MANAGEMENT OF E-RECORDS AT MOI UNIVERSITY ELDORET, KENYA

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Abstract

The article discusses the findings of a study that was carried out to investigate the management of electronic records (e-records) at Moi University. The aim of the study was to investigate the management of e-records within the context of the records continuum principle with a view to recommending a framework that can be used to manage e-records. The sampling frame consisted of 60 respondents drawn from Moi University main campus, Chepkoilel campus and Town campuses. Purposive sampling technique was used to select respondents from Moi University management, ICT, general administration, records/accounts and secretarial staff. Data was collected using semi-structured interview schedules supplemented by observation. The study results revealed that despite Moi University embracing the use of computers as a critical tool for information management and communication in support of its business transactions, the management of e-records remained a neglected

area of the university record keeping system. Factors contributing to this were found to include lack of policies and procedures to guide the management of e-records and lack of knowledge and skills in records management and in particular e-records management. The authors' recommendations include equipping staff and especially those responsible for managing e-records with knowledge and skills in records management and in particular e-records management, staff and users be equipped with ICT skills to enable them to work in an electronic environment and the university should raise awareness amongst staff on the importance of managing e-records.

Keywords: E-records; E-Records Management; Moi University; Records Management

Introduction

Universities are service oriented institutions offering a variety of services which include teaching and learning, research and extension services (Elwhiwhu 2005). Moi University is increasingly becoming part of the digital world. Increasingly, e-records are becoming a reality as the use of computers as information management tools are being embraced by schools, departments and administrative offices. This has in turn led to records being created, used, maintained and disposed of electronically. E-records have enabled 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), e-records management at universities is a new development in Kenya. Ngulube (2009) noted that there was evidence from the literature that policies and guidelines pertaining to e-records management are non-existent in developing countries. Elwhiwhu (2005) assert 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. Management of records in whatever format is regarded as one of the pillars of good public management because activities of any organization are based on access to information contained in records.

According to Moi University Strategic Plan, (2005-2015), the objectives of the 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 largely on availability of, and access to, records by the university community and other stakeholders. Records therefore, constitute an essential instrument of administration without which operational processes and functions cannot be executed. In the absence of records, Moi University will be incapacitated in its decision making process.

Moi University Registry is charged with the responsibility of managing university records but with 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. The creation and receipt of records in electronic format has in turn led to decentralization of the custody of records in addition to the potential loss of control of this vital information. In the current technological and information age, the 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. The surest way to achieve this is to ensure that records created and received by the institution are managed from creation to disposition.

Statement of the problem

Kemoni and Wamukoya (2000) noted 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 are dependent upon good record keeping regimes. Computerization of Moi University business processes has led to

generation and receipt of electronic information. Moi University e-records 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), among others. Much of this information is used for decision making and therefore it must be managed as a record. LIS, ARIS, FMIS and HRIS use the same system but with different modules.

Kemoni and Wamukoya (2000) undertook a study entitled *"Preparing for the Management of E-records: a case study of Administrative and Personnel Records at Moi University".* The study was meant to sensitize staff and users on the introduction of e-records into the university record keeping system. 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 e-records environment. Since Kemoni and Wamukoya (2000) study was conducted a lot has since changed. Moi University has fully embraced the use of computers in creating, receiving, storing and disposing of e-records in all its business activities in libraries, academic, finance, catering and medical services, among others. Moi University has from time to time conducted seminars for staff working in registries in which the authors have been invited as resource persons. As resource persons the authors have shared their findings to the participants and the university management. The present study focuses on the management of all official records created and received electronically and especially those that are used to carry out Moi University business transactions. The study came up with recommendations and proposes a policy framework/model that can be used to manage e-records.

Aim and objectives of the study

The main aim of the study was to investigate the management of e-records at Moi University within the context of the records continuum principle with a view to recommending a policy framework/model that can be used to manage e-records. The specific objectives were to:

- Conduct a business process analysis of Moi University and ascertain the e-records generated and received by the institution;
- Determine and evaluate the strategies used for managing e-records;
- Ascertain the professional knowledge and skills of staff responsible for managing e-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 e-records; and
- Make recommendations and propose a framework/model that can be used to manage e-records at Moi University.

Research questions

The study sought to answer the following questions:

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

Significance of the study

The study is significant in several ways which include: creating an understanding and appreciation of the need for the effective and efficient management of e-records in enhancing delivery of public services and programmes to the university community; creating

awareness on the challenges associated with the management of e-records among university staff/users and especially general administration, records/accounts and secretarial staff who are responsible for managing university records; sensitizing Moi University staff on the importance of e-records to the business activities of the university and the study proposes a policy framework/model to manage e-records at Moi University.

Theoretical considerations

The study was informed largely by the records continuum model (RCM). 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).

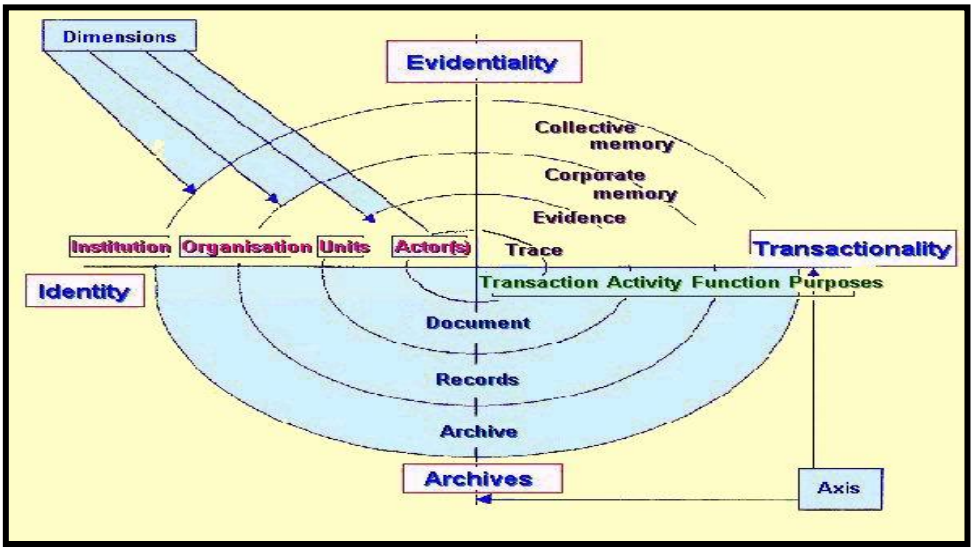


Figure 1: The records continuum model (RCM) (Xiaomi 2001)

The records continuum model way of thinking was formulated in the 1990s by Australian Archival Theorist Frank Upward (McKemmish 2002). 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. Similarly, Xiaomi (2001) pointed out that in a continuum there are no separate steps and managing records is seen as a continuous process in which one element of the continuum passes seamlessly into another. The author adds that the continuum model or matrix as developed by Frank Upward is presented in the form of cycles that reflect different perspectives in the life of the record. 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 (*Xiaomi 2001).

All the above are ongoing and not bound by time and space (Shepherd and Yeo 2003). 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 (Flynn 2001). 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 in that 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 and business systems are implemented with an 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 business systems ensure that records are accurate, complete, reliable and usable. The records will therefore have the necessary attributes of content, context and structure as evidence of business activity.

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 is particularly so when we meet such needs in the digital world.

Relevance of the records continuum model to the study

The elements of the records continuum model have relevance to the study since it emphasizes the importance of managing records at each stage of the life-cycle on a continuing basis. The model takes into account the dynamic nature of e-records that include 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; McKemmish 2002).

One of the study's objectives was to examine the strategies used for managing e-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 e-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 anticipates that records managers and archivists will work closely with records creators even before a record is created to develop a comprehensive e-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 can do this by using their expertise in advising records creators and enlightening the ICT staff on issues related to e-records management for example, on how to include e-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. The majority of records that are created at Moi 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 Moi University e-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. This model is therefore ideal for managing records (both paper and e-records) at Moi University.

Research methodology

Both qualitative and quantitative research designs were used. Non-probability sampling method was used where the sample for the study was obtained by use of purposive sampling method. Data was collected through face to face interviews with the respondents and an interview schedule was used to guide the interviews. This was supplemented by observation.

The sampling frame consisted of 60 respondents drawn from Moi University Main Campus, Chepkoilel Campus and Town Campuses. Out of 60 respondents 52 respondents were selected. There were five major categories of staff that comprised the study population. Category One comprised management as the key informants. The justification for involving this category of staff was because their

offices generated vast quantities of records in electronic format and were therefore deemed as key informants. Category Two comprised information communication technology (ICT) staff charged with the responsibility of handling technical issues that related to ICT infrastructure and resources at Moi University. Category Three comprised general administration staff charged with the responsibility of managing records (both paper and electronic) at the various schools and administrative offices. Category Four comprised secretarial staff working at the various schools, administrative offices, Deans and Head of Departments (HODs) offices. Secretarial staff are charged with the responsibility of creating and receiving official communication from within and outside the university. Information emanating from these offices includes implementation of university teaching and research programmes.

Deans and HODs normally use secretaries to type official communication. Secretaries were in a better position to give the required information for the study. The study observed that most of the Deans and HOD had computers but it's their secretaries who created and received e-records pertaining to their offices.

Category Five comprised 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. Table 1 indicates the size of the sample derived from each stratum.

Stratum	Sampling Method	Main Campus	Chepkoilel Campus	TOWN CAMPUSES		
				School of Medicine and Public Health	Eldoret West	School of Law
Management	Purposive	4	-	-	-	-
ICT Centre	Purposive	2	2	1	-	1
General Administration Staff	Purposive	5	3	1	1	1
Secretarial staff	Purposive	8	7	1	1	1
Records/Accounts Staff	Purposive	6	4	1	1	1
Total = 52		**25**	**16**	**4**	**3**	**4**

Table 1: **Distribution of sample size at Moi University main campus, Chepkoilel campus and town campuses** (N=52)

After the collection of data, the researchers organized, categorized and relationship between the categories were established. The data collected was both qualitative and quantitative. Themes and categories were generated describing the emerging issues. Statistical data was presented in the form of tables and pie charts and content analysis was used to organize data collected through interviews. Some questions were not coded and data emerging from them was presented in the form of single quotations.

The findings of the study

The study interviewed 52 respondents out of a sampling frame of the 60 respondents. Eight percent of the respondents were not able to grant interviews due to their busy schedules. The response rate was therefore (86.7%). Moi University Main Campus totalled (40.1%), Chepkoilel Campus (30.8%), School of Law had (7.7%), Eldoret West Campus had (7.7%), and Schools of Medicine and Public Health had (5.8%). 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. Out of 52 respondents (48.1%) were male while (53.8%) were female.

Business process analysis and records generated and received electronically

The findings revealed that Moi University's core business activities include generation and dissemination of knowledge, learning and teaching, policy formulation and planning and implementation of programmes which includes ICT programmes. Records generated and received electronically include:

- Student's 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;
- Financial records and;
- Library records, among others.

An analysis of the business processes at Moi University indicates that the institution was generating records electronically. Computerization has led to an increase of paper records that emanates from the printing of e-records. The study observed that at the various schools, departments and administrative offices computers were used to generate and receive records in electronic formats.

The respondents' made remarks regarding the importance of e-records and their remarks are captured in Table 2.

Table 2: Respondents remarks on the importance of electronic records (N=52)

Category of Staff	Remarks from Respondents	No. of Respondents
Management Staff	▪ "They enhance faster communication for example, writing memos"; ▪ "Easy to update and retrieve information"; ▪ "E-records help in forecasting future performances";	4

Category of Staff	Remarks from Respondents	No. of Respondents
	▪ "E-records are used for research and teaching"; ▪ "They facilitate the production of reports" and ; ▪ "E-records are used for decision making"	
General Administration Staff	▪ "E-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"	11
ICT Staff	▪ "They enable high speed and better organization of records"; ▪ "Ease of access and of retrieval"; ▪ "Flow of information from source to destination is easily monitored for example, websites" and; ▪ "Students and staff can access journals online"	6
Records and Accounts Staff	▪ "Facilitates faster access to information"; ▪ "Enables the storage of vast quantities of data"; ▪ "Enables faster and	13

Category of Staff	Remarks from Respondents	No. of Respondents
	accurate financial management"	
Secretarial Staff	• "Enhances security of information through the use of passwords"; • "The quality of work is better compared to the manual system and; • "Enhances safety of documents"	18
Total		**52**

An analysis of the business processes at Moi University indicates that the institution was generating records electronically. Computerization has led to an increase of paper records that emanates from the printing of e-records. 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 e-records contribute to the functions of Moi University.

Strategies used for managing e-records

The study established that there were various strategies that were used by staff to manage e-records from creation to disposition. The specific factors investigated were about e-records: creation and receipt; access; security and integrity; storage; preservation and appraisal and disposition.

Strategies used to create and receive e-records

The question was directed at general administration, records/accounts and secretarial staff whose responsibilities include: creation and receipt, use, maintenance and disposal of e-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 since they were responsible for policy issues, provision and maintenance of the ICT infrastructure respectively.

Ninety two percent of respondents out of 42 respondents made printed copies of the e-records they created while (92.9%) made printed copies of the official records they received. Sixty nine percent of the respondents saved records they generated electronically on computer files while (38%) saved e-records they received on the computer hard disks. E-records received at the university included official electronic mail (e-mails), fax messages and official communication from stakeholders such as, commercial banks. Twenty four percent of the respondents stored information they generated on storage devices while (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 the majority of the 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. Respondents maintained soft copies of the e-records they created and received. 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. This can be attributed to staff's lack of awareness of the importance of e-records as official records. Only a small percentage of the respondents saved e-records on storage media for future reference.

The strategies used to create and receive official e-records at Moi 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 e-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.

(While undertaking a pilot study the authors interviewed the legal officer. The legal officer reported that there was no legislative or policy framework for managing e-records at Moi University). 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. Paper records had continued to clog the office space thus, resulting in the in-accessibility of records whenever they were required for reference. On the whole, these findings indicated that there were no control measures after the creation and receipt of e-records. Registration, classification, indexing and tracking of e-records was non-existent. The strategies the respondents used to create and receive e-records are captured in Table 3.

Table 3: Strategies used to create and receive electronic records at Moi University (n=42)

Strategy	No. citing strategy	%
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	24
Receive and store on storage devices	8	19

*Multiple responses were possible

Strategies used to access e-records

The study sought to establish how staff/users including stakeholders accessed information contained in e-records. All the 42 respondents made printed copies of e-records and filed copies manually in folders to facilitate access while (78.6%) respondents used storage devices such as CDs and flash discs as a strategy to ensure that whenever

the information was required it was made available. Respondents who used backups were (66.7%) while (21.4%) respondents used electronic mail to distribute e-records to staff and users. One respondent reported that e-records were microfilmed to facilitate access. Microfilming was used by the Finance Department to ensure that financial records were made available and accessible whenever required. Electronic financial records deemed to be of long-term fiscal value to the university were 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.

Although Moi University was making a transition from traditional paper-based records to e-records, making this information accessible to users and stakeholders was mainly done by maintaining printed copies of e-records. Access to e-mail was minimal because not all staff have access to computers. Most of the computers are stand alone hence they can only be used for routine office functions such as typing letters and memos. The few staff with access to the internet at times went for days without internet due to breakdown of equipment and non payment of subscription fees. This was especially the case in the libraries. Most staff and students access their e-mails in the private cyber cafes within and outside the university at a small fee. The problem was compounded further by lack of information technology (IT) skills by some staff, students and users to enable access e-records. Some staff did not have e-mail addresses and even those with e-mail addresses, rarely checked their mailboxes. Moi University has a local area network in main campus. Connectivity between the various campuses was minimal.

Although some respondents used 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 observed that computers that were currently in use did not have floppy disk drives to read the information contained in floppy diskettes. Some of the floppy diskettes contained vital information and if this information is not transferred to newer storage media the university could lose

vital information. The strategies used by the respondents to access e-records are presented in Tables 4.

Table 4: Strategies used to access e-records (n=42)

Strategy	General Administration staff	Records/Accounts Staff	Secretarial Staff	Total No. Citing Strategy	%
Making information available on hard copies	11	13	18	42	100
Storage devices	9	12	12	33	78.6
Back Up	8	10	10	28	66.7
Electronically via e-mail	3	1	5	9	21.4
Saving on microfilm	0	1	0	1	2.3

*Multiple responses were possible

Strategies used to ensure security and integrity of e-records

The study sought to establish the strategies that were used to ensure that security and integrity of e-records was maintained. All respondents used passwords to secure and ensure the security and integrity of e-records while thirty nine (92.9%) respondents used anti-virus. Forty eight percent respondents backed up information they created and received electronically while (28.6%) respondents used burglar proofing to safeguard the hardware and software. Twelve percent of the respondents used physical security (Moi University guards) to deter unauthorized persons from accessing the office area while (11.9%) respondents said that authority to create and receive official e-records was entrusted to people of integrity. Entrusting responsibility and authority to people of integrity was another measure used to secure e-records; this was not a *must* for all staff charged with the responsibility of creating or receiving e-records. This was done in offices that dealt with sensitive information such as the Examinations and the Finance Department. One respondent reported that they made recordings of persons who accessed the office while

another respondent acknowledged the use of encryption as a measure of ensuring security and integrity of e-records.

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 system that was 100% secure and any attempt to secure e-records was for reduction of the threat rather than its complete eradication. 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. Logical security was lacking as some 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. 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 the problems they experienced in their work caused by constant virus attacks. 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, minutes or invoices are written without the assistance of computers. Ensuring the security and integrity of e-records is therefore, crucial due to increased threats to the systems and the records they process, store and transmit. The study noted that the university did not have a disaster preparedness plan for e-records. Although some staff back up the e-records they created and received it was done as an individual measure without necessarily involving the university. The university has a backup system for the network but there is no policy on how staff and users should backup e-records. The strategies used by the respondents' to ensure the security and integrity of e-records is captured in Table 5.

Table 5: **Strategies used to ensure the security and integrity of e-records** (n=42)

Strategy	No. citing strategy	%
Use of passwords	42	100
Use of anti-virus	39	92.9
Use of Back Ups	20	48
Burglar proofing	12	28.6
Physical security	5	11.9
Entrusting responsibility and authority to people of integrity	5	12
Maintaining a list of persons who access the office	1	2.3
Encryption	1	2.3

*****Multiple responses were possible

Strategies used to store e-records

It is apparent that the respondents used a variety of strategies to store e-records. All respondents printed hardcopies of e-records they created and received as a way of ensuring that records were stored for future reference. Making printed copies was a means of ensuring that e-records were made available whenever required. Respondents who used storage devices were (92.9%) while (71.4%) respondents created personal folders on computers to store e-records. Some (47.6%) respondents backed up information they created and received electronically while (2.3%) respondent used microfilming as a means of storing e-records. Storage media was used to store e-records by (92.9%) respondents. It was established that 71.4% of the respondents who used personal folders to store e-records did so as a personal initiative and gave the folders names that were only known to them. The study noted that there were no controls in place to provide guidance on the management of computer files to prevent their misuse.

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). The study observed that some staff did not seem to be aware of the requirements for naming and storing computer files to aid retrieval. Of the (47.6%) respondents who backed up information created and received electronically did so as a personal initiative and there was no guidance on when backing up was to be done. Only (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 study noted that information in some of the storage media was unreadable because of scratches especially, on CDs due to the manner in which they were carelessly stored in desk drawers, cabinets and on window seals. Some staff members did not label storage media such as, floppy diskettes and CDs. This in turn made it difficult to know what information was contained in the devices unless one scrolled through the contents which took a lot of time especially, when the information was required urgently. Documents were not named or stored in ways that made version control and retrieval efficient or even possible at times. This called into question the reliability of the information of (71.4%) respondents who reported that they used personal folders to store e-records in their personal computers. The strategies used to store e-records are captured in Table 6.

Table 6: **Strategies used to store e-records** (n=42)

Strategy	No. citing strategy	%
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

Strategies used to preserve e-records

All respondents made printed copies as a strategy for preserving e-records while (92.9%) respondents used storage devices. Only (2.3%) respondent reported to use microfilming as a means of

preserving e-records. It was established that all 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 92.9% of the respondents used storage media such as flash disks and CDs to preserve e-records. 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.

The study observed that paper records were kept in storage rooms which had poor storage conditions such as dust and poor ventilation. In some storage rooms paper records were kept on the floors thus exposing them to dust and water and staff continued to store information on floppy diskettes which could not be read by the current hardware and software. The continued use of obsolete hardware will render the information inaccessible and unusable in future. The strategies used to preserve e-records are captured in Table 7.

Table 7: Strategies used for preserving e-records (N=42)

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

*Multiple responses were possible

Appraisal and disposition of e-records

The study sought information from respondents on whether e-records were appraised and the strategies that they used to dispose of e-records. Some of the strategies include:

- Information not required was deleted from the computer to free space and memory;
- No appraisal and e- records are printed and consigned to storage rooms;
- Disposal done by saving on storage devices and ;

- Disposal done by sending the record to the re-cycle bin, among others.

Analyses of the responses indicate that the respondents did not appraise records and there were no guidelines for appraisal. The study noted that the 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 strategies used to dispose of e-records were ad hoc and did not adhere to any policy or standards.

The respondents were further asked whether the university had a policy to guide the management of e-records. A total of 86.5% respondents acknowledged the non existence of a policy for managing e-records while 1.9% respondent acknowledged the existence of a policy but did not know the major areas the policy covered. Some 11.5% respondents were not sure whether a policy for managing e-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. The study noted that the 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 e-records at Moi University the ICT policy should include guidelines for the creation, receipt, use and maintenance, storage, security and integrity and disposal of e-records. Such a policy will guide staff/users in the proper management of e-records from creation to disposition. Without a policy it becomes difficult for Moi University to manage records in an electronic environment.

Professional knowledge and skills of staff responsible for managing e-records

The findings revealed that only 10.6% of the respondents had knowledge and skills in e-records management while 89.4%

comprising general administration, accounts and secretarial staff did not. The 10.6% respondents who had knowledge and skills in e-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 e-records but not from a records management point of view. The 10.6% respondents with knowledge and skills in records management were staff manning Moi University registries however 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 head of Moi University registry did not have knowledge and skills in records management and this had made it difficult for the officer to articulate record keeping and ICT needs of the department among decision makers at the university. The ICT department provided practical training from time to time on the use of computers. However, the induction provided by the ICT Department to staff was not specific to the management of e-records. This was attributed to the fact that ICT staff lacked technical know-how to advice staff on how to manage e-records from a records management point of view.

The study sought information from the four management staff who were interviewed on where staff obtained professional knowledge and skills specifically, in records management. All respondents reported that knowledge and skills was acquired through going to colleges and universities while 75% of the respondents reported that staff acquired knowledge and skills on the job. Only 50% of the 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 e-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 e-records management is a specialized area of records management which one cannot grasp through orientation.

ICT infrastructure and resources available to cater for the management of e-records

The study sought to determine what ICT infrastructure and resources were available to cater for the management of e-records. Those who reported that they were adequate were 11.5% while those who thought that they were barely adequate were 19.2%. The study findings revealed that senior management offices had adequate computers, printers including internet connection. There was concern about inadequate equipment such as storage devices. 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'.* Only 15.3% of the respondents reported that the ICTs and resources were quite adequate and 53.8% did not respond to the question.

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 that the ICT infrastructure and resources available at Moi University to cater for the management of e-records was not adequate. The ICTs and resources that were available were not equipped with e-records management functionalities.

Factors that contributed to lack of adequate ICT infrastructure and resources to cater for the management of e-records include: lack of adequate funds to acquire hardware and software, the benefits of using ICT to manage e-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. With regard to upgrading of computer systems, the study established that this was not often 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 and this had in turn led to loss of vital data.
Respondents' views on available ICT infrastructure to cater for the management of e-records are captured in Table 8.

Table 8: Respondents' views on the available ICT infrastructure and resources to cater for the management of e- records (n=52)

Adequacy of ICTs and Resources	No. of Respondents
Adequate	6(11.5%)
Barely Adequate	10(19.2%)
Quite Adequate	8(15.3%)
No Opinion	28(53.8%)

*****Multiple responses were possible

When the respondents were asked whether computers had a record keeping system, 48% reported that computers did not have a record keeping system while 25% reported that computers had a record keeping system. Other respondents (26.9%) were not sure. Although 25% of the respondents reported that computers had a record keeping system, the study established that the computers did not have a record keeping system. A record keeping system would contribute immensely to the effective management of e-records.

Challenges faced by staff in the management of e-records

The study established that there were many challenges that staff faced in the management of e-records which included:

- Lack of an e-records management policy;
- Lack of funding dedicated to records management;
- Staff's lack of knowledge and skills in records management,;
- Hardware and software obsolescence and ;
- Some staff lack of computer skills, among others.

The ICT staff faced many challenges which included:

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

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

When the respondents were asked how they went about addressing the challenges they faced in the management of e-records, they reported that they:

- consulted ICT staff;
- requested for new computers;
- consulted colleagues for assistance and;
- used their own personal initiative to solve the problems while others forwarded the problem (s) to their heads of departments, among others.

Respondents recommendations on the management of e-records

Respondents made recommendations which include:

- Purchasing of more hardware and software;
- Moi University Draft ICT Policy needs to be operational;
- Entrenching a budget for computerization;
- Continuous training of staff so as to keep up with technological changes in the IT world;
- The university should prioritize key areas (services) for automation for example, students registry, health services and the registries;
- Installation of firewalls and a common anti-virus to avoid loss of data;
- The university should allocate funds for computerization of records and there should be frequent seminars and workshops to equip staff with IT skills so as to enable them to work in a dynamic e-environment;

- The university should give the records management function the recognition it deserves and the starting point would be to automate the registry system and;
- The university should have a recognized records management department headed by an officer trained in records management, among others.

Conclusion and recommendations

Although e-records are considered vital to the business activities of Moi University in terms of teaching, research and decision-making, there was no control measure for ensuring the care of e-records and their availability over time. E-records were not well managed and the existing strategies used for managing e-records from creation to disposition were un-coordinated. Most staff (90%) made printed copies of the e-records they created and received and 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. The strategies used for managing e-records were not effective and this has led to loss of vital information and hampered accessibility to records over time.

The study made recommendations which include:

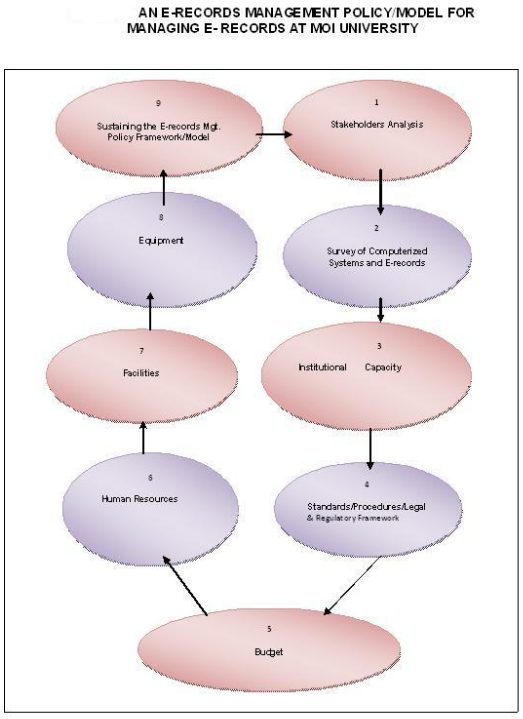
- The provision of guidance to staff responsible for records and records creators on how to manage e-records;
- To enhance the management of e-records the university should adopt the study's proposed policy framework/model;
- Hardware and software should be distributed evenly to all campuses, schools, departments and administrative offices;
- Storage media should be provided to deter staff from personalizing official information stored in the storage media;
- Computers should be constantly upgraded to avoid hardware and software obsolescence and;
- 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, among others.

The proposed policy framework/model for managing e-records at Moi University

Based on the research findings and recommendations of the study, the study came up with a policy framework/model that can be used to streamline the management of e-records (see Figure 2).

Figure 2:



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 as highlighted in the study. The e-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. The policy framework/model is adapted from Roper and Millar (1999). The components of the e-records management framework/model are illustrated in Figure 2.

The components of the e-records management policy framework:

1. *Stakeholders' analysis* - This will include staff and students at the various schools, departments and administrative offices and other stakeholders such as students, staff and commercial banks. 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 e-records* -This information will assist the university to understand the business functions that have been automated and for how long the different series of records are to be kept.

3. *Institutional capacity* - 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. For the success of the e-records management policy framework/model, staff responsible for managing e-records need to be equipped with e-records management skills and they should work in partnership with the ICT department especially when they are designing the record keeping system so that record keeping functionalities are included.

4. *Standards/procedures/legal and regulatory framework* - The university should establish a legal and regulatory framework for managing e-records. The study noted that a lack of a records management policy for paper and e-records had hindered the effective management of records at the university. Moi University's ICT policy should include record keeping functionalities including 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* - The e-records management framework can only be sustained if appropriate funds are made available. 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.

6. *Human resources* - The success of the implementation of the policy framework/model is dependent on staff/users having good records management skills. Moi University staff and especially staff responsible for managing records should be equipped with the minimum skills needed to create a sustainable e-records management programme. The programme should include training in e-records management and the university should incorporate the principles of managing e-records into the mainstream activities of the institution.

7. *Facilities* - In order to ensure access to e-records, both storage media and technology used to create e-records must be stable. E-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 should be kept in appropriate containers. The 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. Due to technological changes that are taking place, the e-records management policy framework/model should have in place a plan for migration of information to newer media whenever necessary.

8. *Equipment* - For the successful management of e-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 e-records management policy framework/ model* - The university should establish a culture of managing records and create a strong awareness of records management amongst staff and users. Promotion of e-records management needs to be done

by introducing induction programmes especially for new employees which incorporates management of records (paper and electronics) as it will make staff appreciate records. The records management office should 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 any breakdown to the sustenance of the e-records management policy framework/model.

Suggestion for further research

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 e-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 e-records management. Studies should also 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. 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.

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