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# APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs) IN RECORDS MANAGEMENT

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## ABSTRACT

*Modern technologies have become the foundation for process improvement and increased accuracy, effectiveness and efficiency in most organizations today. Records Management (RM) is one area in which the use of technology has become inevitable. Rapidly growing technological that can be used to effectively manage organizations records have been on the rise. This paper reviewed literature on application of Information and Communication Technologies (ICTs) in the management of records. It highlights the importance of records and records management including consequences that may arise for poorly managing records in an organization. Traditional RM practices and its associated benefits and challenges have been explored. The paper explains how varied RM technologies can be employed to different records problems including the types of technology-based records management solutions, the benefits of technology-based records management solutions, key functions of records management software, basic criteria for evaluating and selecting a RM, and challenges of e-records management systems. The paper concludes that while organisations and records managers in particular are encouraged to take advantage of technology-based records management solutions to effectively and efficiently manage their records, electronic records systems should not be introduced without the essential processes and controls for the capture, long-term safeguarding and accessibility of electronic records that should safeguard the integrity of records relating to quality, comprehensiveness, accuracy, adequacy, completeness and authenticity. There is need to ensure that e-records systems provide trusted information that is relevant, reliable, accurate, complete and useable.*

**Key Words:** Records management software, Electronic Records Management, record formats, digitization, e-records, e-filing, record life cycle, Records Management.

## 1.0 INTRODUCTION

Records and information are vital resources in any organisation. They are the life-blood of every organisation. Making of key decisions by an organisation all depend on retrieval and availability of records required on time. It is important to note that not all documents are records. A record is a document consciously retained as evidence of an action. The United Kingdom National Archives defines a record as a specific piece of information produced or received comprising content, structure and context, sufficient to act as evidence of an activity, and support informed decision-making. It consist of three features including *content* (what the record says); *structure* (the appearance and arrangement of the content e.g. styles, fonts, page and para breaks, links, graphs, language); and *context* (background information which enhances understanding of the technical and business environments to which the records relate e.g. software, business activity, creating agency, programme). Records come in different forms and media. The forms and media in which records exist include: *paper* e.g. correspondence, maps, posters, minutes, reports,

memoranda; *micrographics (microfilm*, *microfiche* or (microforms); *photographs*, including prints, negatives, transparencies and x-ray films; *sound recordings* (disks, or audio tapes, cassettes) (audiovisual records); *video recordings* (video tapes, CDs (audiovisual records); *electronic text or images* **(**e-mail, Web pages/ Web-based records and publications, online databases; and *three-dimensional models*, scientific specimens or other objects; or combinations of any of the above formats in an electronic form (multimedia).

Records support numerous activities in an organisation. They enable us to organise, plan, entitle, verify, explain, enable, track, notify, protect, recommend, mandate, authorise, guide, authenticate, empower, terminate, comply, communicate and control. Records contain information and data from which decisions are made, plans developed and control exercised. Records help an organisation to pursue its policies; meet its objectives; fulfil legal and other obligations; show how well it used its resources; answer questions from senior officers, ministers and Parliament; and deal with court cases, reviews, audits, investigations and enquiries. Mulauzi, Wamundila and Hamooya (2013) are of the view that it is difficult to attain development without records and archives. They clearly point out that "it is only by looking at our past that we can understand our present and be able to plan for…future development…[They] support…efficiency, transparency, accountability and good governance. Essential government decisions and activities including fundamental rights and obligations are documented in records…"

Any organisation require four basic resources to operate efficiently and effectively. They need finance; records and information; people (personnel, customers, clients); and property (building, equipment, materials, procedures). Out of these four resources, it is information which provides the *competitive edge* to an organization because it is the most indispensable. Information is more important because it links all the other organizational resources. Whereas the other three resources can be *easily replaced* (as shown by the great mobility of modern labour force, easily availability of sources of finances from a variety of financial institutions and the replaceability of buildings and machinery), *information cannot be readily created, replaced or reconstructed* once it is lost. There are six inherent characteristics of information as a resource according to Grillon (1994):

(i) *Information is expandable:* Individuals and organisations at large depend on information to make informed actions.
(ii) *Information is compressible:* It is possible to concentrate, integrate, and summarize information for easier handling.
(iii) *Information is substitutable:* Information can and does replace land, labour, and capital. It is the use of computers and telecommunications that aids in this phenomenon.
(iv) *Information is transportable:* Information can be tapped into just about anywhere; this has led to the idea of being remote as much more difficult to achieve since people and information can be taken to the remotest of places.
(v) *Information is diffusive:* Information has the ability to leak. This leakage allows us to have more, and more of us have it.
(vi) *Information is shareable:* No exchange transaction of information can take place, only sharing transactions, and this leads to an entire sharing environment.

Thus, experience has proved that for any activity such as planning, decision making and production to have a realistic chance of successful execution, it requires accurate, relevant and complete information. None of the managerial and organizational activities can be effectively undertaken without an input of information or records. Records are the known tools for the demonstration of transparency and accountability, consistency and effectiveness as well as for manifestation of corruption and other irregularities in an organisation. According Mulauzi, Wamundila and Hamooya (2013) they provide the ultimate proof or evidence of the activities being undertaken. Without records, activities become susceptible to frauds, forgeries, money laundering, tax evasion, negligence and deception…which can impair the whole system. Records allow for validation of documents including payments; form part of the cultural heritage of a nation and facilitate informed decision making. Where decision-making is questionable, records and archives of the decision making process will allow aggrieved parties to challenge the decision, seek review and, where appropriate, obtain redress (Mulauzi, Wamundila and Hamooya, 2013). In their study on the role of records and archives in resolving chiefdom wrangles, Mulauzi et al (2014) established that traditional rulers and their subjects consulted records to confirm boundaries and inheritance or resolve wrangles, trace the genealogy, procedures and lines of succession and that conflicts in society or between and among different societies are based on deficiency of information. According to Mulauzi et al (2014), records were found to be useful to traditional rulers and their subjects as they contained the only written records of their own succession.

### 1.1 Importance of implementing proper records management systems

It is a desirable practice therefore, that records of an organisation must to be managed appropriately and effectively just like any other organizational resource or asset. Records management, therefore, entail systematic control of all the different sorts of records from their creation, through their use, to their permanent preservation or destruction. Records management aims to make available the *right record*, to the *right person*, at the *right time* (and at the least possible cost). Mulauzi, Hamooya and Munsanje-Mwale (2015) aver that "RM brings about a lot of saving in terms of (i) time and effort that staff would spend to retrieve the records (ii) space for storage of records and (iii) money for salaries, for buying storage equipment for redundant records and for duplicating records."

RM enable an organization to meet operational, legal and regulatory requirements. It enables institutions to retain records of important historical, administrative, fiscal, and legal value and ensure that non-essential records are discarded according to established guidelines and legislation. The study by Mulauzi, Hamooya and Munsanje-Mwale (2015) revealed that without records management programme in place: "… we destroy vital records unknowingly or just keep whatever information we receive...but with a proper records management programme, we can safeguard vital records or we can be guided on what to keep and for how long that information should be kept." Proper records management according to Mulauzi, Hamooya and Munsanje-Mwale (2015) helps to identify and protect vital records. It protects vital records from premature destruction and also prevents excessive retention of records which cause difficulties in retrieving them. Considered a key component of operational efficiency, record management adds more value to organization's information assets.

Though the consequences may not be the same for every organization, there can be severe penalties for not having proper records management systems in place. In some instances, such as with government grants or at government agencies, there might be financial penalties or possible requirements to return grant funds. In other situations, the penalty might be fines, criminal charges, or imprisonment. Organisations should avoid situations where audits and other investigations of records discover irregularities in their record keeping, falsified documents, and improper destruction of documents. In addition, it is important to keep in mind that it could be illegal to destroy records during an open court case or investigation, even if the destruction is in line with company policy. The legal tenet of spoliation comes into play in these cases. Spoliation of evidence implies the intentional, reckless, or negligent withholding, hiding, altering, fabricating, or destroying of evidence relevant to a legal proceeding.

Information and Communication Technologies (ICTs) have become the foundation for process improvement and increased accuracy and efficiency in most organizations today. The management of any form of activity, in this modern era cannot be possible without the use of ICTs. RM is one area in which the use of technology is indispensable. There are rapidly growing opportunities afforded by modern technology to support RM in organizations. Organizations have at their disposal a remarkable range of technologies that can be used to manage their records efficiently and effectively.

## 2.0 TRADITIONAL RECORDS MANAGEMENT PRACTICES

Before the advent of computers and Internet that have fueled the Information Communication Technology (IT) systems worldwide, RM was done manually in terms of acquirement, handing out, storage and broadcasting of information from creation up to stage of archiving (International Records Management Trust, 2015). According to Mulauzi et al (2012), traditional records management practices are based on the concept of the records life cycle. The record life cycle concept has 3 biological ages which are considered as the equivalent of the 3 phases of the life of records: active phase (creation, distribution and use), semi-active phase (maintenance and storage) and non-active phase (disposition). The life of a record begin at active phase when they are are conceived. At this stage they are in current files and are kept in the offices which created them. Two major actors were involved at conception and creation of a record: the person(s) who composed and drafted the record (letter, report, memorandum, etc.) and the person(s) who produced the document (normally typed by a secretary, stenographer, typist, etc.). The production of multiple copies required extra effort and time on the part of the person producing the record (through carbon copying, stenciling, etc.). Normally the record was produced in only one format (Mulauzi et al, 2012).

According to Mulauzi et al (2012), a record is created for a purpose in an organisation: to support an activity taking place in the organization. Therefore, after conception and creation, a record is used to support the activities of the organisation. Semi-active storage involves the transfer, maintenance and storage of records that infrequently used. Thus, after the record has ceased to be actively used, it is infrequently used and is known as semi-active record. Such records were transferred to low cost areas for storage such as records centres to save expensive office space and equipment, and to prevent the pre-mature destruction of records before their disposal date. The storage cycle required a lot of resources. These included; various record handlers including

the creators and users of records, the producers of records (secretarial staff) and the keepers of records (records managers, filing clerks); involved a lot of records management processes and procedures such as filing and un-filing routines, classification, indexing, etc.; and required a lot of space, equipment and storage media, and stationery to house. Non-active phase is the final phase in the life of any record. This is the phase where, the fate of a record is determined through a process of evaluating a record's value after it has ceased to be actively used. This procedure in the traditional records management system ensured that records of permanent value (i.e. archives) were properly identified, transferred and cared for in an archival institution.

### 2.1 Advantages of traditional records management systems

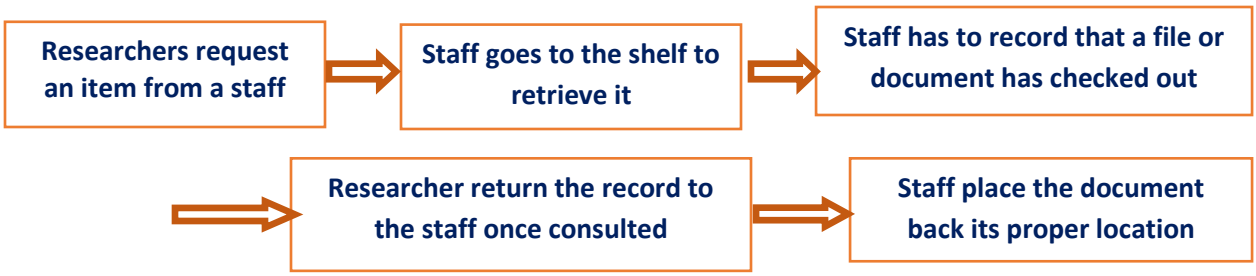
The good about manual system is that it is less complex, and cheap to institute making it easier for untrained people to access and manipulate data (Hamel, 2018). Hamel claims that anyone can look through alphabetized filing cabinets to find a file. It does not solely require only authorized personnel to access the records on the shelves, if the records personnel is not there, an alternative can be made as long as one knows the index number unlike on the computer where a password is required. Manual system does not require back up to secure records and alteration is not common (Kenneth and Laudon 2012). Traditional file organization has security advantages over electronic filing. Electronic files are usually accessible on a network thereby making it possible for an unauthorized person to gain access to electronic data over the Internet through hacking methods. Paper records may be designated in one place and access to the records can be restricted to authorized persons. Thus, many organisations still argue that they cannot do away with paper records as they contain for example a unique legal force, such as an executed lease agreement. Additionally, paper records management system is considered to have security advantages and the file approach is less complex than electronic systems. Thus, the expense of keeping paper files would be well accepted by many companies if the records would be found and retrieved quickly when needed.

### 2.2 Challenges associated with traditional records management practices

Despite the advantages of paper records over electronic records, there are five (5) main problems experienced in records management with paper records (Garland, 2019). These include: too much paper; inability to find the information needed when you need; lack of storage and working space; loss of track of files; and poor conditions of records (table 1). To start with, paper documents go missing regularly and in some cases, misfiled or even lost forever. IRMT (2015) confirms that one of the challenges faced in the manual system was loss of records and a lot of misplacement of information. According to Joseph (n.d) misfiled documents can be difficult to find when they are needed the most. The loss of records, misfiling or misplacement may be due to too much paper and insufficient information about the documents to locate them efficiently among other reasons. Hamel (2018) also adds that records can get out of order in traditional filing systems if someone accidentally puts a file in the wrong place, or takes a file out of a cabinet and forgets to put it back and this can lead to lost files or the creation of additional copies of files. This problem may have serious repercussions on the efficiency and effectiveness of an organisation. For instance, Mulauzi, Hamooya and Munsanje-Mwale (2015) observed that in the pension industry, misplacement or loss of records including the slow speed at which needed records are retrieved from their storage results in beneficiaries not being given feedback on time about their benefits. Some pensioners end up being depressed while others pass on without

getting their benefits and survivors at times do not know how to go about claiming the benefits. Hence, benefits ended up in wrong hands because people often capitalized on the system. Contrary to manual filing, electronic filing systems allow users to quickly check whether information already exists somewhere in the system, which helps avoid problems like redundant files and data loss (Hamel, 2018).

In addition, paper records fades way, get discoloured and brittle after some time. Joseph (n.d.) affirms this by stating that "over time, paper documents can become smudged, faded or damaged, making the information hard to decipher. With handwritten documents, poor penmanship can also render the information illegible, and when an individual who added an illegible written entry to a file leaves the organization, nobody may be able to 'translate' the information." Further, lack of storage and working space is another problem with paper systems. Storage facilities which would otherwise have been used for other purposes is taken up to store large heaps of information under traditional records management practices. This results in inadequate working space in offices. Timely accessibility of information also prove to be a challenge in manual systems. It cost a lot effort, time and money to access information when dealing with paper records. For example, the time records staff require to serve a client when dealing with paper records is a great deal as evident from the following activities:




Accessibility is problematic with paper records at times due to lack of sufficient security to ensure they will be where they are supposed to be when needed most. Thus, users often are unable to find the information when they need it. Additionally, information has to move from one office to another and this can cause loss of track of files. Problems of accessibility may result in delay to make decisions. According to Hamel (2018), electronic databases allow for almost instantaneous access to information. Faster data access time can increase the productivity of decision makers such as managers, analysts, accountants and other workers who use data on a regular basis. It is important to note that paper is fragile and needs care when handling it. Similarly, paper documents can be destroyed by fire, floods or other weather conditions and when such an occurrence takes place, they can be difficult to replace. On the other hand, Hamel (2018) argue that electronic data can also be damaged by software security problems like computer viruses, but electronic data is easy to backup in multiple locations, reducing the potential for permanent data loss. Another concern when dealing with a traditional file system according to Hamel (2018) is that it does not allow users to easily edit files or send information to others. Hamel (2018) states that "paper files often cannot be edited directly, forcing users to make new copies to update old files. To distribute data on paper files, users must mail, fax or scan the data. Databases allow users to edit information fields directly, and because information is stored digitally, it is already in a form that can be easily transmitted."

## 3.0 USE OF ICTS IN RECORDS MANAGEMENT

There are rapidly growing opportunities afforded by modern technology to support RM in organizations. While paper records will continue to exist, and be generated for the conceivable future, technological systems are needed to assist organisations to manage their records effectively. ICTs offer unprecedented capacities and potentials in administration and management of various kinds of records in an organisation. A number of activities such as records creation, distribution and storage can be done using technological devices such as computers thereby playing a crucial role in RM. It is for this reason that globally, the importance of ICTs in organizations can be best demonstrated by the amount of investment organizations put in on these technologies with worldwide spending reaching up to $1.18 trillion in 2019, an increase of 17.9% over 2018 (Help Net Security, 2019). Organisations round the world are making significant investments in information technologies and services that enable the digital transformation of their records management systems and services (Help Net Security, 2019). In other words, organisations and governments have now turned to information technologies as a "solution" to their records management problems because of their potential to address key records management problems such as communication barriers, storage constraints and time constraints to retrieve the records. There is a paradigm shift in the way information is created, gathered, distributed, used, communicated, stored and retrieved with ICTs. For instance, they have become a critical element for records creation. ICTs such as computers, recorders and cameras make easy the process of creating records. According to Mulauzi et al (2012), today, a record can be easily conceived and created by its initiator on the computer terminal and records can be produced effortlessly in multiple copies with very little extra cost. Mulauzi et al (2012) further stated that documents created using ICTs can be output in a variety of formats such as paper, microform, or electronic from just one source document and these extra outputs can be achieved cheaply and with little extra effort.

The use of ICTs to store organizational records constitute an important aspect of effective RM. Advanced computer storage technology and sophisticated retrieval techniques such as query languages, multimedia databases and database management systems can be effective tools in enhancing the storage of organizational records. These tools increase the speed at which records can be accessed. Moreover, ICTs are versatile tools that can perform literally any records management task. According to Flavia-Blanco (2011), multitasking is one of the major advantages of information technologies as they can solve many RM problems within few seconds. For instance, a record initiator can create, use, distribute, store and retrieve a record on a single computer work-station, thereby eliminating the huge army of secretarial and record keeping staff and the associated requisite records management space, equipment and stationery. Unlike bulky paper records that need a considerable amount of space for storage, ICTs offer opportunities for compact storage through electronic and digital storage devices and information can be stored information on a number of sources such as flash drives and Google drive. Space issue and equipment is not a problem. Ralph and Reynolds (2008) support this by stating that ICTs provide new capabilities for organisations to handle large amounts of information that they would not do previously. They argue that large amounts of business records can be stored in computer systems instead of depending on handwritten scripts or recording information manually. Information is also easy to handle as one does not require plenty of physical space such as records centers to store it. With electronic storage devices, information can be retrieved

at any time by multiple users at the same time. For example, a manager of a company can send an email which can be read within that same period by all the people concerned. This has led to efficiency and an increased output, which has made many companies more profitable.

ICTs also enhance retrieval systems and online search facilities. ICTs provide better and quicker records retrieval services to the users. Laudon and Laudon (2012) opined that many people no longer queue for services to access their records such as water bills, rates, and revenue authority tax. People may work from home or anywhere as long as they have a computer or any other appropriate gadgets that can connect to the internet such as smart phones and tablets that can be used to retrieve information. Furthermore, it saves time and energy, as well as creating space in the office since all documents are automated. Records cannot be easily damaged as handling is not physical. It's also possible to provide the desired information selectively to the user (i.e., a user can be given the actual information that they desire other than being given a bulky file of paper records from where they have to laboriously search for the information they want). Additionally, ICTs can process raw data into usable information at little extra cost in terms of money and effort. As stated by Ralph and Reynolds (2008), ICTs enables many people to communicate information better in a cheaper and faster way. For example, a message which took weeks or even months to be delivered to the recipient because of the mode of delivery such as a messenger, can now be delivered with the click of a button on the computer. In this way, information is passed on quickly and is also stored on modern technological devices for future reference if there is need to do so.

Imaging technologies can be used to convert paper documents to digital (computer-readable) form to resolve the problem of poor conditions of records when left in paper form. This process is called digitization. Digitization or migration of records involves converting paper records into digital records through the use of scanning technology. It is the process of converting analogy information into digital format. It involves making collections of historical materials available online in a local area network or in internet. What can be digitized? Paper documents, photographs, sound recordings, and motion pictures are all records that can be digitised. Most organisations opt to digitise records to safeguard and ensure the preservation of the most valuable and perishable components of the collections. Another reason is to make records more accessible and make information available for future reference by researchers and interested parties. Digitisation assist in promoting the collections and visibility of the institutions. It is also faster to retrieve information.

Many users can access the same information at the same time in digital form. Digitisation also improves the quality of that access. For example, materials from different collections located thousands of miles apart can be viewed side by side in a researcher's living room. There is wide availability of information and loss of the original materials is prevented. Further, digital versions of documents can be manipulated to aid a researcher in ways that the original object cannot. For instance, DeGracia (2009) reported about the digitization of a 1791 architectural plan of the District of Columbia, which was badly faded, discoloured, and brittle that it resembled a potato chip. It could not be used by researchers and yielded little detailed information to the unaided eye. However, its digital counterpart can be enhanced in *size, sharpness*, and *colour* so that users can decipher the details of the map and understand the planning of the nation's capital.

Through benefits like these, digitization enhances access, in addition to increasing it. Also, through digitisation, researchers are given new search and browsing options that enable them to find information with greater speed and accuracy. E.g. when dealing with hard-copy written material, the only way to locate specific information within the document is to read through the text. The hardware needed include computer (desktop or Note book), scanner and networking hardware such cables switches, routers and Computer Server. While the software include server based records management systems such as D- space , Alfresco and InfoRouter, where the scanned records will be classified, indexed and filed or stored. Also needed are the scanner drivers that will allow computers to communicate with the scanners during the scanning of records and the servers operating software such as Windows 2008 or Ubuntu (LINUX) to be installed on the server.

### 3.1 A summary of the Benefits of Technology-Based Records Management

According to Municipal Research and Services Center (MRSC) (2019: 9), there are a variety of ways that technology-based records management solutions can benefit organisations including:

- *Greater efficiency:* Electronic records management systems can dramatically improve efficiency by enabling speed and reliability that is impossible with manual processes.
- *Lower staff costs:* Increased efficiency in records searching, retrieval, redaction, and disposition tasks translates into reduced staff time requirements and lower staff-related costs.
- *Lower records storage costs:* Replacing paper records with digital records reduces the need for on and off-site records storage space and associated costs.
- *Reduced potential for litigation and penalties:* Speedier, more comprehensive and accurate responses to public records requests can help to reduce exposure to potentially expensive litigation costs and penalties.
- *Improved customer service:* Efficiency improvements make it easier and faster to retrieve information and records, which reduces wait times and improves customer service.
- *Greater transparency:* Public facing web portals, where available, make it easier for citizens to access information about their local government, increasing transparency and trust.
- *Improved regulatory compliance:* Compliance with retention schedules can be automated so that incoming documents can be easily classified, stored, and scheduled for eventual disposition in accordance with relevant state or organisational records regulations.
- *Benefits of cloud-based solutions:* Many records management vendors offer their solutions via the cloud, accessible through an Internet browser. There are several benefits of cloud deployment, including faster implementation, more secure document backup and recovery, reduced costs, less impact on IT staff, and easier software updates and security patches.
- *Enhanced records security:* Records with sensitive information can be protected and restricted to those who are authorized to have access.
- *Better backup and disaster recovery:* Conversion of paper records to digital formats reduces the risk of loss due to physical deterioration or damage due to environmental factors and accidents.
- Cloud-based storage provides more secure document backup and recovery.

### 3.2 Records management software applications

According to MRSC (2019), several types of records management software applications have evolved over time in response to growth in the use of new technology-based business and communication systems. In effect, there are so numerous now that it is easy to become overwhelmed by the myriad types of software available and the various terms used to describe them and their functions. MRSC (2019) categorized records management software into three major categories:

(i) **Custom Software:** Developed in-house, not typically an off-the-shelf solution, to meet unique records management needs

(ii) **Specialty Software:** Off-the-shelf software that performs specific records management tasks, often focusing on specific types of content and records. These include:

- *Document Management:* Function as electronic filing cabinets including document storage, retrieval and imaging capabilities and work together with document scanners that convert paper documents into digital versions.
- *Email Records Management:* Provide convenient management of email including archiving in a separate repository to facilitate quick search and retrieval, retention scheduling, and public records requests.
- *Social Media Archiving and Storage:* Used to capture, store and retrieve social media posts in their native formats, from multiple platforms, using a single interface.
- *Web Content Archiving and Storage:* Key recordkeeping requirements for these tools include collecting website metadata, preserving content in original file formats, and retaining materials for records requests and retention.
- *Records Request Management:* Allows agencies to manage public records request submission and fulfillment processes for both web-based and paper records requests. Web-based fulfillment uses public facing online portals for fast, efficient tracking and delivery.

  The benefits of Specialty off-the-shelf software solutions over custom developed software, include immediate availability, lower cost, proven reliability based on extensive developer and user testing, and the availability of vendor-provided technical support and training in the form of phone support, user manuals, and online tutorials.

(iii) **Multi-Function Software:** Variously known as Content Management Applications, Records Management Applications or Enterprise Content Management Systems depending on the range of records management functions and features they support, multi-function software combines a range of capabilities and services into more full-featured records management systems or packages designed to meet a wider variety of records management needs.

- *Content Management Applications:* Deal with more than just the scanned documents of earlier applications. They are used to create and manage many more types of digital content related to the growing use of web-based communication technologies. For example, in addition to being used for data contained in structured documents like PDFs, Word files, or Excel files, content management software can also be used to manage unstructured data from sources like webpages, images,

audio, and video. Due to their ability to handle multiple document types and formats, we include content management applications in the "multi-function" group.

- *Records Management Applications:* Specialized "Records Management Applications" integrate special records retention and destruction tools into document management systems that provide the ability to identify and schedule different types of records for automatic destruction or archiving in conformance with required retention schedules. These systems still require individual users to make decisions about which documents qualify as records and to assign applicable retention periods, so appropriate training is critical for successful implementation. Records management applications are included in the "multi-function" group primarily because of the added records retention and scheduling functionality.
- *Enterprise Content Management Applications:* These fall under full-featured multi-function systems because they combine a comprehensive range of records management functions such as workflow, imaging, Web and social media content management, and records management, to provide "cradle to grave" processing of all record types across an entire enterprise within a single application. Depending on your current and future needs, this type of software may reduce the need to purchase additional software to manage diverse types of content.

### 3.3 Key Software Functions

Records management software has been developed to provide a number of key functions to facilitate the capture, archiving, storage, search, retrieval, redaction, tracking, reporting, management, and sharing of a wide variety of public record types. These are the key functions that constitute the vital moving parts of many records management software applications. They may be offered in specialty software applications or embedded in more robust multi-function systems:

- **Archiving and Storage**: Electronic records should be archived when they have long-term retention needs in order to fulfill legal, business and regulatory requirements. A digital archive is a repository that stores collections of digital records to preserve and provide long-term access to the information. Digital archiving and preservation ensure the authenticity and protection of electronic records. Document storage allows users to collect a variety of electronic documents (e.g., PDFs, images and other media) and index them with folder hierarchies, metadata or tags.
- **Search and Retrieval**: Robust search and retrieval tools that allow users to combine powerful Boolean searches, metadata searches, and full text searches are essential for an effective electronic records management system. A system should make it easy to search document information and text to quickly locate what you need. Ideally, this should be done from a single search platform.
- **Redaction Tools**: Many public records requests include records that contain private and confidential information which must first be redacted before they can be released. Software tools that can quickly search for and redact confidential information can greatly reduce the time required to do this work and improve customer service. Redaction tools also have the ability to redact what can be seen and heard in video files like those produced by police body cameras.

- **Reporting:** Reporting provides visibility into access, actions, and history of all records and documents stored within the application. A few standard reporting capabilities include disposition reports, data activity reports, workflow metrics reports, and security logs. Reporting tools should be able to report on each action, including when and by whom it was performed.
- **Workflow Management**: Workflow management tools replace the traditional manual paper flow within an organization with automated, rules-based processes. Workflow management software "knows" all your internal administrative procedures and steps, and can automatically determine whether or not the process is ready for the next step. Workflow software typically integrates with other applications like document management software, databases, and email to provide continuity between separate systems.
- **Public Facing Portal**: Public facing open-data portals allow governments to provide or send records online, eliminating the need to make paper copies or use portable storage devices. Portals that include request management tools facilitate processes for receiving and responding to public records requests, including request tracking, report generation, and direct access to view and download records. Portals may also allow requesters to search and review previous records requests and previous agency responses, which can eliminate duplicate requests.

### 3.4 Evaluating and selecting records management software

The following basic steps can be used in organisations to evaluate and select a RM software:

(i) **Organize a software evaluation team:** It should include IT staff, legal staff, records officer, and any departmental records custodians. IT staff will be responsible for assessing the technical aspects of hardware and software tools as well as how they will be integrated into your existing IT infrastructure, any changes or upgrades that might be needed, and the requirements for initial start-up and ongoing maintenance and operation. Records Officers are the custodians of records and so can give valuable information about the types, formats, and numbers of records in the organization as well as where they can be found, and the nature and frequency of records requests. They are also the ones who will most likely be using the technology tools that are selected through this process. Agency legal staff will help ensure compliance with all applicable records regulations and procurement requirements regardless of which technology tools are selected.

(ii) **Analyze current and future needs:** It is significant to start with a clear understanding of your organisation's current RM needs and requirements. Here, you go in more detail to provide information on the following: types and quantities of records produced and managed in your organisation; the problems you want the systems to solve; the technology tools currently in use; details of records you want the software to capture and manage; records requests you receive annually; existing problems with your workflow or RM system; How legal requirements pertaining to records affect your choices;

(iii) **Develop a list of project requirements and goals:** Based on your analysis of current needs and requirements, develop a list of project requirements and goals and a profile of the specific types of software functions and features that will be the most helpful for your organization. List what you expect the software to do; make a plan on how you will use the software and whether you will need the system to interface with other applications. Prioritize those functions and features so you will have a better idea of those that will be

essential and those that may be nice to have but not essential in case budget constraints limit your choices.

(iv) **Develop an evaluation criteria:** The following will be basic criteria may be helpful as you assess and compare the software applications you are interested in:

- *User-Friendly Interface***:** The software should be simple for employees to use. If it is too difficult, you will not get complete buy-in from the staff, which will make the system less effective
- *Compatibility* with current IT environment and any anticipated changes to that environment
- *Integration*– with the business (e.g., Office applications) and communications (e.g., email) software you already use.
- *Search Functionality***:** ability to locate all relevant records; offer a variety of options e.g. keyword and full-text searches for quickly finding files.
- *Legal requirements***:** Will the product allow you to meet legal requirements such as record retention compliance, timely records request responses, etc.? Can it be readily updated as legal requirements change?
- *Help Features***:** How robust are the software's help features? Do they include online tutorials, clear error messages, and procedural prompts?
- *Vendor Support***:** Ask vendors to provide you with information on what is included in their packages, such as the level of support (installation, training, and/or maintenance) and the cost of that support. Will these options be available by phone or on-site?
- *Reporting Tools***:** The software must be able to produce reports on system activities and the status of objects within its control for management, tracking, statistical, and general purposes.
- *Customization***:** You should be able to modify the "out of the box" solution at little or no additional cost, to better fit your firm's unique operating environment.
- *Security and Access Controls***:** This function controls which users have access to which information. The software should have the ability to assign rights and restrictions on the use or management of particular records. A few common security features include user access authentication, password encryption, audit reports, and notifications of unusual activity.
- *Metadata***:** Look for software solutions that can readily capture, store and produce all relevant metadata.

(v) **Gather product information:** gathering more detailed information about the various software products that are available on the market. A review of available technical literature also plays an important role in evaluating software products. This information can be found in product brochures, technical specifications, white papers written by vendors and/or third parties, and, of course, the vendor's own product website.

(vi) **Contact other local government agencies:** Contact friends in other organisations to learn about the types of RM software they are using and why. This will give you a better sense of what may work for your organisation and, potentially, what you may want to avoid.

(vii) **Score products against your evaluation criteria:** Score according to how well they are able to meet each of the evaluation criteria established in previous steps. Totals for each product can then be computed and compared.

(viii) **Test before you buy:** You should test software products to the greatest extent possible before you buy them. Check if the software and its functionalities operate as advertised. If possible find out more from other organisations using a similar software you are interested in. Take advantage of any free software trial periods the vendor may be offering.

(ix) **Understand software costs:** The overall costs of records management software will depend on a number of factors, including how widely it will be rolled out within your organization, the level of optional functionality selected, the level of configuration or customization that will be required, the extent of initial data migration, and the level of integration with existing IT systems. It is also essential to understand the vendor's licensing requirements and cost structure. Software vendors may have one-time annual license fees or alternatively, they might offer monthly subscription fees. Maintenance costs are additional and are usually based on a percentage of software and license costs.

(x) **Review procurement procedures:** When acquiring software services, local governments need to comply with their applicable procurement requirements. Understand the legal requirements based on type of organisation and type of contract.

**Table 1: Example RM Problems and Technological Solutions that can be applied**

| RM Problem | Technological solutions |
|---|---|
| **Too much paper** | *Better filing equipment* e.g. compact (movable) shelving, open shelving, lateral files and specialized folders, powered filing cabinets, special filing cabinets for specialized media or oversized documents may allow you to fit more documents into existing space.<br><br>*Media Conversion*<br>Conversion of the existing paper to microform or optical images. This allows you to maintain the largest volume of documents in the least space. But, conversion is expensive, and you need to be sure you have studied the records so that you:<br>✓ Only convert the documents you need, and<br>✓ Have an approach to indexing those documents that allow you to retrieve them efficiently.<br>*Microfilm* is a good medium to choose if you need to convert records which have a permanent retention. |
| **Inability to find the information needed when you need it (e.g.** Have no sufficient information about the documents to locate them efficiently, or have no sufficient security to ensure they will be where they are supposed to be when needed. | *Automated Document tracking system e.g.*<br>✓ Bar coding systems provide an excellent means of tracking documents once procedures are in place.<br>✓ RM Software – storage, retrieval, control, track or index records, etc<br>✓ ERM system able to generate system-wide reports on user logins, audit activity, document modifications, etc.<br>*Document indexing* allow for document retrieval in multiple ways<br>*Document distribution technologies* e.g. e-mail, Internet sites offer increased access to information<br>*Special Purpose Programs* used to automate one or more phases of records lifecycle to simplify records management tasks e.g. can automate a form.<br>*Workflow software* for automating business processes so as to capture electronic information or documents and pass it on from individual to another for action.<br>*Imaging technology* used to convert paper documents to digitized (computer readable) form. An imaging system allows for electronic capture, storage and retrieval of documents.<br>*Electronic document management* system is software you can use to store and retrieve electronic documents.<br>*Records management application (RMA)* is software which can manage records throughout their lifecycle. It can be used to categorize and locate records as well as dispose of the |

| | |
|---|---|
| | electronic records maintained in its repository when they are due to be destroyed according to an approved records schedule. |
| **Lack of storage and working space** | *Better filing equipment* e.g. compact (movable) shelving, open shelving, lateral files and specialized folders, powered filing cabinets, special filing cabinets for specialized media or oversized documents may allow you to fit more documents into existing space. |
| **Loss of track of files** | Use of Automated Document tracking system |
| **Poor conditions of records** | Digitization using imaging technologies to convert paper documents to digital (computer-readable) form. |

Adapted from U.S. Department of Transportation, Federal Aviation Administration (2014)

### 3.5 Challenges of e-records management systems

Different from paper records systems where the fate of a record is determined at the disposal stage by evaluating its value after it has ceased to be actively used, ICTs have taken a record's whole life cycle into the hands of the initiator(s) and producer(s) of records. A lot of records are lost at the creation stage due to the relatively easy record creation and disposal cycle. Records of enduring value are hardly retained as it is very easy to issue a command to a computer to erase a file or to press a button on a tape or video recorder to contents at the creation stage. Once lost, such records are almost impossible to recover (Mulauzi et al, 2012). Another challenge for many records managers is to know whether existing or planned Technology systems are technically capable of supporting RM requirements and protecting the information base on which organization depends on such as; quality, comprehensive, accurate, adequate, complete and meaningful, authentic, unique, authority, an altered and compliance of a record. Additionally, e-records are not accessed when there is no power; they are expensive to maintain as they require adequate investment in software to overcome technological obsolesce. Because the e-system is not permanent like manual system, it requires upgrade most of the time. Staffs need to also undergo expensive training. Yet, insufficient funding remains a crippling problem in most records offices and many organisations fail to meet overhead running costs such as making new purchases and maintenance.

One other problem relates to security and privacy of sensitive and critical data or information of great value to government, organisations, and individuals held in an electronic media. In spite of having password controls and audit trails, these controls are widely circumvented. Harking computer databases by breaking access codes has become common. In addition, electronic records are always virtual documents that exist under software control. As such electronic data can also be damaged by software security problems like computer viruses. While paper files can often be lost in fires and floods, electronic data is can be backed-up in multiple locations, reducing the potential for permanent data loss. Further, according to Mulauzi et al (2012), compelling challenges brought by ICTs on records management relate to legality, reliability, authenticity, and originality of documentation held on such newer ICT-based media. Experts in technology and particularly in the legal and policy sector are struggling to determine how to handle the new world that is permeated by digital information that can be easily modified and whose authenticity, legality, originality, and reliability are increasingly difficult to determine

(Mulauzi et al, 2012). E-records can be duplicated easily. Therefore, copies and originals look alike and it is difficult to find out the authentic original. They can also be modified without trace e.g. changing entries in a database. This raises questions of their authenticity and originality. And their legal and evidential values are consequently brought into question.

Additionally, Mulauzi et al (2012) observed that e-records storage media has a shorter lifespan than paper. While a paper record is said to last as long as 200 years, electronic media is said to start deteriorating after the first 5 years. As such making electronic information available for longer periods is problematic. The other problem relates to version control. The constantly changing arena of ICTs has also posed a great challenge to developing countries like Zambia that find it difficult to keep up with regular upgrades in both software and hardware. This leads to situations where organisations are left with older versions of important software that become difficult to use due to compatibility problems (Mulauzi et al, 2012). Additionally, there are no policies and procedures in most countries on how to deal with electronic records creation, accessibility and disposal. In fact, Mulauzi et al (2012) informed that there is lack of ICT legislation and/or the lack of adequate integration of the legislation with national archival legislation. The absence of policies and procedures to provide guidance to creators and users of e-records poses risks that also cannot be ignored. Other challenges faced by records managers in reference to capturing and preservation of e-records include: absence of organisational plans for managing records; low awareness of the role of records management in support of organisational efficiency and accountability and absence of stewardship and coordination in handling records among others.

## 4.0 WAY FORWARD

In order to enhance their firm, many organizations tend to invest and emphasize in too much technology. BenMoussa (2009) points out that "technology alone won't make a person with expertise share it with others. Technology alone won't get an employee who is uninterested in seeking knowledge to hop onto a keyboard and start searching or browsing. The mere presence of technology will not create a learning organization, a meritocracy, or a knowledge-creating company." However, this approach may not have the desirable result if the firm's employees are not able to use these systems. Therefore, it is imperative that many that to be successful in resolving records management problems, companies must prepare to invest in their employees in order to enhance their visions, capabilities, and experiences for the universal working environment. In fact, effective management of both paper and electronic systems requires the four important aspects such as the people to manage the system, information that the organization uses for business, infrastructure and money to procure the required resources for the new system.

Records managers must ensure that records management applications software are secure, reliable, permanent, and comprehensive, and they must comply with rules and regulations. When using any kind of electronic system, it's important to note that simply scanning an existing paper document might not be sufficient to make it a record. Some software systems require a person to declare something a record, so the system can properly manage it. Each record must have a unique identifier to work with some systems. Look for something that is easy to use and has the necessary security to protect files. Some systems include document management systems (DMS)

within the scope of records management. Also, look for something that guarantees an enforceable chain of custody, so you can see what a record said, how the content within it evolved, and who was involved with any changes. That kind of system can prevent unauthorized access and changes. Electronic records management systems need to be able to adapt and grow as technology changes. Formats change, and the documents and records saved in a particular format might also need to change. For example, floppy discs were the best technology available in the mid-1990s. Now, hardly anyone has a drive to read those discs. Records management occurs in the long term, not the short term.

It is also important to note that electronic records systems should not be introduced without the essential processes and controls for the capture, long-term safeguarding and accessibility of electronic records that should protect the integrity of a record pertaining to quality, comprehensiveness, accuracy, adequacy, completeness and authenticity. Before an organizations can transit to e-records or integrated records systems, there is need to ensure that e-records systems provide trusted information that is reliable, complete, unaltered and useable. These solutions should be integrated in e-records systems during their planning and design, rather than be added on during or after implementation because they serve both to document the policies, transactions and activities of organizations and to provide a trusted source of information to support decision-making and accountability. In order to ensure compliance with e-records management requirements, organization entities need to ensure that procedures are implemented that achieve the following security goals: ensure that only authorized personnel have access to electronic records; backup and recovery of records to protect against information loss; personnel are trained in how to safeguard sensitive or classified electronic records; minimized risk of unauthorized alteration or erasure of electronic records; ensure that electronic records security is included in computer systems security plans; and there must be adequate finance and competent personnel to manage the IT infrastructure.

## 5.0 CONCLUSION

This paper has endeavored to explain how technology-based RM systems may be a solution to many RM problems encountered in organisations. Some of the advantages include the following: they serve time, easy to access, create storage space and can be accessed everywhere as long as there is internet and the necessary gargets. The disadvantages are that, they are expensive to institute, they need trained staff to manage it, they cannot be accessed when there is no internet or power or the gargets to use such as smart phones or computers. Additionally, they need backups and they are also prone to security attacks. This document has also looked at the advantages of manual RM processes including the fact that it's cheap to manage, and it can be accessed even without power, internet, computers or smart phones. It's not easy to alter a records. The disadvantages are that they cannot be accessed elsewhere apart from where they are kept, they are time and space consuming. Since the world is fast embracing ICTs in virtually every aspect of life, it is important that even institutions involved in RM such as libraries and archives also invest in ICTs in order to enjoy the benefits that come with their use.

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