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Innovative Tools for Records Management in Electronic Era

Abstract

The influx of modern technologies and their peripherals in the electronic world cannot be undermined. The focus of this paper is on innovative tools for managing records in the electronic era. In a bid to understand these tools, the author divided this article into various sections. Following the introductory section, the author described art of managing records in the electronic era as well as highlighted different modern tools (software and techniques) adopted for record management in modern organizations. Other issues addressed in this article include the opportunities created for the use of these tools for electronic records management and the challenges associated with managing records in an electronic environment. However, the author concluded that despite the changes in records management brought about by innovations and application of ICTs and their tools, it is yet to be felt completely in the traditional African organizational settings especially libraries and information centers. She further recommended that more attention should be placed on keeping abreast with new innovations with regards to records management since development in this field is dynamic and organizations around the globe are seeing the need to imbibe them in their processes and activities for optimal performance.

Introduction

Around the world, individuals, organizations and government bodies recognizes the essence of managing records. Properly managed records preserve a crucial aspect of an organization's memory. Many are kept as evidence of activities, transactions, and decisions. Others document what happened and why. The rationale for managing records is part of an organization's broader function of governance, risk management, and compliance and is primarily concerned with managing the evidence of an organization's activities as well as the reduction or mitigation of risk associated with it (Tarantino, 2008).

The ARMA International Glossary of Records and Information Management Terms (2013) defined records management (also known as records and information management), as an organizational function devoted to the management of information in an organization throughout its life cycle, from the time of creation or inscription to its eventual disposition. This includes identifying, classifying, storing, securing, retrieving, tracking and destroying or permanently preserving records. The International Standard Organization ("ISO 15489-1: 2001") defined records management as "[the] field of management responsible for the efficient and systematic control of the creation, receipt, maintenance, use and disposition of records, including the

processes for capturing and maintaining evidence of and information about business activities and transactions in the form of records”.

Before the electronic era, the record management practices of organizations and institutions metamorphosed from the physical to the analogue pattern of managing records. The shift from mechanical and analogue electronic technology to digital electronics began from the late 1950s to the late 1970s with the adoption and proliferation of digital computers and digital record keeping that continues to the present day (Schoenherr, 2014). Organizations in contemporary times including libraries still handle records as they did some years ago. Not much has really changed. When records were created, record managers would organize them, file them and keep them in storage, having a high level of control over the lifecycle. Even now, most organizations still continue to take same steps with managing records in the electronic era as they did in the old times despite innovations in the digital world and the ever-changing concepts of information and communications technologies (ICTs) and their peripherals. The increasing deployment of ICTs in records management has given the impetus for the creation of electronic records, which is imperative to the functioning of modern organizations including the library.

There exists much interest nowadays in the use of technology-based systems to support records management processes but the application of such systems has shown to be problematic. As electronic information grows, records managers are still trying to maintain the same level of control and oversight, but in today’s electronic environment, this model is no longer effective or realistic. The records management landscape is changing and growing dramatically, which is both a challenge and opportunity for records managers. The global electronic document management market is poised to grow to \$6 billion by 2024, spurred by the growing use of cloud and hybrid computing, BYOD initiatives, and big data (Global Market Insights, 2017).

Thus, the purpose of this paper is to discuss the innovative tools for managing records in the electronic era in order to highlight the areas in which technology has contributed immensely in records management. In so doing, it highlights the management of records in the electronic era, tools for electronic records management, opportunities and challenges of technology integration to records management.

The Context of Records Management in the Electronic Era

Information technologies have tremendously transformed all spheres of human endeavours and the art of keeping records is not left out. Organizations and institutions started keeping records in electronic formats with the proliferation of computers in the early 1970s. The increasing pervasiveness of computers and its peripherals contribute immensely to accountable record keeping precisely because computers are seen as so important to business and daily life. Information technologies are considered by many to be ‘the solution’ to information management problems, and often computer equipment is installed in organisations with little consideration for what tasks they will perform and how the products of those actions – the records – will be managed (International Records Management Trust, 2009).

Unlike computers, paper-based record-keeping technology is so familiar it can be hard to notice. Everyone working in a typical office environment recognizes the nature and purpose of paper, typewriters, carbon paper for creating duplicates, preprinted forms, filing cabinets, ledgers for entering accounts, warehouses for storing volumes of paper records and mail rooms for sending and receiving paper-based records. The paper records environment is easily understood even by people who have not worked in offices before. Part of the challenge of moving from paper to electronic record keeping, therefore, is to understand the fundamental differences between the two technologies (International Records Management Trust, 2009).

According to Nyampong (2015), electronic records (e-records) are recorded information, documents or data that provide evidence of policies, transactions and activities carried out in e-government and e-commerce environments. E-records may be categorized as text files (files produced by word processing programs or by other software); data files (computer processable files that store numeric and sometimes textual information as quantitative values so that numbers can be manipulated using arithmetic processes); analogue audio and visual records (sound documents and images to be played back); disaggregated data (information collected through remote sensing systems); databases (structured collection of interrelated data); machine instruction sets (records created by the action of intelligent machines); image files (records containing computer processable images that generally exist as hard copy before being converted into images) and digital documents (files consisting of numeric data, images or sound recorded digitally in one uniform structure) (Nyampong, 2015).

The increasing use of ICTs, especially the Internet, in operations around the world driven by reforms, has given impetus to the generation of e- records, touted as strategic assets vital to the functions of an organization. Like traditional paper records, e-records support the day-to-day operations of organizations and interactions with customers / clients, private and public sector partners. By and large, in developed regions such as North America and Europe where government services have increasingly moved online, e-records are becoming the basis for confirming pension and other entitlements; registering births and deaths; verifying citizenship, certifying voting rights; enabling collection of taxes, supporting financial management; and supporting litigation (International Records Management Trust, 2004).

The application of electronics into record management is overwhelming. Records are preserved and are reduced in sizes to smaller bits when placed in electronic formats. With the aid of computer technology, individuals and organizations have seen the need to migrate their documents and records into formats that are durable, portable, flexible and transferable. Records are managed in electronic formats which prevent the loss of data and important organizational documents thereby creating room for longevity of records.

Innovative Tools for Electronic Records Management

The field of records management has over the past two decades undergone great advancements and this is mainly due to the emergence of modern information and communication technology (ICT) (Kasozi, 2012). In recent years, significant theoretical work has been done in the area of electronic records management; however, little of this work has been translated into practical, implementable solutions which serve as tools for electronic records management in organizations. According to the National Archives and Records Administration [NARA] (2015) in their article on “open source tools for records management, the use of tools and technology in automating records management tasks could assist individuals and organizations in their records management processes. This will not only reduce the burden of records management responsibilities on individuals, but will make organizational records and information easier to access because they are more consistently managed.

As highlighted by NARA (2015), there exist numerous tools and software adopted by organizations across the world for managing electronic records. These tools are tabulated in Fig. 1 where they are summarized in their contents, descriptions and functions. According to NARA,

these sample of tools and software could act as a “toolkit” to assist organizations and institutions in automating and improving records management functions. Tools were included if they were described as accomplishing a function related to records management. It remains the responsibility of records officers to evaluate software functionality and compliance with record keeping requirements and their organization’s needs. The list represents the range of services available together with software descriptions from their developers. The “Tags for RM Functions” column describes some of the possible uses for the tool when organizations manage their records (NARA, 2015).

Table 1: Innovative Tools for Managing Records in Electronic Era

S/N	TOOL	TOOL DESCRIPTION	TAGS FOR RECORD MANAGEMENT FUNCTION
1.	ACE (Audit Control Environment)	<p>“ACE (Auditing Control Environment) is a system that incorporates a new methodology to address the integrity of long term archives using rigorous cryptographic techniques. ACE continuously audits the contents of the various objects according to the policy set by the archive, and provides mechanisms for an independent third-party auditor to certify the integrity of any object.</p> <p>ACE consists of two components, the first an Audit Manager (AM) that checks files locally to ensure they have not been compromised. The second part, the Integrity Management Service (IMS), issues tokens that the AM can use to verify that its local store of file digests has not been tampered with.”</p>	File Integrity
2.	APACHE™ OODT	<p>“It's metadata for middleware (and vice versa): Transparent access to distributed resources; Data discovery and query optimization; Distributed processing and virtual archives. But it's not just for science! It's also a software architecture: Models for information representation; Solutions to knowledge capture problems; Unification of technology, data, and metadata”</p>	<ul style="list-style-type: none"> • Data grid framework • Metadata management

3.	Alfresco Community	Alfresco Community Edition allows organizations to manage any type of content from simple office documents to scanned images, photographs, engineering drawings and large video files. It is commonly used as a: Document management system; Content platform; CMIS-compliant repository. There are also Add-ons”.	<ul style="list-style-type: none"> • Document management • Content management • Process management
4.	AVI-MetaEdit	The software gives you ability to perform various metadata editing for AVI files. You can use the tool to embed, edit, import, and export metadata.	<ul style="list-style-type: none"> • Digitization • Metadata management
5.	AXAEM	“Axaem is a records life-cycle management system that assists records managers and archivists in their day-to-day work. It produces retention schedules, allows new schedules to be submitted over the web, tracks records officers and their training sessions, and links retention lengths to records center boxes for disposition	Retention schedule development
6.	BAGIT LIBRARY	The BAGIT LIBRARY is a software library intended to support the creation, manipulation, and validation of bags.” “Bags are based on the concept of "bag it and tag it," where a digital collection is packed into a directory (the bag) along with a machine-readable manifest file (the tag) that lists the contents. Bags have a sparse structure that envelopes any institutional data architecture and format. It can hold documents, pictures, music, movies and even other folders.	<ul style="list-style-type: none"> • Transfer format • Transferring records
7.	BitCurator	The BitCurator project uses open source digital forensics tools to help collecting institutions manage born-digital materials. BitCurator packages forensics and data analysis software in	<ul style="list-style-type: none"> • Digital forensics • Disk imaging • File system analysis • Metadata management • Personally Identifiable

		an environment where users can create disk images, rapidly sort through files and file systems, extract and transform metadata, and identify and redact sensitive information.	Information (PII)
8.	BWF MetaEdit	This tool permits embedding, editing, and exporting of metadata in Broadcast WAVE Format (BWF) files.	<ul style="list-style-type: none"> • Metadata management • Audiovisual formats
9.	Cloud Deployment Toolkit	Cloud Deployment Toolkit facilitates the deployment of various Scape software components on top of public or private (on-premises) clouds.	<ul style="list-style-type: none"> • Cloud computing
10.	DELOLD	DELOLD is a command line tool used to delete old files with a create date older than a set amount of days. It can do verbose and recursive with any path given. Perfect for Scheduled and/or batch file jobs.	<ul style="list-style-type: none"> • File cleanup • File management • Shared drive management
11.	DROID (Digital Record Object Identification)	DROID stands for Digital Record Object Identification. It's a free software tool developed by The National Archives of the United Kingdom that will help you to automatically profile a wide range of file formats. For example, it will tell you what versions you have, their age and size, and when they were last changed. It can also provide you with data to help you find duplicates. Profiling your file formats helps you to manage your information more effectively. It helps you to identify risks (and therefore plan mitigating actions).	<ul style="list-style-type: none"> • File format identification • Duplicate detection
12.	iText	iText is a PDF library that allows you to CREATE, ADAPT, INSPECT and MAINTAIN documents in the Portable Document Format (PDF)	<ul style="list-style-type: none"> • PDF Processing

Source: National Archives and Records Administration (2015).

- (1) **ACE (Audit Control Environment):** ACE is an open-source software for managing records in an office environment created / developed by University of Maryland Institute for Advanced Computer Studies. It is a system that provides a scalable, auditable platform for ensuring the integrity of digital archival holdings. The core aspect of ACE is a small integrity token issued for each monitored item, which is part of a larger, externally auditable cryptographic system. In essence, the ACE allows for the monitoring of collections on a variety of disk and grid-based storage systems, on which the monitoring is based on a customizable policy.
- (2) **APACHE™ OODT:** The Apache Object Oriented Data Technology (OODT) is an open source data management system framework that is managed by the Apache Software Foundation. It was originally developed at NASA Jet Propulsion Laboratory to support capturing, processing and sharing of data for NASA's scientific archives (Wikipedia, 2019). From the features possessed by Apache OODT, it focuses on two canonical use cases: big data processing and on information integration. It is a system that operates across all platforms because it is written in Java language.
- (3) **Alfresco Community:** Alfresco is a flexible and leading open source based enterprise content management system. It is highly scalable and helps an organization in their content service. Its easily integrated platform helps the record manager to manage web portals, records, images and lots more. Like Apache OODT, this record tool is written in Java language which makes it easily integrated into workplaces. Among the features of this system include the ability to easily find, share and secure important files; great search features; smart folders; as well as mobile, desktop and web access to record contents.
- (4) **AVI-MetaEdit:** AVI-MetaEdit is a free, open source tool that supports embedding, validating, and exporting metadata in AVI files. This tool was initially funded by NARA, supported by Federal Agencies Digital Guidelines Initiative (FADGI), designed and led by AVP, and developed by Jerome Martinez of MediaArea.
- (5) **AXAEM:** It is an open source records life-cycle management system that assists records managers and archivists in their daily work. It is compliant with MARC, EAD, EAC, DACS and OAI-PMH. The key features of AXAEM include retention schedules, report generation, file arrangements and descriptions, preservation and access, third party

system integration, XML integration, etc. The desktop version of this tool can be deployed on a variety of operating systems including Microsoft Windows, Apple OS/X and Linux.

- (6) **BAGIT LIBRARY (BIL):** The Bagit specification is a hierarchical file packaging format for the creation of standardized digital containers called ‘bags’, which are used for storing and transferring digital contents. Some organizations involved in the digital preservation with this software include the Library of Congress, Dryad Data Repository, NSF DataONE etc. It is written in various programming languages such as Java, Python, Ruby and PHP, along with a Drupal module and a desktop application.
- (7) **BitCurator:** This provides digital forensics tools and techniques to assist archivists, librarians and record-management institutions. It is compatible with the Linux operating system. BitCurator includes a suite of open source digital forensics and data analysis tools to help collecting institutions process born-digital materials. It is funded by a grant from the Young Canada Works Program.
- (8) **BWF MetaEdit:** This is a free, open source application that supports embedding, validating, and exporting of metadata in Broadcast WAVE Format (BWF) files. BWF MetaEdit was developed by the Federal Agencies Digital Guidelines Initiative (FADGI) to support its guideline on embedded metadata in Broadcast WAVE files. The features of this tool include report generation, import, edit, embed and export of specified metadata elements in WAVE audio files, etc.
- (9) **Cloud Deployment Toolkit:** This is a suite of tools that facilitate deployment of various software components on top of public or private (on-premises) Cloud environments. It comprises of: Web GUI and CLI – for easy administration of computing resources; Puppet CMS – for deploying software packages and tools over the infrastructure; Nagios – for monitoring and QA; Libcloud – for interfacing with multi-vendor Cloud services.

- (10) **DELOLD:** DelOld is a graphic user interface (GUI) based tool which is used to delete files that have not been written to or accessed for a specified number of days from local and network volumes. It can also be run from the command line enabling it to be run at specified times via the Windows Scheduler. The key features include the ability to select and browse remote machines, fast jump to location ability, pure UNICODE for faster running among others.
- (11) **DROID (Digital Record Object Identification):** This software performs automated batch identification of file formats. It uses internal signatures to identify and report the specific file format and version of digital files. DROID is written in Java programming language.
- (12) **iText:** This tool allows for the creation and manipulation of PDF files in Java and .NET. iText was written by Bruno Lowagie. The source code was initially distributed as open source under the Mozilla Public License or the GNU Library General Public License open source licenses. iText provides support for most advanced PDF features such as PKI-based signatures, 40-bit and 128-bit encryption, colour correction, barcodes etc.

Opportunities for Electronic Records Management

There abound several opportunities for applying computer systems into managing records. As pinpointed by the International Records Management Trust (2009), the benefits associated with the use of new technologies in managing electronic records include widespread access; flexibility; efficiency and effectiveness; economic benefits; general business opportunities; and auditing capabilities for regulatory compliance. These benefits are explained by International Records Management Trust under the following subheads:

Widespread Access

Traditionally, records and archives have been created and maintained in paper form as physical objects. Their physical composition limits access to a specific time and place: only one person can use a record at one time and only in one physical location. Producing multiple copies is expensive and time consuming, requiring access to photocopiers or printers. Duplication also

leads to confusion about which of many versions of a document is the official record. Electronic records, on the other hand, can be shared widely and they can be accessed and used by several people at the same time, even if they are in different places. In environments where resources are scarce or distances are great, the ability to provide access to information without the boundaries of time or space can dramatically improve service, increase information sharing and enhance operations.

Flexibility

Information technologies enhance flexibility in the creation, storage, use and management of information and records. In a paper environment, records are created, received and filed in one office, and they accumulate in one place. Electronic records can be stored remotely or on compact disks (CDs) or tapes, allowing people to share records and use their information resources more dynamically. Because so many people in an organisation can have access to electronically stored records at the same time, they can carry out their duties without being hindered by a lack of information. They also have better access to more up-to-date information, since they can access information technologies such as electronic records storage facilities or databases directly and not have to wait for materials to be filed in a central registry and then located and retrieved when needed.

Efficiency and Effectiveness

The use of information technologies improves information handling and allows for the speedy retrieval of records and information through electronic search facilities. As a result, policy makers can make informed decisions quickly and efficiently, contributing to the effectiveness of the organisation. Further, when the retrieval of records and information happens swiftly and decisions are made on time, the image of the organisation improves as it is seen to be reliable, capable and responsive to the needs of its clients or the public. Certainly, if someone knows where records are stored, whether in paper or electronic form, he or she can retrieve them in good time, but too often knowledge about where manual records can be found may be held by only one person in the organisation, and if he or she is not available then access to records is delayed. And once the volume of records reaches a certain point, no one person can 'remember'

where everything is. Well-designed computer systems will facilitate easy retrieval of electronic information, improving the speed and quality of service.

Economic Benefits

In the paper environment where records are physical objects, their accumulation requires ever-increasing amounts of space, including office space, shelves, filing cabinets and storage boxes. Several staff members may be needed to carry out routine procedural work such as filing documents and retrieving boxes. Through the use of new technologies, organisations are able to economize in terms of storage space, as computer systems can store large volumes of data and records in a small physical space. Database management systems, electronic mail systems, web and multimedia software programs are all good examples of information technologies that can store far more information than traditional paper records storage systems. In a well-managed organisation, it is also possible to manage staff resources more effectively. Much of the day-to-day work of filing and retrieval will be done by officers throughout the organisation as part of their daily routine, leaving time for other staff to participate more actively in activities such as appraisal and retention.

General Organizational Opportunities

The professional image of an organisation can be enhanced by improved information flow, and the organisation may be able to take on more complex work because it is more efficient and cost-effective. Computers can improve communications, reduce the loss of essential information, speed up the completion of projects and increase public awareness of the organisation. The use of technologies also exposes organisations to communities outside of their normal client base, locally, regionally, nationally and internationally. For example, the creation of a library website can raise awareness and increase interest from users or members of the institution far removed from the physical location of the library.

Auditing Capabilities

Well-designed records and document management systems also allow an organization to regulate and oversee actions and decisions. Many electronic records management software programs include mechanisms to maintain audit trails, encouraging more accountable record

keeping and promote compliance across the organisation. The development of information technologies also usually involves the development of records management legislation and regulations, which are designed to control the process of creating, maintaining and using records. As a result, public accountability and transparency are enhanced.

Challenges of Managing Records in an Electronic Environment

Electronic records management is new to most records officers and archivists in Africa. It has transformed the traditional mode of record keeping and brought with it some constraints which records managers have to contend with if they are to remain relevant in the information society. In an electronic records environment, the stability of the record is at much greater risk. The reality is that it is not as easy to preserve an electronic record, as one can preserve a paper record by placing it in an acid-free folder and keeping it in a secure and environmentally sound storage facility.

According to Iwhiwhu (2011), most of the challenges encountered in managing records, particularly electronic records border on technology obsolescence, inadequate trained personnel, policy formulation and implementation, etc. More so, NARA (2015) pinpointed these challenges to include technological obsolescence, technological dependence, increased risk of lost data and records, risks to reliability and authenticity, loss of security and privacy, increased costs, decentralisation of information, and the increased need for information technology specialists.

Technological Obsolescence

The constant changing nature of software applications and computer hardware has led to what is generally known as “technological obsolescence”. As new innovations in computer technology appear, old systems become obsolete and are no longer supported by the computer industry. Some examples of this obsolescence include Commodore 64 and WANG computers – first introduced in the 1970s and 1980s – which are no longer made or supported at all. Consider also the fact that 8 inch, 5¼ inch and 3½ inch floppy disks are now rarely if ever used, even though they were the predominant storage devices for electronic records for decades (NARA, 2015).

Technological obsolescence is not just applicable to hardware. Many software programs that were once extremely popular are also now out-of-date, including WordStar and early

versions of Microsoft Word and Corel WordPerfect. Some of these changes in technology are a consequence of changing economics and markets, while others resulted from advances and changes in software and hardware. It is quite right to imply that the risk of technological obsolescence is further worsened by the austere environmental conditions in which computer storage media are sometimes stored. Magnetic and optical media will deteriorate quickly when exposed to high temperatures, humidity and contaminants, often resulting in the partial or complete loss of electronic data.

Technological Dependence

Electronic records depend on technology. They are created and managed by computer hardware and software. Therefore, electronic records require mediation in order to be accessed. It is not possible to hold a computer disk up to the light and read it, as one can read a paper document or even, with the aid of a magnifying glass, a frame of microfilm. Because information technologies keep changing, and because electronic records cannot be used without the necessary technologies, individuals and organisations can quickly become dependent on technologies for their essential information. Hardware and software have to be upgraded regularly to ensure continuing access to information and records. As technology changes, records need to be moved to new systems –migrated – so that they can be used. Otherwise, the formats in which records exist are incompatible and the records are increasingly inaccessible. An electronic document cannot be placed on a shelf, like a bound ledger or folder of documents, with any guarantee that it will remain usable in ten, five or even one year into the future.

Risks to Reliability and Authenticity

As changes in information and computer systems require that information be migrated to new technologies in order for the information to remain accessible over time, this process of migration can affect the authenticity and reliability of information, as the process itself can change the content or structure of the records. Unlike paper records, which can be moved, filed, re-filed, copied and otherwise used and reused without change, electronic records need to be managed and preserved in such a way as to secure their authenticity as evidence. Similarly, the way in which electronic records are created can limit their value as authentic records. For example, computerised electronic mail (email) systems do not always capture accurate

information about the author of the original email message. Further, as email messages are forwarded, copied, replied to, they may be edited or altered, and the integrity of the original message may be lost as the email communication progresses. To establish the uniqueness and integrity of a record in such a system, one has to know which system was used, who sent the message, who received it, and when it was sent, received, replied to, forwarded or otherwise acted upon. The email software may not have the ability to capture all this information, which is essential to understanding the structure, content and context of record.

Loss of Security and Privacy

The introduction of information technologies has also affected the way government and private organisations preserve and make available records in their custody. Computers allow organisations to create large and complex databases and make huge amounts of data available electronically. Databases containing personal financial records, for instance, may be extremely useful to the individuals themselves. But without proper security protections, that information may also be accessed by others, threatening the privacy of the owners of that information. People have an inherent right to privacy that can be violated, intentionally or by accident, in an electronic environment.

Increased Costs

The costs of hardware and software can be very high. Costs are incurred not only when acquiring technology in the first place but also, more importantly, when upgrading equipment and systems, which is essential in order to keep pace with changing technologies. For organisations like the library with limited resources to tackle other problems, this ongoing cost poses a serious challenge. When considering the acquisition of computer equipment or the implementation of an electronic records management system, most organisations focus on the initial budget requirements: hardware; software; licenses; supplies; and staff time to develop and install the equipment. But annual and unexpected costs also need to be considered, including: system maintenance fees; upgrades and repairs; and staff training. Consideration is also paramount for the intangible costs of moving to a new working environment. Time and resources are required to comply with new regulations and legislation; to file, store, retrieve and access records; and to support office staff as they adjust to new technologies and methodologies.

Information Decentralization

The decentralisation of information and records management has shifted the responsibility for managing records from records professionals to the people who create and use records on a daily basis. Unfortunately, users are not trained to know what documentation to keep for evidential purposes or how to describe, file or maintain records. Without centralised oversight of the records management process, it can be more and more difficult to ensure that essential evidence has been protected adequately. Thus, even though the computer systems allow for widespread access to information, there is no guarantee that the information needed will be available or that it will be easily retrieved by anyone other than the individual who created and used it. Careful monitoring of the way in which electronic records are created and used is essential to developing an effective library work environment.

Conclusion and Recommendation

The art of managing records have metamorphosed over time from the paper type to the electronic type. Numerous tools have been introduced into records management in the electronic era irrespective of the organizational setting. But despite the changes in records management brought about by innovations and application of ICTs and their tools, it is yet to be felt completely in the traditional African organizational settings especially libraries and information centers. As highlighted in this paper, it can be summed up that several opportunities abound with the application of these tools for records management even though they bring with themselves challenges.

Hence, it is pertinent for management of organizations, record officers, archivists and other personnel to recognize the underlying impact of technology in the management of records in the electronic era. More attention should be placed on keeping abreast with new innovations with regards to records management since development in this field is dynamic and organizations around the globe are seeing the need to imbibe them in their processes and activities for optimal performance.

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