"A SURVEY OF CHALLENGES AND RISKS ENCOUNTERED IN THE MANAGEMENT OF ELECTRONIC RECORDS FOR COMPANIES QUOTED AT NAIROBI STOCK EXCHANGE"

By:

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DECLARATION

This project is my own original work and has not been submitted for a degree in any other university.

Signed: [Signature]
Makobu, Mwambeiro

Date: 21st October 2005

The project has been submitted for examination with my approval as the University supervisor.

Supervisor

Signed: [Signature]

Date: 8th November 2005

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DEDICATION

To my loving wife Susan, beloved son and daughter Kevin and Cindy respectively
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My sincere gratitude goes to my supervisor, Mr. James T. Kariuki for his contribution and guidance during this study.

A lot of thanks go to the respondents of the questionnaires for their willingness and patience to answer the questions in time.

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ABSTRACT

The objective of this study was to determine and document current practice in management of electronic records, challenges and risks encountered in the management of electronic records. The study also established the key factors in development of a recordkeeping system.

The population of the study consisted of all companies quoted at Nairobi stock exchange. Data was collected using a questionnaire personally administered by the researcher. Out of the 31 respondents, 2 were from agricultural sector, 6 from commercial and services sector, 8 from finance and investment sector, and 15 from industrial and allied.

Results of the study show that managers of electronic records are faced with a number of challenges. Amongst them, limited knowledge as to what constitutes a record in electronic environment, end users who have little knowledge on effective management of electronic record, lack of effective and modern systems for recordkeeping and island of information systems which are not integrated. As a result of these challenges organizations are exposed to a number of business risks. Amongst them are potential losses of money and customer goodwill.

Further, the study gathered from the respondents what they considered as the key steps in development of a recordkeeping system to overcome the challenges as well as mitigate the risks. Their recommendations are as follows:

1) Ensuring that an environmental analysis is conducted first and fore most;
2) Development of system specifications and promulgating an appropriate mix of procedures and standards; and
3) Training of technical personnel and end users.
CHAPTER ONE: INTRODUCTION

1.1 Background

In the early day of computerization up to early 1980’s computers systems for processing the organizations’ transactions were mainframe computers. The major input media of data for these systems was the punched cards, and the output was massive amounts of paper printouts. The focus was on automation of business areas with massive and repetitive transactions, such as accounting and payroll. The outputs of these systems were automated versions of traditional paper documents, such as bills and orders. Most employees had little or no direct access to the systems or to the data. They were largely dependent on system professionals to interpret and provide for their information needs.

Requests for data or information in the form of reports were submitted to the computer center and the request were processed in batches and then returned to the person who needed the information as paper printouts (Bantin, 2002).

Similarly, archivists and records managers relied heavily upon conversion of computer data to paper documentation to do their work. The prevailing recordkeeping methodology of the time was to generate printouts of computer files - the so-called “data dumps” - as a means of appraising the value of the data. For records with primary value to the institution, the practice was to print and store the record in established filing systems. For records with secondary values, the general rule was to retain the files on computer tapes in tape libraries and develop descriptive finding aids to facilitate access to the tapes. Overall, recordkeeping practices in the early decades of automation were not radically different from techniques employed on paper records. In those days it was easy to develop records management strategy because all that was required was to convert paper forms to automated files and vice versa, and then applying recordkeeping techniques for managing physical records. In this environment, methodologies designed for the management of papers systems were relevant (Terry Cook, 1999).
From 1980s through to the 1990s, dramatic and frequent changes in technology were witnessed. The most prominently of these changes was the emergence of the personal computers. Also, there has been convergence of computer and communication technologies and utilization of the combined products for business management. Further, we have witnessed the development of database management systems, client-server architectures, and distributed computing and enterprise-wide applications. All these factors have been contributing to the massive acquisition of computerized systems by organizations. The driving force behind this phenomenon of, organizations computerizing in mass has been the immediate efficiency and cost saving benefits accruing to the organizations. Indeed some organizations are using system computerization as a strategic tool for pursing their objectives. These developments have had the effect of dramatically changing the way data, information and records are created and managed.

These developments have resulted in large quantities of records being created electronically. Whereas in the past records were created in paper formats, increasingly many organizations are creating records in electronic formats. Although the introduction of modern Information and Communication Technologies (ICT) is a welcome development, the underlying issues relating to the management of electronic records remains yet to be addressed. Many of the attendant problems associated with electronic records such as the legal admissibility of electronic records, the speed at which they can be altered without trace, and their dependence on hardware and software which are constantly changing are issues yet to be fully addressed. Moreover, there appear to be a misconception amongst policy and decision makers that introduction of modern information technologies is a panacea of the information needs in the organizations (Sphere, 2003).

Recordkeeping supports efficiency and accountability through the creation, management and retention of meaningful, accurate, reliable, accessible and durable evidence of the organizations activities and decisions. Organizations need to keep track of their activities and decisions, so that its future activities can be pursued on the basis of full and accurate knowledge of what has occurred in the past. Retention of organization corporate memory.
in a knowledge management database system, in form of records help employee of an organization perform their duties efficiently and ensures that audit trails necessary for accountability and transparency are maintained. Good recordkeeping also helps to protect the legal, financial, and other interests of the organization.

Records are of importance and value to organizations. Whereas the paper (physical) records are easy to handle, manage and protect, the same cannot be said for electronic records. Though computerization has produced great efficiency and speed of getting transactions processed and thus records generated, the challenge of managing and protecting electronic records have not been adequately addressed. This has exposed the organization to potential loss of vital information and records. Computerization has indeed lead to ad hoc and sub-standard record keeping practices. The adoption of word processing, e-mails and other multi-media applications has led to a situation where essential evidence of organization decisions and transactions is often kept in the hard discs, e-mail inboxes or shared folders of individual employees. This form of record keeping does not meet the requirements for accurate, reliable, accessible, and durable evidence of the organization activities (National Archives of Australia, 2001). Moreover, such a practice exposes organization to unnecessary risk in capturing and management of essential evidence. For instance, an employee may delete records without giving adequate thought of whether those records need to be retained, and also there is distinct possibility of large numbers of records being lost each time an organization’s computer hardware and software platform are upgraded.

In an effort to standardize management of information, in particular records, International Standard on records management, ISO 15489 was promulgated in October 2001. This standard defines records as information created, received and maintained as evidence and information by an organization or a person in pursuance of legal obligations or in the transaction of a business. Further, it defines recordkeeping system as a means for capturing, managing and providing access to the records through time. The ISO also defines records management as the field of management responsible for the efficient and systematic control of creation, maintenance, use, and disposal of records, including the
process of capturing and maintaining evidence of, and information about business activities and transactions in form of records.

1.2 The Research Problem

The challenge of managing electronic records stems from the ease with which they are created, distributed and stored. Further, the knowledge and skills used for managing physical records are not appropriate for electronic records and therefore they are inadequate to manage electronic records (Dollar, 1992).

The processes that were satisfactory for managing records in the past are now inadequate due to pervasive presence of electronic records and the associated challenges of technology and volume. For example, the adoption of electronic mail and other communications technologies that produce new types of records. Another example is the complexity of electronic records and the business process that produce them. Further, the exponential growth of records resulting from ease with which electronic records are created distributed and stored. With this growth in the types, complexity and volume of business records, there is a newfound need to refocus on the processes by which records are managed. Therefore, it is appropriate to begin this refocusing effort by assessing how well records, particularly electronic records, are currently being managed.

A research study conducted in United States of America in 2003 revealed that, most organizations have operational problems in managing their electronic records. The study further revealed that, the problems associated with management of electronic records were resulting into business risks. For instance, in cases where the risk had matured organizations had incurred heavy financial losses mostly through litigations and fines for non-compliance with the law (Williams, 2003).

Given the imperative of records to an organization and the challenges facing records managers, archivist and other information professionals, the developed counties like United States of America, Canada, UK, and Australia amongst others have developed
legal and policy framework to govern the management of electronic records. However, in Kenya, to date, no country-wide survey has been undertaken to establish how records created electronically are being managed (Mnjama, 2003). There is, therefore, a need to undertake such a survey to provide information on how electronic records are being managed and the challenges being encountered.

This research study was intended to establish the challenges faced by information professionals in management of electronic records. The study also established how the challenges are impacting on business risk. Finally, the study evaluated the strategies the organizations should employ to overcome the challenges as well as mitigate the business risks.

1.3 The objectives of the Study

The overall objective of this study was to determine and document current practice and challenges in the management of electronic records. The study also established the business risks inherent in management of electronic records, and critical factors in design and development of a recordkeeping system.

Specific objectives included:

a) To establish what managers considers to be the key challenges in the management of electronic records;

b) To establish what managers considers to be the key business risks inherent in management of electronic records; and

c) To establish critical factors to be considered in the design and development of a record keeping system.

1.4 The Importance of the Study

Organization use records and documents to facilitate efficiency running of the business and timely decision making. Organizations have embraced computerizations in mass, in order to realize the benefits of advanced information technology. The focus has been on
immediate benefits of computerization (Timothy Sphere, 2003). Organizations have a duty to ensure that the records and documents produced by the computerized systems will support their primary and secondary information needs in the future. As citizens become aware and demand for their rights, there is an increased disputes and litigation. For that matter, records have been assuming greater value than ever before. Records have and continue to play a vital role in determining the outcome of disputes and destiny of the organizations.

The outcome of this study will be of great benefit to:

a) **Decision and Policy makers.** The outcome will bring to fore the current practice of electronic records managers in the organizations. This will help the managers to know whether the current practice is exposing the organizations to any form of risk, and therefore commit resources in order to mitigate such risks, and avoid potential future losses.

b) **Information and records management specialist.** Information professionals must understand the information needs of their potential clients, employers and the general society. The outcome of this study will identify the challenges and threats in organizations with regard to management electronic records. This knowledge will assist information professionals to develop effective tools for management of information.

c) **Academicians.** This being an emerging area of study, more research studies are needed. The outcome of this study may act as stimulus to academicians to carry out research in the same and related areas so as to increase the body of the existing knowledge in records management.
CHAPTER TWO: LITERATURE REVIEW

2.1 The Need for Recordkeeping

Any organization irrespective of its objectives or size requires a good recordkeeping system. A good recordkeeping system supports efficiency and accountability through creation, management and retention of meaningful, accurate, reliable, accessible and durable evidence of organization activities and decisions. Records are necessary for an organization to keep track of what its decisions and actions, so that its future activities can be pursued on the basis of full and accurate knowledge of what has occurred. Retention of the corporate memory of the organization, in form of records, helps staff perform their duties efficiently and ensures that audit trails necessary for accountability and transparency are maintained. Record keeping also helps to protect the legal, financial and other interests of the organization. At the national level, records are vital national assets and recordkeeping is essential for a reliable and durable long term historical record.

Prior to 1980's there was little need for managers to consider computerization of their information systems for most of the organization in existence then. There was no or little need for organizations to know how much information was collected, processed, and distributed. Further, the technology involved was minimal and the information itself was not considered an important asset. The management process was considered a face-to-face, personal art and not a widely distributed, global coordination process. That has all changed (Bantin, 2002).

In advent of globalization the markets environment has drastically changed both in size and characteristic. Organization which used to operate with in single economy, has spread or over the world. Therefore, information need to be collected in the market areas, and formulate policies that will advance the intended objectives in the most effective and efficient manner. Hence, the competition and markets environment have drastically
shifted and no single organization can afford to ignore how information is generated, distributed, shared and managed.

In an effort to improve management of information, organizations have adopted computerization in mass. As the computerization is adopted the focus mainly has been the reason of existing, increasing the shareholders wealth. The management of information generated by the computerized system has been treated as a secondary issue and this exacerbated the drift towards ad hoc or substandard recordkeeping practices. The adoption of word processing, email and other multimedia applications has led to a situation where the essential evidence of organizations' decisions and transactions is often kept in hard drives, email in-boxes and shared folders of individual staffs or workgroups. Such practices pose unacceptable risks to capture and management of essential evidence. Not only may individual staff delete records without giving adequate thought to whether those records need to be retained, but there is also distinct possibility of large numbers of records being lost each time an organization’s computer software or hardware platform is upgraded.

However, this is changing and a fundamental re-evaluation of the techniques required to capture and preserve records as evidence of organizational transactions is taking place. This situation is presenting a major challenge to organizations as they try to balance their drive for profit and/or efficiency against the need to meet their legal and information requirements. That is, original demand of computing technology was aimed at reducing cost and increasing the speed of transacting business. As technology is developed to address this demand, the amount of information generated, processed and distributed within and amongst organizations have drastically increased. As these changes take place, the stakeholders are becoming more informed and hence become more assertive in demanding their rights. National Governments are responding to these changes by enacting laws aimed at protecting their citizens. Another challenge to our society is maintaining the significant electronic evidence of our times for future generations.
Fortunately, while technology has contributed to the problem, it also provides the means for development and implementation of the solution. The solution lies in designing and implementing systems that ensure full and accurate records are created and then retained for as long as they are required to support business accountability and wider stakeholders’ interest. For example, Income Tax Act requires that any person carrying on business should preserve every book of accounts, and every document which is essential for the explanation of any entry in any book of account for a period of not less than ten years after the year of income to which that book of account or documents relates (Cap 470, Section 55(2)). There are many other legal provisions demanding organization to create certain records and preserve them for defined durations. Managers must ensure that the recordkeeping systems they have put in place are complying with all laws.

The introduction of computers in organizations for creating and preserving information has led to emergence of electronic records. In turn this has forced information management professionals to articulate the basic principles and components of good recordkeeping in ways that can be satisfied in the electronic environment. Among the information professionals a consensus has emerged on the essential elements of a theoretical and practical framework for best practice in a modern recordkeeping. Many documents have published to document the consensus. The most outstanding and widely used among them is the International Standard in Records Management, ISO 15489.

2.2 International Standard in Records Management ISO 15489

The objective of ISO 15489 is to ensure that, adequate records are created, captured and managed. This done by standardization of records management through development and promulgation of policies and procedures that ensures appropriate attention and protection is given to all records and that evidence and information they contain can be retrieved efficiently and effectively using standardize methods.

The ISO 15489 came up as a consensus to standardize international best practice in records management. It applies to the management of records in all formats or media.
created or received by any organization in the process of conducting its business. It provides guidance on determining the responsibilities of organization for records and records policies, procedures and systems. It further provides guidance in records management in support of a quality process framework to comply with ISO 9001, quality management systems.

The ISO 15489 defines a record as information created, received and maintained as evidence and information by an organization or person, in pursuance of legal obligations or in the transactions of business. Records are traditionally regarded as documents in paper files or bound volumes. In fact records do exist in many physical formats, such as photographic prints, microfilms and multitude of electronic formats.

According to ISO 15489 a record is subset of information as information includes published and unpublished documents such as journals, newspapers, and technical literature as well as data collections. Information contributes to an organization knowledge base and helps organizations mangers in decisions making and in achieving their goals. Such information may be collected in relation to business activity and support such an activity, and may or may not in itself provide evidence of that activity.

Records possess certain characteristics that distinguish them. Not all recorded information may qualify to be a record. Records are a product of a particular action that occurred at particular time. To retain their value as authentic and reliable evidence of particular actions they must not be altered or tampered with. Records derive their meaning, and therefore their usefulness and value as evidence, from the context in which they were created.

A record should correctly reflect what was communicated or decided or what action was taken. It should be able to support the needs of the business to which it relates and be used for accountability purpose. For a record to retain it original meaning it should contain, or be linked to, or associated with the metadata necessary to document the relevant transaction.
Records management responsibilities and authorities should be defined and assigned, and promulgated throughout the organization, so that, where a specific need to create and capture records is defined, it should be clear who is responsible for taking the necessary action. These responsibilities should be assigned to all employees of the organization including records managers, allied information professionals, executives, business unit managers, systems administrators and other who create records as part of their work, and should be reflected in the every employee job descriptions. Specific leadership, responsibility and accountability for records management should be assigned to a person with appropriate authority within the organization.

Any organization seeking to comply with ISO 15489 must establish, document, maintain and promulgate policies and procedures, and practices for records management to ensure that its business need for evidence, accountability and information about its activities are met.

Organization should define and document policy for records management. The objective of the policy should be to create and manage records capable of supporting business functions and activities for as long as they are required. Organizations should ensure that the policy is communicated and implemented at all levels of the organization hierarchy. The policy should be adopted and endorsed at the highest decision-making level and promulgated throughout the entire organization. To enhance the effectiveness of the policy, an officer with adequate authority should be given the responsibility of overseeing and ensuring compliance with the policy. Further, the policy should be derived from the analysis of the business activities. It should define the legislation, industry regulations, and other standards and best practices, and how they apply to the creation of records connected to business activities. This process should take in account the organization economic factors as well. Policies should be reviewed regularly to ensure that they always reflect current business needs.
2.3 Recordkeeping Systems

Traditional records management methodology focuses on managing and controlling records. Recent developments in records management are now focusing on evaluating the processes of creating records and the systems for managing them. Under these developments the goals of records management is identification and capture of records generated in the context of business processes, and the creation of systems that will manage and preserve these records. This means that, current emphasis is on the management of recordkeeping systems as opposed to the management of the records themselves.

2.3.1 Identification of Recordkeeping Requirements

The term "system" is used in its broadest sense to depict the organizational mission, business processes, policies, procedures, practices, human resources and automated mechanisms in place to bring about desired ends, which in this case is trustworthy recordkeeping. To depict the difference between recordkeeping systems form other similar systems, information professionals have designated the identification of a set of requirements for a recordkeeping system as the initial critical task. In the University of Pittsburgh electronic records project the first task was to research on the requirements of recordkeeping system. The project established a set of functional requirements for recordkeeping that addressed three levels of requirements: the organizational level, the recordkeeping system level, and the record level. Within these levels, they established five categories. These are conscientious organization, accountable recordkeeping system, captured records, maintained records and useable records. Since the creation of the Pittsburgh document, numerous other projects have produced lists of requirements for recordkeeping systems. The most prominent are those created by the United States Department of Defense, the National Archives of Australia, and University of British Columbia (Bantin, 2002).

The various lists of recordkeeping requirements differ, in some cases significantly. However, there is a growing consensus on several critical points. Most of the lists of
recordkeeping requirements agree on the basic types or categories and functionality a recordkeeping system must possess. The basic requirements are that the systems be compliant to legal and administrative requirements, national and international standards, and best practices for recordkeeping.

On the overall the organization should have its recordkeeping policies and procedures well documented. Further, the system hardware and software should be regularly tested to ensure that business records being created are consistent with activities, they are accurate and audit trails is being maintained for all business processes. The systems should ensure that all components of a record, including relevant metadata, notes, and attachments can be accessed, displayed and managed as a unit or complete record of a business process, and that the system include an authorized disposition plan. Finally, all sets of requirements specify that the recordkeeping system must ensure the usability of the business records in the future, and the system must be capable of recreating the content of records and any relevant metadata within a new system without loss of any vital information.

2.3.2 Relationship of Recordkeeping System and Other Systems

According to Luciana Duranti there are three models of relationship between recordkeeping systems and other information systems. These relationships are, recordkeeping functionality be built into the active transactions processing system, records be managed in a completely separate system, and a hybrid of the two approaches.

At present there is no consensus on this issue, largely because there have been no significant tests of the costs and effectiveness of building recordkeeping systems in a variety of automated environments. Conceptually, some information professionals are arguing that it's easier to manage records in their own separate environment, much in the same way that management information systems (MIS) manage information. In MIS environment decision support systems (DSS) and data warehouses extract data from the transaction processing systems (TPS) and move it to a separate automated system, which is typically managed by a separate staff operating with its own set of policies and
procedures. This argument further proposes that, this same strategy could be applied to create recordkeeping systems. As records are created in the TPS, they would be captured and moved to a separate but linked environment managed according to its own set of requirements by the records management staff. It is also proposed that, for records to be authoritative they need to be maintained by an independent person, not the creator, who has no special interests in the records and should possess the necessary skills for records management. This was first advanced by the Indiana University electronics records project and later adopted by ISO 15489 as well.

However, the strategy to be employed will be dictated by the recordkeeping environment, the requirements of the organization and the resources available. In less structured environments, such as those where e-mail and electronic documents are exchanged without the benefit of defined work flow or structured work processes, the need for a separate, well defined recordkeeping environment may be essential to the capture and preservation of records. In other words, every environment is different and will demand different approaches. Consequently the “one-size fits all” strategy for designing recordkeeping systems will likely not be effective.

2.4 Documentation Necessary to Create Authoritative Electronic Record

The concept of evidence is a very critical element within the definition of a record. Without sufficient documentation describing the content of the record and the context of its creation, the record loses it value as evidence and in some cases ceases to be a record. This requirement applies for both physical and digital records. The emergence of electronic records, however, has created some new problems and challenges.

2.4.1 Challenges and Issues

The primary challenge in management of electronic records is their virtual nature. Consequently, electronic documents cannot be viewed in the same way as paper records, where the content, context and structural metadata is embedded in or is part of the record. In automated systems, the vital metadata, where it exists, may or may not be physically
associated with the content data. Vital links between metadata and the record content data may exist only in computer software programs. In some cases, the metadata may actually not be a part of the automated system at all, but may exist only as a paper document totally disassociated with the records it is describing.

Records management professionals are concerned in that system metadata as typically defined by systems analyst and programmers is often not as complete as necessary to describe a record. Transaction logs maintained in typical transactions processing system (TPS) do contain some critical data on updates and revisions, but overall, archivists generally agree that these logs do not provide sufficient evidence. One of the major concerns is the relative lack of metadata related to the context of creation and use of metadata that addresses the questions of why the record was created, who were the users of the record, and who has the custodian of the record. David Bearman has proposed that, the availability of this contextual metadata could make the difference between a useful and a useless record, particularly when viewed over longer period of time. Another deficiency from a recordkeeping perspective for a typical system is the absence of some critical documentation on the structure of the record. That is, the structural metadata describing how to open and read a record as it was originally created and viewed. In the overall, the absence of critical metadata has meant that, most collections of electronic data, electronic documents, or information are not records because they cannot qualify as evidence (Bearman, 1994).

Formal records management practices have become an important part of conducting business within organizations. Introduction of more strict legislation coupled with increase in knowledge by stakeholders who are demanding greater transparency and accountability has contributed to organization adopting formal records management practices. The laws and regulations being enacted are aimed at securing, managing and archiving critical information in form of records. Unfortunately most of these laws and regulations do not spell out the road map for compliance. Information professionals are being left to fend for themselves in search of the right combination of products, polices and procedures to ensure that they are complying with these laws. This process of finding the right combination of the systems components is a big challenge in management of
electronic records. For example, according to Giovanna the biggest challenge in the management of electronic records is the management in U.S.A. is how to capture e-mails as records (Giovanna, 2002).

Many organizations recognize that, e-mails constitute their greatest source of liability in event of litigation. The policy advocated is that, when an e-mail qualifies as a record, it should be printed out and saved on paper format. In a distributed computing environment this policy is hard to enforce, since compliance is up to each individual at his or her desktop. Moreover, the volume of e-mail for business transactions has grown to point that a print-to-paper policy is impracticable. In some organizations systems administrators have adopted the practice of deleting e-mails from users' in-boxes after messages reach a certain volume or date limit. If users are not transferring records materials out of their in-boxes to records management systems or other storage, the records are simply lost (Wato, 2003).

In many organizations, electronic records management has not been an integral component of information technology (IT) planning and systems design. In many instances, the IT managers have failed to take records needed into account while designing the information systems they will need to manage information resources. To overcome this problem, IT professionals need to understand the business and legal imperative of separating organization records from non-record information, and the importance of disposing of records materials in a prescribed manner.

In client-server computing environment, the end-user must be trained on how determine whether a document is an organization record or not. This inevitably will require all end users to be trained in basic records management. This approach may face resistance from the employees and hence compromise the process. Further, where the organization decides to introduce electronic records management systems, they may require substantial business process reengineering. Electronic records management has some effect on everyone's work processes, and if the processes are not re-designed to accommodate the new system, it may not work. The redesign of work process again may face resistance, and compromise the outcome.
The above challenges has caused information professional to rethinking and identify new strategies for documenting records. Three strategies have so far been advanced. These are identification of recordkeeping metadata, timing of archival inputs, and value of the traditional finding aids.

### 2.4.2 Identification of Recordkeeping Metadata

The most encountered challenge in recordkeeping is the determination of the types of metadata needed. Information professionals have recognized that before they could properly describe and identify the records, they need first to precisely define the types and categories of metadata to be captured.

One of the pioneer research project designed to identify key recordkeeping metadata was the electronic records project undertaken in the period from 1993-1996 at the University of Pittsburgh. The primary objective of this project was to develop a statement of requirements needed to ensure preservation of evidence in a recordkeeping system for electronic records. This project developed a set of metadata specifications designed to satisfy the functional requirements for evidence. That is, to guarantee that, the data object will be usable over time, be accessible by its creator, and have properties required for authoritative records. The project identified sixty-seven metadata items organized into six categories or levels. Since then, several other institutions or projects have put forward their own set of recordkeeping metadata. Among them are the National Archives of Australia, the United States Department of Defense, and the University of British Columbia School of Library and Information Science. Most of these lists of recordkeeping metadata differ noticeably in the way they are organized, in the amount of description they provide on the specifications, and, most importantly, in the specific items they list as essential or mandatory requirements. At present, there is no overall and concrete consensus on a core set of metadata specifications or a set of minimum metadata standards (Bantin, 2002). However, there some growing consensus among professionals in certain key issues relating to metadata. For example, archivists stress that records require more metadata documenting the context of creation if they are to be understood and interpreted, particularly over long periods of time. There is also agreement about the
basic categories of metadata that systems should capture and retain. For instance, most record metadata lists include various pieces of documentation describing the context of creation. This contextual metadata typically includes information on the agents involved in creating, receiving, and transmitting the record, the date of receipt, and the relationship of the record to the specific business processes. Further, a metadata model should include some documentation in terms and conditions for access and use. Most lists of metadata specifications also include data on the disposition of the record, such disposal authorization and date, and a disposal action history. In summary most lists include metadata describing the record content, such as information on title of the record, date of creation, the subject, and how the content of the record is structured.

2.4.3 Timing of Archival Input

A second issue relating to the documentation of electronic records involves the determination of the point of record management process should an archivist become actively involved. Most of the archivists are of the view that that the profession should be more proactive and be involved at the systems design stage. Proponents of this position, like Charles Dollar, argue that documentation of business processes cannot be postponed until the point when records become inactive. Only in this way can archivists hope to document business transactions throughout their life cycle. Advocates of this position warn that, if procedures for early identification and maintenance are not established, records, and particularly electronic records, may never survive or even be created (Dollar, 1995).

The flip side of the above argument is that, by introducing metadata requirements designed to satisfy the needs of future users, archivists compromise the impartiality of the records. When the impartiality of the metadata is compromised, their value of a record as evidence will be compromised, which means, ultimately, that the underlying objective of metadata strategies of preserving the evidence will be defeated. Advocates of this position further argue that, archival participation in the design and maintenance of metadata systems must be driven by the need to preserve them as archival documents, that is, as evidence of actions and transactions, not as descriptive tools (MacNeil, 1995).
2.5 Models for Management of Electronic Records

Strategies for managing electronic records have been described and depicted within two basic records management models or theoretical frameworks. These are the records life cycle model and the records continuum model.

2.5.1 Life Cycle Model

The life cycle model for managing records, as articulated by Theodore Schellenberg has been the prominent model for management of information for a long time. However, this model has been challenged as inappropriate more so for managing electronic records. This model portrays the life of a record as going sequentially through various stages or periods, much like a living organism. In stage one, the record is created, for a legitimate reason and according to certain standards. In the second stage, the record goes through an active period when it has maximum primary value and is used or referred to frequently by the creating office and others involved in the decision-making process. During this time the record is stored on-site in the active or current files of the creating office. At the end of stage two the record may be reviewed and determined to have no further value, at which point it is destroyed, or the record can enter stage three, where it is relegated to a semi-active status, which means it still has value, but is not needed for day-to-day decision-making. Because the record need not be consulted regularly, it is often stored in an off-site storage site. At the end of stage three, another review occurs, at which point a determination is made to destroy or send the record to the next stage. Stage four, is for inactive records with long-term, indefinite, archival value. This small percentage of records is sent to an archival repository, where specific activities are undertaken to preserve and describe them.

The life cycle model not only describes what will happen to a record, it also defines who will manage the record during each stage. During the creation and active periods, the record creators have primary responsibility for managing the record, although records managers may well be involved to various degrees. In the semi-active stage, it is the
records manager who takes center stage and assumes major responsibility for managing the records. Finally, in the inactive stage, the archivist takes the lead in preserving, describing, and providing access to the archival record (Penn et al., 1994).

In summary, the life cycle model has contributed to the creation of a fairly strict demarcation of responsibilities between the archivist and the rest of records management professionals. Among archivists it has resulted in a tendency to view the life of a record in terms of the cycles.

The chief supporters of the life cycle model as it pertains to electronic records have come from the electronic records research project team at the Master of Archival Science Program at the University of British Columbia. Luciana Duranti and Heather MacNeil wrote that, what makes the life cycle model the most appropriate for management of records is its division of responsibilities. This enhance the value of records as evidence in that it ensures the authenticity of inactive records and makes them the impartial sources that of records when needed. According to University of British Columbia project document, the intellectual methods required to guarantee the integrity of active records are very much different than those required for inactive records. Hence, it is argued, there must be a two-phase life cycle approach to the management of records, the creating body with primary responsibility for their reliability and authenticity while they are needed for business purposes and the preserving body with responsibility for their authenticity over the long term.

2.5.2 Records Continuum Model

David Bearman has been a key critic of the life cycle model as means of managing records for a long time. However, it is the emergence of electronic records that has initiated a new and very spirited debate on criticizing the model. This dialogue has resulted in the definition of an alternative framework. This alternate model is known as the Records Continuum Model.

The base of the records continuum model is strategies used for integrating the activities of archivists and records managers. This model as means of managing records was
emerged in the early 1990s. Since then the management of records has been seen as a continuous process from the moment of creation, in which archivists and records managers are actively involved at all points in the continuum. The primary motivation in formulating and supporting this model has been to ensure the participation of archivist in the early stages of records management process. The intended outcome is that electronic records documenting vital transactions will be created, they will be fully documented, and they will survive as long as they are needed to meet the organization information needs (Bearman, 1994).

The most basic difference between the continuum model and the life cycle approach is that while the life cycle model proposes a strict separation of records management responsibilities, the continuum model is based upon an integration of the responsibilities and accountabilities associated with the management of records.

The International Standard on records Management, ISO 15489 recommends the continuum model. The ISO propagates a consistent and coherent regime of management processes from the time of creation of records through to the preservation and use of records as archives.

A direct result of viewing records management as a continuum is to undercut and destroy the distinction between active and inactive, and archival and non-archival records, and to blur or wipe out the defined set of responsibilities associated with managing records at each stage. One of the consequences of this viewpoint is to propel archivists and archival functions forward in the records management process. In other words, according to the continuum model, strategies and methodologies for appraising, describing, and preserving records are implemented early in the records management process, preferably at the design stage, and not at the end of the life cycle.

2.6 Conclusion

Even though the records management professional are still lacking a consensus on a number of issues, there has been some remarkable progress on many fronts.
In the identification and capture of electronic records, there is widespread recognition that automated environments present new challenges requiring different methodologies and techniques. In general, archivists working with electronic systems understand that transaction processing systems will not consistently and systematically produce records. To ensure that records are identified and captured, archivists have been promoting the creation of conceptual models, which identify when and where records are generated. What has been slow to develop is a methodology for undertaking and creating these models. Moreover, for many archivists moving from a methodology for identifying records based on physically reviewing objects to one based largely on analyzing conceptual models of record creation continues to be a very difficult transition.

Theories on the appraisal of electronic records have clearly tended to focus on functions and business processes as the keys to understanding the context and value of records. The goal of preserving and making accessible evidence as found in the transactions or activities that generated the record have been emphasized in the electronic records management literature. In reaction to this development, some archivists are now claiming that the profession has gone too far in its emphasis on evidence, and that archivists are in building an appraisal methodology that may fail to properly identify the secondary values of records and particularly informational values. Certainly, one of the tasks for the professionals in future is to create appraisal theories for the modern age records that satisfy all requirements for record value, and that are capable of helping society remember its past, its roots, its history, which by definition combines recorded evidence of both the private and the public institutions (Terry Cook, 2000).

In the area of documenting records, there is universal agreement that archivists need to define the categories and types of metadata that must be present to preserve a reliable and authentic record. Consequently, numerous lists of metadata specifications have been created. Increasingly there is a consensus among archivists concerning the basic categories of metadata that systems must capture and retain with record content. Most of the metadata lists include documentation in varying degrees of detail on the content, structure, and the context of the record. The professionals are yet to develop a universally accepted core set or minimum set of metadata standards.
Finally, when one looks for an overall framework or model to guide electronic archives management, it is clear that, most archivists favor a model that advocates a much more active role by archivists in the management process and increasingly they are getting actively involved in all phases of developing a recordkeeping system. If the challenges of electronic records management are to be controlled information professional will have to work together starting from the plan stage taking into consideration the life cycle of information when planning for the life cycle of information technology systems in which the information will reside.
CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design
This study surveyed all the 48 companies listed at Nairobi Stock Exchange (NSE). The study collected data and information aimed at identifying what managers consider as the key challenges in the management of electronic records. The survey also gathered information on what are the business risks inherent in the management of electronic records. Further, the study gathered information on key factors to be considered in the design and development of a good recordkeeping system.

3.2 The Population
The population of the study consisted of all the 48 companies listed at Nairobi Stock Exchange. The quoted companies are drawn from diverse sectors of the Kenyan economy and therefore they form a good representative of all companies operating in the economy. Furthermore quoted companies operate in more stringent reporting regime. That is, over and above meeting the reporting requirements of Companies Act, they must adhere to Capital Markets Authority (CMA) as well as NSE rules and regulations. Hence, they must ensure that, they are keeping proper records to meet recordkeeping requirement of all the stakeholders.

3.3 Data Collection Method
The study used primary data. The data was collected using a semi structured questionnaire using ‘drop and pick later’ method for all the target respondents. Out of 48 questionnaires that were distributed, thirty-one organizations responded to the study. The target respondents were the persons in charge of records management department, where available, and in other cases the persons in charge of information technology department.

The questionnaire contained three main sections each pertaining to a major area of the study:
- Part A gathered information on the demographic data of the organization and the respondent. This was mainly for classification purposes.
• Part B gathered information on what the organization considers to be the key challenges and risks in relation to management of electronic records. A five point likert scale was used, ranging from strongly disagree to strongly agree.

• Part C gathered information relating to key factors in the design and development of a good recordkeeping system.

3.4 Data Analysis

The data collected in part A of the questionnaire was analyzed through use of descriptive statistics. The data was summarized and presented in form of frequency tables and in percentages.

The data in part B of the questionnaire was analyzed using factor analysis to group together similar factors under common heading, and identify which are the most critical factors. The factor analysis was performed on the challenges, risks and factors relating to development of a recordkeeping system.

Using data collected in part A and B, chi-square ($\chi^2$) test of associations was used to investigate whether there is correlation in the challenges experienced and the demographic factors of the organizations. The demographic factors used are the industrial sector of the respondent company, the size of the organization as measured by the number of employees, and the duration the organization has been quoted at NSE.

Data collected using part C of the questionnaire was analyzed using factor analysis, to summarize it and come up with key steps in the development of a recordkeeping system.
CHAPTER FOUR: DATA ANALYSIS AND FINDINGS

4.1 Introduction

A total of 48 questionnaires were distributed to all the companies listed in Nairobi Stock Exchange as at 1st July 2005. Out of the 48, thirty-one questionnaires duly filled were received back. This represented a response rate of 65% and it was found to be adequate for the analysis.

4.2 Analysis of the Demographic Data

4.2.1 Trading Categories of the Respondents

Of the 31 companies which responded to the study, 2 (7%) are from Agricultural sector, 6 (19%) are from Commercial and Services sector, 8 (26%) from Finance and Investment sector, and 15 (48%) from Industrial and Allied sector. The results are as depicted in the Table 4-1.

<table>
<thead>
<tr>
<th>Trading Category</th>
<th>Total No. of Organizations</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>4</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Commercial and Services</td>
<td>8</td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td>Finance and Investment</td>
<td>11</td>
<td>8</td>
<td>26</td>
</tr>
<tr>
<td>Industrial and Allied</td>
<td>16</td>
<td>15</td>
<td>48</td>
</tr>
<tr>
<td>Alternative Investment</td>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>48</strong></td>
<td><strong>31</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Research Data

4.2.2 Duration of Public Trading

Out of the 31 respondents only 2 has been trading its shares for less than five years. This is because, from 1993 – 2003, Kenyan economy experienced a slowed growth rate (Kenya Economic Survey, KIPPRA, 2003). During the period very few organizations opted to seek public listing at NSE. The investor confidence was low and those organizations who issued shares to the public had difficulties attracting subscribers to the
share issue. The two organizations with trading duration of less than ten years are listed in the industrial and allied segment. The rest of the respondents (94%) had traded publicly for more than ten years. This indicates that, most of the data being used for the analysis is from organizations that for long time have used electronic records to meet stringent reporting requirements. The results are summarized in Table 4-2.

Table 4-2: Period of being quoted at NSE

<table>
<thead>
<tr>
<th>Period of being public</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 years</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Between 5 and 10 years</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>29</td>
<td>94</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Research Data

4.2.3 Number of Companies Employees

The data relating to the number of employees was used to measure the size of the respondent organizations. Only four firms had less than 200 employees. These firms are from the finance and investment sector. Out of the four two had between 151 and 200 and two between 101 and 150 employees. The majority (88%) had over 200 employees, which is reflective of the size of companies listed in the stock exchange in terms of the number of employees. The results are summarized in Table 4-3.

Table 4-3: Number of companies' employees

<table>
<thead>
<tr>
<th>No. of Employees</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between 1 and 50</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Between 51 and 100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Between 101 and 150</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Between 151 and 200</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Over 200</td>
<td>27</td>
<td>88</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Research Data

Therefore the companies surveyed were found to have a large number of employees. In addition to this, they had an equally large number of departments.
4.2.4 Respondents Background Qualifications

On the background qualifications of the respondents, 6% of the respondents had their background qualifications in records management. 54% of the respondents had IT or IS qualifications, and 40% had finance and administration qualification. This trend was worrying as it indicated low priority in records management for the organization surveyed. The results are summarized in Table 4-4.

Table 4-4: Respondent Background Qualifications

<table>
<thead>
<tr>
<th>Respondent Background</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Records Management</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>IT/IS</td>
<td>17</td>
<td>54</td>
</tr>
<tr>
<td>Finance/Administration</td>
<td>12</td>
<td>40</td>
</tr>
<tr>
<td>Human Resources</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Research Data

4.3 Records Management Practices

In order to investigate whether there is any correlation between the organization demographic characteristics and the challenges experienced in management of electronic records, chi square test of association was performed. The summary of the analysis is as shown in Table 4-5.

To compute the chi square figures in Table 4-6, cross tab matrix was first established for every challenge as shown in Table 4-5. For example, for the challenge, failing to create back ups, the matrix is here below. The sectors of Agricultural, Commercial and Services, Finance and investments, Industrial and Allied, and Alternative Investment are assigned numbers 1, 2, 3, 4, and 5 respectively.
Table 4-5: Challenge - Employee failing to create backups

<table>
<thead>
<tr>
<th>Category</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Agree</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Not Sure</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Disagree</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>11</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>6</td>
<td>8</td>
<td>15</td>
<td>0</td>
<td>31</td>
</tr>
</tbody>
</table>

Source: Research Data

The chi-square test result for this particular challenge is shown here below.

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi Square</td>
<td>16.469</td>
<td>12</td>
<td>0.171</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>14.091</td>
<td>12</td>
<td>0.295</td>
</tr>
<tr>
<td>No. of Valid Cases</td>
<td>31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Research Data

Both Pearson Chi-square and Likelihood ratio are statistics used to measure the association between variables. The difference between them is how they are computed, and the appropriateness based on the size of data. The likelihood ratio is appropriate for data size of less than five observations. Hence, for this study Pearson Chi-square was found appropriate for interpretation.

At 12 degrees of freedom and 95% significance level the critical Chi-Square ($\chi^2$) is 5.226 from the tables. Hence, the computed ($\chi^2$) = 16.469 is greater than the critical value. Therefore, the null hypothesis is rejected, and the conclusion is that, there is an association between this challenge of employees failing to back up the records and the trading category of the organization.
Chi-square is computed for other challenges against the organization parameters of trading category, duration of trading and size. The results are summarized in Table 4-6.

Table 4-6: Chi square ($\chi^2$) Values summarized

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>Independent variables (factors)</th>
<th>Company category$^a$</th>
<th>Duration in NSE$^b$</th>
<th>No. Of employees$^c$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure of employees to create Back up</td>
<td></td>
<td>16.469</td>
<td>5.961</td>
<td>1.595</td>
</tr>
<tr>
<td>Integration failure</td>
<td></td>
<td>13.135</td>
<td>9.00</td>
<td>1.745</td>
</tr>
<tr>
<td>E-mail separation</td>
<td></td>
<td>15.088</td>
<td>2.953</td>
<td>1.121</td>
</tr>
<tr>
<td>Dispute data</td>
<td></td>
<td>13.602</td>
<td>4.516</td>
<td>13.878</td>
</tr>
<tr>
<td>Uncoordinated records</td>
<td></td>
<td>9.896</td>
<td>2.891</td>
<td>5.130</td>
</tr>
<tr>
<td>Maintenance costs</td>
<td></td>
<td>10.746</td>
<td>6.631</td>
<td>1.595</td>
</tr>
<tr>
<td>Training end users</td>
<td></td>
<td>23.241</td>
<td>5.938</td>
<td>4.320</td>
</tr>
<tr>
<td>Access authority</td>
<td></td>
<td>8.844</td>
<td>4.638</td>
<td>0.420</td>
</tr>
<tr>
<td>Shareholders interests</td>
<td></td>
<td>4.629</td>
<td>1.688</td>
<td>1.080</td>
</tr>
<tr>
<td>Integration of IT with other dept.</td>
<td></td>
<td>9.268</td>
<td>3.134</td>
<td>2.006</td>
</tr>
</tbody>
</table>

Source: Research Data

a – Degrees of freedom = 12  Critical $\chi^2$ at 95% significance level = 5.226
b – Degrees of freedom = 6  Critical $\chi^2$ at 95% significance level = 1.635
c – Degrees of freedom = 3  Critical $\chi^2$ at 95% significance level = 0.352

The challenges of managing electronic records were formulated as the dependent variables and the factors relating to trading categories, duration as publicly quoted company and size as measured by the number of employees were the independent variables.
From the chi test there were challenges unique to a particular category of companies. All the challenges considered were found to be statistically significant at 95% level irrespective of the trading category, company size and duration of public quoted.

4.4 Information Technology Strategy

All the firms which responded to the survey had an information technology strategy in place. However, only 6% of the respondents had an IT strategy addressing issues relating to electronic records.

4.4.1 Challenges in Electronic Records Management

In the overall the challenge which had the highest respondent strongly agreeing was the lack of separation of personal emails and official emails at 80%. The next one is lack of integration of information sub-systems at 61%. The other side of the continuum had failure of capturing of email records with 52% strongly disagreeing that this is a challenge.

Sector wise, in the finance and investment sector it emerged that the most critical challenge was the separation of personal mails from official one and failure to integrate recordkeeping systems with other information systems. Marginal challenges were recorded in areas of capturing emails as organizational records and ad-hoc naming of files by individual end users. In the industrial and allied sector, respondents cited the following as the challenges in the management of electronic records, information storage and backup, uncoordinated capture of data, separation of personal and private e-mail in that order. For the commercial and services sector as well as agricultural, naming of files, record appraisal and employees withholding vital information emerged as the most critical challenges. The responses are as presented in the Table 4-7.
### Table 4-7: Challenges in Management of Electronic Records

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to capture e-mail</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Failure of storage media</td>
<td>3</td>
<td>8</td>
<td>17</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Staff failing to back up</td>
<td>18</td>
<td>8</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Ad hoc naming of files</td>
<td>2</td>
<td>5</td>
<td>14</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Uncoordinated capture of Records</td>
<td>16</td>
<td>6</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Records required for longer than media life</td>
<td>9</td>
<td>7</td>
<td>10</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Lack of appraisal</td>
<td>2</td>
<td>7</td>
<td>10</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Integration failure</td>
<td>19</td>
<td>6</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Withholding of records by ex employees</td>
<td>5</td>
<td>4</td>
<td>12</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Separation of e-mail</td>
<td>25</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Employee holding vital info in e-mail</td>
<td>13</td>
<td>7</td>
<td>4</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Employee sabotage</td>
<td>5</td>
<td>14</td>
<td>4</td>
<td>6</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: Research Data

#### 4.4.2 Challenges in Managing Electronic Records - Factor Analysis

Factor analysis was used to group the 13 challenges into four factors in a summarized way and has also ranked the challenges in order of importance or criticalness. Out of the 13 challenges encountered in management of electronic records, four were extracted using the varimax rotation. Eigen values, that is, the sum of squares where the factor loadings were set at greater than 1. The challenges being uncorrelated to all previous challenges were assigned a decreasing proportion of total variance to minimum set cut point of greater than 1 as shown in the table 4-8 here below. For example, challenge 1 (failure to capture emails as records) explains 45.25% of the total variation, challenge 2
explains 27.62% of the total variations and so on. The challenges with Eigen values greater than 1 were then picked, and the process resulted in a total of 4 component factors. From this table, a component matrix was created to assign each of the challenges encountered in management of electronic records a factor showing the loading of the variable has on each of the 4 challenges. The component matrix was then rotated orthogonally using varimax to extract challenges with the maximum or near maximum loadings. The outcome is shown in the table 4-8.

Table 4-8: Total Variance Explained – Challenges

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigen Values</th>
<th>Extractions Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of Variance</td>
</tr>
<tr>
<td>1</td>
<td>5.883</td>
<td>45.253</td>
</tr>
<tr>
<td>2</td>
<td>3.591</td>
<td>27.625</td>
</tr>
<tr>
<td>3</td>
<td>2.400</td>
<td>18.465</td>
</tr>
<tr>
<td>4</td>
<td>1.125</td>
<td>8.657</td>
</tr>
<tr>
<td>5</td>
<td>7.061E-16</td>
<td>5.432E-15</td>
</tr>
<tr>
<td>6</td>
<td>2.886E-16</td>
<td>2.220E-15</td>
</tr>
<tr>
<td>7</td>
<td>1.478E-16</td>
<td>1.137E-16</td>
</tr>
<tr>
<td>8</td>
<td>4.492E-17</td>
<td>3.456E-16</td>
</tr>
<tr>
<td>9</td>
<td>-2.030E-16</td>
<td>-2.233E-16</td>
</tr>
<tr>
<td>10</td>
<td>-1.040E-16</td>
<td>-8.030E-16</td>
</tr>
<tr>
<td>11</td>
<td>-2.030E-16</td>
<td>-1.558E-12</td>
</tr>
<tr>
<td>12</td>
<td>-3.210E-16</td>
<td>-2.472E-12</td>
</tr>
<tr>
<td>13</td>
<td>-2.290E-15</td>
<td>-1.761E-14</td>
</tr>
</tbody>
</table>

Source: Research Data

Extraction Method: Principal Component Analysis
### Table 4-9: Varimax Rotated Component Matrix – Challenges

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Component Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Failing to create backups</td>
<td>0.960</td>
</tr>
<tr>
<td>Ad hoc naming of the files</td>
<td>0.929</td>
</tr>
<tr>
<td>Uncoordinated capture of records</td>
<td>0.664</td>
</tr>
<tr>
<td>Failing to integrate records keeping with other systems</td>
<td>-0.555</td>
</tr>
<tr>
<td>Failing to separate official and personal mails</td>
<td>-0.509</td>
</tr>
<tr>
<td>Ex-employee withholding information</td>
<td>-0.692</td>
</tr>
<tr>
<td>Records required for long periods</td>
<td>-0.739</td>
</tr>
<tr>
<td>Failure of storage media</td>
<td>-0.230</td>
</tr>
<tr>
<td>lack of electronic records appraisals</td>
<td>0.000</td>
</tr>
<tr>
<td>Employee withholding information</td>
<td>0.701</td>
</tr>
<tr>
<td>Sabotaging</td>
<td>0.850</td>
</tr>
<tr>
<td>Vital information in end users mail box</td>
<td>-0.536</td>
</tr>
<tr>
<td>Failing to capture emails as records</td>
<td>-0.715</td>
</tr>
</tbody>
</table>

**Source: Research Data**

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalization

Table 4-9 is 4 factors by 13 challenges (variables) matrix. The rotated matrix gives the revised initial factor matrix after it had been orthogonally rotated using varimax rotation. This attempts to simplify the columns of factor matrix by making all values close to either 0 or 1. The coefficients in the matrix represent both regressions weights and correlation coefficients. The loadings in a given row represent regression coefficients of factors that describe a given challenge. From this table we can group together the challenges into four factors extracted according to how heavy these challenges load on each factor. For example, the first challenge in the table, that is, employee failing to back up their records, has 96% loadings on factor 1 and is the highest loadings for the challenges grouped within the same principle factor as shown in bold. The challenges extracted under the four factors are:

Factor 1, consists of:
- Employees failing to back up their records;
- Ad hoc naming of files and directories by individual end users;
• Employee sabotaging their employers using electronic records;
• Current or past employee withholding vital information; and
• Uncoordinated capture of records by individual end users

Factor 2, consists of:
• Failure of the storage media. E.g. hard disk crushing, tapes and disks failing;
• Lack of Meta data making appraisal impractical; and
• Records required for longer period than average life span of storage medias.

Factor 3, consists of:
• Individual end users withholding vital information and records in individuals email in-box. That is, lack of sharing vital information;
• Failing to separate personal and official emails; and
• Failing to integrate the various information management systems existing in an organization.

Factor 4, consist of:
• Failure to recognize emails as a source of records for the organization and therefore failure to capture email records.

The challenges under factor 1 may be addressed through matters relating to employee training. The challenges under factor 2 may be addressed through enhancement of capabilities of recordkeeping systems. The challenges under factor 3 may be addressed through integration of the various information systems, so that the management of all electronic records in the organization is centralized. The challenge under factor 4 may be addressed through promulgation of a standard to distinguish email records from non records.

4.4.3 Risks in the Management of Electronic Records
Respondents felt that the most probable risk exposure may be caused by a system failing to retrieve information to support a dispute with 35% strongly agreeing and 58% agreeing. The next most probable risk exposure may be caused by bad publicity due to information leakage with 39% strongly agreeing and 45% agreeing. On the other end of the continuum, the least probable risk exposure may be caused by failure to meet
statutory reporting deadlines with 19% strongly disagreeing and 32% disagreeing. The respondent statistics on the factors that expose them to risks are summarized in the Table 4-10.

Table 4-10: Risks in Management of Electronic Records

<table>
<thead>
<tr>
<th>Risks and Threats</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to retrieve info for dispute</td>
<td>11</td>
<td>18</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Failure to retrieve key customer info</td>
<td>7</td>
<td>12</td>
<td>11</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Loss of information</td>
<td>5</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Information leakages to competitor</td>
<td>3</td>
<td>10</td>
<td>8</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Uncoordinated capture of records</td>
<td>6</td>
<td>16</td>
<td>7</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Slow communication</td>
<td>8</td>
<td>6</td>
<td>9</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Maintenance costs</td>
<td>6</td>
<td>25</td>
<td>0</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Compromise of efficiency</td>
<td>13</td>
<td>17</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Failure to meet statutory deadlines</td>
<td>0</td>
<td>1</td>
<td>14</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Failure to retrieve stakeholder info</td>
<td>10</td>
<td>6</td>
<td>12</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bad publicity due to info leaks</td>
<td>12</td>
<td>14</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Research Data

Factor analysis was performed for the risks/threats organisations face in the management of electronic records. The result of the analysis is as depicted here Table 4-11.
Table 4-11: Varimax Rotated Component Matrix - Risks

<table>
<thead>
<tr>
<th>Risks/Threats</th>
<th>Component factors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Failing to retrieve information to support litigation</td>
<td>0.859</td>
</tr>
<tr>
<td>Failing to retrieve information to serve a customer</td>
<td>0.799</td>
</tr>
<tr>
<td>Loss of critical business information</td>
<td>0.794</td>
</tr>
<tr>
<td>Leaking confidential records</td>
<td>0.838</td>
</tr>
<tr>
<td>Slow communication</td>
<td>0.280</td>
</tr>
<tr>
<td>Unnecessary costs for legacy systems</td>
<td>0.155</td>
</tr>
<tr>
<td>Data loss</td>
<td>0.637</td>
</tr>
<tr>
<td>Failing to meet statutory deadlines</td>
<td>-0.560</td>
</tr>
<tr>
<td>drop of share price</td>
<td>0.614</td>
</tr>
<tr>
<td>Bad publicity</td>
<td>0.118</td>
</tr>
</tbody>
</table>

Source: Research Data

From the factors analysis of risks faced in management of electronic records, two factors were identified.

Factor 1, consists of the following risks /threats:

- Failure of retrieving critical information to support litigation or dispute;
- Confidential information leaking to a competitor;
- Failing to retrieve critical information relating to a key customer leading to eroded customer goodwill;
- Loosing of vital business information;
- Data loss; and
- Failing to retrieve information relating to a key shareholder leading to drop on share prices
Factor 2, consists of the following risks:

- Slow communication process;
- Incurring unnecessary costs maintaining legacy systems;
- Failing to submit statutory returns in time; and
- Information leakage leading to bad publicity.

The threats under factor 1 are relating to the organization failing to retrieve the records when needed to support business objectives. The threats under factor 2 are relating to the organization using inappropriate recordkeeping system.

### 4.5 Records Management Policy

All the 31 respondents had a policy dealing with record management in general but only 19% of those policies were addressing management of electronic records. However, majority of the respondents were in agreement that their policy needed revision to incorporate management of electronic records. Since it is more effective to deal with an issue when there is a policy, the outcome of the factor analysis should be formalized in a policy document.

Therefore factor analysis was performed on the critical factors to be considered in the development of a recordkeeping system. The result is as in Table 4-12.
## Table 4-12: Varimax Rotated Component Matrix - Factors for developing a recordkeeping system

<table>
<thead>
<tr>
<th>Risks/Threats</th>
<th>Component Factors</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Appropriate hardware</td>
<td>0.171</td>
<td>0.867</td>
<td>-0.566</td>
<td>0.578</td>
</tr>
<tr>
<td>Appropriate software</td>
<td>0.223</td>
<td>0.793</td>
<td>-0.453</td>
<td>0.487</td>
</tr>
<tr>
<td>Documenting the system</td>
<td>0.615</td>
<td>0.745</td>
<td>0.110</td>
<td>-0.420</td>
</tr>
<tr>
<td>Training end users</td>
<td>0.187</td>
<td>-0.128</td>
<td>0.917</td>
<td>0.074</td>
</tr>
<tr>
<td>Records Migration</td>
<td>-0.045</td>
<td>-0.177</td>
<td>0.416</td>
<td>0.856</td>
</tr>
<tr>
<td>Setting Standards</td>
<td>0.156</td>
<td>0.113</td>
<td>0.345</td>
<td>0.436</td>
</tr>
<tr>
<td>Development of Retention Schedules</td>
<td>-0.632</td>
<td>0.769</td>
<td>0.344</td>
<td>0.569</td>
</tr>
<tr>
<td>Defining access authority</td>
<td>0.235</td>
<td>0.690</td>
<td>-0.001</td>
<td>0.126</td>
</tr>
<tr>
<td>Verify users at log in</td>
<td>0.000</td>
<td>0.672</td>
<td>-0.237</td>
<td>0.615</td>
</tr>
<tr>
<td>System review</td>
<td>0.237</td>
<td>0.732</td>
<td>0.311</td>
<td>-0.230</td>
</tr>
<tr>
<td>Analysis of business internal environment</td>
<td>0.877</td>
<td>0.366</td>
<td>-0.512</td>
<td>0.319</td>
</tr>
<tr>
<td>Analysis of external regulatory environment</td>
<td>0.756</td>
<td>0.000</td>
<td>0.116</td>
<td>0.178</td>
</tr>
<tr>
<td>Ensure the system address all stakeholders needs</td>
<td>-0.356</td>
<td>0.655</td>
<td>0.012</td>
<td>0.739</td>
</tr>
<tr>
<td>Integration of all information management systems</td>
<td>0.455</td>
<td>0.789</td>
<td>-0.311</td>
<td>0.117</td>
</tr>
</tbody>
</table>

Source: Research Data

Four factors were identified. These are:

**Factor 1** consists of the following variables:

- Analysis of the current business needs to ensure that the recordkeeping system is addressing them; and
- Analysis of the business external regulatory environment to ensure the recordkeeping systems is complaint

**Factor 2** consists of the following variables:

- Acquisition of the appropriate hardware;
- Acquisition of the appropriate software;
- Integration of the recordkeeping system with other IT systems;
- Development of retention and disposal schedules;
- Documentation of the recordkeeping system;
- Developing a time table for system review;
- Defining the access authority for end users; and
- Verifying users at log-in.
Factor 3 consists of the following variable:

- Training of end users on records management aspects.

Factor 4 consists of the following variables:

- Ensuring that the system is meeting the records requirement for all the stakeholders.

The variables consisting of factor 1 may be addressed through environmental analysis. The variables under factor 2 may addressed through development of appropriate system specifications, and promulgation of procedures and standards relating to management of electronic records. Factor 5 may be addressed through training of technical support personnel as well as end users on operations of recordkeeping system. The variable under factor 4 may be addressed by ensuring that the system design is based on the outcome of environmental analysis.
CHAPTER FIVE: SUMMARY AND CONCLUSIONS

5.1 Introduction

Results of the study show that managers of electronic records are faced with a number of challenges. Amongst them, lack of knowledge as to what constitutes an electronic records amongst the end users. These challenges have consequently contributed to business risks. Some of those risks are exposing organizations to potential losses of money, business, and goodwill. Further, the study gathered the key ingredients of developing a road map for implementing an effective electronic recordkeeping system. Their recommendation of the factors to be considered while developing a recordkeeping system in order to overcome the challenges as well as mitigate the risks are: Ensuring that an environmental analysis is conducted first and foremost, development of system specifications and putting in place appropriate mix of procedures and standards, and training of technical personnel and end users.

5.1.1 Conclusion of the Survey on Management of Electronic Records

Records management is a relative new phenomenon in Kenya as compared to developed countries from where the literature being used in Kenya in regard to the topic of the study comes from. Partly this may have contributed to the lack policy on management of electronic records by some organizations. In number of cases the automation of information systems has been done based on functional or departmental needs, as opposed to the information need of the entire organization. As a result, the organizations have ended up with island of information systems, which do not 'communicate' with each other. Therefore, there is duplication of the records produced, making the management of such records highly inefficient from the overall organization point of view.

Kenyan public companies are small as compared to the companies in developed countries which were used as case studies for the literature development. The companies in the developed country have been established over longer time, bigger in size, have higher
turnover and are more spread in all industries. Therefore, organizations in developed world are operating in an environment of higher standards requirements of corporate governance and more stringent legal requirements. In order to meet the requirements these organizations have in place recordkeeping system, standards, policies and procedures for managing the electronic records.

For organizations with recordkeeping systems, integration with other information management systems is an issue yet to be addressed. Even for organization using Enterprise Resource Planning systems (ERP’s) there is need to improve the management of electronic records, by incorporating an electronic record management system as a module of the ERP.

In many organizations the current practice is where a record generated electronically is found vital it is printed and hard copy is filed for future use. This practice is time consuming and costly. Consequently, it compromises the efficiency of the information management system put in place. This waters down the benefits of computerization that could be enjoyed by many organizations. Some organizations are actually contended with low level benefits because they are not aware of more benefits or the level of competition in the market does not warrant further computerization.

The area of study relating to management of electronic records is still emerging even in developed countries. Therefore, Kenyan companies are not making much investment in the area. Like other spheres of technological advancement organizations in the developed countries are the innovators, and organizations in developing countries like Kenya, are adopters. That being the case, there are limited systems available in the market, their cost is prohibitive, and there is few trained personnel to implement and manage the electronic records management systems.
5.1.2 Conclusions of Challenges and Risks Based on Factor Analysis

Through factors analysis four challenges and two risks in relation to management of electronic records emerged. Though the challenges in terms of criticalness may differ from one organization to another, they are more or less the same.

The four challenges are, employee training, system capabilities, system integration and capture of email records.

In a decentralized computerized environment the end users are charged with creation, receiving and distribution of electronic records. For an effective and management of the electronic records each individual end users should have some knowledge of records management. From the study this knowledge is lacking.

The next challenge is limiting system capabilities. Many computerized information system were designed for transaction processing, with little emphasis on management of the records generated. For that matter, the systems are not recordkeeping systems. Therefore, even in organization where end users may have recordkeeping knowledge they find the system limiting.

Most organizations have approached their computerization based on functional or departmental information needs. This has resulted in to many information systems which are not integrated. Therefore when trying to address the overall organization recordkeeping requirements, the lack of integration become an inhibiting factor.

The last challenge identified is lack of capturing of records contained in the email messages. Email systems were designed for communicating. Though some may have some aspects of a recordkeeping system, the aspects are limited. Thus, managers of information are encountering this challenge and records contained in email in-boxes are failing to be captured.
The two risks relating to management of electronic records are failure of retrieve records to support business needs and use of legacy information system.

Records are created to support current and future business needs. The survey indicated that, electronic records, at times fail to be retrieved from the storage medias. In such case the business needs fail to be supported exposing the organization to one form or another of risk.

Uses of legacy system means that the organization information needs are not being fully met. Again this will inevitably expose the organization.

5.2 Recommendations

For any organization wanting to overcome the challenges and mitigate risks relating to management of electronic records, the solution lies in putting to place an appropriate recordkeeping system. The effective way to implement or review an existing recordkeeping system, the road map is per the results of factor analysis on key factors in design and development of a recordkeeping system.

5.2.1 Environment Analysis

The analysis will involve both internal and external environments. By analyzing the internal environment the organization will be able to identify and document the organization’s mission, the structure and other major internal factors affecting recordkeeping. This process will provide the contextual information about the factors that influence the need to create and maintain records. Ideally it will involve scanning through existing documents as well as talking to key stakeholders. Through this analysis the critical factors affecting the recordkeeping practice will be identified and documented. The environment analysis provides the recordkeeping requirements of an organization.
5.2.2 Development of System Specifications, Procedures and Standards
The road map will be the basis of design a recordkeeping system that will meet the requirements identified. The essence of the systems design is to identify and put place appropriate mix of strategies to successfully implement the road map. The road map should provide an overview of how the various components, for example, processes, procedures, people and technology will fit together. This process is crucial and should be allocated adequate resources to enhance chances of success. The system designer should work closely with the eventual users of the system in an iterative manner to incorporate the feedback from users in the design. Also key premises about the environment should be regularly reviewed so that any change that may affect the recordkeeping requirements is capture and incorporated.

5.2.3 Training
The training programme should be designed to ensure that the staff affected by the implementation of the new system and practices are informed, supported and equipped with appropriate skills and experience. Decisions about the level and type of training to offer will largely depend on their role in relation to recordkeeping, and the knowledge and skills required to carryout that role and the type of system being implemented. Employee should be trained to effectively manage the system, carry out regular review of the system to ensure organization information requirements are continuously being met.

5.3 Limitations of the Study
The study had the following limitations:

a) Some respondents did want to participate in the study by filling the questionnaire. Some respondents were reluctant to disclose certain information about their organization especially information regarding the threats they face in managing electronic records.
b) Some respondents did not have adequate knowledge in information management and records management and there they could not fully comprehend some of the questions in the questionnaire.

c) Time was major bottleneck in this study.

5.4 Suggestion for further research

Information needs are dynamic. Hence the information system in place today may not meet the information requirements in future. Future researchers may find it necessary to research on the following areas:

a) Research on implementation problems and challenges of recordkeeping systems;

b) Research on why recordkeeping systems are not as popular as functional information systems like accounting or human resources systems;

c) Research on the same topic for other organizations other than publicly quoted companies; and

d) Repeat the same topic on the same population after some time.
Gorry G. A. and M. S. Scott Morton (1989); “Frame work for management information systems”, *Sloan Management Review. Vol. 13, Number 1*

Hedstrom Margaret (1993); “Reinventing Archives for Electronic Records: Alternative Service Delivery Options”, *Pittsburgh: Archives and Museum Informatics* pp 82 - 98

*International Standard on Records Management, ISO 15489 Part 1 and 2*


MacNeil Heather (1995); “Metadata Strategies and Archival Description: Comparing Apples to Oranges”, *Archivaria No. 36*


National Archives of Australia (2001); *DIRKS – A strategic approach to managing business information*

Patterson Giovanna and Sphere J. Timothy (2002); “Principal challenges facing electronic records management in federal agencies today”, *Government Information Quarterly. Vol. 19 No. 3*
Penn Ira A., Pennix Gail and Coulson Jim (1994); *Records Management Hand Book*  
2nd Edition Gower Publishing Limited


Schellenberg Theodore R. (1975); *Modern Archives: Principles and Techniques*  
University of Chicago Press, Midway reprint

Timothy J. Sprehe (September 2003); “Enterprise records management strategies”  
*Supplement to Knowledge Management World* pp s4 – s7

Turban Efraim and Ronson Jay E. (2001); *Decision support system and Intelligent systems*. Pearson Education Inc.


Williams F. Robert (2003); “Records Management Survey – A call to action”,  
*Association of Records Managers and Administrators (ARMA)*

10th July 2005

Department of Management Science,
Faculty of Commerce,
University of Nairobi,
P.O. Box 30197,
Nairobi.

Dear Sir/Madam,

RE: QUESTIONNAIRE

I am postgraduate student at University of Nairobi.

I am currently conducting a research on CHALLENGES AND RISKS ENCOUNTERED IN THE MANAGEMENT OF ELECTRONIC RECORDS FOR COMPANIES QUOTED AT NAIROBI STOCK EXCHANGE.

The purpose of this letter is to request you to respond to the attached questionnaire. The information you shall provide will be treated with strict confidence and at no time will your name or that of your organization be referred to. The information will be used for academic purpose only. I will be happy to share the results of my research with you upon request.

Thank you.

Yours faithfully,

Jackson Makobu
Appendix II

Questionnaire Number: __________________

Part A: Demographic Data

1. Name of your company _________________________

2. Please tick the trading category of your organization from the list below:
   () Main Investment Market Segment
   () Commercial and Services Segment
   () Finance and Investment Segment
   () Industrial and Allied Segment
   () Alternative Investment Segment
   () Other (please specify) __________________

3. How long has your organization been quoted at Nairobi Stock Exchange?
   () Less than 5 years
   () Between 5 to 10 years
   () Over ten years

4. How many employees do you have in your organization?
   () 1 – 50
   () 51 – 100
   () 101 – 150
   () 151 – 200
   () Over 200

5. How many departments/sections do you have in your organization? ________

6. Do you have a Record Management department/section in your organization?
   () Yes  () No

7. If no, which department/section handles and manages electronic records in your organization? __________________

8. Please indicate your background qualification
   () Records Management/Archives/Librarian
   () Information/System – IT/IS
   () Administration/Finance
   () Human Resources
Part B.

9. Does your organization have Information Technology strategy? ( ) Yes ( ) No
   a) If yes, does the strategy address issues relating to electronic records management? ( ) Yes ( ) No
   b) If no, please briefly indicate how you manage your electronic records:

10. To what extent do you agree or disagree with following statement? The following are the challenges you encounter in managing electronic records in your organization.

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to capture e-mails as records</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure of storage medias e.g. hard disks, CD's, tapes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff failing to implement back up procedures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ad-hoc naming of files and directories by end users</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncoordinated capture of records by individual end users</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Records required for a longer period average life span of storage medias</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of electronic records appraisals</td>
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</table>
Failure to integrate electronic recordkeeping system with other IT systems
Ex-employee withholding vital information
Lack of separation of official and private e-mails
Employees withholding vital information in their e-mail inboxes
Employees sabotaging the organization using the electronic records
Other. Please specify

11. To what extent do you agree or disagree are the following statement? The following are the major risks/threats in your organization as a result of challenges relating to management of electronic records.

<table>
<thead>
<tr>
<th>Risks/Threats</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<tbody>
<tr>
<td>Failure to retrieve critical information to support litigation or dispute</td>
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<tr>
<td>Failure to retrieve critical information relating to a key customer leading to eroded customer goodwill or loss of business</td>
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<td>Loss or critical business information</td>
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<td>hardware</td>
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<td>Acquisition of appropriate software</td>
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<td>Documentation of recordkeeping system</td>
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<td>Training of end users on records management</td>
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<td>Records conversation and migration</td>
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<td>Setting of standards to assess compliance with the policy</td>
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<td>Development of retention and disposition schedules</td>
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<td>Defining access authority for users</td>
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<td>Verify users at log-in</td>
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<td>Maintaining Audit trail</td>
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<td>Developing time table for records appraisal</td>
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<td>Providing time table for system review</td>
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<td>Analysis of the current business needs to ensure recordkeeping system is addressing them</td>
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<td>Analysis of regulatory environment to ensure your recordkeeping system is compliant</td>
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<td>Ensuring that the recordkeeping system is addressing shareholders</td>
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<td>interests</td>
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<td>Integrating the recordkeeping system with the other IT systems</td>
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_Thank you very much for your cooperation_