%) faced challenges in managing electronic records due to lack of knowledge and skills in electronic records management. The study noted that all the respondents were trained in different fields of specialization such as Education, Human Resources Management and Secretarial Studies. Effective management of records and especially electronic records is dependent upon the general administration staff responsible for records acquiring knowledge and skills in electronic records management.

Similarly, security of information contained in electronic records was a challenge especially on the issue of access. The study noted that some staff handled official storage devices as their personal possessions and even carried the devices to their homes. This led to inconveniencing business transactions especially when the devices were misplaced. The study observed that some staff allowed their colleagues to use their passwords while others failed to change their passwords often as required thus, making their password codes familiar to their colleagues. For example, some staff reported that sharing of passwords had led to instances where staff breached security of electronic records and leaked vital information. The study further noted that this had caused embarrassment to the departments. The university should ensure that staff handling sensitive information were vetted or even took an oath to maintain secrecy.

The study established that preservation was another challenge faced by staff in managing electronic records. The study noted that the university lacked a preservation policy or

guidelines on how electronic records of long-term value were to be preserved in order to facilitate access to information over time. In a study by Ngulube (2003), it was noted:

> Preserving electronic records remained a significant challenge. The author further noted that the preservation landscape changed with electronic resources increasingly becoming a significant part of the society's cultural heritage

The study concurs with Ngulube (2003) because Moi University had embraced the use of computers without paying much attention to the records accessibility in the future. The study noted that with the growth of networking and development towards paperless transactions, there was a major concern for long-term preservation of electronic records and especially, in ensuring that these records were accessible over time.

The study established that the university did not have a policy for managing electronic records. Three (27.3%) of respondents who reported hardware and software obsolescence as a challenge in the management of electronic records reported that computers were old and slow. The study noted that although General Administration staff lacked knowledge and skills in records management, they were computer literate and hence, they were able to create and receive information electronically.

When the observation technique was used, the study noted that some computers were slow and this affected service delivery in some schools and departments where clients had to wait for long hours. The study observed that staff continued to keep vital information on floppy diskettes which could not be read by the current systems. This, they attributed to the university's inability to acquire enough storage devices such as flash disks and CDs.

A study conducted by Wamukoya and Mutula (2005) identified lack of skills and competencies as one of the problems and challenges that archival institutions faced in the ESARBICA region with regard to capacity-building requirements for electronic records management. The present study concurs with these findings. It was established that all the 11 General Administration staff interviewed lacked knowledge and skills in electronic records management (See Table 4.18).

4.7.2 DATA FROM RECORDS/ACCOUNTS STAFF

The study sought to identify the challenges Records/Accounts staff faced in the management of electronic records. Their responses are captured in Table 4.19.

TABLE 4.19: CHALLENGES FACED BY RECORDS/ACCOUNTS STAFF IN MANAGEMENT OF ELECTRONIC RECORDS (N=13)

Challenge Faced	No. indicating Challenge	Percentage of Total
Security and integrity of electronic records	13	100
Preservation of electronic records	13	100
Lack of an electronic records management policy	13	100
Hardware and Software obsolescence	13	100
Lack of knowledge & skills in electronic records management	10	76.9
Lack of computer skills	6	46.1%

***Multiple responses were possible**

Table 4.19 shows that thirteen (100%) respondents cited security and integrity of electronic records, preservation of e-records, lack of an electronic records management policy and hardware and software obsolescence as challenges they faced in managing electronic records. Ten (76.9%) respondents cited lack of knowledge and skills in electronic records management while 6 (46.1%) respondents cited lack of computer skills as a challenge.

The study noted that challenges faced by Records/Accounts staff were similar to those of the General Administration staff. The staff who acknowledged having knowledge and skills in electronic records management received training from colleges and universities that taught courses in Information Sciences such as, Moi University, Kenya Polytechnic University and Inorero University. The study noted that some staff had attended workshops and seminars within and outside the university. The researcher however, noted that although some staff had knowledge and skills in electronic records management, they manned registries that were not facilitated with computers and hence, they were not able to put their knowledge and skills into practice. This contradicts Ngulube (2004), who noted that continuing professional development should be a hallmark of records management in all organizations.

Thirteen (100%) respondents reported that hardware and software obsolescence was a major challenge which resulted to computers processing data at a slow pace. The study observed that staff continued to store data on floppy diskettes which could not be read by the current systems. The study further observed that some schools, departments and

administrative offices kept old computers that occupied large office space. The study established that the old computers held vital information. In addition, these equipments were exposed to environmental hazards such as dust, water and light. The study however, was not able to confirm whether the data held in these computers was actually readable.

Six (46.1%) respondents reported that lack of computer skills was a challenge in managing electronic records. The study noted that this was a challenge especially to the older staff who preferred using manual systems in transacting business. The study observed that some staff had been facilitated with computers but due lack of IT skills the computers continued to lie idle. The study noted that there was need for collaborative efforts between the university management and the ICT department in designing training programmes which can sensitize staff on the importance of managing electronic records from creation to disposition and especially, staff charged with the responsibility of managing university records such as the general administration, record/accounts and secretarial staff.

4.7.3 DATA FROM SECRETARIAL STAFF

The study sought to find out from secretarial staff the challenges they faced in the management of electronic records. Their responses are captured in Table 4.20.

TABLE 4.20: CHALLENGES FACED BY SECRETARIAL STAFF IN THE MANAGEMENT OF E- RECORDS (N=18)

Challenge	No. indicating Challenge	Percentage
Lack of knowledge & skills in electronic records management	18	100%
Security	18	100%
Preservation of electronic records	18	100%
Lack of an electronic records policy	18	100%
Hardware and software obsolescence	14	77.8%
Lack of computer skills	-	-

***Multiple responses were possible**

A total of 18 respondents cited knowledge and skills, security, preservation and lack of an electronic records management policy as challenges faced in managing electronic records. Fourteen (77.8%) respondents cited hardware and software obsolescence. No respondent cited lack of computer skills as a challenge. The study noted that secretarial staff's responses were similar to the general administration and records/accounts staff. The challenges include: lack of knowledge and skills in electronic records management, security of electronic records, preservation of electronic records and lack of an electronic records management policy.

A total of 14 (77.8%) respondents cited hardware and software obsolescence as a major challenge. This was attributed to the university taking long to upgrade the systems. However, some staff did not experience the same challenges because they constantly got

new hardware and software whenever they requested. This was especially so, for secretarial staff working in senior management offices. The study observed that secretarial staff working in senior management offices had the latest computers, several printers and fax machines including wireless mobiles.

None of the respondents reported lack of computer skills as a challenge. This can be attributed to the fact that secretarial training included training in the use of ICTs. The study however, established that although secretarial staff were not conversant with electronic records management issues such as capture of metadata and preservation of electronic records, they were able to create and receive, use and store electronic information but only from a secretarial point of view.

4.7.4 DATA FROM ICT STAFF

The study sought information from ICT staff regarding the challenges they faced as they assisted staff to address the problems they faced in the use of ICTs and resources. This information was sought through face to face interviews from six ICT staff.

The respondents cited the following problems:

- “Keeping up with the constantly changing technology”;
- “Resistance of embracing the use of ICTs by some staff”;
- “Lack of an operational ICT policy”;
- “Poor storage and handling of storage devices by some staff”;
- “Lack of enough technical staff”;
- “Virus attacks”;
- “Some staff/users were not computer literate”;

- “Lack of adequate funds” and;
- “Hardware and software obsolescence”, among others.

It is apparent from the information received from the respondents that ICT staff did face many challenges. The study noted that all the challenges cited by the ICT staff were the same as those cited by general administration and records/accounts staff. The study further noted that if the university management addressed these challenges, it would go a long way in enabling the ICT Department tackle the challenges faced by staff Moi University.

The study sought information from 48 respondents comprising of six ICT, 11 General Administration, 13 Records/Accounts and 18 Secretarial staff on how they went about addressing the challenges they faced in their day to day management of electronic records. Their responses are summarized in Table 4.21.

TABLE 4.21: HOW RESPONDENTS ADDRESSED THE CHALLENGES THEY FACED IN THE MANAGEMENT OF E- RECORDS (N=48)

Category of Respondents	Responses
General Administration staff	• Consulting ICT staff; • Requesting for new computers" and; • Consulting colleagues, among others
Records/Accounts staff	• Consulting ICT staff; • Consulting colleagues; • Using personal initiative; • Going for training to acquire knowledge and skills and; forwarding the problem to the head of department, among others
Secretarial staff	• Consulting colleagues; • Requesting for new computers; • Forwarding the problem to the boss and; • Using personal initiative, among others
ICT staff	• Deploying technicians to campuses and schools to help solve the challenges; • Onsite training of users; • Advising the university management to replace old computers; • Lobbying the university to increase the number of ICT staff; • Organizing from time to time group training for specific categories of staff and; • Providing practical hands on training on how to use computers, among others.

It was apparent that staff used different methods to solve the challenges they faced in the management of electronic records. The study observed that when computers broke down

and help was not forthcoming, some staff decided to idle around all day long in the offices. The study noted that the ICT Department had done its best especially in deploying the few staff in the department to various campuses and schools. There is however a need to employ more IT technicians.

Wato (1999) and Mutiti (2001) in their studies noted that there are many challenges posed by electronic records. They cited the non-availability of a stable media to facilitate access to the information contained therein over time, capturing the content, context and structure, acceptance of electronic records as evidence, technological obsolescence, authenticity, reliability, security, impermanence acquisition of information technology skills and capture of metadata. The study concurs with the authors' observations as corroborated by the challenges cited by the respondents which include: security of electronic records, hardware and software obsolescence, lack of an electronic records management policy and lack of storage media, among others.

4.8 RESPONDENTS RECOMMENDATIONS ON WAYS OF IMPROVING AND SUSTAINING THE MANAGEMENT OF ELECTRONIC RECORDS AT MOI UNIVERSITY

The study sought recommendations on ways of improving and sustaining the management of electronic records at Moi University.

4.8.1 RECOMMENDATIONS MADE BY MANAGEMENT STAFF

Management staff made the following recommendations:

- "Purchase of more hardware and software";
- "The ICT Policy needs to be operational";

- "Training all staff in computer and records management";
- "Entrench a budget for computerization";
- "Continuously train staff so as to keep up with technological changes in the IT world";
- "Sensitize management staff on the importance of electronic records in meeting the vision and mission of Moi University" and;
- "Computerize registry operations to enhance service delivery".

4.8.2 RECOMMENDATIONS MADE BY ICT STAFF

ICT staff made the following recommendations:

- "There is need for adequate funds";
- "Staff should constantly back up the e-records they created and received";
- "Have formal ways of handling electronic information";
- "Install firewalls and a common anti-virus to avoid loss of data";
- "Have an integrated system with different levels of security";
- "Purchase or procurement of a file server which will be used for backing up the entire university's electronic information";
- "The university should come up with a clear policy on the establishment and management of ICT resources" and ;
- "Improve computer literacy among staff";

4.8.3 RECOMMENDATIONS MADE BY GENERAL ADMINISTRATION STAFF

General Administration staff made the following recommendations:

- "There is need for interconnectivity between all campuses";

- "Use modern equipment because the current ones are too slow";
- "Install a common anti-virus which can be installed and updated online";
- "Have frequent seminars and workshops to train staff at Moi University on IT to enable them work in a dynamic e-environment";
- Training of all staff in ICT should be mandatory";
- "The university should hire more ICT staff with a passion for promoting electronic records management" and;
- "The university should draw lessons from universities such as, University of Dar-es.salaam and University of Eduardo Mondale in Mozambique and even the youngest university Strathmore University which have operational ICT records management systems which consequently, as a result are able to offer better services in comparison to Moi University".

4.8.4 RECOMMENDATIONS MADE BY RECORDS/ACCOUNTS STAFF

Records and accounts staff made the following recommendations:

- "Moi University should give the records management function the recognition it deserves and the starting point would be to automate the registry system and allocate adequate funds";
- "The university management should give serious priority to equip staff with computer skills";
- "The university should have a recognized records department headed by an officer trained in records management";
- "Develop and implement an ICT policy";
- "Sensitize staff on the importance of electronic records" and;

- "The School of Information Sciences should work hand-in-hand with the ICT department and advice on electronic records management issues."

4.8.5 RECOMMENDATIONS MADE BY SECRETARIAL STAFF

Secretarial staff made the following recommendations:

- "Management and leadership of Moi University should be enlightened on the importance of electronic records management";
- "Provide enough budget allocations for acquiring the necessary hardware and software";
- "Management should draw up a policy for managing electronic records";
- "Sponsor staff for training in IT";
- "Formulate workable policies";
- "The ICT Department should give regular training to staff";
- "There is need for inter-connectivity between all campuses, schools and department " and;
- "There is need for co-ordination of general records management".

An analysis of the recommendations made by the respondents revealed that many respondents were in a near total agreement to the need to improve the management of electronic records at Moi University.

4.9 SUMMARY

Chapter Four has presented, analyzed and interpreted data, in accordance with the objectives of the study and research questions. It has examined a number of issues pertaining to the management of electronic records at Moi University among them, a business process analysis of Moi University and the records generated and received electronically; strategies used for managing e-records; professional knowledge and skills of staff responsible for managing e-records; adequacy of the ICT infrastructure and resources to cater for the management of e-records; challenges faced by staff in the management of e-records and recommendations made by the respondents for improving and sustaining the efficient and effective management of electronic records at Moi University.

In interpreting the research findings, an attempt was made to show how the current findings concur or differ from previous similar research findings. An attempt was made to provide meaning to the research findings by offering necessary explanations. The observation checklist enabled the researcher to confirm data provided by management, ICT, general administration, records/accounts and secretarial staff.

CHAPTER FIVE

SUMMARY OF RESEARCH FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents a summary of the research findings based on the research questions (See Chapter One, Section 1.9). The chapter provides conclusion derived from data presented in Chapter four. Recommendations are provided to address the shortcomings identified in the management of electronic records at Moi University. The study recommendations address the study objectives and research questions. An electronic records management framework (ERMF)/model for managing electronic records at Moi University is presented.

5.2 SUMMARY OF RESEARCH FINDINGS

The study set out to investigate the management of electronic records at Moi University. The following section summarizes the results of the study, basing them on the research questions that were formulated to guide the study.

5.2.1 RESEARCH QUESTION ONE: WHAT ARE THE BUSINESS ACTIVITIES OF MOI UNIVERSITY AND WHAT RECORDS ARE GENERATED AND RECEIVED ELECTRONICALLY?

The study established that Moi University's core business activities include the following:

- Generation and dissemination of knowledge;
- Learning and teaching;
- Policy formulation and;
- Planning and implementing programmes including ICT programmes.

The study established that the following records were generated and received electronically namely:

- Students fee records;
- Records of deans , senate and council meetings;
- Records pertaining to changes of curriculum;
- E-mail correspondence from within and outside the university;
- Student's examinations results;
- Student's related correspondence;
- Memos;
- Fee statements;
- Reports ;
- Certificates;
- E-mail or enquiry on student's performances especially from universities abroad and firms wishing to employ former or current students;

- Financial records;
- Library records;
- Tax returns and;
- Preparing students' academic transcripts, among others.

It was further established that electronic records were important to the functions of the university in the following ways:

- They enhance faster communication, for example writing memos;
- Facilitate faster production of reports;
- E-records were used for decision making;
- Enables ease of access to information;
- Occupied less space compared to paper records;
- Enhances security of information through the use of passwords and ;
- Reduced paperwork, among others.

5.2.2 RESEARCH QUESTION TWO: WHAT ARE THE STRATEGIES USED FOR MANAGING ELECTRONIC RECORDS?

The study established that there were various strategies that were used by staff for managing electronic records from creation to disposition. The study found that these were individual strategies used by staff without necessarily involving the university. The strategies used include:

- Making printed copies after creation and upon receipt of e-records;
- Backing up the information to the university server;
- Use of storage devices such as, CDs and flash disks;

- Saving electronic records on microfilm;
- Communicating information electronically via e-mail;
- Use of passwords;
- Entrusting responsibility and authority to people of integrity;
- Use of anti-virus for the security of records;
- Burglar proofing the offices;
- Use of security guards to prevent entry of unauthorized persons;
- Encrypting the information;
- Information not required is deleted from the database to free space and memory and;
- Disposal done by saving the information on storage devices.

The study established that making of printed copies was the preferred method. The strategies used to manage electronic records were not effective and they did not conform to the Records Continuum Model which formed the theoretical framework of the study. The strategies lacked uniformity because they did not adhere to any standards. The study established that a policy for managing electronic records was non-existent.

5.2.3 RESEARCH QUESTION THREE: WHAT PROFESSIONAL KNOWLEDGE AND SKILLS DO STAFF RESPONSIBLE FOR MANAGING ELECTRONIC RECORDS POSSESS?

The study established that among 47 staff who were interviewed only five (10.6%) had knowledge and skills in electronic records management while 42 (89.4%) comprising General Administration, Accounts and Secretarial staff did not. The five (10.6%) respondents who had knowledge and skills in electronic records got knowledge and skills

from colleges and universities that offered education and training in Information Sciences.

The study established that most staff (85.7%) were computer literate and hence, they were able to use computers to create, receive, distribute, store and dispose of electronic records but not from a records management point of view. The five (10.6%) respondents with knowledge and skills in records management were staff manning Moi University registries and the study established that they were currently incapable of using their knowledge and skills because the registries were not facilitated with computers.

The study established that the university had sponsored staff to pursue degree and diploma courses in Information Sciences while others had been granted staff study leave to pursue courses in the field of Information Sciences. The study established that the head of Moi University registry did not have knowledge and skills in records management. This had made it difficult for the officer to articulate record keeping and ICT needs of the department among decision makers at the university.

To enable staff and users to effectively use computers the ICT department provided the following induction:

- Day to day , one on one training through end user support;
- Organized ICT group training for specific categories of staff and;
- Practical training on how to use computers.

The induction provided by ICT Department to staff was not adequate. The ICT staff lacked technical knowhow to advice staff on how to manage electronic records from a records management point of view. It is important that the university ensures that staff have knowledge and skills in electronic records management in order to ensure that the university's electronic information is secure and accessible over time.

5.2.4 RESEARCH QUESTION FOUR: WHAT ICT INFRASTRUCTURE AND RESOURCES ARE AVAILABLE TO CATER FOR THE MANAGEMENT OF ELECTRONIC RECORDS?

The study established that the ICT infrastructure and resources available at Moi University to cater for the management of electronic records was not adequate. This was in the form of technological components such as, computers, record keeping system, printers and storage devices. Out of 13 schools only one school had an adequate ICT infrastructure and resources such as, computers, printers and internet connection for staff and users. In the other 12 schools staff had to share the few computers that were available.

Observations from the study revealed that senior administrative offices including offices of the Dean's of Schools had adequate computers, printers including internet connection. There was concern about inadequate equipment such as storage devices (flash disks and CDs). The inadequate supply of these devices led to staff acquiring the devices using their own money and treating the information contained in these devices as *'personal information'*.

The study established that Moi University registries were not facilitated with computers. The records staff interviewed had the perception that registry services were not regarded as important compared to other services. This does not augur well for a university such as Moi University because essentially, a university registry is charged with the responsibility of managing corporate records throughout their life-cycle.

The study established the following factors that contributed to lack of adequate ICT infrastructure and resources to cater for the management of electronic records:

- Lack of adequate funds to acquire hardware and software;
- The benefits of using ICT to manage electronic records was not well recognized;
- There was a lot of inertia by those responsible for managing records at the university and;
- Lack of administrative will among those responsible for making policy decisions regarding the management of university records to accord full attention to the use of ICTs in records management, among others.

With regard to upgrading of computer systems, the study established that this was not oftenly done. Some offices had computers that were old and slow. The research findings revealed that some staff did not migrate data whenever they received new computers. This had in turn led to loss of vital data. Although 13 (25%) respondents reported that computers had a record keeping system, the study established that the computers did not have a record keeping system. There was inadequate technical support for ICTs related

problems due to shortage of technical staff and this was attributed to the university's inability to employ more IT technicians.

From the research findings, it can be concluded that inadequacy of ICT and resources to cater for the management of records and especially electronic records poses one of the greatest challenges to usability, processibility; authenticity, integrity and preservation of the corporate business records and memory at Moi University. Adequate hardware and software including a record keeping system would contribute immensely to the effective management of electronic records.

5.2.5 RESEARCH QUESTION FIVE: WHAT ARE THE CHALLENGES FACED BY STAFF IN THE MANAGEMENT OF ELECTRONIC RECORDS?

The study established that there were many challenges that staff faced in the management of electronic records. The challenges cited by management staff include:

- Lack of an electronic records management policy;
- No funding dedicated to records management;
- Staff lacked knowledge and skills in e-records management and;
- Lack of computer skills.

The ICT staff cited the following challenges:

- Keeping up with constantly changing technology;
- Poor storage and handling of storage devices by staff;

- Lack of adequate technical staff;
- Some staff/users lacked computer skills and;
- Lack of adequate funds.

The challenges cited by General Administration, Records/Accounts and Secretarial staff include:

- Lack of knowledge and skills in electronic records management;
- Lack of an electronic records management policy;
- Lack of computer skills and ;
- Hardware and software obsolescence, among others.

On how the respondents went about addressing the challenges they faced in the management of electronic records, the study found that they used the following:

- Consulted ICT staff;
- Requested for new computers;
- Consulted colleagues for assistance ;
- Used their personal initiative to solve the problems and;
- Forwarding the problem to their heads of departments, among others.

ICT staff addressed the challenges by:

- Deploying technicians to campuses and schools to help address the problems;
- Carrying out onsite training for users;
- Advising the university management to replace old computers;
- Lobbying the university to employ more ICT staff;
- Organizing group training for specific categories of staff and ;

- Providing practical hands on training on how to use computers, among others.

5.2.6 RESEARCH QUESTION SIX: HOW CAN THE MANAGEMENT OF ELECTRONIC RECORDS BE IMPROVED AND SUSTAINED AT MOI UNIVERSITY?

Management, ICT, General Administration, Records/Accounts and Secretarial staff made recommendations that could improve and sustain the management of electronic records at Moi University.

1) Recommendations made by Management Staff include:

- Purchase of more hardware and software;
- The Draft ICT Policy needs to be operational;
- Entrench a budget for computerization and;
- Continuous training of staff so as to keep up with technological changes in the IT world, among others.

2) Recommendations by ICT staff include:

- The university should prioritize key areas (services) for automation for example, students registry, health services and the registries;
- Install firewalls and a common anti-virus to avoid loss of data;
- Purchase or procurement of a file server which will be used for backing up the entire university's electronic information;
- Improve computer literacy among staff and;
- The university should allocate funds for computerization of records, among others.

3) General Administration staff made the following recommendations:

- There is need for interconnectivity between all campuses;
- The university should acquire modern computers to replace the older ones that are too slow;
- Install a common anti-virus which can be installed and updated online;
- Have frequent seminars and workshops to equip staff at Moi University with IT skills so as to enable them work in a dynamic e-environment and;
- The university should draw lessons from universities such as, Dar-es.salaam and Eduardo Mondale in Mozambique and even the youngest university Strathmore which have operational ICT records systems which consequently, as a result are able to offer better services in comparison to Moi University, among others.

4) Records and Accounts staff made the following recommendations:

- The university should give the records management function the recognition it deserves and the starting point would be to automate the registry system and allocate adequate funds;
- The university should have a recognized records management department headed by an officer trained in records management;
- Regular training of staff on record keeping and;
- Upgrading of the computers should be done regularly, among others.

5) Secretarial staff made the following recommendations:

- Allocate adequate funds for acquiring the necessary hardware and software;

- Management should draw up a policy for managing electronic records;
- The ICT department should give regular training to staff and;
- There is need for co-ordination of general records management, among others.

5.3 CONCLUSION

The conclusion of the study is drawn from the research findings. In drawing conclusion only the major findings that directly addressed the research findings are included.

Computerization of Moi University business activities has led to generation and receipt of records in electronic formats. The application of computers to the work processes has had profound influence on the way the university operates. To derive maximum benefits from the application of computers in the university's business transactions there is need to train staff and users in the proper management of records emanating from these systems. The study observed that computers were mainly being applied on routine administrative functions rather than, using the technology to improve the efficiency and effectiveness of managing university records.

It can be concluded that although electronic records were considered vital to the business activities of the university in terms of teaching, research and decision-making, there was no control measure for ensuring the care of electronic records and their availability over time. It is therefore important that staff and users be prepared through seminars and workshops to make them appreciate the importance of e-records as well as enabling the university run its affairs smoothly.

Electronic records at Moi University were not well managed and the existing strategies used for managing e-records from creation to disposition need to be coordinated. Most staff (90%) made printed copies of the e-records they created and received. Once a printed copy was made, the soft copy was no longer considered important to the particular business transaction that led to its creation or receipt. Access to e-records was minimal due to lack of internet connection between the various schools, departments and administrative offices. Security and integrity of e-records was lacking because many staff failed to regularly change their passwords. There was lack of adequate logical and physical security which had in turn led to unlawful access to e-records thus, exposing the data to deletions, alterations and hacking.

Most of the staff (90.7%) used storage devices to store e-records. Storage devices were not always provided for and staff had to buy the devices using their money. This in turn resulted in staff personalizing the information contained in these devices. E-records were not appraised and there was no controlled approach to e-records disposal hence, staff deleted records whenever they felt that they no longer required them to transact business. The study established that there was no policy for managing e-records. This had in turn led to lack of uniformity in the strategies that were used to manage e-records.

The overall conclusion therefore is that the strategies used for managing e-records were not effective and this has led to loss of vital information and hampered the accessibility of records over time. There is need for the university to have in place efficient and effective strategies for managing e-records.

The study established that 11 General Administration and 18 Secretarial staff responsible for managing records lacked professional knowledge and skills in records management. Staff had education and training in different fields of specialization such as education, psychology, human resource and secretarial studies. Lack of knowledge and skills in records management and especially e-records management was one of the factors that had contributed to the un-coordinated strategies used for managing e-records. In order to successfully manage records and especially e-records staff need to be equipped with knowledge and skills on how to manage e-records throughout their life-cycle.

Five (38.5%) staff had knowledge and skills in electronic records management which they acquired from colleges and universities that offered education in Information Sciences. The staff manned the university registries and were currently incapable of putting their knowledge and skills into use because the registries were not facilitated with computers. Accounts staff had knowledge and skills in accounting including financial record keeping. Although three (75%) of management staff reported that staff acquired knowledge and skills on the job, Kemoni (2007) pointed out that effective management of records was dependent upon staff responsible for records receiving education and training in records management.

It can therefore be concluded that most staff lacked knowledge and skills to enable them manage e-records effectively. Moi University should pay more attention to electronic records management issues to ensure future usability, processibility, accessibility and preservation of the corporate business records and memory.

Management of electronic records depends on a well-developed ICT infrastructure and resources to cater for the management of electronic records. Thirty three (62.2%) respondents reported that the ICT infrastructure and resources to cater for the management of electronic records were adequate while 21 (39.6%) reported that they were barely adequate. Six (11.3%) respondents reported that the ICTs and resources were quite adequate and four (7.5%) did not respond to the question.

ICTs such as computers were not uniformly distributed across the schools, departments and administrative offices. The university lacked a policy to guide the management of electronic records. It also lacked adequate computers, printers including internet connection between various campuses, schools, departments and administrative offices. Without an electronic record keeping system in place the university cannot effectively manage its records especially e-records. Departments such as the Registry were not facilitated with computers. Senior management staff offices including Dean's offices had adequate high speed computers, printers, storage devices including internet connection. With the exception of management staff who are the policy makers including approving ICT programmes other staff were not involved before and after the installation of the hardware and software. In some offices staff had to share one computer.

It can therefore be concluded that Moi University lacks an adequate ICT infrastructure and resources to cater for the management of e-records.

The study found that staff faced many challenges in the management of e-records. These challenges included lack of knowledge and skills in electronic records management, security of e-records, preservation of electronic records and hardware and software obsolescence, among others. One of the major challenges in the management of e-records was lack of an electronic records management policy to guide the management of electronic records. This had led to staff devising individual strategies that were un-coordinated and lacked uniformity.

Lasting solutions to the management of e-records can only be achieved if the university developed an e-records management policy or guidelines that staff and users can adhere to. Management staff should give support to records management activities especially in equipping staff responsible for managing university records with knowledge and skills in electronic records management. This will enable the university meet corporate accountability and provide evidence of its business transactions.

It can be concluded therefore that the challenges staff faced in the management of electronic records were many and required urgent attention from the university management if it was to save its corporate memory. Respondents made recommendations which if implemented could enhance the management of electronic records at Moi University.

5.4 RECOMMENDATIONS

Arising from the research findings, various issues have been identified that affect the management of electronic records at Moi University. The study therefore, makes recommendations to address the specific electronic records management issues identified with regard to their practicability and achievement. The recommendations address each study objective.

5.4.1 BUSINESS PROCESS ANALYSIS OF MOI UNIVERSITY AND RECORDS GENERATED AND RECEIVED ELECTRONICALLY

The study established that through the current computerization of Moi University business processes, vast quantities of records were being generated and received electronically. The business process analysis identified the various records that were generated and received electronically and recommends that the university raises awareness amongst staff, users and students of the importance of these records to the functions of the university. The university should provide guidance to staff responsible for records and records creators on how to manage e-records. This will enable the university to know the records created and received; their location, preservation status and problems faced in their management.

This can be achieved through training of staff, users and students on the use of ICTs and how to manage records emanating from these systems (the study is happy to report that the ICT Department has embarked on training different cadres of staff on various aspects of ICTs. The first training was conducted in March, 2010).

5.4.2 STRATEGIES USED FOR MANAGING ELECTRONIC RECORDS

The study established that the strategies used for managing electronic records were individual measures devised by staff which did not adhere to records management principles or policy. The study found the strategies were un-coordinated and lacked uniformity. The study recommends that the university adopts the study's proposed policy framework/model for managing electronic records at Moi University. The proposed policy framework include: how electronic records should be filed against the corporate file plan; how the disposal of electronic records will be managed and procedures for security, back up and purging to protect records from alteration, loss or in-appropriate destruction. The use of computers enhances the creation, access, maintenance, storage and security of records. The university should therefore take advantage of the current computerization to automate its business processes in all its campuses, schools, departments and administrative offices.

The study further recommends that when creating e-records, the records should be accompanied by metadata. Metadata is vital as it helps in understanding any changes or alterations made to a document. Metadata will provide contextual information about the business processes and how the records were captured. Unlike paper records whose content, context and structure are all embedded on the document, electronic records are virtually constructed and are dependent upon well documented metadata.

The study recommends that only those records that document the business transactions of the university should be created or kept upon receipt. Printed copies should be made for

manual filing which should be filed immediately and should not be kept in desk drawers or left to clog office space. Official e-records received at the university such as electronic mails should not be deleted upon receipt or after printed copies have been made. They should be filed electronically as they await appraisal decisions. Printed copies of electronic records created and received by the university that are deemed to be of long term value to the university should be transferred to Moi University Archives.

Although the university is increasingly using computers to transact business, making this information accessible to staff, students and stakeholders was quite a challenge. The study established that although Moi University was generating and receiving records in electronic formats, making this information accessible to users and stakeholders was mainly through maintaining printed copies of the electronic records.

The study recommends that the university promotes access to electronic information it holds. This can be done by assigning staff and students e-mail addresses to facilitate access to the information it holds. However, measures should be put in place to ensure that security of any accounts issued abide by the related privacy rules. There should be limits to rights, restricting, removing and even extending access and privileges within materials posted on or communicated electronically. The study recommends that a good starting point would be to send employees pay slips, tax return forms, student's academic results and fee invoices electronically to staff and students so as to inculcate a culture of users opening their e-mails. Such a culture would sustain an interest on the use of computers at the workplace.

For security and integrity of electronic records the study recommends the transfer of the information to an off-site storage and backing up of the information in the university server as a fall back. Storage devices can also be used to secure the information. The study recommends that to maintain the integrity of e-records staff need to change their passwords regularly. Staff should avoid sharing their passwords with their colleagues. The university should acquire a common anti-virus for all computers at the university whereby staff can update the anti-virus online. The study recommends the grilling of all offices where the hardware and software are kept as a security measure to deter alteration of data and theft.

Storage of e-records is complex and the study recommends that the information be backed up at an off-site storage or in a central server under the ICT department. This will ensure that copies of records created and received electronically by the university are backed up to the central server or the off-site storage. The study established that staff did not label the storage devices. The study therefore, recommends that storage media holding official information be labeled to facilitate faster retrieval of information.

There is need to provide records creators with guidelines on how to name the computer files held in their computers. This will enable staff performing similar tasks to access and retrieve electronic information with ease. The university should provide staff with adequate storage media to store official information. This will deter staff from treating official information stored in storage devices they bought using their money as *'personal information'*. The study recommends that as storage media change staff should ensure

that they transfer information onto the new media lest the information becomes unreadable. The storage devices including the hardware and software should be kept under controlled environmental conditions that are free from environmental hazards such as light, dust, high temperatures and water.

There is need for urgent measures to be taken by the university if it is to avert the loss of its electronic memory. With the exception of microfilming other strategies used by staff to preserve electronic records such as making printed copies and storing information in storage devices was found to be in-adequate. The study recommends that training be offered to staff and especially staff responsible for the management of e-records to equip them with knowledge and skills in preservation management in order to respond to challenges associated with preservation of electronic records.

Storage media and paper are fragile and susceptible to scratches and exposure to environmental hazards. The study therefore recommends that staff be sensitized on the need to keep the hardware and software under the right environmental conditions and on the need to constantly migrate data to newer platforms especially when they are allocated new computers. The university needs to constantly upgrade the hardware and software to ensure that electronic records can be read over time. The printed copies should be kept under proper environmental conditions free from dust and water. The study recommends that migration strategies be developed and included in the guidelines for managing electronic records.

With regard to appraisal and disposition of electronic records, the study recommends the involvement of e-records creators. Appraisal decisions should be made at the point of records creation regarding the necessity to create certain records. Disposition schedules should be used to determine appraisal and disposition actions. The study recommends that appraisal decisions be based on records functionality to determine their long-term value. In addition, the study recommends that records creators be equipped with basic records management skills to enable them make proper decisions regarding appraisal. Electronic records should not be disposed of before they are appraised.

The study noted that the absence of an electronic records management policy for paper and electronic records including an e-mail policy hindered effective management of records. It had led to the un-coordinated strategies that were used to manage records. The study therefore recommends that the university adopts the study's proposed framework/model for managing e-records. The proposed policy framework for managing electronic records will enable the university create and manage authentic, reliable and usable records capable of supporting the business functions of the university.

If the electronic records management framework/model is adopted staff and users should be made aware of the its existence and strict measures be put in place for adherence. This will ensure that electronic records are properly managed and that they fit within the university's decision-making process. There is need for staff responsible for records such as General Administration, Records/Accounts and Secretarial staff to work closely with

the ICT Department in ensuring that the electronic records management policy framework/model is observed in terms of information security and strict business use.

5.4.3 PROFESSIONAL KNOWLEDGE AND SKILLS OF STAFF RESPONSIBLE FOR MANAGING ELECTRONIC RECORDS

The use of ICTs and especially computers as an information management tool has created new skills requirements. The officer in-charge of staff training and development at Moi University should address the issue of records management as a matter of agency if the university has to protect and preserve the e-records required as evidence for their operation and for future reference. There is need to train staff and especially staff responsible for records on how to manage records in electronic formats by sponsoring them to the School of Information Sciences for undergraduate and postgraduate degree courses in Records and Archives management. This will enable them acquire the prerequisite knowledge and skills in records management including e-records management. In addition it will enable them play an active role in the management of electronic records.

Majority of staff in the cadre of general administration at Moi University are usually graduates and they can be encouraged to pursue postgraduate courses in Records and Archives Management. Records/Accounts and especially records staff can pursue undergraduate courses in Information Sciences and specialize in Records and Archives management. Secretarial staff including management staff can be trained through seminars and workshops on the importance of e-records management to the functions of Moi University including how to manage records and especially e-records.

Although some staff such as management, accounts and secretarial staff may not require high level understanding of records management, they need an understanding of the principle concepts and technical limitations of IT in managing records. Moi University should therefore take the advantage of the School of Information Sciences at the institution and equip staff with knowledge and skills in records and archives management especially staff responsible for managing university records. This can be done through conducting seminars and workshops where professional records and archives professionals at the School can provide important information on records management and electronic records management in addition to being resource persons.

Knowledge and skills in records management and especially e-records management will enable staff including records creators to have the ability to communicate electronic records management requirements credibly both to management, heads of departments and the ICT department. The study therefore recommends that staff charged with the responsibility of managing e-records at the university possess relevant knowledge and skills in records management and information technology.

The study established that some staff lacked IT skills and therefore were not able to create or receive records electronically. The study recommends that staff training in IT for all staff and users at all levels be put in place to enable them work with these technologies. Equipping staff with ICT skills will be a step in the right direction and vital for promoting an IT culture amongst staff and users. This can be done through provision of short courses conducted by the ICT department and other internal or external resource

persons as well as seminars and workshops on ICTs and the role of ICTs in university records management. Kemoni and Wamukoya (2000) identified lack of IT skills due to inadequate training as one of the impediments to the management of electronic records at Moi University.

Furthermore, equipping staff with IT skills has the potential to reduce the current 'digital divide' existing between the different employees. Even for those staff not directly involved in managing university records such as, messengers and cleaners, the study recommends that acquisition of basic computer skills be encouraged as this is necessary to inculcate a culture of using ICT tools and services. In addition, it will make them appreciate electronic information.

5.4.4 ICT INFRASTRUCTURE AND RESOURCES AVAILABLE TO CATER FOR THE MANAGEMENT OF ELECTRONIC RECORDS AT MOI UNIVERSITY

The study established that some schools and administrative offices had adequate hardware and software such as computers, printers and internet connection while others did not. The study recommends that hardware and software be distributed evenly to all campuses, schools, departments and administrative offices. Storage media should be provided to deter staff from personalizing official information stored in the storage media. The systems should be constantly upgraded to avoid hardware and software obsolescence.

The study recommends that before installation of computers staff should be involved to determine their requirements. For example, staff responsible for records can recommend

the systems be equipped with a record keeping system. Involvement before and after the installation of the hardware and software is important because it creates a link between records creators and users of electronic information. The study established that, in some offices technological obsolescence was a major obstacle to service delivery. The study observed that some computers were slow in processing data and this led to formation of long queues of clients waiting to be served. This impacted negatively on service delivery.

The study established that Moi University registries were not facilitated with computers. The study recommends that Moi University registries being vital to the functions of the university need to be automated. The university should explore the various ways in which ICT application and especially computers can be used in the various phases of the records management life-cycle and the beginning point should be to automate the registries. The use of computers will enhance creation, receipt, access, security, integrity and storage of e-records. However before automating the registries the study recommends that the current manual record keeping system be restructured to ensure that the source documents are correct and complete. The study recommends that automation should be undertaken even if for the time being it will mean limiting prospects to entering filenames and codes. This option should be explored.

5.4.5 CHALLENGES FACED BY STAFF IN THE MANAGEMENT OF ELECTRONIC RECORDS

The study established various challenges that staff faced in the management of e-records. These challenges include: lack of a policy for managing e-records, lack of knowledge and skills in e-records management and lack of adequate computers, among others. The study recommends that recommendations 5.4.1 to 5.4.4 be implemented to overcome the challenges that staff faced in the management of e-records. Others ways of addressing the challenges include:

1) SENSITIZATION AND AWARENESS CREATION

The study noted that with the increasing decentralization of record keeping and especially e-records, many schools, departments and administrative offices were struggling to organize and manage their records. There was no uniformity in the way electronic records were managed and the study recommends that the university raises awareness throughout its campuses on the important role e-records play to the functions of the university. This can be done through conducting seminars and workshops to sensitize staff on how electronic records should be managed from creation to disposition.

2) CREATING THE POSITION OF A RECORDS MANAGER

There is need to establish the position of a records manager in the hierarchy of the university administrative structure who will take a lead role in the university records management programme. First, the university records manager will be charged with the responsibility of undertaking records survey that will identify the main series of records (paper and electronic records) held by the university including their size, format,

function, ownership and for how long they should be retained. The outcome of the survey can be used to inform future initiatives on record keeping.

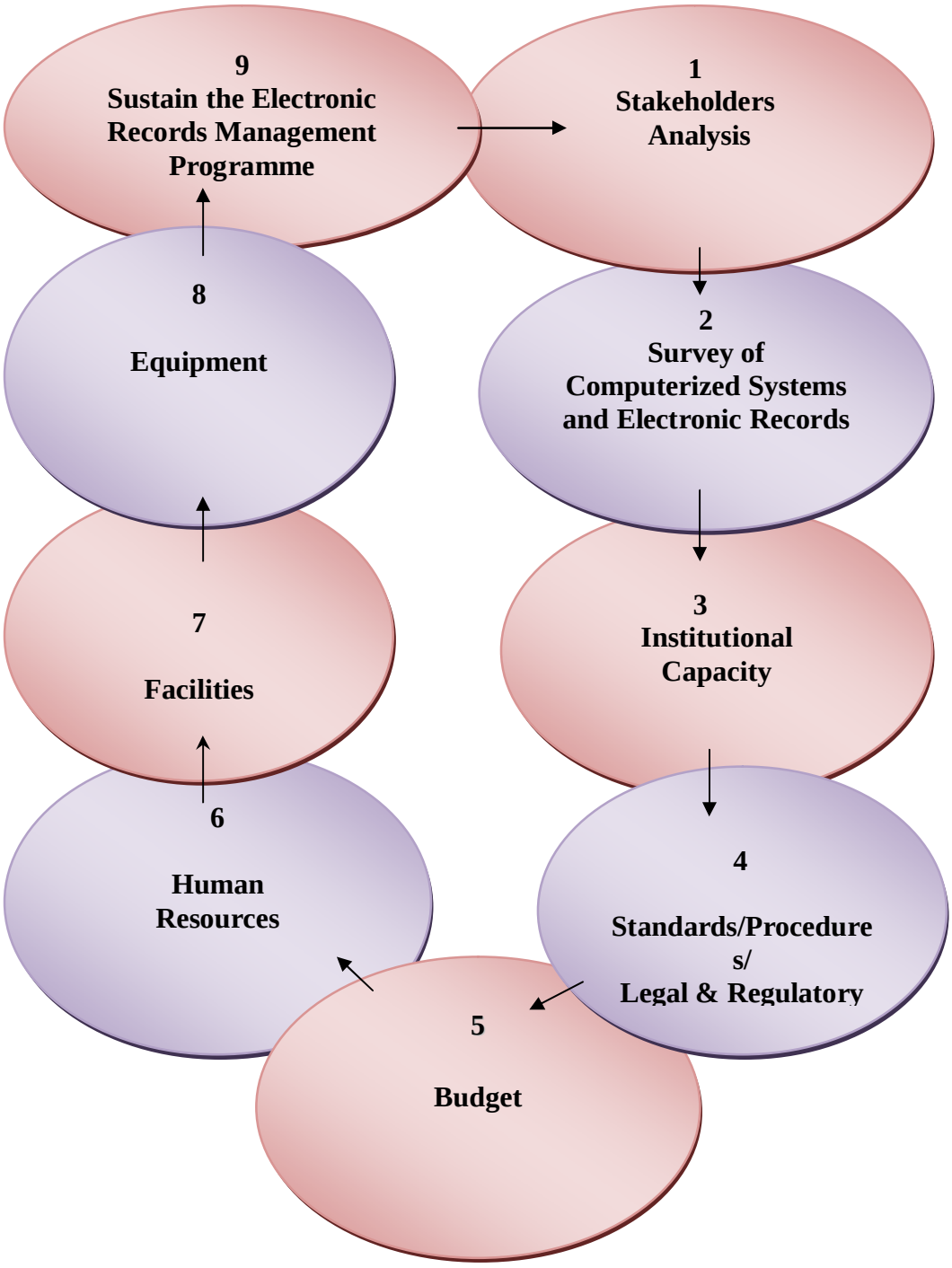
Secondly, the records manager can develop benchmark standards for records management. Thirdly, he/she will be charged with the responsibility of implementing an electronic record keeping system which will make it easier to track, classify and access electronic records that are generated and received by the university. Fourthly, the records manager will develop a university records retention schedule of all records created and received by the university. The records retention schedule will provide staff with advice on how long particular types of records should be kept and what should be done with them.

The records manager will be required to provide advice and guidance on aspects of records management including appropriate filing systems, classification of records and storage, among others. The study recommends that the records manager should be a professionally trained records manager. A professionally trained records manager will be able to run the university records management activities efficiently and effectively.

5.5 THE PROPOSED POLICY FRAMEWORK/MODEL FOR MANAGING ELECTRONIC RECORDS AT MOI UNIVERSITY

Based on the research findings and recommendations of the study, the study came up with a policy framework/model for managing e-records at Moi University. The framework/model can be used to improve and sustain the efficient and effective management of e-records at Moi University which is plagued by a number of problems highlighted in the study. These include: lack of a policy; inadequate ICTs and resources to cater for the management of e-records, among others. The policy framework is aimed at streamlining the current strategies used for managing electronic records which the study found to be un-coordinated and lacked uniformity.

The electronic records management policy framework/model attempts to comply with best practices to address the problems faced in the management of e-records at Moi University. It explains the various components Moi University will have to put in place to strengthen the electronic records environment in view of the electronic transactions that are taking place in order to create and preserve authentic and reliable records for transparency and accountability of its services. The policy framework is adapted from Roper and Millar (1999). The components of the electronic records management framework/model is illustrated in figure 5.1.



Source: Author's own conceptualization, 2010

FIGURE 5.1: AN ELECTRONIC RECORDS MANAGEMENT POLICY FRAMEWORK/MODEL FOR MANAGING ELECTRONIC RECORDS AT MOI UNIVERSITY

The components of the electronic records management policy framework include:

- Stakeholders' analysis;
- Survey of computerized systems and electronic records;
- Institutional capacity;
- Standards/procedures/legal and regulatory framework;
- Budget;
- Human resources;
- Facilities and;
- Equipment and sustaining the programme.

1) STAKEHOLDERS ANALYSIS

The quality of any records management policy framework will be determined by carrying out a stakeholders' analysis to identify all groups using e-records. For the university it will include staff and students at the various schools, departments and administrative offices and other stakeholders such as students, staff and commercial banks, among others. A stakeholders' analysis will identify the potential (strengths, weaknesses, opportunities and threats) which are encountered in managing e-records and identify linkages between the stakeholders (conflicts of interest, cooperative relations and dependencies). By undertaking a stakeholders' analysis the university will be in a strong position to plan and identify the potential obstacles that need to be overcome.

2) SURVEY OF COMPUTERIZED SYSTEMS AND ELECTRONIC RECORDS

A survey will have to be carried out to determine records generated and received by Moi University including all its campuses. Once records created and received have been determined this information will assist the university in understanding the business functions that have been automated. It will enable the university determine the records generated and received by the institution and how long these records need to be kept.

In identifying the business functions that have been automated, the university will be in a position to know the records created and received by the university and therefore ensure that they are managed in a continuum of care. The study noted that there were problems encountered by staff in keeping records electronically, for example, hardware and software obsolescence. With an electronic records management policy framework in place Moi University will be able to determine how long the different series of records are to be kept electronically. Printed copies could be made of the e-records as is the current practice.

3) INSTITUTIONAL CAPACITY

The university will have to assess its capacity to manage e-records effectively in relation to the needs of staff, users and stakeholders. The capacity assessment should take into account the human resources and the budget required. Some of the key issues that should be considered are accessibility of the ICT specialists and technicians, environmental conditions and controls to store e-records such as the availability of air conditioning and a stable power supply. In case of power interruptions as is the case during rainy seasons,

access to an uninterruptible power supply (UPS), surge protectors and generators should be made available.

The quality of any records management programme is directly related to the quality of the staff that operates it. Without skilled and experienced personnel all the components of the programme may not be adequately executed. The study proposes the establishment of a records management office headed by a qualified records management professional. He/she will coordinate the activities of the policy framework. For the success of the electronic records management policy framework, staff responsible for managing electronic records will need to be equipped with e-records management skills. Staff therefore, need to be trained in e-records management to enable them manage e-records effectively.

The efficient management of records using computers requires the right equipment and technical support. Equipment for e-records management includes hardware and software such as computers and storage devices and a record keeping system. It also requires that staff responsible for records work in partnership with the ICT department especially when they are designing the record keeping system so that record keeping functionalities are included. The implementation of the policy framework should be adequately funded.

4) STANDARDS/PROCEDURES/LEGAL & REGULATORY FRAMEWORK

Moi University should establish a legal and regulatory framework for managing e-records. The study noted that lack of a records management policy for paper and

electronic records had hindered the effective management of records at the university. The study recommends inclusion of record keeping issues in the ICT Policy (Council Draft), 2010. The policy should highlight the role of records management in enhancing the services of Moi University. Once implemented the accounting officers should ensure that the policy is adhered to.

5) BUDGET

Ensuring availability of equipment and materials relies on there being an adequate budget. The university should ensure that the annual budgeting exercise factors in e-records management requirements. The electronic records management framework can only be sustained if appropriate funds are made available. Due to technological changes, it is difficult to calculate the likely long-term costs of keeping e-records with precision. However, the factors the university should take into account include:

- Cost of storage;
- Cost of upgrading computer facilities;
- Environmental conditions (air conditioning facilities) and;
- Cost of migration, among others.

Although estimates of the long-term costs are difficult to calculate reliably, it should be possible to arrive at a reasonably accurate figure for short-term costs of a programme.

6) HUMAN RESOURCES

Computerization has transformed the way Moi University is transacting business. In order to run the programme successfully, good records management skills are required. The study established that majority of staff lacked knowledge and skills in records management. Moi University staff and especially those responsible for managing records should be equipped with the minimum skills needed to create a sustainable e-records management programme. The university should therefore have a programme to train staff in record keeping that includes e-records management.

The university should incorporate the principles of managing e-records into the mainstream activities of the institution, for example, records capture, use, maintenance, storage and disposal. This will go a long way in fostering consistent treatment of records whatever their medium in addition to ensuring uniformity in the management of electronic records. In addition, staff charged with the responsibility of managing electronic records will require the following competencies:

- *Records Management and Archival Competencies.* This will include an understanding of records functions, maintaining authenticity of records, knowledge of the principles of provenance, description of e-records and ensuring long-term access to e-records, among others.
- *Legal Competence.* This will include knowledge in data protection and ensuring security of records, privacy of information, for example, personal information, access and copyright, among others.

- *Organizational Competencies.* Staff should have knowledge and skills in information management; understand the importance of records as organizational assets and resource sharing including roles and responsibilities.
- *Information Technology Competencies*- staff will need to have an understanding of the different types of hardware and software, storage media, standards, telecommunications and networks. Others include: long-term preservation of e-records, migration strategies and capture of metadata.
- *Systems Design Competence*. This will entail an understanding of different types and functions of office systems, for example, registry systems and document management systems, among others.

7) FACILITIES

In order to ensure access to e-records, both storage media and technology used to create electronic records must be stable. Storage media such as CDs and flash disks do not have the longevity of paper records. The study noted that storage devices were kept carelessly in desk drawers among other personal items that led to the storage devices having scratches which led to loss of vital data. Electronic records need to be stored in a stable environment which is clean, dry and free from light, dust and water. Storage media should therefore be stored appropriately, for example CDs can be kept in appropriate containers.

Moi University will be required to ensure that facilities are available to ensure long-term access to electronic information. This can be achieved by ensuring that hardware and

software are protected from all hazards and duplicate copies of records are stored off-site. The study noted that financial records of long-term value were microfilmed and stored at the basement of the administration building. The study observed that there were no measures in place to prevent damage from water and dust. Due to technological changes that are taking place, the electronic records management policy framework will need to plan for migration of information to newer media whenever necessary.

8) EQUIPMENT

The study established that the ICT infrastructure and resources to cater for electronic records management was not adequate. For the successful management of electronic records the equipment to copy or migrate records depends on the type of medium to be used for present and future storage and access. During the copying process, staff should ensure that information is not lost. The hardware and software should be kept in perfect operating order to facilitate access to information whenever it is required. Whenever computers are replaced with new ones or relocated to the store rooms staff should ensure that data from these computers is transferred to the newer platforms.

9) SUSTAINING THE ELECTRONIC RECORDS MANAGEMENT POLICY FRAMEWORK/MODEL (ERMPF)

Having put in place all the components, Moi University will be ready to implement the electronic records management policy framework/model. The university will have established a culture of managing records and created a strong awareness of records management amongst staff members. A strong collaboration through the records management office, a legal and regulatory framework, an e-records management policy

including classification and retention schedules will be in place. The university will have undertaken an assessment of the current electronic systems and therefore be ready to implement the electronic records management policy framework/model.

Promotion of e-records management will need to be done by introducing induction programmes especially for new employees which incorporates management of records both paper and electronics. This will make staff appreciate records. The records management office will be required to provide on-going training for all staff on e- records management. Funds should be set aside to sponsor staff for formal training in e-records management. A committee of professional staff should be appointed to constantly evaluate and monitor the management of e-records to ensure that problems are identified and rectified thus avoiding the breakdown of the programme.

5.6 SUGGESTION FOR FURTHER RESEARCH

The study investigated the management of electronic records at Moi University. The study identified several issues which could be a subject of further investigation by records and archives researchers. For example, the study investigated the management of electronic records at Moi University and not other public and private universities in Kenya. Consequently, the study suggests that similar studies be conducted in other public universities such as the University of Nairobi, Kenyatta University, Egerton University; Maseno University and Masinde Muliro University of Science and Technology to investigate the current state of electronic records management. Studies should include private universities such as: the United States International University (USIU); Daystar

University; Catholic University; Strathmore University; St. Paul's University; Inorero University and Kenya Methodist University, among others.

It is recommended that studies be conducted to compare the management of electronic records in public and private universities in Kenya. Such studies will provide useful comparative information on electronic record keeping in public and private universities in Kenya. The study noted that electronic mail (e-mail) was used to transact business at Moi University especially between the university and stakeholders such as, staff, students and commercial banks. It is recommended therefore, that future researchers conduct studies on e-mail management at public and private universities in Kenya.

It is recommended that studies be conducted to establish the current state of electronic records management in other sectors such as Sectorial Electronic Records Management; the link between electronic records management and the proposed Freedom of Information (FoI) Law and Electronic Records Management and Service Delivery/ISO Certification. Such studies would be timely as most organizations in Kenya are working towards ISO certification.

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APPENDIX I : INTRODUCTORY LETTER TO RESPONDENTS

I am an MPhil student at Moi University School of Information Sciences conducting a research entitled: "**Management of Electronic Records at Moi University, Eldoret, Kenya".**

The purpose of the study is to investigate the management of electronic records within the context of the continuum principle with a view to recommending a policy framework/model that can be used to manage electronic records.

I would like to assure you that any information that you provide will be treated with utmost confidentiality and will be used only for this research.

Thank you very much for participating and giving your time and support to this study.

Agnes Peninah Nasieku
IS/MPhil/032/07

APPENDIX II : INTERVIEW SCHEDULE FOR MANAGEMENT STAFF, MOI UNIVERSITY

Part I : Personal Information

1). Name of Campus.

2). Designation.

3). Gender.

3.1 Male

3.2 Female

Part II : Business Process Analysis

4). Broadly, what are the business activities of Moi University?

5). What types of electronic records are generated and received in the course of the university's business activities?

6). In what ways are electronic records important to the functions of the university?

Part III : Strategies used for Managing Electronic Records

7). (i). Does the University have a formal electronic records management policy?

7.1 Yes

7.2 No

7.3 Not Sure

(ii) If an electronic records management policy exists, which major issues does it cover?

Part IV : Professional knowledge and skills of staff responsible for managing electronic records at Moi University

8). Where do staff get their training?

8.1 On the Job	
8.2 College/University	
8.3 Through Seminars/Workshops	

Others (specify).

……..

Part IV: ICT Infrastructure and Resources available to cater for the Management of Electronic Records

9). Would you say the ICT and resources are adequate for the management of e-records.

9.1 Quite Adequate	
9.2 Adequate	
9.3 Barely Adequate	

10). Does the university involve you before and after the installation of the system (s)?

10.1 Involved	
10.2 Not Involved	
10.3 No Opinion	

11). How often does the university upgrade the system (s)?

11.1 Often	
11.2 Not Often	
11.3 On Request	

12) (i). What record keeping system do the system (s) have?

(ii). If a record keeping system exists, which areas does it cover?

Part VI : What recommendations would you make on ways of improving and sustaining the management of electronic records at Moi University

13). What recommendations would you make to improve and sustain the management of electronic records at Moi University?

APPENDIX III: INTERVIEW SCHEDULE FOR ICT STAFF

Part I : Personal Information

1). Name of Campus.

2). Designation.

3). Gender.

3.1 Male	
3.2 Female	

Part II : Business Process Analysis

4). What business activities does your department conduct?

5). In what ways are electronic records important to the functions of Moi University?

Part III : Strategies used for managing electronic records

6).

(i). Is there policy in place to guide the management of electronic records at Moi University?

6.1 Yes	
6.2 No	
6.3 Not Sure	

(ii). If a policy exists, which major issues does it address?

Part IV: Professional knowledge and skills of staff responsible for managing electronic records at Moi University

7). What training (if any) does your department give to staff/users to enable them use ICTs such as computers?

Part V : ICT Infrastructure and Resources available to Cater for the Management of Electronic Records

8). In what ways does your department involve the staff before and after the installation of the ICTs and resources in their respective Department (s)/Section (s)?

9). How often does your department upgrade the system (s)?

10). (i). Do the systems have a record keeping system?

(ii). If a record keeping system exists, what major areas does it cover?

Part VI: Challenges faced in the management of e-records at Moi University

11). (i). What challenges (if any) do/ your department encounter?

(ii). How do you/ your department go about addressing these challenges?

Part VI: Recommendations on ways of improving and sustaining the management of electronic records at Moi University

12). What recommendations would you give to improve and sustain the management of electronic records at Moi University?

APPENDIX IV: INTERVIEW SCHEDULE FOR MOI UNIVERSITY STAFF
(General Administration, Records/Accounts and Secretarial Staff)

Part I : Personal information

1). Name of Campus.

2). School/Department/Section.

3). Designation.

4). Gender.

4.1 Male

4.2 Female

Part II : Business Process Analysis

5). What business activities do you conduct?

6). What type of electronic records are generated and received in the course of your business activities?

7). In what ways are electronic records important to the functions of Moi University?

Part III : Strategies used for managing electronic records

8). How do you Create/receive electronic records?

9). How do staff/users access electronic records

10). How do you ensure the security and integrity of electronic records?

11). How do you Store electronic records?

12). How do you preservation electronic records?

13). How do you appraisal and dispose of electronic records?

14). (i) Does Moi University have an electronic records management policy?

14.1 Yes	
14.2 No	
14.3 Not sure	

(ii). If the policy exists, which major areas does it cover?

Part IV : Professional knowledge and skills of staff responsible for managing electronic records at Moi University

15). (i). What knowledge and skills do you have that pertain to the management of electronic records?

(ii). If not, what education and training do you have?

Part V : ICT Infrastructure and resources available to cater for the management of electronic records

16). Would you say the ICTs and Resources are adequate to cater for the management of Electronic records?

16.1 Quite adequate	
16.2 Adequate	
16.3 Barely adequate	

17). Does the university involve you or your department/section before and after the installation of the system (s)?

17.1 Involved	
17.2 Not Involved	
17.3 No opinion	

18). How often does the university upgrade the system (s)?

18.1 Often	
18.2 Not often	
18.3 On request	

19). (i). What record keeping system does the system (s) have?

(ii). If a record keeping system exists, what major areas does it cover?

Part VI: Challenges faced by staff in the management of e- records at Moi University

20) (i). What challenges (if any) do you/your School/ Department/ Section encounter in the management of electronic records.

(ii). How do you/your School/Department/Section go about addressing these challenges?

Part VI: Recommendations on ways of improving and sustaining the management of electronic records at Moi University

21). What recommendations would you give to improve and sustain the management of electronic records at Moi University?

APPENDIX V : OBSERVATION CHECKLIST

No.	Item to be observed	Observation details
1.	Types of Information Resources at Moi University. • Electronic resources such as: o Computers o Internet o E-mail o Microfilms o Fax	
2	ICT infrastructure and resources to cater for the management of electronic records at Moi University. They include but not limited to: • Number of computers • Storage media (Disks, CDs among Others); • Labeling of Media • Accessibility among others.	
3.	Security of electronic records such as: • Physical security for equipment (Hardware and Software) • Integrity of the system (s)	
4.	Information systems in place. • E-mail • Intranets • Internet among others.	
5	Storage Conditions • For Equipment • Media	
6	• Disposal of e-records	

APPENDIX VI: INTRODUCTORY LETTER