THE ROLE OF RECORDS CENTRES IN THE DIGITAL ENVIRONMENT: A CASE STUDY OF RECORDS CENTRES IN WINDHOEK

A THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

MASTER OF ARTS IN RECORDS AND ARCHIVES MANAGEMENT

OF

THE UNIVERSITY OF NAMIBIA

BY

SELMA NANGULA MULOKOSHI

201501961

APRIL 2024

SUPERVISOR: PROF. CATHRINE T. NENGOMASHA (UNIVERSITY OF NAMIBIA)

ABSTRACT

The study investigated the role of records centres in the digital environment focusing on Windhoek records centres. The study was guided by the records life cycle, records continuum theory and records management standards. The philosophical foundation of this study was the interpretivist paradigm which applied a qualitative approach. The study adopted a multi-case study research design. The target population was 18 respondents, purposively collected from three commercial records centres, which were Document Warehouse, AGS Records Management and Phildou and six in-house records centres in Windhoek, which were University of Namibia, Namibia University of Science and Technology, NamPower, Ministry of Health and Social Services, Namcol and National Archives of Namibia. A census was applied, hence, all nine records centres in Windhoek were intended to take part in the study. However, only eight records centres granted permission for the study to be conducted. The data collection was conducted by means of face-to-face interviews comprising open-ended questions and then analysed using content analysis. The findings of the study indicate that the services offered by the records centres were storage and retrieval services of semi-current records. Furthermore, the study reveals that some of the services had not changed in the digital environment. However, there were new services such as hosting of e-records on the cloud, scanning and using the electronic document management system. The study could not conclusively determine if policies and guidelines were fully integrated into ICTs. The study discovered challenges faced by records centres, such as transitioning in terms of human and financial resource needs, digital obsolescence, and a lack of adequate equipment to meet the digitalisation of records. The study recommends that records centres should train staff members on electronic records management practices and create digital archival repositories.

Keywords: records management, digital environment, electronic records, records centre, records management system, records life cycle theory and records continuum theory.

DECLARATION

I, Selma N. Mulokoshi, hereby declare that this study is a true reflection of my own research and that this work, or part thereof, has not been submitted for a degree in any institution of higher education.

No part of this research project may be reproduced, stored in any retrieval system, or transmitted in any form, or by any means (e. g. electronic, mechanical, photocopying, recording or otherwise) without the prior permission of the author, or the University of Namibia on her behalf.

I, Selma N. Mulokoshi, grant the University of Namibia the right to reproduce this research project as a whole or in part, in any manner or format, which the University of Namibia may deem fit, for any person or institution requiring it for study and research; providing that the University of Namibia shall waive this right if the whole the research project has been or is being published in a manner satisfactory to the University.

Student Signature:  Date: April 2024

DEDICATION

This thesis is dedicated to my late mother VISTORINA NDESHITEELELA HAIPUMBU (may your soul continue resting in peace Mukwanambwa wange) for molding me into the strong woman I am today and my son LUKAS KAILIWA KAUKUNGWA whom I would like to inspire to go above and beyond in all his life endeavors as the sky is definitely the limit. I would also like to dedicate this thesis to all motherless daughters who have lost their mothers due to Gender-Based Violence.

ACKNOWLEDGEMENTS

I would like to thank God for granting me an opportunity and good health, to further my studies. This study would not have been possible without the support of the following people and institutions:

- My supervisor Prof. Cathrine T. Nengomasha for your guidance, motivation and advice;
- All the records centres for granting me permission to carry out this study and the individual respondents;
- The Namibia Civil Aviation Authority (NCAA), Aerodrome and Ground Aids (AGA) department for the financial assistance;
- My mentor Tate Wilhem Uutoni for the constant push and motivation;
- All who believed in me and never got tired of telling me that I could do it, even when I was about to give up; and
- My son who had to endure the greatest sacrifice of being away from mommy as I fully dedicated my time to this study.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS AND ACRONYMS

CD	Compact Discs
CRM	Customer Relationship Management
ECM	Enterprise Content Management System
EDRMS	Electronic Document Management System
ERMS	Electronic Records Management System
ERP	Enterprise Resource Planning
ICT	Information Communication and Technology
ISO	International Standard Organization
IT	Information Technology
MHSS	Ministry of Health and Social Services
MoReq	Model Requirements for the Management of Electronic Records
NAMCOL	Namibian College for Open Learning
NAN	National Archives of Namibia
NARA	National Archives and Records Administration
NUST	Namibia University of Science and Technology
OAIS	Open Archive Information System
OPM	Office of the Prime Minister
PDF	Portable Document Format
UNAM	University of Namibia
WAN	Wide Area Network
WWW	World Wide Web

CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter highlights the background of the study, the context of the study, the statement of the problem, the objectives of the study, the significance of the study, the limitations of the study and the delimitations of the study. Finally, the chapter provides a summary of the research methodology, definition of key terms and concludes with the chapter summary.

1.2 Background of the Study

Over the years, the landscape of records management has witnessed significant transformation driven by advancements in technology, evolving regulatory environments, and the increasing volume of records (Buckland, 2017; Porogo & Kalusopa, 2021). According to Smallwood (2014), records are significant pieces of evidence that document business activities, transactions, decisions, and interactions. Therefore, efficient management of records is crucial to upholding transparency, accountability, good governance, adherence to regulations, and well-informed decision-making (Chigariro & Khumalo, 2018). Records come in different formats such as: paper/print, audio-visual and electronic records. Paper/print records include general correspondence, transactional records, receipts for items purchased, photocopied papers, drafts, staff and student records in files, finance records, legal hold records and landed property documents (Toyo, 2017). Electronic messages, metadata information, audio and video files, messages on mobile

phone memory cards, and records on external hard disk drives are among the records made electronically (Ambira, 2016). Technological advancements have played a pivotal role in shaping recordkeeping practises (Rice, 2022). The introduction of the printing press revolutionised the production of written materials, allowing for efficient and large-scale replication of documents. This advancement greatly enhanced the availability and distribution of information to a broader audience (Chaterera, 2016). However, the proliferation and improved accessibility of information have exerted a substantial influence on records centres. The advent of advanced document production and replication technologies has resulted in a significant rise in the quantity of records that require effective management (Schoenherr, 2014). The recent increase in the number of records has created a heightened demand for records centres to efficiently handle and oversee the expanding quantity of information.

The advent of the digital revolution during the latter part of the 20th century has resulted in a significant change in the way information is stored, with a shift from traditional paper-based records to electronic formats. The aforementioned has resulted in heightened efficacy, expandability, and availability, fundamentally transforming the administration of documents and data (Sudhier & Seena, 2018; Katuu & Ngoepe, 2017).

Traditionally, institutions were tasked with managing only paper records, but technological advancement has led to the management of both paper records and electronic records (Mulauzi, 2019). One key element that has consistently played a crucial role in supporting effective records management practises is the establishment and evolution of records centres. Record centres are dedicated facilities that have been specifically designed to store and effectively manage both physical and electronic records

and documents on behalf of various organisations (Mulauzi, 2019). In the broader context of records management, record centres assume a crucial function by facilitating the secure storage, efficient retrieval, and appropriate disposal of physical records (Schoenherr, 2014). The services provided by record centres assist in the control of records, ensuring compliance, and optimising records management processes for various organisations (Enakrire, 2020). However, in the contemporary era, characterised by a growing reliance on digital technologies, organisations have become prolific producers and custodians of substantial volumes of records in digital forms (Kalusopa, 2016). This necessitates the establishment of digital record centres. Digital records centres refer to specialised facilities that offer the necessary infrastructure, systems, and expertise for the storage, management, and preservation of digital records throughout their entire lifespan (Akporhonor, 2020).

Some records centres are in-house, which can either be public, and others are commercial records centres. An in-house records centre manages documents of the parent company while commercial records centres keep records for various organisations for a fee (Touray, 2021). These records centres are required to offer a professional records management service that meets best practices, supported by trained and skilled staff (Nengomasha & Nyanga, 2012; Ngoepe, 2018). Related studies on the management of digital records centres by Malauzi (2019) and Enakrire (2020) reveal that the management of digital records centres is a challenging task due to various factors such as the absence of appropriate guiding tools in the form of policies and procedures, records classification scheme, as well as records management programmes. Furthermore, Sambo et al. (2017, p. 120) argue that "digital records are vulnerable to loss and destruction because they are stored on fragile magnetic and optical media, which deteriorate rapidly." In addition,

Digital records “are inherently software dependent, regardless of their format” (Dar & Ahmad, 2017, p. 37). This has given digital record centres a lot of hurdles when it comes to long-term preservation.

Studies in Namibia (Kaupa & Chisa, 2020; Negumbo, 2018; and Nengomasha & Chikomba, 2018) have reported an increase in the creation of electronic records. In the public service of Namibia, this has been driven by the adoption of e-government (Negumbo, 2018). According to Heeks (2003), e-government refers to the utilisation of information and communication technologies (ICTs) with the aim of enhancing the operations of public sector entities. A study on records centres in Namibia by Nengomasha and Nyanga (2012) found that the landscape of records management has undergone significant transformations driven by technological advancements, evolving regulatory environments, and the increasing volume of records.

1.3 Context of the Study

Since Namibia gained independence in 1990, there has been an improvement in ICT infrastructure development compared to other African countries (Isaacs, 2011). Furthermore, the improvement in the development of ICT infrastructure in Namibia is attributed to different policies and initiatives that were adopted and implemented such as the e-governance policy. This is supported by the Prime Minister's Office that has urged the government to implement ICTs and electronic document records management systems (EDRMS) to improve organisational records management and ensure compliance with legislative and regulatory requirements of the National Archives Act, 12 of 1992, and the OPM: Draft Working Document E-Records Management Guidelines and Electronic Transaction Act 4 of 2019 (Republic of Namibia, 2018).

The Namibian government designated 2019 as the year of accountability, encouraging openness across all government organisations. This target was expected to be met if adequate record management practices were maintained, as well as a shift to electronic record keeping allowed by the implementation of EDRMS in the public sector (Kaupa & Chisa, 2020).

The Namibian government is working to improve ICT infrastructure, which should make it easier to create electronic records as well as provide opportunities for electronic systems for managing records (Nengomasha & Chikomba, 2018). The development of ICT infrastructure in Namibia could have a positive effect on records management practises (Kaupa & Chisa, 2020). To maximise the positive effects of ICT in records management, ongoing efforts are required to resolve challenges such as infrastructure gaps in remote areas, guaranteeing data privacy, and promoting digital literacy (Kaupa & Chisa, 2020; Nghihalwa & Shava, 2018).

Namibia's Vision 2030 has supported the government's vision to improve services in the digital environment (Government of the Republic of Namibia, 2004). This framework encourages investment in the ICT sector, and the National Development Plan (NDP 5) also support the government's vision of ICT development for organisations and the government sector to cope with global digitalisation. According to the NDP 5, "By 2022, Namibia will have universal access to information, affordable communication and technology infrastructure and services" (National Planning Commission, 2017, p.54). Additionally, it aims to ensure that public agencies have 100% access to broadband infrastructure to facilitate e-government initiatives (National Planning Commission,

2017). The Namibian government has demonstrated a proactive approach by commencing the development of e-governance platforms across crucial sectors and agencies of the state (Namibia Internet Governance Forum (NamIGF), 2017). Furthermore, the government has initiated a thorough examination of laws and regulations such as the Electronic Communications Act 8 of 2009 and National Broadband Policy for the Republic of Namibia pertaining to ICT with the objective of establishing strong legal frameworks that are in keeping with the digital goals established in Vision 2030 (NamIGF, 2017). The aforementioned collaborative endeavour highlights the government's dedication to strategically progressing the digital environment of the nation.

According to the Communications Regulatory Authority of Namibia (CRAN), Namibia has achieved significant strides in its efforts to achieve universal access to information and establish inexpensive communication and technology infrastructure (CRAN, 2022). The nation has made significant strides in improving the accessibility of information and technology to its inhabitants, businesses, and government agencies through the implementation of measures such as expanding broadband connectivity and investing in digital infrastructure (CRAN, 2022).

It is worth noting that Namibia has received recognition from the African Union for its highly advanced communications infrastructure, a noteworthy achievement that signifies considerable progress in its technological development (African Union, 2022). The aforementioned assertion finds support in the Global Competitiveness Index 4.0: Pillar 3: ICT Adoption, wherein Namibia is ranked 6th out of 34 countries within the region (World Economic Forum, 2019). Although there have been significant advancements, it is important to acknowledge that internet accessibility in Namibia is still limited to approximately 50% of the population, with the current level of internet penetration

slightly surpassing 51%. The data presented by NamIGF in 2021 sheds light on the advancements made thus far and the future possibilities for growth.

Furthermore, the Namibian Archives Act 12 of 1992 establishes policies and procedures for the management of records in all government document repositories, including the establishment of records centres (Nengomasha & Nyanga, 2012). These legislative frameworks provide the foundation for effective records management practices and support the integration of ICT solutions in the management of government records.

Therefore, Namibia has made significant strides in ICT infrastructure development and records management practices. The government's commitment to digitalization, supported by policies and development plans, sets the stage for further progress in leveraging ICT for efficient records management and improved service delivery across various sectors of the economy.

1.4 Statement of the Problem

The traditional roles of records centres have been to provide storage of records in hard copies and retrieval service for clients (Mulauzi & Ngulube, 2015). These roles entail maintaining records in safe and accurate temperatures, implementing retention schedules, developing procedures for labelling records and developing procedures to maintain an accurate and up-to-date inventory of records stored (Szekely, 2017). Several records centres in Windhoek, both in-house and commercial, provide these services (Nengomasha & Nyanga, 2012). However, with the introduction of ICTs, records centres have taken on the additional role of providing services in electronic format (Kalusopa, 2016, Litt, 2017, NARA, 2019). This role requires that records centres make plans to address the challenges

brought about by the creation and management of digital records, which are more demanding than physical records. With this new role, challenges such as failure to retrieve and use records due to hardware and software obsolescence, electronic records susceptibility to manipulation and legal implications of using cloud services have emerged (Toyo, 2017). Mulauzi (2019) reports that although organisations are migrating to digital platforms, records centres and archives in Africa are still lagging in accommodating digital records. Kalusopa and Ngulube (2012) highlight inadequate records management standards and practices as evidence of low electronic records readiness in organisations, archives, and records centres.

Despite the increasing reliance on digital systems, the role of records centres in this evolving landscape remains unclear. Failure by records centres to provide electronic records service could lead to the loss of valuable information. Therefore, this case study aims to investigate the role of records centres in the digital environment and identify the challenges and strategies they encounter in effectively managing records.

1.5 Objectives of the Study

The main objective of this study was to investigate the role of records centres in the digital environment, focusing on Windhoek records centres. The sub-objectives of the study were to:

- Determine the services offered by the records centres in managing digital records;
- Find out if ICT systems of records centre integrated records management policies and guidelines;
- Establish opportunities and challenges, faced by the records centres in the management of digital records; and

- Establish the applicability of the life cycle and continuum theories in the management of digital records.

1.6 Significance of the Study

The findings of the study could contribute to policy formulation and practice in records centres operations in the digital environment. This research would also add to the body of knowledge on records centres in the digital age. The study would benefit records centres managers, staff and stakeholders who are the beneficiaries of the research by contributing to better understanding and gaining more knowledge on digital records management. Using the findings, the management of records centres could develop appropriate approaches to resolve challenges associated with hardware and software obsolescence.

1.7 Limitations of the Study

Limitations of the study are defined "as constraints or limits in a study that are out of the researchers' control, such as time, financial resources, access to information, and so on" (Enslin, 2014, p. 275). The findings of the study cannot be generalised to other records centres outside Windhoek, which were not part of the study. The participants were unwilling to provide documents on their records management systems, policies, and guidelines. The study therefore could not verify through document review to conclusively determine if ICT systems of records centres integrated records management policies, and guidelines. To mitigate this limitation, the researcher asked the respondents the question to determine if ICT systems integrated records management systems, policies and guidelines differently to determine any inconsistencies.

1.8 Delimitation of the Study

For this study, the researcher only focused on eight Windhoek records centres and the National Archives. The in-house records centres include the University of Namibia (UNAM), the Namibia University of Science and Technology (NUST), Namibian College for Open Learning (Namcol), Namibia Power Corporation (NamPower), Ministry of Health and Social Services (MHSS), and the National Archives of Namibia (NAN) that serves the public sector. Commercial records centres include the Document Warehouse, AGS Records Management and Phildou. These records centres were included in the study because they meet the criteria of what a records centre must have to be considered as one, as stipulated in the National Archives Circular 4 of 2017 such as security (custodial and environmental security), access, cleanliness and order (NAN, 2017).

1.9 Research Methodology

The study employed a qualitative approach to investigate the role of records centres in the digital environment focusing on Windhoek records centres. Thus, the study utilised the interpretivism paradigm, which enables the researcher as a social actor to appreciate differences between people. The study used a multi-case study research design, which, according to Gustafsson (2017), explores a real-life multiple bounded system through detailed, in-depth data collection involving multiple sources of information. The study population comprised of commercial and in-house records centres in Windhoek and their employees. The study employed a census, hence, considered all the nine records centres in Windhoek. However, only eight centres granted permission. The researcher used purposive sampling technique. Due to the qualitative nature of the research, data were collected using interviews. The researcher collected data using semi-structured interview

guides. Content analysis was used to analyse data with the help of Atlas ti. Software. In-depth details of methodology are presented in Chapter 3.

1.10 Definition of Key Terms

Records management - "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" (ISO 15489-1: 2016).

Digital records – refers to records that are created, communicated, and kept using electronic or computer equipment (Kumar, 2014).

Digital era – refers to a period in which there is widespread, quick, and easy access to, sharing, and use of electronically accessible information (Haris, 2016).

Digital preservation – According to Alan (2016), this is the "active protection of digitally stored data. Digital preservation is a part of the structured efforts of library and archive sciences to ensure that information is protected from medium failures as well as software and hardware obsolescence".

Electronic record – This is data generated or received by a computer while initiating, conducting, or completing an agency or person action. Email messages, word processor papers, electronic spreadsheets, digital photos, and databases are all examples of electronic records (Ngoepe, 2017).

Records centre - A structure or component of a structure built or fitted for the low-cost storage, maintenance, and communication of semi-current records while they are being disposed of (Mulauzi & Ngulube, 2015).

Records life cycle – According to Garcia (2017), this relates "to how long a record should be maintained, what actions should be performed, if any, as the record moves through various stages of retention, and what happens to the record when its life cycle is over".

Records continuum theory – "Is a model of record keeping practice that conceptualizes the interactions of records across interrelated dimensions and axes, without distinguishing where the creation and active management of records ends and the archival management of them begins" (Smith, 2012: 154).

Software obsolescence – This refers to when the original creator and an authorised third-party stop providing regular updates, upgrades, and fixes, or when the intended environment, systems, and hardware change, rendering the software unusable (Sandborn, 2017).

The thesis comprises of six chapters as follows:

- Chapter 1 gives insight into the background of the study, highlighting major issues of the study, which are the new role of records centres in the digital era.
- Chapter 2 reviews literature on records centres, electronic records management and the theoretical framework guiding the study.
- Chapter 3, the study methodology is presented in this chapter focusing on population, data collection instruments, and data analysis and research ethics.
- Chapter 4 presents data analysis of the collected data.
- Chapter 5 discusses and interprets the findings.
- Chapter 6 summarises the findings, makes conclusions and gives recommendations.

1.11 Chapter summary

This chapter gave an introduction to the study, giving a background highlighting the traditional role of records centres. It went on to discuss the creation of electronic records as well as the issues that come with managing electronic records in the digital era. Although organisations are transitioning from paper to electronic records, records centres and archives are trailing behind in adapting to this change, as noted in the problem statement. This section also revealed that there has been a rise in the electronic creation of records in Namibia, but there have been no studies on the role of records centres in the digital era. The research objectives, significance, limitations and delimitations of the study were also discussed. The literature review and theoretical framework are discussed in the following chapter.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the literature and theoretical framework related to the study. The importance of literature review in a study cannot be overemphasised. Ridley (2012) views literature review as a complex phenomenon that comprises the process of conducting literature and the finished product of the literature review. Welman, Kruger and Mitchell (2011) consider literature review as significant in that it helps the researcher to avoid duplicating previous research. Kumar (2014) explains that literature does not only provide the study's theoretical background but also helps the researcher to conceptualise the findings in relation to other studies. Additionally, a theoretical framework explains the path of research and grounds it firmly in theoretical constructs. Theories assist in stimulating research while ensuring the extension of knowledge by providing both direction and impetus to the research inquiry and gives life to research (Kumar, 2014).

Drawing from the research objectives, the literature review is presented under the following main headings: services offered by the records centres in Windhoek in the digital environment; integration of records management systems; policies and guidelines in ICT systems; opportunities and challenges faced in managing records in the digital environment; and the applicability of the records life cycle and records continuum theories in the management of electronic records in records centres.

2.2 Services offered by records centres

The following section will discuss into details the traditional services and the services offered in the digital era by the records centres to their clients.

2.2.1 Traditional records centres services

Prior to the electronic era, companies and institutions' records management procedures evolved from physical to analogue record administration (Erway, 2012). The acceptance and proliferation of digital computers and digital record keeping began in the late 1950s and continued until the late 1970s, when the move from mechanical and analogue electronic technologies to digital electronics began (Schoenherr, 2014). Mulauzi and Ngulube (2015) explain the traditional role of records centres as storing records in the form of hard copies and protecting them from hazards such as fire while providing speedy retrieval of the records upon request. Records centres, for example, continue to manage records in the same way they did a few years ago, as there has not been much of a change. Records managers in these records centres would arrange, file, and store records after they were created, giving them complete control over the life cycle.

Additionally, Szekely (2017) states that a records centre's traditional role includes: maintaining records in safe and accurate temperatures, implementing retention schedules, developing procedures for labelling records, and developing procedures to maintain an accurate and up-to-date inventory of records stored. Databases are used in traditional records centre procedures to keep track of documents transferred to storage, unique storage locations assigned to each box, files accessed and returned, records destroyed, and the manner and date in which records were destroyed (Bolcer, 2014).

Mulauzi (2019) indicates that the concept of the records life cycle underpins traditional records management approaches. The record life cycle idea comprises three biological ages that correspond to the three phases of record life: active phase (creation, dissemination, and usage), semi-active phase (maintenance and storage), and non-active phase (archiving and preservation) disposition. Records are created in the course of conducting business and after their creation, they are kept in a records office where they are maintained and frequently used. When reference to records diminishes, they are said to be semi-current and at that stage, they are stored in a records centre (Mulauzi & Ngulube, 2015). The idea behind transferring records to low-cost storage facilities like records centres is to save money on office space and equipment while also preventing the premature destruction of the records before their disposal date (Garland, 2019).

Schoenherr (2014) is of the notion that despite advances in the digital world and the ever-changing notions of ICTs and its peripherals, most records centres generally use the same procedures for keeping records in the electronic era as they did in the past. However, Kalusopa (2016) argues that the records centres' role has changed as a result of the implementation of ICTs, as they now provide facilities to manage both physical and digital records. The growing use of ICTs in records management has fuelled the creation of electronic records, which are critical to the operation of modern organisations.

2.2.2 Records centres services in the digital environment

Kalusopa (2016) argues that the role of records centres has changed because of the implementation of information and communication technology (ICTs), as they now provide facilities to manage both physical and digital records. The regulation by the

United States National Archives and Records Administration (NARA) (NARA, 2019) for agencies to submit to federal records centres digitally formatted records that can be handled electronically attests to this. Akporhonor (2020) indicates that the growing use of ICTs in records management has fuelled the creation of electronic records, which are critical to the smooth operation of modern businesses. Nengomasha and Chikomba (2018) report such an increase in Namibia.

Electronic records management arose in lockstep with the advancement of ICTs. The planning, regulating, directing, organising, training, promoting, and other managerial operations linked to the development, maintenance, usage, and disposition of records using ICTs are referred to as electronic records management (Kalusopa, 2016). An electronic record in a records centre or archive is retained if, and only if, it can be retrieved and provides reliable and authentic proof of the activity that produced it (Magama, 2017). Records preservation in records centres and archives has become a global concern since advances in technology in the digital environment need documents centres to upgrade their hardware and software systems on a regular basis to avoid losing or corrupting records (Ridwan, 2015).

Szekely (2017) asserts that the main service of records centres has been record storage of semi-active records, which occurs during the second phase of the records life cycle. Saskatchewan (2015) propounded that maintaining records in accurate and precise temperatures, incorporating retention periods, transferring permanent preservation records to an archives facility, developing procedures for labelling records, and developing procedures to keep an accurate and up-to-date inventory of records stored are

all traditional roles of records centres. However, Mosweu, Luthuli and Mosweu (2019) reveal that records are now kept on cloud computing systems because of technological advancements. This means storage space and equipment are no longer a worry.

All realms of human endeavour have been profoundly impacted by information technologies, and the skill of maintaining records is no exception (International Records Management Trust, 2009). With the development of computers in the early 1970s, organisations and institutions began keeping records in electronic formats. Since computers are viewed as crucial to business and daily life, their increasing pervasiveness and accessories contribute significantly to account record keeping. Many people assume IT to be "the solution" to information management problems, and computer equipment is frequently placed in businesses without much thought given to the activities they will do or how the results of those actions and records will be maintained. Unlike computers, paper-based record-keeping technology is so common that it is easy to overlook it (International Records Management Trust, 2009). Paper, typewriters, carbon paper for creating duplicates, pre-printed forms, filing cabinets, ledgers for entering accounts, warehouses for storing volumes of paper records, and mailrooms for sending and receiving paper-based records are all familiar to anyone who works in a typical office environment.

Even people who have never worked in an office before can understand the paper records environment. Understanding the underlying distinctions between the two systems is part of the problem of transitioning from paper to electronic record keeping (International Records Management Trust, 2009). According to Nyampong (2015), electronic records

(e-records) are digitally stored information, documents, or data that serve as proof of policies, transactions, and activities in e-government and e-commerce settings.

Nyampong (2015) asserts that text files, which are files created by word processing programs or other software; data files, which are computer processable files that store numeric and sometimes textual information as quantitative values so that numbers can be manipulated using arithmetic processes; and analogue audio files are all examples of e-records. So too are visual records (sound documents and images to be played back); disaggregated data (information collected through remote sensing systems); and 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) are other examples of e-records.

The growing use of ICTs, particularly the internet, in operations around the world, fuelled by reforms, has fuelled the creation of e-records, which are regarded as strategic assets critical to an organisation's functioning. E-records, like traditional paper records, let organisations run their day-to-day operations and connect with consumers, 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 the collection of taxes,

supporting financial management; and supporting litigation (International Records Management Trust, 2009).

The application of electronics in records management is overwhelming. Records are preserved and reduced in size to smaller bits when placed in electronic formats. With the aid of computer technology, individuals and organisations 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 organisational documents thereby creating room for longevity of records. Kalusopa (2016) argues that it is, therefore, vital that records centres provide facilities to manage both physical and digital records.

According to Toyo (2017) the introduction of electronic records has led to new challenges, which include security, legal, and software and hardware obsolescence and their impact on records continuity. Mnjama (2014) indicate that the more records are made using modern media, the more ephemeral they become in constant danger of being lost due to technological obsolescence, and software and hardware dependency. Scheduled maintenance on software and hardware is very important in preserving digital records in records centres, as digital records are prone to software and hardware obsolescence. Therefore, software updates on servers preserve records for longevity, reducing challenges related to hardware and software (Yatin et al., 2019).

NARA (2015) has identified a number of challenges, including technological obsolescence, technological dependence, heightened risk of data and record loss,

compromised reliability and authenticity, diminished security and privacy, escalated costs, information decentralisation, and an augmented demand for IT specialists. Additionally, Lowry and Thurston (2015) highlight that the lack of procedures for handling digital documents has become a serious concern in many African countries' public records centres and national archives, and if not rectified, it might jeopardise ICT initiatives put in place to keep up with operations in the digital era.

Many records centres face the challenge of determining whether existing or planned technology systems are technically capable of supporting records management requirements and safeguarding the information base on which they rely, such as quality, comprehensiveness, accuracy, adequateness, completeness, and meaningfulness, authenticity, uniqueness, authority, and compliance of a record (Mulauzi, 2019). Furthermore, when there is no power, e-records cannot be accessible, and they are costly to maintain since they require significant software investment to avoid technical obsolescence. Because the e-system is not as permanent as a manual system, it is frequently upgraded (Szekely, 2017). Employees must also go through costly training. In most records centres, however, limited funding remains a crippling problem, and many records centres are unable to cover overhead operating expenses such as new acquisitions and upkeep (Mulauzi et al., 2014).

Records retention and disposal

California State University (2012) propounded that records retention refers to the amount of time that records should be kept at an office or records centre before they are transferred to an archive institution or otherwise disposed of, as determined by legislation, regulation,

or administration. Retention and disposal are some of the services offered by the record centres. Saskatchewan (2015) establishes that when it comes to maintaining electronic data, destruction entails deleting files from hard drives or, in some cases, crashing auxiliary media. Electronic records management systems (ERMSs) and EDRMSs are two types of software developed to handle retention and destruction. According to Codafile (2015), an ERMS is a software application that allows for the capture and storage of all electronic data, such as word documents, scanned photos, and Web pages, in any format. ERMS encourages organisations to implement good records management practices.

Public sector organisations in South Africa and Namibia have implemented EDRMSs for the management of digital records (Abbot, 2012; Nengomasha, 2009). An EDRMS enables businesses to produce, store, and dispose of records without using paper. It is currently the most popular solution for handling electronic records because it provides both operational efficiency through workflows and professional records management capabilities (Codafile, 2015; New South Wales Government, 2012; National Archives of Australia, 2012). The usage of an EDRMS allows for more convenient and faster access to records. According to the National Archives of Australia (2012), records managers can simply click on a certain code to display the relevant information with electronic technology. As a result, good record keeping is critical to the accountability of records centres' clients and records centres since it gives documentation of what an organisation has done and how it conducts its business operations.

When a document is still a work-in-progress, it is managed by the EDRMS's document management component, which advances it through workflows until it reaches the final status, at which point the transaction is completed and the document becomes a record of

evidence of that transaction (Queensland State Archives, 2012). The document, now a record, is then sent to the ERMS component, which guarantees that it remains fixed and applies retention policies to it. If the record needs to be acted on again, it is moved from the ERMS component to the EDRMS component and then back to the ERMS component for storage and retention (Queensland State Archives 2012; Navin, 2012). As a result, an EDRMS provides a single platform for automating business processes for records management as well as enhancing record management systems in records centres.

Legal and regulatory obligations, as well as an organisation's own policies, dictate retention and disposal. A good system for managing electronic records, according to the Model Requirements for the Management of Electronic Records (MoReq) model, has a function that determines retention periods, automates reporting and destruction actions, and has integrated facilities for exporting records and metadata. Any changes to retention and disposition schedules should be limited to the system administrator (MoReq, 2010). Venter (2012) agrees with the aforementioned opinion, adding that all topic files in the filing system can have disposal instructions and retention requirements added to them using the records management system, which may be implemented by records centres.

Smith (2012) further indicates that professionals in records management can have an impact on these changes by recognising them and their implications for the future of records management. According to Mnjama and Wamukoya (2013), digital records and the information contained within them is a valuable asset that must be secured. This implies that without a viable legal framework, digital records cannot be managed effectively. Hence, retention and disposal of information scheduling is critical in

electronic records management because it affects the efficiency and efficacy of the records management procedures. It reduces the costs of managing records by deleting those that are no longer needed. It also minimises the number of records in a database, which speeds up search, retrieval, and access (Codafile, 2015). In the case of electronic records, eliminating unneeded records from storage medium frees up space, making the retrieval process faster because the search is narrowed. When creating retention-disposition schedules within records centres, legal obligations must take precedence.

Preservation of digital records

Digital records preservation is another function provided by records centres. Preservation, according to the International Records Management Trust (2012), is a continuous activity. This means digital preservation will continue indefinitely unless the document is no longer considered valuable (Oweru & Mnjama, 2014). The overarching purpose of digital preservation is to make electronic records accessible, readable, and understandable. Developing a preservation policy, implementing security and access restrictions, assuring the integrity of the digital record, managing metadata, controlling the content of digital records, and planning for crises are all examples of preservation techniques (Szekely, 2017). Smith (2012) is of the opinion that because each generation of technology brought in new systems and capabilities without displacing the existing ones, the process of managing and protecting digital data has become difficult and expensive. According to the author, records are saved in certain forms that cannot be accessed without the use of software and hardware.

The task of keeping and protecting digital documents is complicated for several reasons. The problems, according to the International Records Management Trust (2012), include the complexity of electronic records overriding simple paper transfers. Simple text-based files have grown into complex digital artifacts that may include embedded graphics such as drawings, music, hyperlinks, or spreadsheets. Converting these documents to paper or text formats would result in the loss of context, functionality, and information.

Another problem relating to managing and protecting digital data is that obsolete and ageing storage media put records centres' electronic records in danger. International Records Management Trust (2012) identifies obsolescence and decay as the two issues that influence storage media. They are delicate, have a short shelf life, and will be obsolete in a few years. Finally, electronic records are reliant on constantly changing software and hardware. Computers with software ranging from word processors to e-mail programs are used to create electronic records. As computer hardware and application software grow more absolute, they may leave behind information that can only be accessed with the original hardware and program (International Records Management Trust, 2012).

The National Archives of Australia (2015) observes that due to frequent changes in both hardware and software, digital records pose numerous preservation issues. As a result, both at the hardware and software levels, systems for maintaining electronic records must conceptualise and offer mechanisms for preserving the records throughout time. The Consultative Committee for Space Data Systems produced a reference model for an Open Archival Information System (OAIS) in 2012. The OAIS reference model outlines essential criteria for digital preservation that could aid in the preservation of electronic documents (National Archives of Australia, 2015).

Digital preservation solutions are typically independent of ERMSs, and adequate records preservation would necessitate operational interoperability. To put it another way, records collected in an electronic record management system may need to be transferred to digital repositories for long-term preservation during the disposal phase (OCLC, 2015). This means depending on the preservation method chosen, interoperability between the electronic records system and the digital preservation environment in records centres is required in terms of software and hardware, as well as document formats supported by both.

2.3 Records management system

A records management system is responsible for overseeing both physical and electronic documents and records throughout their life cycle, from creation and usage to storage, maintenance, and eventual destruction or permanent preservation (ARMA, 2012). The system ensures that the integrity, authenticity, and accessibility of corporate records are maintained. The software oversees the entirety of the lifespan of both tangible and digital documents in accordance with the records management guidelines established by the institution and those mandated by legislation (Saffady, 2016). The implementation of these systems results in the automation and optimisation of record-keeping procedures, thereby guaranteeing adherence to legal and regulatory mandates, and promoting convenient retrieval and accessibility of data as and when required (Tlou, 2020).

A conventional records management system may have the following characteristics (Saffady, 2016, p. 125):

- *Document capture and indexing: captures and indexes a variety of record categories, such as digital documents, emails, digitised documents, and multimedia files.*
- *Metadata management: allows for the development and maintenance of metadata related to records, such as file properties, categorization codes, and retention schedules.*
- *Version control: maintains data integrity and correctness by tracking and managing record versions.*
- *Access controls and security: sets up security steps to limit access to records based on user jobs, permissions, and protection needs.*
- *Records retention and disposal: This makes it easier to follow retention rules, making sure that records are kept for the right amount of time and thrown away properly when they are no longer needed.*
- *Search and retrieval: Offers effective full-text, metadata, and keyword search functionality for quickly locating records.*
- *Reporting and audit trails: This feature keeps track of and logs all records management-related activities, enabling audit trails and producing reports on record usage, access, and compliance.*
- *Integrates with other business applications and systems, including customer relationship management systems, enterprise content management systems, and document management systems.*
- *Compliance and legal support: assists with the observance of various regulations and standards.*

- *Workflow automation automates record-keeping operations by using workflows, approvals, and notifications.*

2.4 Policies and guidelines in records centres

Policies and guidelines are critical components of good digital document management. They provide a structure and set of norms for organisations to follow while creating, using, preserving, and disposing of digital records (Ngoepe & Keakop, 2011). They promote standardisation in record creation, classification, metadata usage, and retention by ensuring similar practises across the organisation. *This uniformity promotes effective record administration and simplifies information retrieval and access* (Saffady, 2016, p. 56).

Thus, the effectiveness of policies and guidelines in the management of digital records demonstrates variation among different institutions. “Policies and guidelines help companies keep records in line with legal, regulatory, and industry-specific requirements” (ARMA, 2013, p. 114). The retention periods for various records are delineated, disposal procedures are specified, and legal holds and litigation requirements are addressed. Adherence to these policies mitigates legal liabilities, facilitates audit and e-discovery procedures, and manifests conformity to relevant laws and regulations. The next sub-section highlights national policies and guidelines that govern records centres, mainly the Archives Act 12 of 1992, the E-governance Policy, the OPM Draft Working Document E-Records Management Guidelines, and the Electronic Transaction Act 4 of 2019.

2.4.1 Archives Act 12 of 1992

The National Archives Act No 12 of 1992 guides the National Archives of Namibia, giving it the mandate to manage and improve the approaches with which state bodies and other organisations preserve and access records. The act aims at the reinforcement of management of records, including records in electronic formats in the Namibian public sector, State-Owned Enterprise and parastatals (National Archives Act of Namibia, 1992).

2.4.2 E-governance Policy

E-governance is defined as the practice of restructuring how the government functions, disseminates information, engages its citizens and delivers services to external and internal clients. Precisely, government harnesses information technologies such as Wide Area Network (WAN), Internet, World Wide Web (WWW) and mobile computing to reach out to citizens, businesses and various arms of the government. The objectives of the e-governance policy in Namibia is to ensure government administration becomes more transparent, speedy and accountable, while addressing the society's needs and expectations through efficient public services and effective interaction between the people, businesses and government (Republic of Namibia, 2005).

2.4.3 OPM Draft Working Document E-records Management Guidelines

OPM Draft Working Document E-records Management Guidelines specify details for the handling of electronic records. The guidelines deal with the practicalities and procedures in two scenarios, which are, first, a brief outline of the tasks of an ERMS and, second,

detailed guidelines for handling electronic records without a dedicated ERMS (National Archives of Namibia, 2007).

2.4.4 Electronic Transactions Act 4 of 2019

The Electronic Transactions Act was brought into force, with the exception of section 20, Chapter 4 and Chapter 5, on 16 March 2020. The objectives of the act are to provide a general framework for the promotion of the use of electronic transactions in the Republic of Namibia, provide for the legal recognition of electronic transactions and the admission of electronic evidence. Furthermore, it provides for consumer protection in electronic commerce, regulates the liability of service providers for actions of their clients and provides for matters incidental thereto.

2.4.5 Standards applicable to management of records in a digital environment

The section discusses some standards applicable to the management of electronic records services offered by records centres in a digital environment.

Over the past two decades, there have been numerous efforts around the world to develop standards and best practice guidelines to manage records, particularly digital records (Wilhelm, 2009). The standards with an impact on records management have come from both within and outside the profession. For instance, when researchers of an international research project, known as InterPARES 3, developed a database of standards relevant to their study, they identified 63 ISO standards, five International Council on Archives standards, and 22 standards from other professional organisations that have an impact on the long-term preservation of authentic digital records (InterPARES 3 Project: TEAM

Canada, 2012). The OAIS reference model (ISO 14721:2012) provides guidance for long-term preservation digital records.

ISO 15489 is the first standard entirely dedicated to records management. It outlines the fundamental concepts and principles for the creation, capture, and administration of records. ISO 15489-1:2016 “defines the concepts and principles from which approaches to the creation, capture and management of records are developed.” It provides a framework for maintaining documents, whether they are physical or digital, and encourages accountability, openness, and good governance in records management (ISO 15489-1). ISO 15801:2009 describes how to build and run document management systems that can store electronic information in a safe and reliable way. ISO 16175-1 specifies the fundamental concepts and functional criteria for office-based software utilised to create and maintain digital records. ISO 16175-3:2010 sets up general rules and standards for managing records and gives instructions on how to find and take care of records of business operations done through business systems. These standards provide guidance on records management in the records centre.

Frost (2011) and Oliver (2014) argue that records management professionals need to understand how to make the best use of the full range of standards and best practice guidelines. Force (2013) argues that there is a need to understand their commonalities and differences in order to strengthen the impact of records management. Given the extensive range of standards and best practice guidelines available to professionals in records management, it can be beneficial to investigate methods for recognizing recurring patterns and emerging trends. This exploration can enhance comprehension of the

available resources and provide a clear path for more effective utilization (Force, 2013). One approach to analysing these standards and guidelines involves categorizing them based on their respective subject areas (Oliver, 2014). Admittedly, there are limited systematic or objective ways of identifying these subjects and, therefore, this process might be left at the discretion of the individual professional. For instance, if one examined a number of ISO standards that may have a direct impact on the management of digital records, they could be placed in six subjects as depicted in Figure 2.1.

Figure 0.1: Analysis by subject

Figure 2.1 highlights six subjects the standards can be grouped into and these are: professional, metadata, EDMS, EDRMS, file format and digital conservation and preservation processes.

The OAIS reference model addresses a full range of archival information preservation functions, including the transfer of electronic records from legacy systems (ingest) into an archival repository, archival storage, data management including digital preservation, access, and dissemination. It addresses "the migration of digital information to new media and forms, the data models used to represent the information, the role of software in information preservation, and the exchange of digital information among archives" (Consultative Committee for Space Data Systems (2002, p.2).

2.5 Integration of records centres ICT systems with records management policies and guidelines

Any records centre's adherence to regulatory and legal frameworks is crucial. Compliance presents itself in two ways in the administration of electronic records, just as it does in general records management: compliance with regulations that require records to be managed and compliance with other business regulations, which can be proven by the documents retained (Association for Information and Image Management, 2015).

Records must be managed in conformity with the country's legal and regulatory framework. According to Mosweu et al. (2019), compliance with policies and regulations governing the management of electronic documents has been a key difficulty in the digital era. The use of cloud service providers, which is common in several records centres, also

raises questions about records jurisdiction (State Records of South Australia, 2015). Asproth (2015) highlights the challenges of electronic records management as hardware, software, formats, legal issues and provenance. Information security has been identified as a problem with cloud storage for managing electronic data, so records offices need to improve their cloud storage security to stop hackers from getting into client data (Mosweu et al., 2019, p. 5).

The integration of records management systems with policies and guidelines is a crucial aspect in guaranteeing uniformity, adherence, and efficient administration of electronic records. Smallwood (2014) elucidated a series of measures and factors to be taken into account when incorporating records management systems with policies and guidelines.

- The first step is to conduct a thorough examination of the current policies and guidelines in place. This involves a thorough examination of the existing policies and guidelines pertaining to records management within your organisation, evaluating "their conformity with industry standards, legal mandates, and organisational goals" (Smallwood, 2014, p. 241).
- The second step involves the identification of requirements for a records management system for the precise criteria and capabilities that are necessary for the records management system to effectively uphold the established policies and guidelines.

Saffady (2016, p. 203) advises that the following factors be taken into account, "metadata management, retention schedules, access controls, security features, search capabilities, and integration with other systems."

Staff and stakeholders should be informed about the system and the applicable policies, and guidelines. The staff should also be trained and provided with clear guidelines on the system's utilisation. Smallwood (2014, p. 245) recommends the following:

- *Engage in regular monitoring and auditing activities to ensure compliance with established policies and guidelines within the records management system. Leverage the reporting functionalities of the system to monitor adherence, detect opportunities for enhancement, and rectify any instances of non-conformance.*
- *Conduct periodic reviews and updates of policies and guidelines in order to remain current with evolving regulations, technological advancements, and organisational needs.*

2.6 Opportunities and challenges faced by records centres in the digital environment

This section will discuss below in detail the opportunities and challenges faced by the records centres in the digital environment.

2.6.1 Opportunities faced by records centres in the digital environment

There are many opportunities for applying computer systems in managing records. As pinpointed by the International Records Management Trust (2009, p.7), the benefits associated with the use of new technologies in managing electronic records include "cloud computing, widespread access, flexibility, efficiency and effectiveness, economic benefits, general business opportunities, and auditing capabilities for regulatory compliance." The International Records Management Trust (2009); Masenya, 2020; Kaupa & Chisa, 2020 explain these benefits under the following subheadings:

2.6.1.1 Cloud computing

Based on the most recent ICT breakthroughs and their widespread success, the IT industry believes that cloud computing has the enormous potential to completely transform how the internet and information systems operate globally (Min, 2012). Cloud computing is the latest discovery of the development of the internet, enabling the execution of all sorts of programmes and activities as the network does. The practice of records management is confronted with tough challenges regarding constant change of technologies, therefore, the emergence of cloud computing has made the role of records centres more practical and pragmatic to the services they offer to the clientele on day-to-day basis (Lin et al., 2013; Grant, 2013).

2.6.1.2 Widespread access

Records and archives have traditionally been created and kept as physical objects in paper form. Their physical makeup restricts access to a given time and area: a record can only be used by one person at a time and in one physical location (International Records Management Trust, 2009). In addition, making many copies is costly and time-consuming, and it necessitates the use of photocopiers or printers. Duplication also makes it difficult to determine which of several versions of a document is the official one. Electronic records, on the other hand, can be extensively shared, accessed and used by multiple people at once, even if they are in separate locations. In circumstances where resources are limited or distances are considerable, the ability to provide access to information regardless of time or location can improve records centres' service, promote information sharing, and improve operations considerably. Asproth (2015, p. 28) adds

that “clients can access their records on the records centre’s system from their office, without visiting the records centre”.

2.6.1.3 Flexibility

The International Records Management Trust (2009, p. 8) is of the notion that

> *IT improves the flexibility of information and records generation, storage, usage and management. Records are made, received, and filed in one office in a paper-based system, and they collect in one location. People can share records and use their information resources more dynamically by storing electronic records remotely or on compact discs (CDs) or tapes at records centres. Because a large number of workers in a company may access electronically stored records at the same time, they can do their tasks without being hampered.*

2.6.1.4 Efficiency and effectiveness

The use of ITs improves information handling and allows for the speedy retrieval of records and information through electronic search facilities records centres offer. As a result, policymakers can make informed decisions quickly and efficiently, contributing to the effectiveness of the organisation. Furthermore, 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 as 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 as most records centres have systems in place (Asproth, 2015). Well-designed computer systems facilitate easy

retrieval of electronic information, improving the speed and quality of service (International Records Management Trust, 2009).

2.6.1.5 Economic benefits

In the realm of paper-based recordkeeping, where records take physical form, their accumulation necessitates a continuous expansion of storage and office space. Moreover, routine tasks like filing documents and responding to client requests for box retrieval in record centres might demand the involvement of multiple staff members (International Records Management Trust, 2009). However, the advent of modern technologies offers an avenue for optimisation. Organisations can streamline their utilisation of storage and office space by leveraging computer systems capable of housing vast amounts of data and records within the limited physical confines offered by records centres (NARA, 2015).

Database management systems, electronic mail systems, web and multimedia software programs are all good examples of ITs 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 is 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 (Masenya, 2020). Additionally, an e-records system provided by a records centre can attract several clients to use their services to transfer paper records to e-records.

2.6.1.6 General organisational opportunities

“Improved information flow can enhance the professional image of an organisation, and the organisation can take on more complex work because it is more efficient and cost-effective” (Kaupa & Chisa, 2020, p. 9). 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 their normal client base, locally, regionally, nationally and internationally (Elisha, 2014). For example, the creation of a records centre website can raise awareness and increase interest from users or members of the institution far removed from the physical location of the records centre.

2.6.1.7 Auditing capabilities

Well-designed records and document management systems also allow an organisation to regulate and oversee actions and decisions. Many electronic records management software programs include mechanisms to maintain audit trails, encouraging accountable record-keeping and promoting compliance across the organisation (Nengomasha & Chikomba, 2018). The development of ITs 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 (Rice, 2022).

Additionally, records centres are under growing pressure to become more efficient while maintaining or improving their service quality. Electronic records, with their potential, serve a critical role in promoting information efficiency, accuracy, and accessibility

(Rice, 2022). Mnjama and Wamukoya (2013) point out that better customer service, wider product/service variety, quicker response time, improved product/service quality, and better customisation of products and services are all examples of how investing in electronic records can boost efficiency in records centres. The implementation of sound record-management practices for electronic records can result in a number of benefits for records centres (Mnjama & Wamukoya, 2013).

One of the most significant advantages is the ability to create and manage precise and reliable electronic records (Mosweu, Bwalya, & Mutshewa, 2017). This enables records centres to comply with legal requirements surrounding the preservation of their records (Lappin, 2013). Other benefits include ensuring the legal acceptability of the organisation's electronic records, reducing the burden of paper records management, identifying appropriate means for the movement of records to successive generations of technology and systems, and improving citizen access to public information (Mosweru et al., 2017).

2.6.2 Challenges of managing records in the digital 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 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 a much greater risk. The reality is that it is not 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 (Kaupa & Chisa, 2020).

According to a survey of the literature on managing electronic records, the following are some of the major problems affecting electronic records management: there are no regulations or legal frameworks in place to govern the management of electronic records; the cost of electronic records systems and technical obsolescence (Akor & Udensi, 2014). There is also insufficient technical knowledge and skills among records managers, slow adoption of standards and best practices, and weak institutional frameworks and commitment to electronic records management (Kaupa & Chisa, 2020). There is also a lack of appropriate technologies for electronic records management, long-term preservation of electronic records, exponential growth of electronic records, and distorted manual records systems. The security of electronic records and email management are also major challenges (Asogwa, 2012; Lappin, 2013; Williams, 2013).

Furthermore, a study on the critical review of the literature on electronic records management in the ESARBICA region by Keakopa (2012) found that understanding the mission of the national archives, a lack of technical skill, and ethical difficulties were among the issues archivists had to deal with. Although the introduction of ICT and its widespread use in records centres has resulted in an increase in electronic records and has made the work of archivists and records managers easier, it has also generated issues (Keakopa, 2012). Some of the unresolved issues associated with the impact of technology on record keeping include technological obsolescence and long-term preservation, concerns about reliability and authenticity, increased risk of lost data and records, lack of security and privacy, and an increased need for IT specialists (Keakopa, 2012; IRMT, 2012).

According to Iwhiwhu (2011), most of the challenges encountered by records centres in managing records, particularly electronic records, border on technology obsolescence, the lack of adequately trained personnel, and policy formulation and implementation. More so, NARA (2015) pinpoints these challenges to include technological obsolescence, technological dependence, increased risk of losing data and records, risks to reliability and authenticity, loss of security and privacy, increased costs, decentralisation of information, and the increased need for IT specialists. These are explained in detail in the succeeding sub-headings.

2.6.2.1 Technological obsolescence

Records centres face challenges concerning technological obsolescence. The constant changing nature of software applications and computer hardware has led to what is generally known as "technological obsolescence". As innovations in computer technology appear, old systems become obsolete and are no longer supported by the computer industry (NARA, 2015). Some examples of this obsolescence include Commodore 64 and WANG computers first introduced in the 1970s and 1980s, which are no longer manufactured or supported. 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 does not only apply to hardware, as 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. The austere environmental conditions in which

computer storage media are sometimes stored further worsen then risk of technological obsolescence (Yin, 2014). 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 within records centres (Yin, 2014).

2.6.2.2 Technological dependence

Records centres depend on technology, hence, they are created and managed by computer hardware and software (Keakopa, 2012). 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 (Keakopa, 2012). Because ITs 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 (Buckland, 2017). Hardware and software have to be upgraded regularly to ensure continuing access to information and records. As technology changes, records need to be moved or migrated to new systems so that they can be used. Otherwise, the formats in which records exist are incompatible and the records are increasingly inaccessible (National Archives of Australia, 2011). 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 10, five or even one year into the future (National Archives of Australia, 2011).

2.6.2.3 Risks to reliability and authenticity

As changes in records centres in digital environment require that information be migrated to new technologies for the information to remain accessible over time, this process of migration can affect the authenticity and reliability of the information, as the process itself can change the content or structure of the records (IRMT, 2012). 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 (Smallwood, 2014). Furthermore, 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 (Yin, 2014). The email software may not have the ability to capture all this information, which is essential to understanding the structure, content and context of the record.

2.6.2.4 Loss of security and privacy

The introduction of ITs has also affected the way government and private organisations preserve and make available records in their custody (Chaterera, 2016). The use of computers allows records centres to create large and complex databases and make huge amounts of data available electronically (Keakopa, 2012). Therefore, without proper

security protections others might also access that information, 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 (Porogo & Kalusopa, 2021).

2.6.2.5 Costs

The costs of hardware and software can be very high for records centres that are striving to store records electronically in the digital environment. Costs are incurred not only when acquiring technology in the first place but also, more importantly, when upgrading equipment and systems, which is essential to keep pace with changing technologies (Masenya, 2020). For organisations like records centres 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 ERMS, most records centres' institutions focus on the initial budget requirements: hardware, software, licences, supplies, and staff time to develop and install the equipment. But there is also a need to consider annual and unexpected costs, 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 (Sudhier & Seena, 2018). 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.

Navigating the digital records management environment introduces a noteworthy challenge, particularly concerning costs. While digital records hold the potential for cost savings compared to their physical counterparts, it's essential to acknowledge a range of

cost-related challenges. As underscored by Rashid and Chaturvedi (2019, p. 425), "the financial outlay associated with training stands out as a significant factor. The efficient management of digital records hinges on personnel equipped with specialised competencies spanning records management, information technology, and data security." The commitment to allocate resources for employee training and professional growth can lead to substantial expenditures, particularly in scenarios where organisations resort to external training initiatives or the recruitment of specialised experts. A steadfast dedication to continuous training and the ongoing enhancement of skills becomes paramount, serving as a means to remain attuned to evolving technologies and optimal practises.

Furthermore, the preservation of the confidentiality and integrity of electronic records necessitates the application of diverse strategies, including but not limited to encryption, access management, intrusion detection systems, and security evaluations (Nghihalwa & Shava, 2018). The implementation of security measures necessitates investments in both hardware and software, as well as the continuous monitoring of said measures. Furthermore, it may be necessary for organisations to allocate resources towards conducting periodic security assessments, vulnerability testing, and compliance audits in order to safeguard their digital records.

Additionally, researches on e-records management in both the developing and developed nations divulge challenges that adversely impact e-records management practices. Little and Bose (2004) define e-readiness as the degree to which a country is equipped to partake in the networked world by assessing its advancement in areas that are most critical to the

adoption of ICTs. According to Nengomasha and Chikomba (2018), impediments to e-readiness in East and Southern Africa comprise lack of or deficient legislation, policy frameworks and procedures to guide the management of e-records. Also, lack of understanding of what records are and the importance of records management, inadequate training and education in IT systems and electronic records management approaches (Ncaagae-Mbe, 2021). Furthermore, poor security, confidentiality control mechanisms, records backup and recovery systems also affect e-readiness (Chigariro & Khumalo, 2018). This observation confirms the observation by Porogo and Kalusopa (2021) regarding low electronic records readiness in records centres in Africa, which they attribute to inadequate records management standards and practices.

2.6.2.6 Information decentralisation

The decentralisation of information and records management by records centres has shifted the responsibility for managing records from records professionals to the people who create and use records daily. 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 adequate protection of essential evidence (Nengomasha & Chikomba, 2018). Thus, even though the computer systems allows for widespread access to information, there is no guarantee that the information needed would be available or that it would be easily retrieved by anyone other than the individual who has captured them into the system at the records centres (Masenya, 2020). Careful monitoring of the way in which electronic records are created and used is essential to developing an effective organisation work environment (Kaupa & Chisa, 2020).

It is worth noting that the majority of archive institutions in industrialised nations, as well as a handful in developing countries, have policies and processes in place to ensure the proper maintenance of electronic documents (Kaupa & Chisa, 2020). The National Archives of Australia, New Zealand, and Malaysia established conditions for acceptable access, protection, use, and preservation of electronic data through these rules and procedures (Keakopa, 2018). These countries' policies and procedures stress the need for systems and processes that deal with electronic records, such as their dependability, accessibility, and long-term preservation. The lack of applicable rules and processes to support the maintenance of documents throughout their life cycle has impeded record-keeping practices in Namibia (Keakopa, 2018).

2.7 Theoretical framework

2.7.1 Theories applicable to management of records in a digital environment

This section discusses the life cycle and continuum theories and their applicability to the management of records by records centres in a digital environment.

2.7.1.1 Records life cycle theory

The life cycle concept is defined as a theory that provides a framework for a records management programme's operation (Shepherd, 2012). Schellenberg of the National Archives of the United States of America (USA) is credited with developing the life cycle concept in the 1930s (Yusof & Chell, 2012). The notion was devised in response to the ever-increasing volume of records businesses created (Devellis, 2012). The life cycle notion is based on the reality that recorded information has a life cycle that is similar to

that of a biological creature in that it is created, lives, and dies (disposition phase) (Shepherd, 2012).

The life cycle theory has served as the primary theoretical framework for records management in this study, particularly in the context of paper-based environments. This theory outlines a linear process that governs the interplay between the creation, utilisation, and disposition of records. According to Lemieux, Hofman, Batista, and Joo (2019, p. 5), "the life-cycle theory sets out a framework in which records have distinct phases of existence, and the actions required of the record-keepers depend upon what phase of the life-cycle the records are in." Valtonen (2017) asserts that the principles and practises of records management are grounded in the theory of the records life cycle. The life cycle of records is based on the premise that records necessitate management throughout their entire existence, from inception to elimination. The premise underlying this approach is that the effective management of records throughout their lifecycle, from their inception to their ultimate disposal, results in optimal utilisation, upkeep, and disposition of documented data.

Many variations on the records life cycle notion have been modelled since the 1950s. Most models attempt to depict a series of actions conducted at various points in a record's life cycle, such as creation, capture, storage, usage, and disposal. Some authors depict the life of records as a straight line, while others describe it as a loop or a circle (Shepherd, 2012). Yusof and Chell (2012) note, for example, that in the United Kingdom, the records or information life cycle is commonly divided into at least three stages. Shepherd (2012) discusses the three stages of the life cycle, stating that the life cycle of a record is in its

journey from creation to final disposition. It includes current records, or records that are required on a regular basis for an agency's or organisation's current operations and continue to be maintained in their place of origin or receipt, records in this stage are sometimes called active records. Furthermore, semi-current records are records that are needed so seldom for current business that they should be transferred to a records centre pending their eventual disposal, should be transferred to a records centre. Finally, non-current or inactive records should be destroyed or transferred to an archival repository if they are no longer required for current business.

According to Litt (2017), the basic assumption of the records life cycle theory is that all records go through three stages: current (creation, use, and maintenance, when they are stored in registries), semi-current (when reference to the records has decreased and they are stored in a records centre), and non-current (when records are either destroyed or transferred from the records centre to archives facilities). Further, Penn, Pennix and Coulson (2012) indicate that the life cycle of records can be divided into five major phases, that is, creation, distribution, use, maintenance, disposal or archiving. However, Goodman (2013) listed 10 stages of the records life cycle concept, namely design and creation of records, identification, authorisation, verification, validation and auditing, circulation, access, loan and use, backup procedures and disaster recovery plans, and retention schedules and destruction.

Scholars (Robek, Brown & Stephens, 2012; Williams, 2013) are constantly citing different interpretations of the number of phases in the life cycle of records. One of the important qualities of records is their value. Their usefulness for business reasons, like

that of other organisational assets, tends to dwindle over time, and they eventually become obsolete and may be abandoned. In their life cycle, Robek et al., (2012) identified five key stages, namely creation, dissemination and use, storage and maintenance, retention and dispose, and archival preservation. The updated records life cycle model allows archivists and records managers to trace the evolution of a record sequentially, as shown in Table 2.1, and ensure that the appropriate processes are followed at each stage of its existence (Williams, 2013).

Table 0.1: The modified records life cycle processes

Phase	**Considerations**	**Processes**
Gestation (prenatal phase)	Does this activity need recording?	Decisions about its form, content, life span – before it is created
Decisions about its form, content, life span – before it is created	Records are created/received and captured in a record-keeping system	Application of appropriate metadata (descriptive information about the record's context); systematic capture
Active life	Record is referred to frequently	Appropriate access, storage, retrieval, security, preservation, appraisal, some destruction
Semi-active life	Record is referred to infrequently	Less access, retrieval, off-site storage, appraisal, some destruction
Archive	Records accessed as archives, for non-current purposes	Archival standard storage and access: a further cycle of processes

Source: Williams (2013, p.11)

The gestation phase was included in the life cycle processes described in Table 2.1. Therefore, this study treated it as a modified records life cycle. "The present study

integrated the prenatal phase of the records continuum with the conceptual stages of the records life-cycle to develop a hybrid model that is appropriate for records management" (Chachage, 2012 p. 65). The implementation of altered record life cycle procedures is widely relevant in the administration of electronic records. Williams (2013, p. 10) argues that "although the traditional record life cycle serves as a basis, it requires adaptations to accommodate the distinctive attributes of digital records." The revised record's life cycle comprises five distinct phases: gestation, decisions about its form and content, life span before it is created, active life, semi-active life, and archive. Through the integration of these alterations into the life cycle of records, records centres can proficiently handle the distinctive complexities and attributes of digital records, guaranteeing conformity, information administration, and the conservation of substantiation throughout the complete life cycle of the records.

Although the records life cycle concept has influenced the development of records and archives management in many parts of the world, it has been criticised (Shepherd, 2012). For instance, Williams (2013) asserts that although the records life cycle concept had been useful in promoting a sense of order in the overall management of records, strict adherence to its principles undermined any trend towards greater cooperation and coordination among archivists and records managers. Hence, it ignored the many ways in which the records management and archives operations are interrelated.

Williams (2013) argues that a clear distinction between records and archives can lead to inconsistencies in practice between records managers, who have traditionally been in charge of managing current and semi-current records, and archivists, who are in charge of the archival phase. Furthermore, technological advancements have shown that

traditional records management is no longer appropriate for documents in electronic formats, which have their own unique features. Records are susceptible to alteration and conversion as technology advances (Yusof & Chell, 2012). Issues like technical obsolescence, the need to migrate data to new platforms, and ensuring the integrity of records all need to be addressed from the start (Williams, 2013).

When it comes to electronic records, the records' life cycle is insufficient because they are unlikely to reach a definitive inactive point because they have moved into different formats because of technological advancements (Yusof & Chell, 2012). Furthermore, Matlala and Maphoto (2020) are of the notion that the life cycle theory is unable to address the issues of electronic records, but the continuous theory presents a new set of management ideas for the preservation of the electronic environment. The two theories provide a framework for addressing the issues of managing physical and electronic records in records centres, as well as incorporating the extra function of managing electronic records. In the records management field, the concept of the records continuum was thus supported because it addressed the administration of both paper and electronic documents.

2.7.1.2 Record continuum theory

The records continuum concept has been well received since it addresses the management of both paper and electronic documents. According to the lifecycle concept, records can only live once at each stage of their lives, implying obligations for record management at each stage. In contrast, the continuum theory developed in the 1990s by Ian Maclean argues that record keeping is a continuous process that does not separate the life of a

record in time and space (Upward, 2009). According to Upward (2009), there are no strict boundaries between archives rights and records management responsibilities, as current records can also become archives from creation.

Proponents of the continuum paradigm, such as Bearman (1994) and Cook (1997), suggest that archivists should be involved in the management of records creation rather than waiting until the conclusion of the lifetime. According to Shepherd (2012), successful administration of digital records can only be accomplished if they are handled as a continuous process. Flynn (2012) provided the Australians' view of the records continuum as the generation of records (and even before that in the design of record-keeping systems) to the preservation and use of records as archives, a consistent and cohesive regime of management processes exists. The model was created in response to criticisms of the life cycle model in the 1980s and 1990s (Shepherd, 2012). For instance, Chachage (2012) criticised the model because it is oriented towards tasks rather than systems, it ignores the transactional and evidential nature of records, disconnects both record managers and archivists from the organisational reasons of record keeping, and divides the professions.

Smith (2012) presents the four stages of the records continuum, which are creation or receipt of the record; classification; establishment of retention/disposal schedules and their subsequent implementation; and maintenance and use in the creating office, inactive storage, or archives. Smith (2012) notes that all four stages are interrelated, forming a continuum in which both records managers and archivists are involved to varying degrees in the ongoing management of recorded information. Some scholars (Yusof and Chell,

2012; Chachage 2012; Flynn 2012) argued that electronic records do not have a life cycle similar to that of records in paper format. To them, the concept of the life cycle is too limited to cater for technologically generated records. They argue that the concept of the life cycle should be replaced by a records continuum (Yusof and Chell, 2012 p.57).

Theorists such as Frank Upward adopted the records continuum model as an alternative to the records lifecycle to cater for electronic records (Chachage 2012; Flynn 2012). According to Shepherd (2012), the continuum model is a flexible and inclusive concept that reflects a range of issues surrounding the role of records in contemporary organisations and society. The model provides a graphic tool for framing issues about the relationship between records managers and archivists, past, present and future, and for thinking strategically about working collaboratively and building partnerships with other stakeholders (Smith, 2012).

An, Sun and Zhang (2011) state that the evolution of the concept of a records continuum shows that the processes of records management and archives management are moving towards integration. Upward (2009) points out that the records continuum model has been defined in ways which show it is a time/space model instead of a life of the records model. In “Structuring the Records Continuum”, Upward (2009) states four principles of the records continuum model. That is, a concept of records that is inclusive of records of continuing value (archives), which stresses their use for transactional, evidentiary, and memory purposes, and which unifies approaches to archiving/record keeping whether records are kept for a split second or millennium; also, a focus on records as logical rather than physical entities, regardless of whether they are in paper or electronic form; as well

as institutionalisation of the record-keeping profession's role requires a particular emphasis on the need to integrate record keeping into business and societal processes and purposes; finally, archival science is the foundation for organising knowledge about record keeping. Upward (2009) explores these principles through a diagrammatical representation of the model (see Figure 2.2 below).

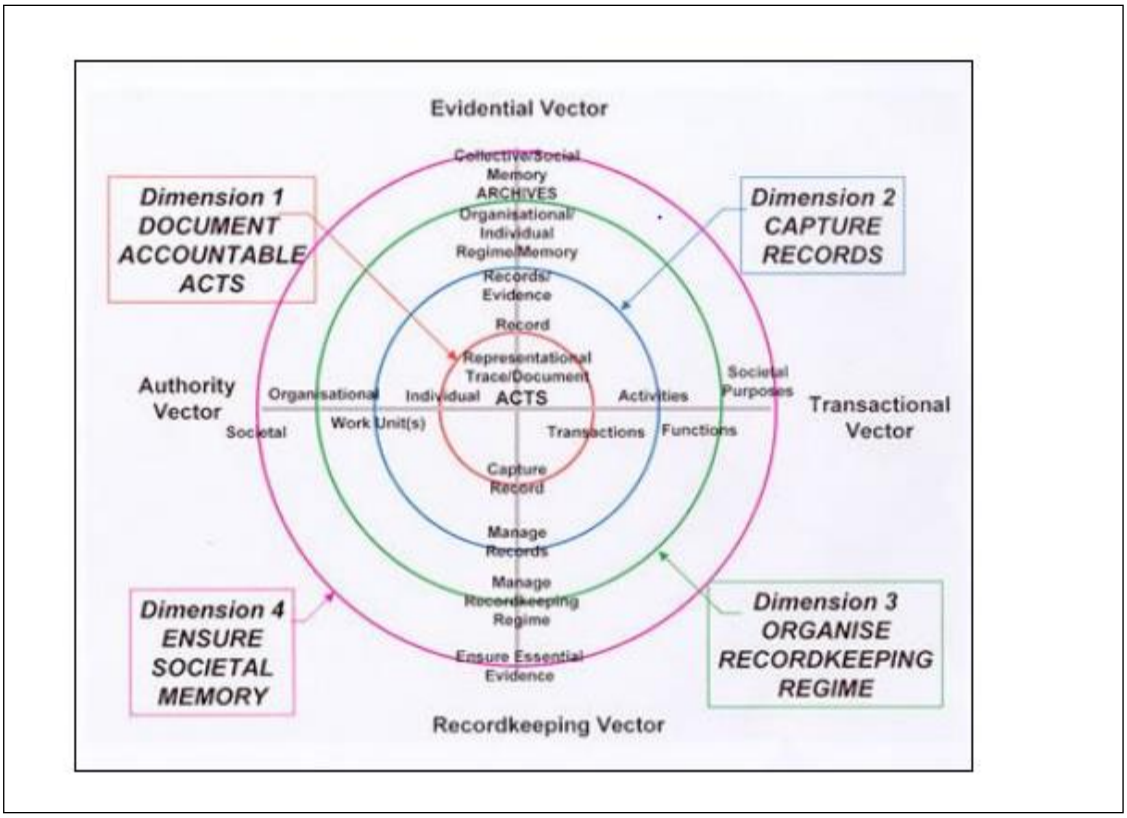


Figure 0.2: Records continuum model

Source: Upward (2009, p5)

The four major themes in archival science encompass transactional, authority (identity), evidential and record-keeping vectors as illustrated in Figure 2.1. The transactional vector relates to records as products of activities, while the authority (identity) vector relates to the authorities by which records are made and kept, including their authorship, establishing particularities of the actors involved in the acts of records creation, the empowerment of the actors and their identity viewed from broader social and cultural

perspectives. The evidential vector relates to the records as evidence and the record-keeping vector relates to the objects created in order to store records (Upward, 2009).

The themes are linked by concentric circles representing the dimensions or layers of the continuum joining the individual record to its contexts (Flynn, 2012). The dimensions include create (document accountable acts) whereby documents are drawn up or received in the post and also capture, where documents are added to the office filing system that is records series. Organise is the third dimension representing the series that has been scheduled for permanent preservation forming part of the organisational memory. Finally, pluralise (ensure societal memory) where documents, as records schedules for permanent preservation constituting evidence of their creator's or accumulator's activity, are consulted by internal and external users (Upward, 2009).

According to An et al. (2011), the records continuum model takes a multi-dimensional view of the creation of documents in the context of social and organisational activity (proto record as trace), their capture into records systems (record as evidence), organisation within the framework of a personal or corporate archive (record as personal/corporate memory), and pluralisation as collective archives (record as collective memory). An et al. (2011) further point out that in continuum terms, while a record's content and structure can be seen as fixed, in terms of its contextualisation, a record is "always in a process of becoming".

Records are stretched into new shapes and structures during the filing and aggregating processes that form them, and by disposal and new administrative patterns, which alter their physicality and the control and attention that they receive. Even disposition is cyclical and never final (Upward, 2009). In the records continuum model, there are no

strict boundaries between archives and records management responsibilities, as current records can also become archives right from creation, instead of waiting for final disposal to determine this. The records continuum model applies to records including archives regardless of whether they are in paper or electronic form.

The records continuum theory helps to understand and explore record-keeping activities in relation to multiple contexts over space and time. Record-keeping activities span a period encompassing multiple action structures within record keeping, including contemporary record keeping, regulatory recordkeeping, and historical record keeping (McKemmish, 2016).

2.8 Conceptual Framework

The study's conceptual framework is drawn from the literature review, records life cycle and records continuum theories as well as the standards. The study's conceptual framework is illustrated in Figure 2.3:

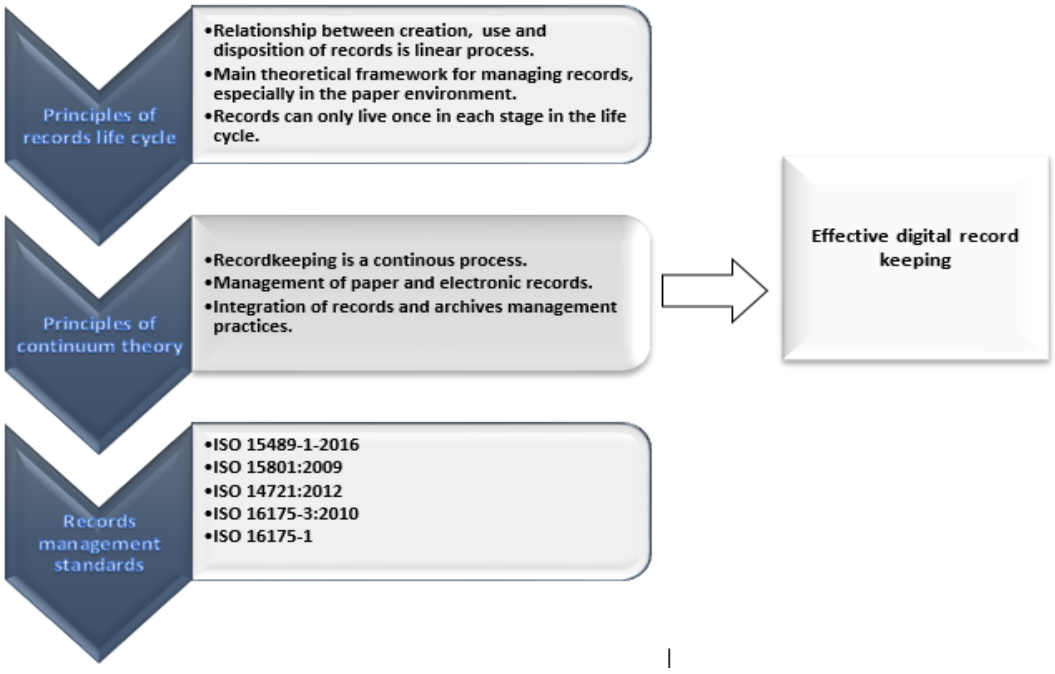


Figure 0.1: Conceptual Framework

Applying the conceptual framework highlighted in Figure 2.3, records centres can ensure effective digital records keeping by integrating the principles of the records lifecycle, continuum theory and records management standards as regulatory frameworks. The main constructs which anchored the study were records storage, retrieval and retention as informed by the records lifecycle in a paper environment; digital preservation and continuity as informed by the continuum theory and ISO standards which provide frameworks and guidelines to digital preservation. The study investigated if the records centres were applying traditional strategies of managing records as informed by the records life cycle which is more appropriate for paper records or the records continuum in recognition of the electronic records driven by the digital environment. The study also investigated if and how records centres were being informed by standards, specifically on digital preservation pertinent to the digital environment.

2.9 Chapter summary

The chapter reviewed the literature on the role of records centres in the digital environment. Various contributions from scholars were reviewed. The chapter highlighted the services offered by the records centres in the digital environment. The researcher also reviewed literature on records management policies and guidelines and their integration in ICT systems of the records centres, as well as the opportunities and challenges faced by records centres in the digital environment. The chapter also reviewed the applicability of the records life cycle and continuum theories. Furthermore, the chapter reviewed literature on standards applicable to management of records in a digital environment and went on to present the conceptual framework of the study. The next chapter discusses the research methodology adopted by the study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents and discusses the study's methodology. Saunders, Lewis and Thornhill (2016, p. 172) define research methodology as "a model of how research should be undertaken, comprising philosophical and theoretical assumptions on which the research is based and the implications of methods adopted". The chapter outlines the research philosophical assumptions, also known as the research paradigm, which informed the study's research approach. The research design, population, sampling method, data-collection instruments, the procedure for collecting data, and how data was analysed, as well as issues of reliability and validity are presented in this chapter. Finally, this chapter covers the research ethics, evaluation of the research methodology and concludes with a chapter summary.

3.2 Research Paradigm

A research paradigm can be defined as a set of beliefs that govern and shape the approach taken by a researcher in conducting a study and interpreting its findings (Bryman, 2012). Thomas (2016) observes that every form of research is influenced by philosophical assumptions (ontology, epistemology and methodology), which constitute or validate the study's research methods undertaken to construct desired knowledge. This implies that one or other of the philosophical assumptions might influence the way any researcher chooses to conduct research (Fox, 2018). These philosophical assumptions can be based

on different perspectives of reality (ontology), how knowledge is acquired and validated (epistemology) as well as on how research is conducted (methodology) (Creswell, 2012). Extensive philosophical assumptions debates occur among different schools of thought. The research world sees three main research paradigms, namely: interpretivism, positivism and pragmatism. Interpretivism was found to be most suitable for this study and it is briefly discussed below:

3.2.1 Interpretivism

Interpretivism is associated with the philosophical position of idealism, and is used to group together diverse approaches, including social constructivism, phenomenology and hermeneutics; approaches that reject the objectivist view that meaning resides within the world independently of consciousness (Cohen, Manion & Morrison, 2015). According to interpretivist approach, it is important for the researcher as a social actor to appreciate differences between people. Moreover, interpretivism studies usually focus on meaning and may employ multiple methods in order to reflect different aspects of the issue.

The overall design of this study draws principally on qualitative data and fits with the notion of the interpretative paradigm (Cohen et al., 2015). Proponents of the interpretive paradigm do not accept the view that reality can exist in isolation from the researcher. In this paradigm, the researcher assumed relativist ontology and adopted a subjective epistemology through an in-depth exploration of human experience through the adaptation of qualitative research approach and methodology to gain insight into the role of records centres in the digital environment. Interpretivists believe that knowledge is

seen as open-ended, hence the research adopted the use of an interview guide, which comprised of open-ended questions in gathering data from respondents.

McLeod (2018) indicates that the process of gathering, analysing, and interpreting non-numerical data, such as language, is defined as qualitative research. The other two approaches, quantitative and mixed-methods approach were deemed not suitable, as there were no quantitative measures required to meet the objectives of the study. The qualitative approach was suitable for this research, which explored the role of records centres - comprising commercial and in-house - in the digital environment in Windhoek. The qualitative research approach allowed for a more in-depth examination of the issues under investigation and allowed the researcher to capture the respondents' inside viewpoints by asking open-ended questions.

3.3 Research Design

Research design is defined as a framework that indicates how problems under examination will be resolved (Kothari, 2017). In other words, the research design determines how the required data would be collected and analysed, as well as how the research objectives would be achieved. This research adopted a multi-case study research design. A multi-case study is one in which the researcher examines several cases to determine the similarities and differences between them. The evidence obtained by a multi-case study is solid and trustworthy (Kothari, 2017).

Consequently, the researcher examined variations both within and between samples via a multiple-case study. Replication of findings across cases was the aim. The cases were

cautiously selected in line with the definition of a records centre, since comparisons were made, which allowed the researcher to predict either consistent findings across cases or inconsistent results based on theory (Yin, 2018). Multi-case studies enable a more comprehensive understanding of theoretical evolution and research concerns. However, Gustafsson (2017) cautions that a multi-case study can be an expensive and time-consuming task. This researcher concurs with the observation that a multi-case study requires more financial resources and is time-consuming.

3.4 Population of the study

Kombo and Tromp (2016) assert that a target or study population comprises a group of people, objects and items from which samples are gathered for measurement. In this study, the population consisted of three commercial records centres namely Document Warehouse, AGS Records Management and Phildou and six in-house records centres in Windhoek, namely UNAM, NUST, NamPower, Ministry of Health and Social Services, Namcol and NAN and the IT and records keeping staff of these records centres. The criteria which were used to define the population was guided by the guidelines of records centre storage as stipulated in the National Archives Circular 4 of 2017 such as security (custodial and environmental security), access, cleanliness and order (NAN, 2017).

3.5 Sampling

Sampling is the process of choosing units (individuals or organisations) from an interested community so that the researcher (or researchers) may appropriately generalise the results back to the population from which they were picked (Trochim, 2020). The study employed a census for selecting the unit of analysis. According to Trochim (2020) census

is the method of statistical enumeration where all members of the population are studied. Applying the census method all nine records centres were intended to take part in the study. This enabled the researcher to gain insight of the role of records centres in the digital environment from a broader scope. However, only eight records centres granted permission.

After determining the census, the researcher went on to sample the respondents. Sampling techniques can broadly be classified in two categories namely, probability and non-probability sampling methods (Alvin, 2016). This study adopted the non-probability sampling technique, specifically purposive sampling for selecting the staff. Purposive sampling, which, according to Trochim (2020), involves the utilisation of the researcher's discretion or predetermined criteria to choose participants or cases for incorporation in the research.

In qualitative research, purposeful sampling is widely used to pick and identify information-rich cases relevant to the phenomenon of interest (Corbin & Strauss, 2018). This method of sampling entails identifying people who are informed and experienced about the phenomenon (Creswell & Clark, 2017). The researcher deliberately and purposively decided on the participants to be included in the study. The inclusion of records-keeping and IT staff members was based on the following reasons: records-keeping staff were involved in the day-to-day activities of managing records hence they had in-depth knowledge on records management systems, policies and procedures. IT staff members were part of the study as they provided expertise in software and hardware for keeping electronic records.

Creswell and Clark (2017) define a sample as a part or sub-set of a population. Asiamah, Mensah and Oteng-Abayie (2017) provide additional clarification that in order for a sample to accurately represent a population, it must possess all the characteristics inherent to that population. The intended sample size consisted of nine records-keeping and nine IT staff members, two from each records centre, as indicated in Table 3.1.

Table 0.1: Sample Size

Record Centre	**Sample Size**
Document Warehouse	2
AGS Records Management	2
Phildou	2
UNAM	2
NUST	2
NamPower	2
Ministry of Health and Social Services	2
Namcol	2
National Archives of Namibia	2
Total sample size	**18**

According to Table 3.1, the study sample comprised of 18 individuals, with nine belonging to the records-keeping department and the other nine belonging to the IT department. Specifically, selecting two of each was for verification purposes in order to enhance the trustworthiness of the findings. However, because only eight records centres granted permission, the sample size was 15. Additionally, at NUST, UNAM, National Archives of Namibia and Document Warehouse more members of staff were available to take part in the study as a result interviews were conducted until data saturation was

reached after eight extra interviews. Saturation is an important indicator that a sample is adequate for the phenomenon studied (Bowen, 2019).

3.6 Data collection methods

This study of eight records centres in Windhoek conducted an in-depth investigation of their role in the digital environment. Interviews were used to collect data from records-keeping and IT staff members.

3.6.1 Interviews

According to Babbie and Mouton (2010), interviews are especially useful for learning the backstory to a participant's experiences and obtaining in-depth information on a topic. There are various types of interviews such as face-to-face interviews with the respondent and there are telephone interviews. This study conducted face-to-face interviews.

3.6.2 Face-to-face interview

The face-to-face interview, also called an in-person interview, is probably the most popular and oldest form of survey data collection. Face-to-face interview is a data collection method where the interviewer directly communicates with the respondent in accordance with the prepared questions (Myers & Newman, 2017). This method enabled the researcher to acquire factual information, consumer evaluations, attitudes, preferences and other information coming out during the conversation with the respondent (Merriam, 2019). Thus, the face-to-face interview method ensured the quality of the obtained data and increased the response rate. The main advantage of the face-to-face interview was the

presence of the interviewer, which made it easier for the respondents to either clarify answers or ask for clarification for some of the items on the interview guide (Kvale, 2016). Thus, the researcher was able to solicit information from respondents in records centres. This enabled the researcher to probe for deeper information from respondents, thus the understanding of the role of records centres was revealed. The interviews were conducted with management and general staff members in the records-keeping and IT departments of the records centres.

3.7 Research Instruments

Leavy (2017) explains that a research instrument is a tool used to collect data from the respondent. The researcher gathered data using interview guides. There were two interview guides, one for records-keeping staff, which covered questions on records management practice informed by the records lifecycle and records continuum theories (See Appendix D) and one for IT staff covered technology application questions (See Appendix E). Thus, 15 respondents were interviewed, of whom 12 were records management staff and 3 were IT staff.

3.7.1 Interview guide

The researcher used a semi-structured interview guide. A semi-structured interview guide refers to a versatile framework that delineates a predetermined set of questions and topics to be addressed during the course of an interview (Saunders et al., 2016). The use of interviews was advantageous for this study since it was based on participants' experiences, this was expressed using interviews. According to Saunders et al (2016),

interviews provide flexibility as they allow the interviewer to reiterate inquiries in instances where a question is misunderstood.

3.8 Research Procedure

The researcher sought ethical clearance and research permission letters from the University of Namibia. The letters enabled the researcher to seek authorisation to conduct the study from the records centres. The researcher did not commence the research before getting the clearance letter, as this letter was important when conducting research as some organisations required proof that the researcher was conducting the research for academic purposes only. The researcher made all logistical arrangements prior to commencing data collection, as proper planning in research resulted in organised data collection.

The researcher obtained the necessary permission from the records centres in Windhoek to conduct the study. Thereafter, the researcher arranged appointments for interviews with study respondents. Thus, convenient time, date and venues were agreed upon with those who consented to participate in the study.

3.9 Data analysis

Data analysis is a technique that involves gathering, cleaning and organising the data (Thorne, 2017). The data gathered from respondents was subjected to qualitative inductive analysis as the key data analysing strategy (Thomas, 2016). Inductive analysis involves rigorously reading and interpreting the raw data to develop concepts and themes. The study applied content analysis technique facilitated by Atlas ti.7. Vaismoradi and Snelgrove (2019) define content analysis as a form of qualitative analysis that is applied

to identify themes (patterns) in the data. It encompasses the systematic examination of data in order to discern recurring patterns, thematic elements, and underlying significance, with the ultimate aim of extracting valuable insights and formulating conclusive findings (Vaismoradi & Snelgrove, 2019). The research used content analysis in order to acquire a more profound comprehension of the content regarding digital records management evident within the data. Data were presented in descriptive narrative.

As stipulated by Shava et al. (2021), content analysis is conducted in five steps, which were used in this study as guides in doing the analysis.

Step 1: Prepare the data - Qualitative content analysis is a versatile method that can be employed to analyse diverse forms of data. However, it is typically necessary to convert the data into written textual form prior to commencing the analysis process. Qualitative content analysis was employed as a method for examining interview transcripts with the aim of uncovering and conceptualising individuals' behaviours and thoughts pertaining to information.

Step 2: Define the unit of analysis - In content analysis, the fundamental text unit to be classified is referred to as the unit of analysis (Shava et al., 2021). The unit of analysis for the study was individual themes. The expressions of a concept are what you are generally searching for when employing the theme as the coding unit (Schreirer, 2012). A text chunk of any size can thus be given a code as long as it expresses a single subject or problem that is pertinent to the study's question(s).

Step 3: Develop categories and a system- The categorization and coding framework were developed based on three primary sources: the collected data, existing literature on the

subject matter, and relevant theoretical frameworks. The coding system underwent initial testing on a text sample in order to assess its level of consistency.

Step 4: Code all the text- Once a satisfactory level of consistency had been attained, the coding rules were subsequently implemented across the entirety of the text corpus. Upon completing the coding process for the entire data set, the researcher proceeded to conduct a thorough reassessment of the coding consistency.

Step 5: Analysis of the results and drawing conclusions- This was the last step, which focused on content analysis and giving a narrative about the data that went beyond the data's description, as well as developing an argument regarding the content analysis.

3.10 Trustworthiness of the study

Reliability and validity are concepts used to evaluate the quality of research. According to Surucus and Maslakci (2016) validity refers to whether the measuring instrument measures the behaviour or quality it is intended to measure and how well the measuring instrument performs its function whereas reliability, on the other hand, means research done at different times is consistent and reliable if it supplies the same answer. However, credibility, transferability, dependability and conformability are more in line with qualitative studies (Thompson, 2003).

3.10.1 Credibility

Credibility in qualitative research is measured by how persuasive and reliable the data and data comprehension are compared to how unreliable they are (Lincoln & Guba, 2020). Internal validity, or how closely study results match reality, is comparable to believability. To increase the trustworthiness of the findings, the researcher employed

participant verification, which comprised of asking different respondents the same questions to determine if there were any inconsistencies.

3.10.2 Transferability

Research findings that can be applied to new situations unrelated to the initial study environment are referred to be transferable or generalisable findings. Transferability indicates how closely results can be transferred to other contexts (Lincoln & Guba, 2020). The researcher applied transferability by describing the research methods, settings and underlying assumptions of the study. This provided the audience with enough information to assess whether the outcomes are applicable to other contexts they are familiar with, which is crucial to deliver a thorough, rich account of the surroundings examined.

3.10.3 Dependability

Dependability refers to how often the same result is noticed in identical situations. This entails the extent to which results may be repeated using comparable individuals in an analogous setting (Merriam, 2019). It also highlights how important it is for researchers to consider or describe the changing contexts and circumstances that are essential to the accuracy of their study findings.

The researcher applied dependability through noting research limitations. Of particular note was that document analysis could not be used in this study due to participants' unwillingness to provide documents on their records management systems, policies and guidelines, hence the study's failure to find out whether records management systems, policies and guidelines from the unit of analysis were integrated into the ICT systems of the records centres.

3.10.4 Conformability

According to Merriam (2019), conformability describes the degree to which other researchers can verify or back up a study's findings. The researcher presented a thorough self-critical evaluation of the design of the study, which could be used to demonstrate conformability. The researcher would ensure data is accessible to other researchers for verification purposes in the event the research findings are contested.

3.11 Evaluation of research methodology

In this section, the reader is informed of the aspects of the study's research methodology that worked and those that did not work. If the same study is replicated, the assessment of the methodology section could help the researcher avoid problems, especially where there are methodological issues (Nengomasha, 2009). Even though the interview guide was successfully used to gather data, there was lack of evidence to support whether records management policies and guidelines from the unit of analysis were integrated into the ICT systems of the records centres. The researcher also spent more time gathering data through these interviews. In addition, the interviews were scheduled during working hours, with scheduling of interviews outside working hours difficult due to respondents' commitments. Hence, the researcher recommends taking more time to understand respondents' commitments and schedules for the data collection process. If the study were to be conducted again, the researcher would alter the research design from a multi-case study and focus on a single case. This would allow the researcher to select one unit of analysis where information would be available for document analysis and use that information intensively to come up with robust findings to infer to other records centres.

3.12 Research ethics

Creswell and Clark (2017) define research ethics as the application of morals and professional conduct in the collection of data for research purposes. An ethical clearance certificate was obtained from the UNAM Decentralised Ethics Committee and a research permission letter was issued by Postgraduate Research Support Services. The researcher explained the purpose of the study to the participants who were requested to sign a consent form to indicate their willingness to participate in the study. According to Polit and Beck (2017), this means participants had the right to choose to participate or withdraw their participation in the study.

At any time, information relating to a participant was treated as confidential and authority to use such information was only granted by the participant. The researcher upheld confidentiality, honesty, objectivity and respect of intellectual property during the study as stipulated by Creswell (2018). The researcher guaranteed confidentiality to each participant and used codes instead of names in reporting data. Data are kept on a cloud system and will be disposed of in line with the UNAM Research Ethics Policy.

3.13 Summary

This chapter presented the research paradigm and design. It then highlighted the population, sampling, data sources and research instruments used in the study. Furthermore, it presented research procedure used, data analysis technique used and research ethics. The next chapter analyses the data and presents the results.

CHAPTER 4

DATA ANALYSIS AND PRESENTATION

4.1 Introduction

The chapter looks at data analysis and presentation, which involves establishing order, structure, and significance within a large quantity of previously acquired data (Saunders et al., 2016). It is a process that is chaotic, unclear, time-consuming, creative, and interesting all at the same time. It does not progress in a linear form, nor is it tidy in any way (Creswell, 2016). Therefore, qualitative data analysis is the process of looking for broad assertions concerning the correlations between different types of data (Creswell, 2016).

This chapter presents the research data gathered through interviews in three commercial records centres and five in-house records centres in Windhoek. To maintain confidentiality, the names of the institutions have been withheld, and where there is a need to highlight a particular institution, the institutions are distinguished by codes. Data is presented mainly in the form of descriptive narrative with direct quotes from the respondents as well as figures. The chapter is divided into sections and sub-sections, based on the themes and sub-themes derived from research objectives and content analysis, respectively. Table 4.1 below shows the themes and sub-themes.

Table 0.1: Themes and sub-themes

Themes	**Sub-themes**
Theme 1: Demographic characteristics	• Highest level of education • Period of employment at records centre • Position in the records centre
Theme 2: Role of records centres	• Type of clients given the service • Traditional services offered before the digital era • Services offered in digital era • Role of IT staff in the records centre
Theme 3: Records management systems	• Records management system being used • Basic functions of records management system • ICTs in records centres • Preservation of digital records and systems for digital preservation
Theme 4: Policies and guidelines	• Policies and guidelines used at records centre • Policies and guidelines integration with ICT • Policies and guidelines for digital preservation • Policies guided by the National Archives Act 12 of 1992 • Policies and guidelines on cyber security
Theme 5: Opportunities and challenges	• Opportunities from introduction of digitalisation • Benefits of digitalisation of records centre • Challenges faced by the records centre in the digital era. • Challenges of digital preservation • Technical challenges and mitigation of such challenges. • Future of records centres

Table 4.1 shows the five themes of the research and the sub-themes found under each theme. The themes were derived from the research objectives and sub-themes were derived from the transcribed interviews, which were put in Atlas.ti.

4.1.1 Respondents of the study

The study aimed at covering all nine (two respondents from each institution, making 18 respondents) institutions in Windhoek, but eight institutions granted the researcher permission to carry out the study. However, because only eight institutions were eventually covered, 15 (83%) respondents were interviewed.

They comprised of records management staff and key IT personnel. Table 4.2 shows the respondents of the study. According to the guidelines of Mugenda and Mugenda (2003), a response rate of 50% is suitable for analysis and reporting, a response rate of 60% is typically good, and a response rate of more than 70% is exceptional. Mugo (2016) shares this view and adds that a response rate of above 70% is seen as excellent. According to these assumptions, the response rate for this study is very good, signifying that the results are representative of the targeted sample.

Table 0.2: Respondents of the study (n=15)

Institution	**Total number of respondents interviewed by institution**	**Group of respondents**	
		Records management (RM) staff	**IT staff**
Institution 1	2	1 - RM1	1- IT1
Institution 2	2	2 - RM2 and RM 3	
Institution 3	2	2 - RM4 and RM5	
Institution 4	2	1 - RM6	1- IT2

Institution 5	2	2 - RM7 and RM8	
Institution 6	2	1 - RM9	1- IT3
Institution 7	2	2 - RM10 and RM11	
Institution 8	1	1 - RM12	
Total	**15**	**12**	**3**

4.2 Qualitative data analysis

This section looks at the qualitative data analysis, as shown by the themes and codes depicted in Table 4.1, where five themes emerged that enabled the research to answer the research questions.

4.3 Theme 1: Demographic Characteristics

The first theme outlines the information of the respondents, their highest level of education, period of employment and their position in the records centre. Thus, the three sub-themes that developed from this theme were highest level of education, period of employment at records centre, and position in the records centre.

4.3.1 Highest level of education

The results of the study show that most of the respondents (RM2, RM4, RM6, RM7, RM9, RM10, RM11 and IT3) had completed their bachelor's degree, followed by those who had completed a diploma (RM1, RM5, RM8 and IT1), followed by those who had completed a master's degree (RM3 and IT2) and the least were those who had completed Grade 12 (RM12).

4.3.2 Period of employment at records centre

Most of the respondents (RM2, RM3, RM7, RM8, RM10, RM11, RM12, IT1, IT2 and IT3) had been employed for more than five years at their respective records centre. The other respondents (RM1, RM9 and RM6) had less than five years' employment at the records centre. However, only two respondents had a year of employment (RM5) and three months' employment (RM4) at their respective records centres.

4.3.3 Position in the records centre

The position of the respondents at the records centres varied. However, most of the respondents (eight – RM1, RM3, RM6, RM7, RM8, RM10, IT1 and IT2) held managerial posts at their respective records centres. The rest of the respondents were: archivists (three – RM2; RM9 and RM5); record officers (two – RM4 and RM11); administrator (one – RM12); and ICT officer (IT3).

4.4 Theme 2: Role of Records Centres in a Digital Environment

One of the objectives of the study was to determine the services offered by the records centres in Windhoek in the digital environment. Hence, the interviews were tailored to probe information on this matter and the following sub-themes emerged: role of IT staff in the records centre, services offered in the digital era, type of clients given the service, and traditional services offered before the digital era. The following sub-sections fully explore the role of records centres.

4.4.1 Type of clients given the service

The study looked at the type of clients the records centres offered their services to. Most of the respondents highlighted the clients to be either internal, within the institution or external, public or private clients, which included commercial banks, ministries, and parastatals like NamPost. Respondents (RM1; RM9; RM10; RM11 and RM6) indicated that their clients were mostly internal. RM1 said, “We deal mostly with our staff members.” Some respondents indicated that their institutions dealt with external clients only. RM12 had this to say, “We deal with commercial banks, private companies, and ministries.” RM5 supported this, “We deal with the private sector and then government.” However, RM4 highlighted that both internal (workers at the records centre) and external clients (for example, NamPost, which brings mail to the registry) used their services.

4.4.2 Traditional services offered before the digital era

The respondents had different views on the traditional services offered before the digital era. Most of the respondents (RM1, RM2, RM3, RM5, RM6, RM8, RM9, RM10, RM11 and RM12) indicated that the traditional services offered before the digital era were mainly records management services. In particular, RM12 noted, “We offer recordkeeping, store the documents, capturing and shredding.” RM2 added preserving archival records as another record management service they offered at their records centre.

RM1 said, “Traditional services include: the day-to-day registries, day-to-day administration of contracts, day-to-day management of all records that are produced within the firm, which are obviously forwarded to the records centre for preservation to

complete the life cycle." RM8 added that, "Traditional services provided include: paper records, scanning as well, consultancy as well, and training services in records management as well." However, one respondent was not sure about the traditional services used and said, "As far as I am concerned, like I said, I have been here for three months. What I see maybe, the traditional services that we are using are just manual ones" (RM4).

4.4.3 Services offered in the digital era

Some of the respondents were of the view that the services had not changed much since digitalisation of records management, whereas some indicated various services that came with the digital era. RM3, RM9 and RM10 were of the view that nothing had changed. RM10 highlighted, "Still the same services, but the records centre is trying to move towards digital records".

However, some of the respondents (RM1, RM4, RM5, RM6, RM7, RM8, RM11, RM12, IT1, IT2 and IT3) highlighted that the digital era had given rise to scanning and use of EDRMSs. RM12 said, "Scanning and hosting the scanned documents." RM8 added, "OK, so we do scanning of documents for a lot of people …. Then we sell a number of software solutions to enable people to do electronic filing, we design and set-up the whole electronic filing systems." RM2 viewed digital era services to be production of microfilms. Furthermore, RM5 indicated that their institution offered both services and products:

> *We've got products and services. On the product side, we've got various archiving products that we sell to clients whether it is for archiving or filing. Other products… include software. On services offered, we assist clients throughout the life cycle of*

electronic document. So, from the creation stage, we offer on-site parking services for setting up of records centres for your paper copies and then we can assist with the next processes, which would obviously be archiving and your destruction, in short. But, our focus will obviously be archiving services and security services. So, we do on-site destruction services. We have a shredder here and we also offer training information in records management.

Respondent (IT1), gave new insight into the services offered and indicated:

We make sure that staff have access to the documents and records … We also need to ensure that only authorised people access the documents so that we maintain confidentiality while also promoting transparency. So, we have got something that you call permissions model that we use. We group people based on their functions and then give them access to the system based on those functions or the job roles. Then we make sure that they have 24/7 access to the documents via the internet.

4.4.4 Role of IT staff in the records centre

The respondents in the IT staff group talked about different roles they had in the records centres. These roles included managing the electronic records and the records management systems, and supporting other business functions through provision of IT services. IT2 added that they made sure their record-keeping systems were well-managed and administered, and they made sure that the systems met their criteria and were upgraded as needed. Furthermore, IT1 added that the IT staff's role went beyond just the management of records, but included managing access to file plans and ensuring that records backups were done.

4.5 Theme 3: Records Management Systems

One of the research objectives was aimed at finding out whether records management policies and guidelines were integrated into the ICT systems of the records centres. Emanating from the content analysis are the following sub-themes: Records management system being used, basic functions of records management system, ICT in records centres, and preservation of digital records and systems for digital preservation. The following sub-sections give a better understanding of these sub-themes.

4.5.1 Records management system being used

The study results show mixed responses in terms of the records management systems used in the institutions under study. Some of the respondents were of the view that their institutions used EDRMS and others highlighted that they did not use any system at all. RM1, RM5, RM7, RM8, RM12, IT1, and IT2 indicated the use of EDRMS at their institutions. The respondents indicated that they used the following EDRMS systems: CRM from Siyanda software solutions, PowerCloud, SharePoint, OpenText Solutions, M-files, Hubshare, Kofax and O'Neil.

The other respondents (RM3, RM6, RM9, RM10 and RM11) were of the view that there was no records management system in place.

RM3 cited that:

> *All we have at this present moment is the specifications, but we don't have the system in place. There are real efforts in place to procure an appropriate EDRMS. I'm confident that this year we might see some movement in that area*.

RM10 added that, "There is a manual system." Furthermore, some of the respondents (RM2 and RM4) were not entirely sure whether there was a records management system.

RM2 pointed that, “The records management system department would know better.” The same can be said for RM4, who was not sure whether there was a records management system because there were still new to the institution.

4.5.2 Basic functions of records management system

As highlighted in Section 4.5.1, the institutions used different records management systems. Hence, the systems had different functions, but the basic functions of these systems were linked to records management processes. IT1 highlighted the following:

> *It provides the integration of SAP, which is our corporate system. Basically, there are some documents that do need to keep in SAP because SAP has more expensive storage area. The document itself will be stored in PowerCloud and then there will be integration between the two. It gives audit trails on each document.*

RM5 also added the following regarding the basic functions of their system:

> *Used for the flow of your hard copy documents from take-in to index to management to retrievals to destruction, and then the system was upgraded or worked on as time went by. So now, a client can use the same software that we use. The client has a customer portal where they can log-in. So the advantages for client would be they can use one system where they can see their hard copy location and open the PDF in soft copy, and we scan directly to the system on the client portal. So, there is no need for expensive IT infrastructure or anything. It is all Web-based. We also assist clients using the same software to manage the on-site operations. We assist clients with barcodes consultations and everything is done using one wireless system.*

4.5.3 ICT in records centres

Under this sub-theme, respondents talked about how ICT in their respective records centres allowed for processing of both paper and electronic records, the hardware and software used in records management, records management hardware and software obsolescence, and how ICT ensures digital continuity.

4.5.3.1 System allows for the processing of paper and electronic records

The institutions used different systems. So, respondents gave mixed responses on whether their systems allowed for processing of paper and electronic records. IT1, IT2, RM5, RM7 and RM8 agreed to the notion of using both paper and electronic records in their systems. IT2 had this to say:

> *Yes, the system can scan and upload. For example, l will be writing in SharePoint. I will start the document there and then once it is done, it is forwarded to my supervisor who approves it. So, once the document is created in SharePoint it can remain as a copy on SharePoint, as it is without a printout, but in our environment a printout is required for signature and stamp. So, now once this document is done, it is scanned into the system so that there is reference for the document and it is saved according to the file plan.*

RM5 highlighted the uniqueness in the processing of paper and electronic records when providing records management services to clients by saying:

> *Yes, and obviously with digitalisation it can be customised to the clients' needs or their business processes. So, we have got people who go in and do a business mapping process to assist clients to do it properly from the start because a lot of people want*

to jump electronically but if they do not sort out their hard copies it will be garbage in, garbage out.

The results also show that some institutions processed both paper and electronic records, even though they did not use a records management system. This is highlighted by RM4, "Yes, after the document has been signed and brought back to registry, we scan and file it on the system. It allows for that before we send it to the user department."

The other respondents (RM2, RM3, RM8, RM9 and RM10,) indicated that they had no system in place, hence it was impossible to process paper and electronic records. However, one of the institutions had a system in place, but it did not allow for processing of both paper and electronic records. It allowed for paper processing only.

4.5.3.2 Hardware and software used in records management

The respondents comprised of the IT staff because they were more knowledgeable on the subject matter. The respondents highlighted several hardware and software applications used in the records centres for record keeping. The applications differed from one records centre to another. For instance, IT2 described the software and hardware used at the records centre, "The software application that we are using is Microsoft SharePoint, which is installed on an HP server that has a generation 9 with 16 RAM of memory, and one terabyte disc space." On the other hand, IT1 only mentioned the software application used in the records keeping as OpenText solution.

IT3 indicated that their institution had no system in place for records keeping, but the specifications for the system had already been done and efforts were being made to

procure the EDRMS. Hence, the respondent commented on the hardware and software applications that would be needed for records keeping, “At the moment, financial records are being held at a transitional system called ITS and other records are on a transitional system called SIERA. These systems use the server for storage together with the ICT equipment. We will need an EDRMS that meets our specifications.”

The records management software and hardware that were used in the records centres can be summarised in Table 4.3 below.

Table 0.3: Records management software and hardware

Software		
Tool	**Description**	**Function**
RS-SQL	RS-SQL is the state-of-the-art software product from O’Neil unveiled in 1999. This flexible, feature-rich information management and record-tracking software allows you to easily and accurately manage, track and monitor the activity of any storable item (boxes, file folders, documents and tapes) throughout your record centre, from deposit to destruction, work order to invoice.	Records management
Hubshare	Hubshare is part of M-Files software as it uses M-Files as the back-office document management platform. The features include: cloud integration, data encryption, access and user right, and easy to use.	Records management
Kofax	Kofax Express delivers on its commitment to a first-rate user experience supported by a user-friendly interface. Its features include getting the most from VRS, barcode capabilities, point and click re-scan, database lookup, searchable PDF; and background export.	Records management

M-Files	Intelligent information management platform that improves business performance by helping people find and use information more effectively. Unlike traditional enterprise content management (ECM) systems or content services platforms, M-Files unifies systems (SharePoint, file-sharing services, ECM systems, customer relationship management (CRM), enterprise resource planning (ERP), data and content across the organisation without disturbing existing systems and processes or requiring data migration.	Records management and digital preservation
OpenText Solutions	OpenText Solutions is an enterprise platform that securely governs the information life cycle by integrating with leading enterprise applications, such as SAP, Microsoft 365, Salesforce and SAP Success Factors. Bringing content and processes together, it provides access to information when and where it is needed, improves decision-making and drives operational effectiveness.	Records management
CRM	CRM from Siyanda Software Solutions is part of Sage software. CRM offers management real-time information about sales, marketing, customer service activities and performance. With access to business key performance indicators (KPIs) in real-time on 'access anywhere' dashboards, it is easy to monitor performance and maintain records. It allows for integration with ERPs.	Records management
PowerCloud	A complete records and document management system. Records are managed throughout their life cycle. It manages the full document life cycle, from creation to disposal or retention. The system stores and retrieves data and manages role-based access rights. The built-in retention and disposal durations complement institutions' filing systems.	Records management and digital preservation

Cloud Deployment Toolkit	Cloud Deployment Toolkit facilitates the deployment of various Scape software components on top of public or private (on-premises) clouds.	Cloud computing
Adobe Commercial software	Adobe Commercial software is a PDF library that allows you to CREATE, ADAPT, INSPECT and MAINTAIN documents in the Portable Document Format A (PDF/A).	PDF processing
Hardware		
Tool	**Description**	**Function**
Computers	Generic laptops and desktops	Processing digital records and storage
Server	Physical and virtual servers	Records management
External hard drives	External hard drives are useful for backing up computers and transferring data between computers.	Storage and retrieval
Flash disk	A storage module made of flash memory chips.	Storage and retrieval
Scanning machines	Document scanning machines convert physical records into a digital database by scanning, tagging, and indexing.	Creation of records
Shredding machine	Mechanical device used to cut sheets of paper into either strips or fine particles.	Disposal of records

4.5.3.3 Records management hardware and software obsolescence

Respondents aired different views in terms of the records management hardware and software obsolescence at their records centres. IT2 alluded that:

> *When it comes to records management software, our software is upgraded according to our needs; this is a yearly activity that is conducted. Our financial rules say that our records management hardware needs to be upgraded every four to five years and should be replaced after that time.*

The respondents (IT1, IT2 and IT3) highlighted that their institutions tried by all means to avoid the obsolescence of records management hardware and software.

IT1 said:

> *We are constantly upgrading our records management software to latest versions to remain current. We are also patching our record systems periodically. Patches are basically fixes that the owners of the solution release periodically. So, maybe every three months or so, depending on how many patches are available, we apply the patches to make sure we are up to date. Also, the records management equipment has certain life cycles. Laptops are replaced every four years.*

Some of the respondents (IT3 and IT2) highlighted the use of policy measures as a way to mitigate obsolescence in hardware and software. IT3 added that the records centre had policies in place to monitor and control hardware and software obsolescence, with replacement cycles ranging from one to five years.

4.5.4 Preservation of digital records

The respondents had several views regarding the preservation of digital records and systems in place for preserving digital records. The respondents (IT1, IT2 and IT3) all agreed that their institutions engaged in the preservation of digital records. Furthermore, they highlighted that preservation of digital records was done through backups. The respondents pointed out several techniques used for the preservation of digital records. These included making copies of records, setting up security and access controls, making sure that digital records are in the correct format, managing metadata, controlling the content of digital records, and making plans for emergencies.

Asked about digital preservation, IT3 had this to say, “The records centre ensures the longevity of digital records by converting records to modern file formats. You make sure records never become obsolete by always keeping them in the most up-to-date format.”

IT2 indicated that the software for records management was the same software for digital preservation. The M-Files software contains sub-systems like SharePoint, DocuWare, and Dropbox, which enable both record-keeping and digital preservation.

However, some of the respondents lacked an understanding of digital preservation. They were of the view that retention of records is the same as preservation of records. IT1 highlighted the following when asked about digital preservation:
“We keep our records on current state media and we manage them based on pre-defined retention schedules for retention authorities from the National Archives. Then this regarded as our regular backup.”

The respondents had different views on the obsolescence of paper and electronic records. Some believed that as record centres transition to only digital records, paper records would become obsolete. Whereas some were of the view that digital records are more exposed to obsolescence than paper records due to technological dependence and obsolescence. RM4 said, “The paper records at the records centre are becoming obsolete due to a lack of enough storage space, hence the paper records are now being damaged to the extent that there are not usable.” However, IT1 indicated the reasons behind digital records becoming obsolete.

Digital records are prone to becoming obsolete because the physical carrier of the record can become obsolete, just like what happened to floppy discs. The floppy discs became outdated, as did the information on the discs. Also, digital records can become obsolete when the hardware needed to access them becomes obsolete. Lastly, digital records can become useless if the software needed to access them becomes obsolete'.

4.5.5 Digital continuity

The respondents noted that ensuring digital continuity in records keeping is two-fold. First, digital continuity is ensured through policies and guidelines that prevent obsolescence of records management software and hardware. For instance, IT2 said, "We have digital continuity policy and guidelines that are in place for records keeping." This justifies the mitigation strategy of obsolescence mentioned by IT2, "When it comes to EDRMS, our software is upgraded according to our needs. It is a yearly activity that is conducted. With regard to records management hardware, our hardware is upgraded according to our financial rules. Our records management hardware is to be replaced after four to five years." IT2 added:

We also do emulation every four to five years or even go back 15 years, whereby we retain records on old computers or devices. During records emulation, the bits are copied and may not be an exact match; data loss becomes a real risk. Emulation allows you to access the original record as if it were still running on its original computer system.

Second, ensuring digital continuity is done through migration of stored records to the updated versions in the EDRMS. For instance, IT1 indicated that documents in storage at

the records centres were now stored on PowerCloud to ensure digital continuity. However, the challenge the centres face is that staff members are failing to migrate the records from storage, flash discs and in offices onto PowerCloud. IT1 also said the IT department ensured digital continuity by building technical infrastructure ahead of changes in demand for new technologies, in response to those changes.

RM1 shared the same view, by indicating that their records centre ensured digital continuity, and adding that:

> *We use PDF/A to normalise migrated files from storage devices, memory sticks and CDs (compact discs). Like read-only PDF files, PDF/A files can only be viewed and not edited. PDF/A documents are only suitable for visual documentation, as they do not accept audio or video files or complicated formats like those including moving pictures.*

However, at one occasion, the strategy for digital continuity helped explain the strategy employed for mitigation of obsolescence of hardware and software. This was seen from the assertions on continuity by IT3, who said:

> *We upgrade software and also make sure that the formats that these records are in are open formats. At the digitalisation unit, when they are scanning things, they make sure they use preservation formats so there are images. I think they use TIF though it is quite demanding on storage. For access, they can use JPEG and other formats that are a bit light for access purposes, because with TIF it will be heavy on bandwidth if we are to use it for access format.*

These assertions by IT3 help explain the need for replacement cycles mentioned in section 4.5.3.3.

4.6 Theme 4: Policies and Guidelines

Theme 4 is derived from objective 2, which aimed at finding out whether policies and guidelines were integrated into the ICT systems of the records centres. Thus, several sub-themes were derived which are: policies and guidelines used at records centre, policies and guidelines integration with ICT, policies and guidelines for digital preservation, policies guided by the Archives Act 12 of 1992, and policies and guidelines assisting the IT department in dealing with cyber security. The sub-themes are explained in detail in the following sub-sections.

4.6.1 Policies and guidelines used at records centre

Most of the respondents (RM1, RM2, RM4, RM5, RM7, RM8, RM9, RM10, RM11, RM12, IT2 and IT3) highlighted that they used policies and guideline at their respective records centres. These policies and guidelines where mainly focused on maintaining, monitoring and controlling the records management process at every step in the records life cycle. IT3 said the following, “There is a records management policy and it’s approved by Senate, so I am confident it has guidelines attached. I know the archives department uses the policy.”

IT2 said, “We have a records management policy, retention guidelines, off-site records guidelines, vital records guidelines, file plan guidelines, and a new drafted information security policy.”

RM1 added that, “We have got the information and security policy, records management policy, records and disposal schedule or guidelines, and data classification policy.”

Also, RM1 differentiated the policies from guidelines:

> *On the records management disposal policy, there is a difference between a guideline and a policy. Guideline is how to do it. Basically, it gives you direction on all the steps that you need to follow and a policy instructs you on the way forward, what are the consequences if you do not follow those rules. So, that distinguishing the two.*

Other respondents highlighted the use of codes from ISO as their guidelines. RM7 highlighted that they use ISO 2000 and ISO 2001. However, RM5 indicated that they used different ISOs (ISO 9000:12015) at their records centre. RM8 also indicated the use of ISO standards as guidelines, “We also use ISO 15489: 2001 for information and documentation management also ISO 15801: 2009 for document management. Then for functional specifications, we have ISO 16175-1: 2010 and ISO 16175-3: 2010.” Most of the respondents highlighted that their policies and guidelines were guided by the National Archives Act 12 of 1992.

4.6.2 Policies and guidelines integration with ICT

The results showed that RM1, RM3, RM5, RM6, RM7, RM8, RM9 and IT2 were of the view that the policies and guidelines at their respective records centres were integrated into ICT. IT2 highlighted that, “Yes, an information security policy is a policy from the information department. Risk management is conducted as an overall institutional process.” The view was supported by RM5, who indicated that, “Yes, they have always

worked together, the archivists, salespeople or the records managers with IT people so they have the same understanding, everything forms part."

It is important to note that in some of the institutions, the records centre was within the IT department, hence integration of policies with ICT become inevitable. RM1 noted that:

> *Yes….. because we are housed within IT, we need to make sure that the records management functions relate to any of our ICT acceptance usage policy ….. So, for every policy that we produce needs to speak to the ICT acceptance usage policy. So, there is a huge correlation in terms of all the policies that we produce within different sub-sections.*

On the other hand, RM4, was of the view that there was no integration and RM2 and RM11 were not sure whether the policies and guidelines were integrated into ICTs.

4.6.3 Policies and guidelines for digital preservation

The opinion of the respondents of the study was divided on whether there are policies and guidelines specifically for digital preservation. Most of the respondents (RM1, RM6, RM7, RM9, RM10, and RM11) highlighted that there were no policies and guidelines of that nature at the respective records centres. RM1 said, "We do not really have something on digital preservation."

RM7 added that:

> *We do not have policies, but we have SOPs (standard operating procedures) because we act on behalf of our clients. If the clients have a policy, they tell us what they want us to do, either providing backups or storage in the vaults, which we keep for five*

years, and then we give it back to them and they convert it from one technology to the next one, but we do not have a policy. We follow the policies of the client.

Some of the respondents (RM4, RM5 and RM8) were not sure whether their institution had policies and guidelines for digital preservation. However, some of the agreed to the notion. This is seen by the response of RM2, "We have a preservation policy in draft that we use internally here. We also have the National Archives Act 12 of 1992."

4.6.4 Policies guided by the Archives Act 12 of 1992

All the respondents agreed that the Archives Act 12 of 1992 guided their policies. IT3 highlighted that, "Yes, like the records management policy, I know it is actually citing the Act as one of the supporting or the umbrella legislation."

4.6.5 Policies and guidelines assist the IT department in dealing with cyber security

The respondents showed uncertainty in their views on policies assisting the IT department to deal with cyber security. IT2 indicated that, "Information security is there, but still in draft. But, yes besides the policies, we have a risk management policy. It is the one that deals with cyber security and all vulnerabilities."

On the other hand, IT2 talked about integrity being the key driving force in enforcing cyber security.

I think the policies talk about integrity of our records. So, as IT department, you need to make sure that the integrity of the records is maintained at all times and then you can also prove that maybe in case of dedication and so on that records are indeed genuine. So, that is how we use the policy to make sure that our systems address the issues that are being raised in the policy. There are also firewalls that make sure that

our systems are secured. Maybe, if possible, you could talk to the people that are responsible for those.

However, IT3 highlighted little involvement of the IT staff at their firm in cyber security.

Okay, I think with cyber security, from our side I doubt we do much. We also ensure security at the server level but the main actor on that one is the central IT, which is responsible for the network. So, we do have quite a big team there that handles firewalls and all these to make sure that any of our internal resources or assets are safe.

4.7 Theme 5: Opportunities and Challenges

The last theme of the study was opportunities and challenges, which was derived from objectives 3 and 4. The theme had six sub-themes, which are: opportunities from introduction of digitalisation; benefits of digitalisation; challenges faced by the records centre in the digital era; challenges of digital preservation; technical challenges and mitigation of such challenges; and future of records centres.

4.7.1 Opportunities from introduction of digitalisation

The respondents indicated several opportunities, which have risen due to the introduction of digitalisation at their records centres. The responses were more on the enhancement of records management driven by efficient and effective records management processes. The respondents highlighted that digitalisation improves search and retrieval, which takes a lot of time. Technology simplifies and speeds up that process, enabling business-wide collaboration and document sharing. The assertion was backed up by RM4, who was of

the opinion digital records are easy to trace, save paper, and guarantee backup. Paper records can be ruined or burnt, whereas electronic records can be saved and tracked throughout the life cycle of the record.

Also, RM6 supported the notion of digitalisation providing opportunities in improved records management:

> *Easy access. Accessing is very easy. By a touch, you send and provide access. It is fast, and even if the person is not around here, sitting in a meeting somewhere, if you realise the information that you forwarded them is not the one you intended, I am quick to tell them where to look. So, it is quick and efficient.*

However, some highlighted opportunities in providing services. RM5 highlighted that, "Improved customer service, improved timeframe for looking of hard copy documents and I think there is overall data exceptional appreciation for records management."

The results show an opportunity in cloud computing and storage. The respondents (RM1, RM7, RM8, and IT1) highlighted that software such as PowerCloud and M-Files made it possible to store records in the cloud and improve storage.

4.7.2 Benefits of digitalisation of records centre

All the respondents highlighted improved operational efficiency as the major benefit of digitalisation of records centres. The responses emphasised the notion that every document is easily accessible and traceable. They highlighted that employees were protected if a crucial document was lost, and there was a reduction in records storage and transportation expenses. RM12 added that, "Clients would not come in physically, they can view the records online on the system. Hence, improving business efficiency."

RM5 added:

> *It helps us to provide a better overall retrieval system so we do not have to try and request for files, it takes time. Also, booking out in the system, putting it in a plastic bag, so it's all costs and then driving to the client to deliver the file and drive back.*

4.7.3 Challenges faced by the records centre in the digital era

Due to the different systems used by the institutions, results also showed different challenges faced by the records centres in the digital era. However, a common challenge highlighted by the Respondents (RM1, RM2, RM3, RM4, RM7, RM8, RM9, RM10, and IT3) was transitioning into the digital era. Transitioning in terms of human resource needs, equipment and tools needs, and financial constraints. RM1 said that:

> *The records management colleagues need to understand that with the management of the electronic and physical records there is a difference. Most of these colleagues that I am seated with are older generation. They are used to the records centres of years back. When you start explaining to them that we are moving to the digital era, it is a huge mind shift. There will be constant debate, so it is change management. The term change management obviously encompasses a lot of training, a lot of information sharing, lots of resistance from them because they will tell you they have been doing this for the past 20 years why are we changing now. It is a whole organisational behaviour change, it is not only the records management staff but down to the board, the executive down to the employees.*

IT3 talked about the equipment constraints, pinpointing lack of server storage to back-up the records on personal devices. RM10 added that technology evolved rapidly, hence the need to keep on upgrading hardware and software, which was a big challenge.

IT1 identified financial constraints as a major problem, because the records centre needed to finance technology and personnel on a constrained budget. Furthermore, IT1 added that besides being a great way to make archival records more accessible, digitalisation was expensive due to equipment, storage, and people. “Staff cost includes generating digital copies, metadata, and digital collection curation. These factors present challenges to digitalisation” (IT1).

4.7.4 Challenges of digital preservation

The IT staff gave their input on the challenges of digital preservation. These challenges include: ever-changing technology and failure to perform digital preservation duties. IT1 indicated:

> *Technology is always changing. To share the volume of data that is now available in the digital space is a challenge. Thus, keeping up with all the storage required is becoming expensive and they have limits. We have moved from physical storage to virtual to make it more scalable. Instead of going to buy a physical disc, we can provision virtual in a quick manner. Another challenge is that the National Archives Act is currently silent on digital records, so many aspects of paper-based. We also had a lot of challenges when we were trying to get our file plan approved based on the paper environment. They still got structures that are coming way back maybe from the 70s or the 60s and we need to have these series in our file plan.*

IT3 was of the view that the staff members were not performing digital preservation as the records were just on their devices. "Whatever records are created on transitional systems, they remain there on servers, so that includes invoices for finance. The people are reluctant to preserve such documents" (IT3).

4.7.5 Technical challenges and mitigation of such challenges

All the IT staff highlighted a lack of adequate equipment to meet the digitalisation of records centres as the major technical challenge. IT3 was of this view: “The issue of server storage, especially for backups, is a real challenge because there is a risk of losing records. Records should ideally be kept in a central storage facility that allows for secure sharing.” In addition, IT3 gave ways to mitigate such a challenge:

> *I think the only way is for staff to choose portable devices and for the organisation to set aside money for this, because when you hire someone, you should give them the tools they need to do their job well and not slow down production.*

4.7.6 Future of records centres

The respondents had different views on the future of records centres. The common view was that paper records will continue to exist in the records centres in the future. The other respondents were of the view that electronic records will never replace paper-based records, but rather they will work in unison to provide better records management. Some of the respondents were of the view that there will be less paper records in the future. RM2 agreed with this and added, “They will never die but we will slowly, but surely move towards digital records centres.” However, other respondents were of the view that

there was a need for cooperation among records centres and the Government for the proper implementation of records digitalisation.

IT1, highlighted:

> *I think that they will still be there; because we have records that still need to be maintained for a long time and they are in the paper environment. Not all of them can be digitalised... We need to look at a hybrid system as a country where we can digitalise whatever we can for easy access and to bring in efficiencies in terms of when you look for information.*

RM2 also added:

> *The future of the archives is bright, if the leadership will engage with other archival institutions through cooperation and agreement and if the government will also get involved and lend a supporting hand. I believe that if we could obtain three to four pieces of digital equipment as well as staff, we could accomplish more and improve the future by making information available.*

4.8 Chapter Summary

This chapter focused on the presentation of the research. Analysis and presentation of the findings were done with the aid of Atlas.ti software and presented tables and themes. This helped in the presentation of the results in a way that readers could easily understand. The study had five themes. Theme 1 looked at the demographic characteristics of the respondents, such as their highest level of education, period of employment, and position in the records centre. Theme 2 looked at the role of records centres in a digital environment and focused on the services offered by the centres and the types of clients

they serve. Theme 3 looked at records management systems, including EDRMS used in record centres, ICT in record centres, and digital preservation. Theme 4 looked at policies and guidelines used in records centres and how they were integrated into ICT systems at the records centres. Theme 5 looked at the opportunities and challenges faced in the digital environment. The challenges were split into three categories: challenges faced by the records centres in the digital era, challenges of digital preservation, and technical challenges. The next chapter discusses the research findings.

CHAPTER 5

DISCUSSION AND INTERPRETATION OF FINDINGS

5.1 Introduction

The study's findings are discussed and interpreted in this chapter. According to Creswell (2016), after the results of the study have been presented, “the most salient aspects will be discussed, bringing them together with the underlying principles and the study's overarching goals” (p.174). Thorne (2017) brought attention to the significance of data interpretation and emphasised the central role data interpretation plays in the scientific method. The findings are interpreted in light of the literature discussed in Chapter 2, in which various interpretations are provided for findings that either support or refute those of earlier investigations. The discussion of the study findings is structured within headings that correspond with the objectives of the study.

5.2 Services offered by the records centres in Namibia in the digital environment

The study sought to determine the services the records centres in Namibia offer in the digital environment. To understand this objective further, the researcher first sought the services offered before the digital era and then looked at the services offered in the digital environment. The records life cycle and records continuum theories guided the study in determining these services. The findings reveal that the majority of the records management services provided prior to the digital era (traditional services) included document storage, capturing, shredding, archival record preservation, manual filing, and record-keeping training services. The findings are consistent with the study by Mulauzi

and Ngulube (2015) that records centres tend to handle records in the same manner they did a few years ago, that is, by arranging, filing, and storing them, providing them with total control over the life cycle. Szekely (2017) agrees with this point of view and stresses that a records centre's traditional duties include keeping records at safe and accurate temperatures, using retention schedules, setting standards for categorising records, and putting in place procedures for keeping an accurate and up-to-date inventory of stored records.

The findings also reveal that the majority of the services provided in the digital environment were centred on the traditional services such as records creation, records inventory, developing file plans, records storage, records retention and disposal. This suggests that the records centres were still managing more paper records than electronic records, hence the records life cycle theory still applied. The findings are supported by Schoenherr (2014), who believes that the record centres employ the same techniques for maintaining records in the electronic era as they did in the past. This observation confirms the argument by Kalusopa and Ngulube (2012) regarding low electronic records readiness in records centres in Africa, which they attribute to inadequate records management standards and practices. Electronic records readiness may be described as the comprehensiveness and breadth of a firm's institutional, legal, and ICT infrastructure, as well as its capacity to implement a comprehensive records and information management (Kaupa & Chisa, 2020).

The study found that in the records centres claimed to employ EDRMS for records management, confirming the assertion by Kalusopa (2016) that the introduction of ICTs

has changed the role of records centres so that they can now handle both physical and digital records. Similarly, Mosweu et al. (2019, p. 9) state that "because of the fourth Industrial Revolution, businesses are now making use of technology in their record-keeping practices." One of the respondents highlighted that their records centre provided both products (such as software) and services (such as assisting clients throughout the life cycle of their electronic records), supporting the view of the International Records Management (2009) that in the digital age, records centres offer specialised record management software.

Furthermore, the respondents who were part of the IT staff indicated that the services offered by the IT departments included providing staff with access to paper and electronic records in offices and cloud. The respondents also highlighted that their role at the records centre included managing the electronic records and the records management systems and supporting other business functions through the provision of IT services. This is in line with the findings by Kalusopa (2016) and Nyampong (2015), who indicate that the support IT departments offer records centres in the management of electronic records includes ensuring that electronic records are reliably and securely maintained, retained or disposed of in accordance with authorised and approved records retention schedules. They also ensure that work processes, associated business procedures and tools support the creation and management of records. Furthermore, they ensure that electronic records are retained or disposed according to authorised and approved records disposition schedules.

5.3 To find out if ICT systems of records centres integrate records management policies and guidelines

The study sought to find out if the records management policies and guidelines were integrated into ICT systems of the records centres. The findings are discussed under the following subheadings: records management systems, ICTs in records centres and policies and guidelines.

5.3.1 Records management systems

The findings show that some of the records centres used records management systems while others did not. The records management systems supposedly used were: CRM from Siyanda software solutions, PowerCloud, SharePoint, OpenText Solution, M-files, Hubshare, Kofax and O'Neil. However, these systems perform some record management functions, but are not EDRMS. An EDRMS is an automated, electronic document and records management system that facilitates the generation, usage, and maintenance of paper or electronic documents and records for the purposes of an organisation's workflow and operations (National Archives of Australia, 2012). The study reveals that most of the respondents confused their document solutions softwares for EDRMS. For instance, PowerCloud is mainly for storage, which is one of the records management processes but the software itself is not a records management software. The same was observed with M-files, which is a filing software and does not have all the functional requirements to be termed an EDRMS.

Furthermore, the study reveals the functional requirements of an EDRMS, such as: managing records in accordance with standards; accommodating dates and date logic;

meta-tagging organisational data for backward compatibility and accessibility; extensibility; and security. An EDRMS is also used when implementing file plans, filing electronic mail messages, storing records, screening records, freezing and unfreezing records, cycling vital records and access controls. Furthermore, an EDRMS does system audits, backing up of stored records, and has data integrity and disaster recovery capabilities, applying records retention to backup copies (DOD5015). The root for this confusion could be the vendors who present these software solutions as EDRMSs, hence the impression that what was being used in the records centres were EDRMSs (NARA, 2015).

Standards such as DoD5015 and MoReq 2010 guide the design of electronic records management systems. The goal of DoD 5015 is to provide users with assurance that software enables standardised records management. The same can be said for MoReq2010, which strives to develop a thorough, yet basic and readily understood set of standards for a records system that is adaptable and suitable to diverse institutions and sectors in the economy (NARA, 2015).

The core functional requirements for an EDRMS, as stipulated by the OPM: Draft Working Document E-records Management Guidelines (Republic of Namibia, 2007, p. 83), include:

1. *Control - The ERMS must allow folders and records to be organised, so that they can be managed, found and understood;*
2. *Capture - The ERMS must formally capture records regardless of their technical characteristics;*

3. *Access and security - The ERMS must have the ability to assign rights and restrictions on the use or management of particular records in order to facilitate security;*
4. *Disposal - The ERMS must be able to control the retention and disposal of records held by the system, in accordance with disposal authorization;*
5. *Searching and retrieval - The ERMS must be able to retrieve digital records and folders by a variety of search methods, and render the results on-screen;*
6. *Metadata - The ERMS must support the use of metadata to describe digital records and to enable automated records management processes; and*
7. *Compliance - The ERMS must meet relevant local, national and international requirements for record keeping and records management.*

These core functional requirements were not found in the software the records centres used, at best some of the software adopted some functionalities but not all.

As highlighted by the respondents, records centres were not using ERMS, as supported by DoD 5015 and MoReq 2010. Some records centres were using manual systems, which allowed the control, capture, access and security; storage; retention and disposal; compliance to national and international requirements. This supports Mulauzi (2019), who posits that Africa has been reported to be lagging in implementing EDRMS.

Additionally, the findings of the study show that in some records centres, there was processing of paper and electronic documents in the absence of a records management system. This was done through scanning the paper documents to make them electronic and then using them in the firm's business operations. These findings are in line with the

Kalusopa (2016), who stipulates that institutions now use scanning services in their records centres.

Also, the study found that the software used at the records centres supposedly allowed for the preservation of digital records. The respondents highlighted that the preservation of digital records was done through backups on the server, hard drives, flash discs and computers. The results showed that some of the participants did not fully comprehend the concept of digital preservation. They were of the view that retention of records is the same as preservation of digital records. California State University (2012) propounds that "records retention" is the amount of time that records should be kept at an office or records centre before being transferred to an archive institution or otherwise disposed of, as determined by legislation. Whereas, digital preservation refers to a sequence of managed operations meant to assure continued access to all types of digital records for as long as necessary and to safeguard them from media failure, physical loss, and obsolescence (International Records Management Trust, 2012). This suggests that staff were not knowledgeable about electronic records management, supporting the view by Kalusopa and Ngulube (2012) on low electronic records readiness in the records centres in Africa.

However, to understand how these records management systems are integrated into the records centres' ICT systems, there is a need to look at the ICTs in the records centres. These are discussed in the next section.

5.3.2 ICTs in records centres

The study looked at the hardware and software applications used in record keeping. The results showed that some of the records centres were using ICTs in their records centres while others were not. Using ICTs at record centres supports infrastructure, human resources, organisational policies, and capital, which some businesses lack (Mulauzi, 2019). Several hardware and software applications were used in the records centres for record keeping. The applications differed from one centre to another. The software applications used included Microsoft SharePoint, OpenText Solutions, ITS, and SIERA.

The hardware used included computers, servers, external hard drives, flash discs, scanning machines, and shredder machines. Records centres require both hardware and software to operate efficiently (Szekely, 2017). However, due to the ever-changing technology, record centres will have different types of hardware and software to meet their business needs (International Records Management Trust, 2012). The study highlighted that the record centres upgraded hardware and software constantly to keep up with the latest versions.

The findings support the International Records Management Trust (2012), which stipulates that hardware and software at records centres are prone to become obsolete. Therefore, electronic records are reliant on constantly updating software and hardware. Hence, it can be said that institutions were ensuring digital continuity through adhering to the measures of avoiding hardware and software obsolescence.

The respondents felt that digital records were susceptible to obsolescence. The results are in line with the International Records Management Trust (2012) arguments that technological obsolescence and technological dependence can lead to digital records obsolescence.

Digital records obsolescence is confirmed by NARA (2015), which postulates that its records centres are receiving information in digital format, in an infinite number of sizes and formats that is between 15 and 20 years old and most can no longer be read. Because they are not available on paper, they are really gone. Some of the respondents highlighted that paper records at the records centre were becoming obsolete due to a lack of enough storage space; hence the paper records were being damaged to the extent that they were not usable. This suggests that the respondents did not understand the meaning of obsolescence. Obsolescence relates to electronic records becoming unusable due to hardware and software obsolescence.

The results show that the records centres were ensuring the digital continuity of their records. The respondents noted that ensuring digital continuity in record keeping was a two-fold process. First, digital continuity was ensured through policies and guidelines that prevented the obsolescence of records management software and hardware. However, the policies and guidelines were specifically for hardware and software not for records. Hence, the respondents confused digital continuity of records for the hardware and software. As and when organisations migrate to new hardware and software, the electronic records should be migrated as well (NARA, 2015).

Second, digital continuity was ensured through the migration of stored records to the updated versions in the software used at the records centres. The findings support NARA (2015), which states the importance of the migration of digital records to ensure digital continuity. They further highlight two ways to migrate digital records: These are migration at obsolescence (records migrated only as and when they are about to become inaccessible) and migration on demand (storing digital records in their original formats and only migrating them to current formats "on demand", such as when a user needs access to particular records). However, the results showed that the respondents took the word migration in the literal sense and their description of migration of records is not the one put forward by NARA (2015). For instance, RM5 indicated that the challenge being faced was that staff members were failing to migrate the records from storage, flash discs and offices onto PowerCloud. This suggests a lack of understanding of migration as moving records to the cloud does not translate to migration of records. Migration is the process of moving data from one technology to another while keeping the data's original authenticity, integrity, dependability, and usefulness and updating the underlying software or media formats to ensure the data can be accessed in the future (IRMT, 2012).

The results suggest that respondents did not understand the term digital preservation of records as evident in the responses given. Digital preservation was said to be the process of putting records in the cloud or server. Others thought it was the process of providing backup to records, making copies of records, setting up security and access controls, making sure the digital record is in the correct format, managing metadata, controlling the content of digital records, and making plans for emergencies. However, all these processes relate to general management of electronic records not preservation of digital

records. The term "digital preservation" refers to the ability to protect electronic materials so that they can last through changes in technology without being changed, losing their ability to be read, or being hard to get to for a long time (NARA, 2015).

5.3.3 Records management policies and guidelines integration in ICT systems in records centres

The study looked at the policies and guidelines used at the records centres. The results show that all the records centres used policies and guidelines in their operations. The policies and guidelines mainly focused on maintaining, monitoring and controlling the records management processes during every step in the records life cycle. As Mosweu et al. (2019) posit, records must be managed in conformity with the country's legal and regulatory framework. However, compliance manifests itself in two different ways in the management of electronic records just as it does in general record keeping: compliance with regulations that mandate the management of records and compliance with additional business regulations, which can be demonstrated by the documents that are kept (Association for Information and Image Management, 2015).

The findings depict that records centres used ISO standards as guidelines. The following ISO standards were used at the different records centres: ISO 15489: 2001; ISO 15801: 2009; ISO 16175-1: 2010; and ISO 16175-3: 2010. The standards provide guidance on records management in the records centre. The findings are supported by the OPM: Draft Working Document E-records Management Guidelines (Republic of Namibia, 2007), which stipulates that records centres should adopt ISO 15489 as a standard for EDRMS.

The study found conflicting views on whether the records centres had policies and guidelines for digital preservation. Some respondents were of the view that they did not have such policies and guidelines, while others were not sure. The others were of the view that the records centres had policies and guidelines for digital preservation. The findings are in line with the OPM: Draft Working Document E-records Management Guidelines (Republic of Namibia, 2007), which indicates that records centres perform digital preservation as one of their functions. The same view was shared by Szekely (2017), who advises that record centres should have digital preservation policies and guidelines aimed at protecting and storing electronic records. The E-Government Policy for the Public Service adds a guideline on the preservation of digital records. The policy stresses how important it is to keep the software and hardware up-to-date so that data does not get lost when it is saved.

Furthermore, the findings show that the public institutions in the study were guided by the Archives Act 12 of 1992. This is the case because as per section 3 (1) (a) of the Archives Act (Act No. 12 of 1992), “the National Archives of Namibia regulates and supervises all records management activities of all institutions in the Namibian Public Service that are created by an Act of Parliament”.

The findings reveal that the records centres' ICT systems were integrated into the policies and standards. Different techniques were used to incorporate the policies and guidelines into the ICT systems. Some of the respondents emphasised the integration by pointing to the records centre's information security policies. It is vital to keep in mind that the records centres in some organisations were housed within the IT departments, making

integration of regulations with ICT inevitable. However, the findings show that some respondents held a different perspective regarding the integration of the policies and guidelines into ICT systems. They emphasise the lack of integration between ICT systems and policy, with some being unsure of the extent of the integration. These findings support Mosweu et al. (2019) who argue that there is ambiguity regarding the integration of policies and guidelines with ICT systems. The State Records of South Australia (2015) holds the same opinion.

As demonstrated by the findings, integrity emerged as the primary motivating factor for integrating policies and guidelines on cyber security. Maintaining integrity regarding cyber security protects not just data but also operating systems, apps, and hardware from being modified by unauthorised parties (National Archives of Namibia, 2009).

5.4 Opportunities and Challenges of the records centres in the digital environment

The results show different views regarding the opportunities the records centres had and the challenges faced in the digital environment, and these are discussed in the next sections.

5.4.1 Opportunities of records centres in the digital environment

The efficient management of information is possible with the use of information technologies, which also enable the rapid retrieval of records and information via the electronic search services made available by records centres. As a result, EDRMS will make it easier to retrieve electronic information, thus increasing both the speed at which the service is provided and the quality of the service (International Records Management Trust, 2009).

The findings of the study revealed an opportunity for increased record accessibility (improved timeframe for looking for hard copy documents). In all likelihood, if a person is aware of the location of the records, regardless of whether they are kept in paper or digital format, they will be able to obtain them timeously, since the majority of records centres have retrieval methods in place (Asproth, 2015). The use of EDRMS makes this outcome conceivable. The results show that digitalisation improves search and retrieval, without which it takes a lot of time. Technology simplifies and speeds up that process, enabling business-wide collaboration and document sharing. Thus, electronic records allow for extensive sharing, access, and usage by several people at the same time, even if those individuals are physically located in different places. In situations where resources are scarce or distances are substantial, the ability to provide access to information regardless of time or location can improve the service provided by records centres, encourage information sharing, and significantly improve operations. Asproth (2015, p. 30) posits that "customers can access their records on the records centre's system from the comfort of their own office rather than having to physically travel to the records centre."

The results also show that the use of digital technologies in records centres may have economic benefits, the main one being saving costs. A paper-based system requires constant increase in physical work space and storage. Several employees may be required to complete typical procedural tasks like filing paperwork and obtaining boxes at the records centre in response to customer requests (International Records Management Trust, 2009). By using new technologies, businesses can save money on storage and office space. This is because computer systems can store a lot of data and records in a

small amount of physical space, which is provided by records centres. Information technologies like database management systems, electronic mail systems and web and multimedia software applications can store a lot more information than paper records.

The use of the cloud has resulted in much cheaper storage choices. The results show an opportunity in cloud computing and storage. The respondents highlighted that software such as PowerCloud and M-Files made it possible to store records in the cloud and improve storage. Min (2012) postulates that cloud computing is very important because it gives you flexibility, the ability to recover lost data, easy access, less or no maintenance, and a higher level of security. The digital environment has presented opportunities in storage through the use of technologies (NARA, 2015).

5.4.2 Challenges of records centres in the digital environment

A common challenge highlighted by the respondents was transitioning into the digital era. Transitioning in this context is the movement to new hardware and software to address digital obsolescence. Transitioning challenges include human resource needs, equipment and tools needs, and financial constraints. The digital environment requires institutions to transition whenever new technologies are available. However, if the records centre fails to transition to the new technologies, then its technology becomes obsolete. Hence, as innovations in computer technology emerge, old systems become obsolete and are no longer supported by the computer industry (NARA, 2015). This challenge is worsened by the fact that in the digital era, electronic records are highly dependent on technology hence they are created and managed by computer hardware and software (Keakopa, 2012).

Just like the software and hardware, which need to be changed as technology changes, there is a need for human resource transitioning in the digital environment. The challenge arises when records centres change from one technology to another. Therefore, there is a need to train the staff on the use of new technologies or finding the right personnel to operate the new technologies (NARA, 2015).

Additionally, both the technology and human transitions require financial support. However, because most records centres have limited funding, this presents a significant difficulty for the records centre (Iwhiwhu, 2011). Most records centres prioritise the preliminary cost estimates for hardware, software, licensing, supplies, and staff time to build and install the technology when deciding whether to purchase computers or implement an electronic records management system. However, recurring and unforeseen expenses must also be taken into account, such as employee training, system maintenance fees, upgrades, and repairs. The intangible expenses associated with relocating to a new records centre due to the need to transition to the digital era must also be taken into account (Iwhiwhu, 2011). The same is observed in the digitalisation policy of the National Archives of Namibia, which states that, “Although digitisation is an excellent means for facilitating access to archival documents, it is costly in terms of digitisation equipment, storage and backup equipment, and staff cost” (National Archives of Namibia, 2009, p. 1).

The findings of the study indicate that digital preservation is a difficult task in the current digital environment. Australia's National Archives (2015) supports this idea. According to the National Archives of Australia (2015), the preservation of digital records is complicated due to the constant changes that occur in both the hardware and software of

these records. Because of this, systems for retaining electronic records need to be able to conceive and provide mechanisms for preserving the records throughout the course of time. This requirement applies to both the hardware and software levels of the systems. The reference model for OAIS is a viable framework for digital preservation, but it requires knowledgeable staff and resources, which was found lacking in the records centres. The OAIS model lists important requirements for digital preservation, which could help with long-term accessibility of electronic records (National Archives of Australia, 2015). The OAIS model is guided by the records continuum model of managing electronic records, which emphasises digital preservation and digital continuity unlike the records life cycle.

Additionally, the expectation that staff can manage electronic records on their personal devices was a challenge as the study found. The failure by staff to do it was attributed to a lack of knowledge of the new technologies and the complexities of managing digital records, supporting similar observations by Smith (2012).

Also, a lack of adequate equipment to meet the digitalisation of records centres, such as server storage, was identified to be another challenge. Digitalisation of records centres involves using computer technologies to produce, communicate, and maintain digital records (National Archives of Australia, 2015). Hence, equipment is needed to ensure production, communication, and maintenance of digital records. However, as indicated in the OPM: Draft Working Document E-records Management Guidelines (Republic of Namibia, 2007), EDRMSs are expensive and their adoption require a substantial amount of money and training.

5.5 The applicability of the life cycle and continuum theories in the management of electronic records in records centres

This section looks at how the research results depicted the application of the life cycle and continuum theories in the management of electronic records in records centres. The study shows that the different records centres utilised the records life cycle in their management of paper records. For instance, one of the respondents indicated that the services offered by their records centre included assisting clients throughout the life cycle of the records. “So, from the creation stage, we can offer on-site parking services for setting up of records centres for your paper copies and then we can assist with next process, which would obviously be archiving and your destruction, in short” (RM5). The application of the record life cycle can be deduced from this fact because there is a linear process in the records management process. This is also seen in paper records and some of the records centres are using them in the digital environment. Hence, the records life cycle is applicable in this sense. However, other records centres used electronic records and the records life cycle theory becomes inapplicable.

According to the findings, the record continuum theory is the one that is most suited for the role of records centres play in a digital environment. Digital continuity and the need to preserve electronic records through upgrades hardware and software require the application of the records continuum theory for the management of electronic records. The storage of electronic records in the cloud, guided by standards such as the OAIS reference model, means the records life cycle theory is inadequate for the management of electronic records by records centres. A new function for records centres in the electronic age is digital preservation, which, as highlighted the electronic records management

standards and guidelines, is key to ensuring that clients' electronic records remain accessible and usable. To sum up, the two theories are both applicable for the paper records still being managed by records centres, and the records continuum theory for the electronic records. This is seen from the applicability of the principles of the record life cycle, which stipulate that the relationship between creation, use, and disposition of records is a linear process meant for the management of paper records and that records only live once in each stage of the life cycle. Also seen is the applicability of the principles of continuum theory, which stipulate that recordkeeping is a continuous process that involves the management of paper and electronic records and integrates records and archives management practises.

5.6 Chapter Summary

This chapter interpreted the research data and discussed the findings of the study. The discussion was based on the four research objectives. The first objective looked at determining the services offered by records centres in Namibia in the digital environment. The study found that services offered by the records centres were document storage, capture, shredding, archival record preservation, manual filing, record-keeping training services, scanning, and EDRMS.

The second objective looked at finding out whether records management systems, policies, and guidelines were integrated into the ICT systems of the records centres. The results showed that the records centres do not use records management systems, and some use record-keeping software, which they term EDRMS.

The third objective looked at establishing opportunities and challenges, if any, faced by the records centres in the digital environment. These opportunities were efficient management of information, increased record accessibility, cloud computing, storage, economic benefits, and improved record management. The challenges faced by records centres in the digital environment included transitioning into the digital era. Transitioning in terms of human resource needs, equipment and tool needs, and financial constraints. The study found low electronic records-readiness among the records centres.

The fourth objective was to assess the applicability of the life cycle and continuum theories in the management of electronic records in records centres. The findings show that both theories were applicable to the records centres. The next chapter comprises summary of the findings, conclusions and recommendations.

CHAPTER 6

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter provides a summary of the findings, conclusions, and recommendations that were derived from the study. McLeod (2018) states that this section is where the researcher provides a summary of the study's findings and makes recommendations that should be logical extensions of the research. The chapter further covers the implications of the study and areas for further research.

6.2 Summary of Findings

The summary of findings is presented in line with the main themes of the study, which are the role of records centres, records management systems, policies and guidelines, and opportunities and challenges.

6.2.1 Services offered by the records centres in Namibia in the digital environment

The findings of the study show that records centres offered their services to internal and external clients. The traditional services offered by the records centres before the digital era were records creation, records inventory, filing plans, records storage, records retention and disposal, shredding, consultancy, and record-keeping training services. Some of these services had not changed in the digital era and some new services were highlighted such as scanning, hosting of electronic records on the cloud and the use of EDRMS. The results show that IT personnel assisted staff with access to records at the

records centres and supported other business functions through the provision of IT services.

6.2.2 Records management systems

The findings show that some of the records centres claimed that they used records management systems and others did not use records management systems. The records management systems supposedly used were CRM from Siyanda software solutions, PowerCloud, SharePoint, OpenText Solutions, M-files, Hubshare, Kofax, and O'Neil. However, these systems perform some record management functions, but are not EDRMS. The results show a misconception over electronic records management system by personnel at the records centres.

The study looked at the hardware and software applications used in record keeping. The results show that some of the records centres were and some were not utilising ICT in their records centres. The software applications used included Microsoft SharePoint; OpenText Solutions, ITS, and SIERA. The hardware used included ICT equipment to run the software and servers. The results highlight that the records centres upgraded hardware and software constantly to keep up with the latest versions. The results show that the records centres were ensuring digital continuity. However, there was confusion over the interpretation of digital continuity as records centres confused digital continuity of hardware and software with digital continuity of records. One strategy highlighted in the results of digital continuity was the migration of records. There was also a misinterpretation of the term 'digital continuity', as some respondents took its meaning in a literal sense.

Also, the study found that the software used at the records centres supposedly allowed for the preservation of digital records. The respondents highlighted that preservation of digital records was done using backups on the server, hard drives, flash discs, and computers. Therefore, the results show that some of the participants did not fully comprehend the concept of digital preservation. Putting records on backup on the server, on hard drives, flash drives and computers does not translate to records preservation.

6.2.3 Policies and guidelines

According to the findings of the study, all records centres followed operational policies and standards. The policies and standards primarily emphasised the maintenance, monitoring, and control of the records management operations across the whole records lifecycle. The findings depict that records centres used various ISO standards as guidelines. Institutions used the Archives Act 12 of 1992 as their guide. The findings show different views on the integration of ICT systems with policies and guidelines at records centres. Some of the records centres were part of the IT departments; hence, integration was an easier task, whereas some of the respondents did not have sufficient information to comment on the integration of ICT and policies and guidelines at records centres.

6.2.4 Opportunities and challenges

The study found several opportunities available to records centres in the digital environment. These opportunities were efficient management of information, increased record accessibility, cloud computing, storage, economic benefits and improved records management. The challenges faced by records centres in the digital environment included

transitioning into the digital era. Transitioning in this context is the meeting of the human resources, equipment and tools, and financial needs. The digital environment requires institutions to transition whenever new technologies are available. Another challenge identified in the study was the process of digital preservation, which was considered a daunting task. Also, a lack of adequate equipment to meet the digitalisation of records centres, such as server storage, was identified as another challenge.

6.3 Conclusions

The conclusions of the study are based on the research objectives, which are: to determine the services offered by the records centres in Namibia in the digital environment; and to find out whether records management systems, policies and guidelines are integrated into the ICT systems of the records centres. The other objectives were to establish opportunities and challenges, if any, faced by the records centres in the digital environment; and to assess the applicability of the life cycle and continuum theories in the management of electronic records in records centres.

6.3.1 To determine the services offered by the records centres in Namibia in the digital environment

The records centres offered traditional services (before digitalisation) such as records creation, records inventory, filing plans, records storage, records retention and disposal, shredding, consultancy and record-keeping training services. In the digital era, some of these services had not changed and some records centres offered services such as scanning, hosting electronic records on the cloud and the use of EDRMSs together with

the traditional services. Therefore, the study concludes that there has been minimal change in the services offered by records centres in Namibia in the digital environment.

6.3.2 To find out if ICT systems of records centre integrated records management policies and guidelines

The results show that some of the records centres did not use any records management systems, while others claimed to use them. The results show a misconception of the term "records management system" by personnel at the record centres, as software solutions which aid in record keeping were regarded to be EDRMS.

Therefore, the study concludes that there was a lack of understanding regarding the concepts of EDRMS, digital continuity, and digital preservation among the records centres in Namibia. The results show that all records centres followed operational policies and guidelines in their records management. The findings show different views on the integration of ICT systems into policies and guidelines at records centres. Therefore, having failed to access the policies and guidelines, the study could not conclusively determine whether policies and guidelines were not fully integrated into ICT systems of the records centres.

6.3.3 To establish opportunities and challenges, if any, faced by the records centres in the digital environment

The study concludes that the opportunities available to records centres in the digital environment were efficient management of information, increased record accessibility, cloud computing services such as hardware storage and software, economic benefits, and

improved records management. Furthermore, the challenges faced by records centres in the digital environment were transitioning in terms of human resource, equipment and tool needs; financial constraints; digital preservation; and a lack of adequate equipment to meet the digitalisation of records centres.

6.3.4 To assess the applicability of the life cycle and continuum theories in the management of electronic records in records centres

The study shows how the records life cycle theory applies in records centres where they are still managing paper records. With the move towards managing electronic records and the adoption of EDRMSs, the records centres need to apply the records continuum theory in the management of electronic records, because electronic records do not die as the life cycle theory suggests, but digital records management should be viewed as a continuous process. The study's conclusion is that the records life cycle theory can be used to explain how records centres still manage paper records and the records continuum theory can be used to explain how records centres manage electronic records.

6.4 Recommendations

Given the research findings, the study makes the following recommendations:

1. There was confusion regarding records management terms such as EDRMS, digital continuity, and digital preservation. Therefore, the researcher recommends the need for effective training or education regarding what entails EDRMS, digital continuity and digital preservation; attending seminars on electronic records management; and the need for records centres to hire key staff knowledgeable in electronic records management.

2. Records centres staff need training workshops so that they can get a better understanding of electronic records and their management. Workshops for training, on the other hand, can be expensive. Depending on the records centre's budget, training should be given on-site or elsewhere. The records centres should create records management positions and hire trained personnel.
3. Before purchasing the record-keeping software, the records centres should check whether it is an EDRMS to avoid buying wrong software solutions. The records centres can achieve this through using consultancies or experts in the field. These two options might be costly for the records centres. However, the benefits outweigh the costs. Another cheaper option could be to ask other records centres which EDRMS they are using, but the problem would be if they are also using software that is not an EDRMS or that they might not be at liberty to disclose such information.
4. Some of the record centres were not using electronic record management systems. The researcher recommends that key stakeholders (records centres, including the National Archives of Namibia) promote the use of electronic records management systems in the digital environment, as these systems come with several benefits, including improved records management practices. The need for records management systems should be considered a key necessity now because many institutions are incorporating digital records and EDRMS to improve business processes.
5. The study could not conclusively determine if policies and guidelines were fully integrated into ICT systems of the records centres. Therefore, the researcher recommends that the National Archives of Namibia should conduct a survey. This

will enable the policies and guidelines to integrate into ICT systems of the records centres fully. Also, the records centres should ensure that the IT and the records management departments are on the same page when creating policies and guidelines for records management.

6. The findings show that the challenges faced by records centres in the digital environment were transitioning in terms of human and financial resource needs, digital preservation, and a lack of adequate equipment to meet the digitalisation of records centres. The researcher recommends that records centres should make provision in their budgets for human resources, equipment and tools needs.
7. The study show that records centres had not fully embraced one of the key roles they need to play in a digital environment, that is, continuity of electronic records through digital preservation. The researcher recommends that the records centres establish electronic archival repositories based on best practices as informed by standards such as the OAIS Reference Model, which incorporates digital preservation.

6.5 Implications of the Study

The research findings have theoretical and practical implications. These are discussed below.

6.5.1 Theoretical implications

The study was conducted to assess the role of records centres in the digital environment, with a multi-case study of records centres in Windhoek. The conceptual framework which guided the study was drawn from theories the records life cycle and the records continuum

theories as well as several standards such as ISO15489 of 2016. The study has shown that this is a versatile framework which can be applied by any organisation to review its records management in the digital environment, as well as adaption by similar studies.

Therefore, the study contributed to knowledge by providing insight on the application of the two theories and especially the records continuum theory application in addressing digital obsolescence of records stored by records centres.

6.5.2 Practical implications

There are several practical implications that is, implication of the study to policymakers and management at records centres. The study suggests that management at records centres should use electronic records management systems to improve records management practices. Also, policy makers should relate the implications included in the research (use of records management systems) as key to putting in place policies that encourage the use of EDRMSs and policies that encourage effective training and education on issues such as EDRMSs, digital preservation and digital continuity. Through such education will records centres make the right decisions for the effective management of electronic records under their care.

6.6 Areas of Further Research

Further research should be conducted on records management systems in the digital environment, with a particular focus on the nature and reasons for their adoption. As some of the records centres indicated the use of cloud computing, an area for further research is the adoption of cloud computing by records centres. Additionally, as this study focused

on the records centres i. e. the service providers, research is needed to establish whether the services offered by the record centres meet the needs of their clientele.

6.7 Final Conclusion

The use of technology in records centres, has economic as well enhanced service delivery benefits. With the increase in the use of ICTs in business and the resultant creation of electronic records, the role of records centres is changing. Although the role of records centres as revealed by this study has not changed much in the digital environment, there is a move towards embracing technology. However, there is a lot that still needs to be done to make the records centres electronic records ready to fully operate in the digital environment.

REFERENCES

Abbott, B. (2012). The state of electronic records in South Africa: An overview. *ESARBICA Journal*, 20, 62-70.

African Union. (2022). Namibia review report: Key highlights. *African Peer Review Mechanism*. https://www.aprm-au.org/wp-content/uploads/2022/02/NamibiaKey-Highlights-design.pdf

Akor, P.U., & Udensi, J. (2014). An assessment of records management system in the establishment of two Universities in Nigeria Mediterranean. *Journal of Social Science*, 13(12), 12-20. https://doi10.5901/mjss.2013v4n12p87.

Akporhonor, B.A. (2020). Innovative tools for records management in electronic era. *Library Philosophy and Practice (e-journal)*, 1-17.

Alan, R. (2016). Digital preservations of electronic records. *Journal of Information Technology*, 1-5.

Alvin, S. (2016). The comparative method: Moving beyond qualitative and quantitative strategies. *Academy of Management Review, 3*(2), 24-35.

Ambira, C. (2016). A Framework for management of electronic records in support. *PhD Thesis; Pretoria: University of South Africa*.

An, X., Sun, S., & Zhang, W. (2011). Managing electronic records in e-government: Current trends and future directions internationally. *International Conference on Management and Service Science*, Wuhan, China, 2011, pp. 1-5, doi: 10.1109/ICMSS.2011.5999074.

ARMA (2013). *Glossary of Records and Information Management Terms, 5th Ed*. ARMA.

Asiamah, N., Mensah, H.K., & Oteng-Abayie, E.F. (2017). General, target, and accessible population: Demystifying the concepts for effective sampling. *The Qualitative Report, 22*(6), 1607-1621.

Asogwa, B.E. 2012. The challenge of managing electronic records in developing countries: implications for records managers in Sub-Saharan Africa. *Records Management Journal*, 22(3):198-211.

Asproth, V. (2015). Information technology challenges for long-term preservation of electronic information. *International Journal of Public Information Systems*, 1, 27-37.

Association of Information and Image Management (AIIM). 2015. *Electronic records management*. www.aiim.org/resourcecentres

Babbie, E., & Mouton, J. (2010). *The practice of social research,* (10th ed.). Cape Town: Oxford University Press Southern Africa.

Bearman D. (1994). "Managing electronic mail." *Archives & Manuscripts*, 22(1), 28-50.

Bolcer, J. (2014). Using the Records Centres. *University of Washington academic paper*, 1-31.

Bowen, G.A. (2019). Naturalistic inquiry and the saturation concept: A research note. *Qualitative Research*, 8(1), 137-152.

Bryman, A. (2012). *Social research methods*. New York: Oxford University Press.

Buckland, M.K. (2017). Library technology in the next twenty years. *Library Hi Tech*, 35(1):1- 12.

California State University. (2012). *Concept mapping for a literature review*. http://www.csun.edu/~krowlands/Content/Writing_Mentor/Literature%20Reviews/Concept%20Mapping%20for%20a%20Literature%20Review.pdf

Chachage, B. (2012). Management of business records in Tanzania: An exploratory case study of selected companies. *South African Journal of Information Management*, 8(3).

Chaterera, F. (2016). "Managing public records in Zimbabwe: the road to good governance, accountability, transparency and effective service delivery." *Journal of the South African Society of Archivists*, 49: 116-136.

Chigariro, D. and Khumalo, N.B. (2018). "Electronic records management research in ESARBICA: a bibliometric study." *Records Management Journal*, 28(2): 159-174. https://doi.org/10.1108/RMJ-12-2016-0045.

Codafile. (2015). *What is EDRM?* http:// www.codafilesoftware.com

Cohen, L., Manion, L., & Morrison, K. (2015). *Research methods in education* (7th ed.). Routledge.

Communication Regulatory Authority of Namibia. (2022). *CRAN Integrated Annual Report 2022*. Windhoek: Communications Regulatory Authority of Namibia.

Consultative Committee for Space Data Systems. (2002). *Reference Model for an Open Archival Information System (OAIS)*. Washington, DC: Consultative Committee for Space Data Systems. https://siarchives.si.edu/sites/default/files/pdfs/650x0b1.PDF

Cook, T. (1997). Electronic Records, Paper Minds: The Revolution in Information Management and Archives in the Post-Custodial and Post-Modernist Era. *Archives & Social Studies: A Journal of Interdisciplinary Research*, 1.

Corbin, J., & Strauss, A. (2018). *Basics of qualitative research: Techniques and procedures for developing grounded theory.* New York, Thousand Oaks: Sage.

Creswell, J. (2016). *Research in Education: Design, Conduct and Evaluation of Quantitative and Qualitative Research*. Ion: Athens.

Creswell, J. W. (2012). A qualitative, quantitative, and mixed-method approaches. . *Thousand Oaks: Sage publications.*

Creswell, J., & Clark, P. (2017). *Designing and conducting mixed-method research.* (2nd ed.). New York, Thousand Oaks: Sage.

Creswell. J. (2018). *Research design: A qualitative, quantitative, and mixed-method approaches.* New York, Thousand Oaks: Sage, 3(4), 24-68.

Dar, B.A., & Ahmad, S (2017). *Recent trends in digital archiving and preservation: a global perspective.* Raleigh: Laxmi Book Publications.

Devellis, R. (2012). *Scale development theory and applications*. New York, Thousand Oaks: Sage.

Elisha, M. (2014). The role of information communication technology in records creation and distribution in Uganda communications commission. *Makerere University academic paper*.

Enakrire, R.T. (2020). Impact of ICTs in the practice of records management in ministry of health, Nigeria. *African Journal of Information Management*, 1-18.

Enslin, C. (2014). Limitations, delimitations and recommendations. In F. du-PlooyCilliers, C. Davis, & R. Bezuidenhout, *Research matters* (pp. 274-281). Cape Town: Juta and Company.

Erway, R. (2012). *The Evolving Scholarly Record*. Dublin, Ohio: OCLC Research.

Flynn, S.J.A. (2012). The Records Continuum Model in Context and its Implications for Archival Practice. *Journal of the Society of Archivists*, 22(1), 79-93.

Force, D.C. (2013). *Pursuing the 'Usual and Ordinary Course of Business': An Exploratory Study of the Role of Recordkeeping Standards in the Use of Records as Evidence in Canada*. Doctoral dissertation, University of British Columbia, Vancouver, BC.

Fox, A. (2018). *Qualitative research for education: An introduction to theory and methods* (5th ed.). Boston: Allyn and Bacon.

Frost, R. (2011). New ISO Management System Standards for Records Facilitate Transparency in Corporate Governance. *International Standards Organization*, Geneva.

Garcia, M. (2017). What is a record life cycle? *Journal of Archival Science*, 1-6.

Garland, M. (2019). Electronic records management 101. Retrieved from //blog.netwrix.com/2019/10/10/electronic-records-management-101/

Goodman, E.C. (2013). Records management as an information management discipline: A case study from SmithKline Beecham Pharmaceuticals. *International Journal of Information Management,* 14(2):134-143.

Government of the Republic of Namibia (2004). Namibia Vision 2030, Policy Framework for Long-Term National Development. Windhoek: Office of the President.

Grant, C. (2013). Value-Added Librarianship: Creating it in our services and in the infrastructure upon which we rely. *Public Library Quarterly*, 32(1), 21-32.

Gustafsson, J. (2017). Single case studies vs multiple case studies: A comparative study. *The Academy of Management Journal,* 1, 1-15.

Haris, A. R. (2016). Information issues in digital era. *Journal of Information Management*, 1-15.

Heeks, R. (2003). Most e-government for development project fail: The effect of trust and risk perception on citizens' intention to adopt and use e-government services. *Journal of Service Science and Management*, 8(3), 13 -27.

International Records Management Trust (2009). *Training in electronic records management:*

Understanding the context of electronic records management (Module 1). London:

International Records Management Trust. Retrieved from http://www.irmt.org.

International Records Management Trust (2012). *The e-records readiness tool*. London: International Records Management Trust. Retrieve from www.irmt.org.

International Standard Organization (2001). *ISO 15489-1: 2001 Information and documentation records management (Part 1) general*. Geneva: ISO, section 3.16.

International Standard Organization (2001). *ISO 15489-1: 2016 Information and documentation records management (Part 1) general*. Geneva: ISO, section 180.

InterPAERS 3 Projects: Team Canada, (2012). *Digital records management/preservation*. Educational Modules. http://www.interpares.org/ip3/ip3_general_studies.cfm

Isaacs, C. (2011). ICT technology development in Namibia business sector. *Computers & Business, 51*(2), 187-199.

Iwhiwhu, B. E. (2011). *Electronic records management in Africa: Problems and prospects*. Retrieved from https://www.igi-global.com/chapter/electronic-records-management-africa/45385.

Kalusopa, T. (2016). Extent of the integration of information communication and technology (ICT) systems in the management of records in organisations and storage centres in Botswana. *Journal of the South African Society of Archivists*, 49, 102-149.

Kalusopa, T., & Ngulube, P. (2012). "Record management practices in labour organisations in Botswana",. *South African Journal of Information Management, 14*(1), 1-15.

Katuu, S. & Ngoepe, M. (2017). Education and training of archives and records management professionals in Africa. *SCEaR Newsletter*, 1:22-27.

Kaupa, S. & Chisa, K. (2020). Adoption of the electronic document and records management system within the public sector in Namibia: Exploring the challenges and opportunities. *International Journal of Operations Management*, 1 (1), 7-18. DOI: 10.18775/ijom.2757-0509.2020.11.4001.

Keakopa, M. (2012). A critical review of the literature of electronic records management in the ESARBICA region. *ESARBICA Journal*, 28,78-104.

Keakopa, S.M. (2018). *Management of Public Sector Records and Archives in Botswana*. In book: Digital Curation (pp.167-188). DOI:10.4018/978-1-5225-6921-3.ch008.

Kombo, T., & Tromp, J. (2016). *Qualitative research and evaluation methods* (3 ed.). New York, Thousand Oaks: Sage.

Kothari, J. (2017). Research design for qualitative. *Journal of Social Research*, 20-37.

Kumar, R. (2014). *Research Methodology: A Step-by-Step Guide for Beginners, 4th Ed*. London: SAGE Publications.

Kvale, S. (2016). *Interviews: An introduction to qualitative research interviewing*. Thousand Oaks: Sage.

Lappin, J. (2013). *The state of records management in 2013: the challenges*. http:/thinkingrecords.co.ke

Leavy, P. (2017). *Research design: Quantitative, qualitative, mixed methods, arts-based, and community-based participatory research approaches*. New York: Guilford Publications.

Lemieux, V.L., Hofman, D., Batista, D., & Joo, A. (2019).*Blockchain technology and recordkeeping*. ARAMA International Educational Foundation. http://armaedfoundation.org/wp-content/uploads/2019/06/AIEF-Research-Paper-Blockchain-Technology-Recordkeeping.

Lin, C., Su, W.B., Meng, K., Liu, Q., & Liu, W.D. (2013). Cloud Computing Security: Architecture, Mechanism and Modeling. *Chinese Journal of Computers*, 36, 1765-1784.

Lincoln, Y.S., & Guba, E.G. (2020). *Naturalistic Inquiry*. Beverly Hills, CA: Sage.

Litt, H. (2017). Managing digital records in a global environment. *The Electronic Library*. doi:10.1108/EL-04-2015-0064.

Little, D., & Bose, A. (2004) *Botswana's National ICT Policy: Assessment of e-readiness and e-potential at the local community level*. Gaborone: DIT.

Lowry, J., & Thurston, A. (2015). Aligning records management with ICT/ e-government and freedom of information in East Africa. *International Records Management Trust*, 1-9.

Magama, B. (2017). Strategies for preservation of digital records in Masvingo Province of Zimbabwe. *Thesis: University of South Africa*.

Masenya, T.M. (2020). Application of modern technologies in the management of records in public libraries. *SASA Journal*, 53: 65-79.

Matlala, M.E. & Maphoto, A.R. (2020). Application of the records life-cycle and records continuum models in organizations in the 21st century. *ESARBICA Journal: Journal of the Eastern and Southern Africa Regional Branch of the International Council on Archives*, 39(1): 79-98.

McKemmish, S. (2016). Recordkeeping in the continuum: an Australian tradition. In Gilliland, A.J., McKemmish, S. & Lau, A.J. (eds). *Research in the Archival Multiverse, red. Clayton: Monash University Publishing*, 122-160.

McLeod, S. (2018). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (6th ed.). London: Sage.

Merriam, S. (2019). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Jossey-Bass.

Min, J. (2012). A survey on security issues in service delivery models of cloud computing. *Journal of Network and Computer Applications*, 34(1), 1–11.

Mnjama, N. & Wamukoya, J. (2013). E-government and records management: an assessment tool for electronic records readiness in government. *The Electronic Library*, 25(3):274-284.

Mnjama, N. (2014). *The records management paradigm shift: Problems and prospects in East and Southern Africa*. 10.1533/9781780634357.1.49.

MoReq (2010). Modular requirements for records systems: core services & plug-in modules (version 1.1). *Publications Office*, 2011, https://data.europa.eu/doi/10.2792/2045.

Mosweu, O., Bwalya, K.J., & Mutshewa, A. (2016).Examining factors affecting the adoption and usage of Document Workflow Management System (DWMS) using the UTAUT model. *Records Management Journal*, 26(1), 38-67.

Mosweu, T., Luthuli, L., & Mosweu, O. (2019). Implications of cloud-computing services in records management in Africa: Achilles heels of the digital era? *South African Journal of Information Management*, 21(1), 1-12.

Mugenda, O.M., & Mugenda, A.G. (2003. *Research Methods, Quantitative and Qualitative Approaches*. Nairobi: African Centre for Technology Studies (ACTS).

Mugo, G.P. (2016). Partnership examinations versus Kenya Certificate of Secondary Education: One goal, different perspectives. *Journal of Educational Research and Studies*, 4(2): 9-17.

Mulauzi, F. (2019). Application of information and communication technologies (ICTs) in records management. *Library and Information Association of Zambia Journal (LIAZJ), 5*(1&2), 41-54.

Mulauzi, F., & Ngulube, D. (2015). Records management practices in the Zambian records centres and Archives. *ESARBICA Journal*, 34, 35-46.

Mulauzi, F., Munsanje-Mwale, V., Mtanga, N., & Hamooya, C. (2014). The role of records and archives in resolving chiefdom wrangles:Case study of the National Archives of Zambia. *Case study of the National Archives of Zambia Proceedings of the 21st Standing Conference for Eastern, Central and Southern African Library and Information Association (SCECSAL)*, (127–135.). Sunbird Capital Hotel, Lilongwe.

Myers, M. D., & Newman, M. (2017). The qualitative interview in IS research: Examining the craft. *Information and Organization*, 17(2), 2-26.

Namibia Internet Governance Forum (NamIGF). (2017). *Namibia Internet Governance Forum 2017 report*. Namibia: NamIGF. https://actionnamibia.org/wp-content/uploads/2018/11/Nam-IGF-Report-2017.pdf

Namibia Internet Governance Forum (NamIGF). (2021). *only half of Namibia's population has access to the internet. Namibia Economist*. https://economist.com.na/66397/technology/only-half-of-namibiaspopulation-has-access-to-the-internet/

National Archives and Records Administration (2015). *Open source tools for records management*. Retrieved from https://www.archives.gov/files/records-mgmt/prmd/open-source-tools-for-records-mgmt-report.pdf.

National Archives of Australia. (2012). *Implementing an EDRMS- key considerations*. Canberra: National Archives of Australia.

National Archives of Australia. (2015). *Digital records*. Canberra: National Archives of Australia.

National Archives of Namibia (2009). Digitalisation Policy. Windhoek, Namibia: Author.

National Archives of Namibia (2017). *Circular 5: Record centre requirements*. Windhoek, Namibia: Author.

National Planning Commission. (2017). *5th National Development Plan (NDP5)*. Namibia: National Planning Commission.

Navin, G. (2012). *Implementing EDRMS that supports improved business processes*. Podcast and accompanying slides of presentation delivered at State Records' Records Managers' Forum.

Ncaagae-Mbe, K. (2021). Managing Records in the Covid-19 Era at the Botswana Communications Regulatory Authority. *Mousaion: South African Journal of Information Studies*, 39 (4),12-25. doi: 10.25159/2663-659X/9976.

Negumbo, S.I. (2018).*E-Government for good governance: Barriers to the implementation of digital workflows in the Namibian Public Service*. Master dissertation, Stellenbosch University, South Africa.

Nengomasha, C., & Chikomba, A. (2018). Status of EDRMS implementation in the public sector in Namibia and Zimbabwe. *Records Management Journal, 28*(3), 252-264.

Nengomasha, C., & Nyanga, E. (2012). Managing semi current records: A case for records. *Journal for Studies in Humanities and Social Sciences*, 1(2), 231-245.

Nengomasha, C.T. (2009). A study of electronic records management in the Namibian Public Service in the context of e-government. Doctoral dissertation, University of Namibia, Windhoek, Namibia.

New South Wales Government. (2012). FAQs about EDRMS. www.records.nsw.gov.au

Nghihalwa, E., & Shava, B. F. (2018). *An Assessment of cloud computing readiness in the Namibian government's information technology departments*. Windhoek: Namibia University of Science and Technology (NUST). https://ieeexplore.ieee.org/document/8379074.

Ngoepe, M. (2018). Managing records in networked environments-South Africa. InterPares Trust Project Research Report. DOI: 10.13140/RG.2.2.30856.08961.

Ngoepe, M.S. (2017). Electronic records for local governments. *Records Management Services*, 1-6.

Ngoepe, M., & Keakop, S.M. (2011). An assessment of the state of national archival and records systems in the ESARBICA region: A South African Botswana comparison. *Records Management Journal*, 21(2), 146-160.

Nyampong, S. A. (2015). Electronic records management in national development: A case study in Ghana immigration service. *European Journal of Business and Management*, 7(10), 120-144.

OCLC Research. (2015). *OCLC Research: 2014 Highlights*. Dublin, Ohio: OCLC Research.

Oliver, G. (2014). International records management standards: the challenges of achieving consensus. Records Management Journal, 24(1), 3.

Oweru, P.J., & Mnjama, N. (2014). Archival preservation practices at the records and archives management department in Tanzania. *Archival Preservation Practices in Tanzania*, 136—165.

Penn, I.A., Gail, P., Morddel, A., & Smith, K. (2012). *Records management handbook*. Aldershot: Gower Publishing.

Penn, I.A., Pennix, G., & Coulson, J. (2012). *Records management handbook*, 2nd Ed. London: Routledge.

Polit,D.F., & Beck.,U. (2017). *Social science research: Generating and assessing evidence for social practice.* (10 ed.). Philadelphia: Sage.

Porogo, K.M., & Kalusopa, T. (2021). A strategic framework for digital preservation in the context of e-government in Botswana public service. *SASA Journal*, 54: 83-101.

Queensland State Archives. (2012). *Guideline for the planning of an electronic document and records management system (EDRMS).* Runcorn: Queensland State Archives.

Rashid, A., & Chaturvedi, A. (2019). Cloud computing characteristics and services: A brief review. *International Journal of Computer Science and Engineering*, 7(2), 421-426. doi: 10.26438/ijcse/v7i2.421426.

Republic of Namibia. (2005). *The e-governance policy for the public service of Namibia*. Windhoek: Office of the Prime Minister.

Republic of Namibia. (2007). *Draft working document e-records management guidelines.* Windhoek: Office of the Prime Minister.

Republic of Namibia. (2018). *Electronic document and records management system (EDRMS) upgrading proposal*. Windhoek: Office of the Prime Minister.

Rice, E. (2022). The relationships between data, information, and records. Texas Record. https://www.tsl.texas.gov/slrm/blog/2022/05/the-relationshipsbetween-data-information-and-records/

Ridley, D. (2012). *The Literature Review: A Step-by-Step Guide for Students, 2nd Ed*. Los Angeles: SAGE Publications.

Ridwan, S. M. (2015). Application of information and communication technology in management of information in local government areas of Nigeria. *International Journal of Advancements in Research & Technology*, 4(1), 47-54.

Robek, M.F., Brown, G.F., & Stephens, D.O. (2012). *Instructor's manual for information and records management: document-based information systems, 4th Ed*. New York: Glencoe.

Saffady, W. (2016). *Records and Information Management: Fundamentals of professional practice.* ARMA International.

Sambo, A.S., Urhefe, E.A., & Ejitagha, S. (2017). A survey of digital preservation challenges in Nigerian Libraries. *International Journal of Curation,* 12(1), 117-128.

Sandborn, P. (2017). Software obsolescence – complicating the part and technology obsolescence management problem. *IEEE Trans on Components and Packaging Technologies,* 36(4), 90-106.

Saskatchewan, R., (2015). *The Archives and Public Records Management*. Canada:The Queen's Printers.

Saunders, M., Lewis, P., & Thornhill. (2016). *Research methods for business students.* London, UK: Pearson Education.

Schoenherr, S.E. (2014). The digital revolution. Retrieved from https://web.archive.org/web/20081007132355/http://history.sandiego.edu/gen/recording/ digital.html.

Shara, N.G., Hleza, S., Tlou, N.F & Shonhiwa, S. (2021). Qualitative content analysis, utility, usability and processes in educational research. *International Journal of Research and Innovation in Social Science*. 3: 553-558.

Shepherd, E. (2012). An 'academic' dilemma: The tale of archives and records management. *Journal of Librarianship and Information Science,* 44: 174-184.

Smallwood, F. (2014). *Information Governance: Concepts, Strategies, and Best Practices*. New York: Wiley.

Smith, O. (2012). Information management in secondary education. *Educational Journal,* 7(2), 42-50.

State Records of South Australia (2015). Cloud computing and records management. *Guideline Version 1*. Adelaide, South Australia.

Sudhier, K.G. & Seena, S.T. (2018). Library professionals' adoption of cloud computing technologies: A case study on Kerala University Library, India. *Library Philosophy and Practice,* 5-14.

Surucus, L., & Maslakci, A. (2016). Validity and reliability in quantitative research. *Business & Management Studies: An International Journal,* 8(3), 2694-2726.

Szekely, I. (2017). Do archives have a future in the digital age? *Journal of Contemporary Archival Studies*: 1-17.

Thomas, J. (2016). *Research in education- evidence-based inquiry*. Boston: Pearson, 33-46.

Thompson, B. (2003). *Understanding reliability and coefficient reality: Contemporary thinking in reliability issues.* Thousand Oak: Sage.

Thorne, S. (2017). *The art and science of critiquing: Details and dialogue*. Thousand Oaks: CA Publications, 1-22.

Tlou, M.M. (2020). Application of modern technologies in the management of records in public libraries. *Journal for South African Society of Archivist*, 53.

Touray, R. (2021). A review of records management in organisations. *Open Access Library Journal*, 8(12), 1-23.

Toyo, D.O. (2017). Application of information and communication technology (ICT) to the management of records in the head of services office, Asaba, Delta State.

Research Journal of Mass Communication and Information Technology, 3(1), 1-9.

Trochim, W. (2020). Research methods knowledge base. *Journal of Social Science Research*, *1*(5), 10-18.

Upward, F. (2009). *Structuring the records continuum—Part One: Postcustodial principles and properties*.

Vaismoradi, M., & Snelgrove, S. (2019). Theme in qualitative content analysis and thematic analysis. *Qualitative Research Forum*, 20(3), 1-23.

Valtonen, M.R (2017). Documentation in pre-trail investigation: A study of records continuum model as a records management tool. *Records Management Journal*, 17(3): 179-185.

Venter, L. (2012) National Archives and Records Service's requirements for the management of electronic records in the public sector: an archivist's perspective on records management vs. storage management. *Archives News*, 2:22–36.

Welman, C., Kruger, F., & Mitchell, B. (2011). *Research Methodology*. Oxford: Oxford University Press.

Wilhelm, P. (2009). An evaluation of MoReq2 in the context of national EDRMS standard developments in the UK and Europe. *Records Management Journal*, 19(2), 117-134.

Williams, C. 2013. Records and archives: concepts, roles and definitions, in archives and record-keeping: theory into practice. C Brown (Ed.). London: Facet Publishing: 1-29.

World Economic Forum (WEF). (2019). *The Global Competitiveness Report 2019*. Switzerland. https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf

Yatin, S.F., Sabarudin, A.S., Ahmad, A., Sulaiman, S., Aziz, M.A., Haron, H., & Zulkanain, N.N. (2019). Trends in commercial record centre development. *International Journal of Academic Research Business.*

Yin, B. (2014). "An analysis of the issues and benefits in EDRMS implementation: a case study in a NZ public sector organisation." *MA thesis, Victoria University of Wellington*.

Yin, R. (2018). *Case study research and applications design and methods.* (6th ed.). Thousand Oaks: Sage.

Yusof, Z. M., & Chell, R. W. (2012). The records life cycle: An inadequate concept for technology-generated records. *Sage Journals.* doi:10.1177/0266666004240413.

APPENDIX A: ETHICAL CLEARANCE CERTIFICATE

ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: SHS 0001 Date: 22 September 2021

This Ethical Clearance Certificate is issued by the University of Namibia Decentralized Ethics Committee (DEC) in accordance with the University of Namibia's Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the School of Humanities, Society & Development Decentralized Ethics Committee.

Title of Project: The role of records centre in the digital environment: A case study of records centre in Windhoek.

Researcher: Selma Nangula Mulokoshi
Student Number: 201501961
Supervisor(s): Prof Cathrine T. Nengomasha

Centre for Research Services

Take note of the following:

1. Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the ethics committee. An application to make amendments may be necessary.
2. Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the ethics committee
3. The Principal Researcher must report issues of ethical compliance to the ethics committee (through the Chairperson) at the end of the Project or as may be requested by the ethics committee
4. The ethics committee retains the right to:

i) Withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,

ii) Request for an ethical compliance report at any point during the course of the research.

The ethics committee wishes you the best in your research.

…….

Prof. Trywell Kalusopa (Chairperson, Decentralised Ethics Committee)

……

Prof. Davis Mumbengegwi (Head, Multidisciplinary Research)

APPENDIX B: RESEARCH PERMISSION LETTER UNAM

CENTRE FOR RESEARCH SERVICES
Office of the Pro-Vice Chancellor: Research, Innovation & Development
University of Namibia, Private Bag 13301, Windhoek, Namibia
340 Mandume Ndemufayo Avenue, Pioneers Park, Office F223 - Fblock, Second Floor
☎ +264 61 206 4673; E-mail:kmbulu@unam.na; URL.: http//www.unam.edu.na

UNAM
UNIVERSITY OF NAMIBIA

RESEARCH PERMISSION LETTER

Date: 30/09/2021

Student Name: SELMA NANGULA MULOKOSHI

Student Number: 201501961

Programme: MASTER OF ARTS

Approved Research Title: The role of records center in the digital environment: A case study of records center in Windhoek.

TO WHOM IT MAY CONCERN

I hereby confirm that the above mentioned student is registered at the University of Namibia for the programme indicated. The proposed study met all the requirements as stipulated in the University guidelines and has been approved by the relevant committees.

The proposal adheres to ethical principles as per attached Ethical Clearance Certificate. Permission is hereby granted to carry out the research as described in the approved proposal.

Best Regards

Dr. AEE Shikongo
Head: Postgraduate Support Services
Tel: +264 61 206 3129
E-mail: aeshikongo@unam.na

CENTRE FOR RESEARCH SERVICES
Office of the Director
2021 -09- 30
University of Namibia
UNAM

APPENDIX C: INFORMED CONSENT FORM

UREC Annex 5F: Informed Consent for Qualitative Studies

INFORMED CONSENT FORM

Informed Consent for Participants who are invited to participate in research titled " The role of records centres in the digital environment: A case study of records centres in Windhoek".

Name of Principal Investigator:	SELMA NANGULA MULOKOSHI
Name of Sponsor:	PROF. CATHRINE T. NENGOMASHA

This Informed Consent Form has two parts:

- **Information Sheet (this section, to share information about the study with you)**
- **Certificate of Consent (for signatures if you choose to participate)**

You will be given a copy of the full Informed Consent Form.

PART I: INFORMATION SHEET

Introduction

I am Selma Nangula Mulokoshi, working for the Namibia Civil Aviation Authority (NCAA) as an Administrative Officer and I am pursuing a Master's degree in Records and Archives Management at the University of Namibia (UNAM).

I am researching the role of Records Centres in the digital environment with a specific focus on nine (9) Records Centres in Windhoek. I am therefore going to give you information and invite you to be part of this research. You do not have to decide today whether or not you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about the research. This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask me.

Purpose of the Research

The traditional role of record centres has been to provide storage of records in hard copies and to provide retrieval services to clients. However, with the merge of the 4th industrial revolution and ICTs, records centres have to take on additional roles of providing services in an electronic format. I want to determine services offered by Records Centres in Windhoek in the digital era. Research by several scholars have highlighted inadequate records management standards and policies as evidence of low electronic records readiness in organisations, including record centres, which can contribute significantly to its failure of losing valuable information.

I believe that you can provide some useful information on the different digital services offered by your institution to your clients and the opportunities and challenges you experience in your institution, in order to improve on the current strategies as well as implementations in future. Additionally, I believe that you can provide some useful information on the preservation strategies as well as whether records management systems, policies and guidelines are integrated into the ICT systems in Windhoek's Record Centre.

Type of Research Intervention

This research will involve your participation as an individual and the interview will take about half an hour to an hour.

Participant Selection

You are being invited to take part in this research because of your experience as **Records Keeping Staff** and **IT Staff** which can contribute much to our understanding and knowledge of the digital services offered by the institution to clients.

Voluntary Participation

Your participation in this research is entirely voluntary. You will indicate your willingness to participate voluntarily through the signing of the consent form. You may change your mind later and stop participating even if you agreed earlier. Please note that the choice that you make will have no bearing on your job or any work-related evaluations or reports.

Procedures

The research study will only be conducted in one region, which is the Khomas region in the centre of Namibia, it will cover nine (9) Record Centres three (3) commercial records centres which are Document Warehouse, AGS Records Management and Phildou; and six (6) in-house records centres in Windhoek which are UNAM, NUST, NamPower, Ministry of Health and Social Services, Namcol and National Archives. In each Record Centre, eight (8) Key informants will be interviewed which the records are keeping staff and IT staff.

You are invited to take part in this research project. If you accept, we shall proceed as follows:

You can also ask questions about the research which you might have. Then I will ask you questions about the digital services your institution offer to clients and give you time to share your knowledge. The questions will be about cloud computing, digital preservation strategies**,** systems implemented in your institution as well as challenges and any other recommendations you can prove to improve the system.

You will not be asked to share personal beliefs, practices or stories and you do not have to share any knowledge that you are not comfortable sharing. The discussion will take place in a location of your choice within your respective institution, and no one else but you and I will be present during this discussion. The discussion can be recorded but only with your permission, but no one will be identified by name on the recording. The recording will be stored securely while waiting for the destruction after a period of five years. The information recorded is confidential, and no one else except the researcher (Selma Mulokoshi) will have access to the recordings.

Duration

You will be interviewed once and the interview will take about 30 minutes to an hour.

Risks

Possible risks are addressed by adhering to research ethical considerations of confidentiality and anonymity and keeping the data collected on a cloud system and disposed of after five years in line with the University of Namibia's Research Ethics Policy.

You do not have to answer any question or take part in the discussion/interview if you do not wish to do so. You do not have to give us any reason for not responding to any question, or for refusing to take part in the interview. You can withdraw from participating in the study at any time.

Benefits

The findings of the study will contribute to policy formulation and practice in records centres operations in the digital environment. The findings will also add to the body of knowledge on records centres in the digital age.

Reimbursements

There will not be any compensation or payment for taking part in this study.

Confidentiality

Your name will not be used when reporting findings. A code will be used instead. The gathered data will be stored securely while waiting for the destruction after a period of five years in line with best practices.

Sharing the Results

Nothing that you tell us today will be shared with anybody outside the research team, and nothing will be attributed to you by name. The knowledge that is acquired from this research will be made widely available at the right time.

Right to Refuse or Withdraw

Nothing unbecoming will happen to you and you will be free to stop participating in this study at any time you so choose as your participation is wholly voluntary.

Who to Contact

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact Selma Mulokoshi (Researcher), P O BOX 26777 Windhoek, Namibia or Call me on: 0814289646 or send an e-mail to: selmanangula3@gmail.com.

This research has been reviewed and approved by the relevant Ethics Review Committee at the University of Namibia, which is a committee whose task it is to make sure that research participants are protected from harm. The committee reports to the University's Centre for Research Services. If you wish to contact this Centre, please call +264 61 206 4673 or send an e-mail to research@unam.na.

PART II: CERTIFICATE OF CONSENT

You have been invited to participate in this research about the role of Records Centres in the digital environment: A case study of Records Centres in Windhoek.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked, have been answered to my satisfaction. I consent voluntarily to be a participant in this study

……. ……

Name of Participant (print) Signature of Participant

……

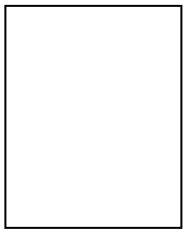
Date (day/month/year)

If illiterate

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

…….

Name of Witness (print)



Thumbprint of Participant

……

Signature of Witness

……

Date (day/month/year)

Statement by the Researcher/Person taking Consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands that the following will be done:

1. Introduction

2. All instructions on research

3. Opportunity to ask questions about research

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant.

Selma Nangula Mulokoshi

……. ……

Name of Researcher/Person taking Consent (print) Signature

27/07/2021

……

Date (day/month/year)

APPENDIX D: INTERVIEW GUIDE FOR RECORDS KEEPING STAFF

Self -introduction

My name is Selma N Mulokoshi, a Master of Arts in Records and Archives Management student at the University of Namibia. I am conducting a research titled: *"The role of records centres in the digital environment: A case study of records centres in Windhoek"*

The research study aims to bring forth the different services offered by the records centres in the digital era as a result of the merge of the 4th Industrial Revolution and ICT. I will be using semi-structured interview questions to collect information of the study from you. Interview's response is anonymous, and information is confidential.

For any questions or clarification with any aspect of this study, you may contact my research supervisor in the department of Social Science, University of Namibia, Prof. Cathrine Nengomasha, Tel +264-61-2063641, or email cnengomasha@unam.na
Thank you for your participation.

SECTION A- DEMOGRAPHICAL CHARACTERISTICS OF THE RESPONDENTS

1. What is your highest level of education?
2. What is your position in the records centre?
3. For how long have you been employed by the records centre?

SECTION B- OPEN – ENDED QUESTIONS

Role of records centres:

1. What are the services you offer?
2. What type of clients do you offer your services to?
3. What were the traditional services you offered before the digital era?
4. What are the services you are now offering with the introduction of the digital era? Explain in details

Records Management Systems:

5. Which records management system are you using?
6. What are the basic functions of your records management system?
7. Does your system allow for the processing of paper and electronic records?

Policies and Guidelines:

8. In brief may you describe your policies and guidelines in your records centre?
9. What are your policies and guidelines specifically for digital preservation?
10. Are policies and guidelines integrated into your ICT systems? Explain in details

Opportunities and Challenges:

11. In your view, what are the opportunities which have rose with the introduction of digitalisation?
12. What are the benefits of digitalisation in your records centre?
13. Are there any challenges faced by the records centre in the digital era?
14. In your opinion what is the future of records centres?

APPENDIX E: INTERVIEW GUIDE FOR IT STAFF

Self -introduction

My name is Selma N Mulokoshi, a Master of Arts in Records and Archives Management student at the University of Namibia. I am conducting a research titled: *"The role of records centres in the digital environment: A case study of records centres in Windhoek"*

The research study aims to bring forth the different services offered by the records centres in the digital era as a result of the merge of the 4th Industrial Revolution and ICT. I will be using semi-structured interview questions to collect information of the study from you. Interview's response is anonymous, and information is confidential.

For any questions or clarification with any aspect of this study, you may contact my research supervisor in the department of Social Science, University of Namibia, Prof. Cathrine Nengomasha, Tel +264-61-2063641, or email cnengomasha@unam.na
Thank you for your participation.

SECTION A- DEMOGRAPHICAL CHARACTERISTICS OF THE RESPONDENTS

1. What is your highest level of education?
2. What is your position in the records centre?
3. For how long have you been employed by the records centre?

SECTION B OPEN – ENDED QUESTIONS

Role of records centres:

1. What is the role of IT staff in the records centre?
2. What are the different services offered by the records centre to clients? Explain in detail

ICTs in records centres:

3. Which hardware's and software applications do you use in records keeping?
4. How do you deal with hardware and software obsolescence? Explain in detail
5. How do you ensure digital continuity in records keeping? Explain in detail

Records management system:

6. Tell us about your records management system and its functions? Explain in detail
7. Does your records management system accommodate both paper and electronic records?
8. How do you preserve digital records in your organisation and what are the systems in place for digital preservation? Explain in detail

Policies and Guidelines:

9. What are the policies and guidelines the records centres use in its operations? Explain in detail
10. Are the policies guided by the National Archives Act 12 of 1992?
11. How are the policies and guidelines assisting the IT department in dealing with cyber-security?
12. In your opinion, what can you say about policies and guidelines in line with ICTs systems?

Opportunities and Challenges:

13. What are the technological opportunities brought by the advancement of technological?
14. Do you as an organisation face technical challenges and how do you resolve such challenges?
15. Are there any challenges you are facing with digital preservation?