



Durban University of Technology

**Preparedness for digitization projects in KwaZulu-Natal (KZN) information
providing agencies**

Ndumiso Shelembe

2021

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**Preparedness for digitization projects in KwaZulu-Natal (KZN) information
providing agencies**

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**Submitted in fulfilment of the requirements of the Master of Management
Sciences in Library and Information Science in the Department of Information
Systems, Durban University of Technology, Durban, South Africa.**

2021

DECLARATION

I, **Ndumiso Shelembe**, hereby declare that this study represents the original work by the author and has not been submitted in any form at another university. Where use is made of the work of others, it has been duly acknowledged in the text and included in the list of references.

Mr. Ndumiso Shelembe

Signature

15 March 2021

Date

DEDICATION

I dedicate this research to my late father (Khethokwakhe Jackson Shelembe), late younger brother (Ntuthuko Minenhle Shelembe), and to my mom (Thembisile MaGumede Shelembe).

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ABSTRACT

Due to the demand for information and extended operating hours, information providing agencies face challenges with providing information at any time when needed. This study investigated the preparedness for digitization projects in KwaZulu-Natal (KZN) information providing agencies. Multiple case study research method was adopted in research design. The target population for this study included the staff members involved in preparing for the digitization projects at the Msunduzi Municipal Library, the Don Africana Central Reference Library, the University of Zululand (UniZulu) Library and the Durban Local History Museums. This study was grounded by the framework termed the Collections Digitization Framework (CDF). The data was collected using semi-structured face-to-face interviews from all staff members involved in preparing for the digitization projects in KZN information providing agencies. The researcher analyzed the collected data in this study using the qualitative content analysis based on Tesch's approach. The themes of the study included the preparedness for a digitization project, types of collections institutions prepare to digitize, digitization policies and guidelines and digitization process. The data obtained may contribute to social change by benefiting the institutions and organizations planning for their digitization projects. The findings of this study revealed that most participants from the KZN information providing agencies are prepared by being trained by the digitization machines suppliers in how to operate the supplied digitization machines. This study found that the KZN information providing agencies are preparing to digitize photographs, legal deposit serials and theses and dissertations. This study found that only one KZN information providing agency has a digitization policy and guidelines available and most do not have digitization a policy and guidelines. It was ascertained that most KZN information providing agencies have digitization processes available while one does not have a digitization process. This study recommends that institutions and organizations preparing for digitization projects should have adequate resources required for a digitization project. Further, this study recommends the availability of a digitization policy and guidelines and digitization processes.

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LIST OF ABBREVIATIONS

AACR	Anglo American Cataloguing Rules
AAU	Association of African Universities
AR	Augmented Reality
CDF	Collections Digitization Framework
CDWA	Categories for the Description of Works of Art
DATAD	Database of African Theses and Dissertations
DCBDC	Darwin Core Biology Darwin Core
DCC	Digital Curation Centre
DDC	Dewey Decimal Classification
DL	Digital Library
DLF	Digital Library Federation
DPI	Dots per inch
DUT	Durban University of Technology
DSpace	DuraSpace
DVD	Digital Versatile Disc or Digital Video Disc
EAD	Encoded Archival Description
FTP	File transfer protocol
HoD	Head of department
HTML	Hypertext Markup Language
IA	Information architecture
ICA	International Council on Archives
ICT	Information Communication Technology
IEC	International Electrotechnical Commission

IMLS	Institute of Museum and Library Services
IMS	Information management system
IR	Information repository
ISO	International Organization for Standardization
IT	Information Technology
KZN	KwaZulu-Natal
LCC	Library of Congress Classification
LCSH	Library of Congress List of Subject Headings
LIS	Library and Information Sector
M.Tech	Master of Technology degree
NRF	National Research Foundation
NSF	National Science Foundation
OCLC	Online Computer Library Center
OCR	Optical character recognition
PC	Personal computer
PDF	Postscript and portable document format
PhD	Doctor of Philosophy
QA	Quality Assurance
RDA	Resource Description and Access
SGML	Standard Generalized Markup Language
SRB	Storage Resource Broker
TEI	Text Encoding Initiative
UDC	Universal Decimal Classification
URL	Uniform Resource Locator

USA	United States of America
UK	United Kingdom
UKZN	University of KwaZulu-Natal
VRA	Visual Resources Association
XML	Extensible Markup Language

LIST OF ACRONYMS

ALA	American Library Association
ABU	Ahmadu Bello University
B.Bibl.	Bachelor of Library and Information Science (Honours)
B-Tech	Bachelor of Technology
DARLO	Dramatic, Artistic and Literary Rights Organization
IAM	Identity and access management services
ICA	International Council on Archives
IFLA	International Federation of Library Associations and Institutions
IP	Internet Protocol
IREC	Institutional Research Ethic Committee
JPEG	Joint photographic expert group
LOI	Letters of inquiries
NDip.	National Diploma
MARC	Machine Readable Cataloging
METS	Metadata Encoding and Transmission Standard
MIX	Metadata for Images in XML Schema
MODS	Metadata Object Description Schema
NISO	National Information Standards Organization
No.	Number
TIFF	Tagged image file format
SAN	Storage Area Network
UniZulu	University of Zululand Library
UNESCO	United Nations Educational, Scientific and Cultural Organization

XOBIS XML Organic Bibliographic Information Schema/System

CHAPTER ONE: INTRODUCTION AND PROBLEM STATEMENT

1.1. Introduction

Due to the demand for information and extended operating hours, information providing agencies in KwaZulu-Natal (KZN) face challenges with providing information at any time when needed. Therefore, these information providing agencies decided to embark on digitization projects of their collections with the aim of preserving them from different factors of deterioration and ease of access at any time. Somers (2006: 2) states that “it is important to find ways to facilitate access and at the same time to relieve stress on the originals. That is why many institutions have embarked on digitization projects”. The United Nations Educational, Scientific and Cultural Organization (UNESCO) (2015: 1) define the term “digitization” as “a creation of digital objects from physical, analogue originals by means of a scanner, camera or other electronic device”. On the one hand, Vrana (2010: 326) defines digitization as “a process of taking physical library materials, usually in the form of books and papers, and converting them to electronic form where they can be stored and manipulated by a computer”. Vrana (2010: 326-327) further states that, the benefits of digitization are that it helps in preservation of information and rises the profile of the libraries as users global access their collections remotely.

Merriam-Webster (2018) simply defines the term “preparedness” as the state or quality of being prepared. According to Bulow and Ahmon (2011: 172), collaboration, planning, preparation and presentation are the most important aspects in any digitization project. Nash, Sterkenburg and Wentzell (2011: 1) state that preparation for digitization project includes but not limited to labor, equipment, training of staff involved, location and facility, budget, timeline, and reflecting on the value added by digitization. Hammond and Davies (2009: 8) point out that the preparation processes and costing for the digitization project are usually guided by the funding body’s requirements. Hence, Mammond and Davies (2009: 8) recommend that the more knowledge you have about the materials to be digitized the better, as this would enable you to better prepare for a digitization project. Hammond and Davies (2009: 8) further emphasize that in a

preparation stage, a proper planning should be done to the extent that it incorporates costing and time-frame for the digitization process.

1.2. Background of the study

According to the National Research Foundation (NRF) (2018) list of institutions embarking on a digitization project in KZN includes the Don Africana Central Reference Library, the University of Zululand Library and the Durban Local History Museums. However, the researcher has looked further than these in order to find out if there are any other institutions embarking on a digitization project in KZN and found only one more, which is the Msunduzi Municipal Library. It was confirmed that these institutions are embarking on digitization and were therefore included in the study. This current study was conducted using the following four information providing agencies in the province of KZN and these institutions confirmed that their digitization projects are new but will be the ongoing projects:

1.2.1. Msunduzi Municipal Library

Msunduzi Municipal Library (formerly the Natal Society Library) has provided public library services for the people of Pietermaritzburg since 1850. On 1 April 2004, libraries and employees of the Natal Society were integrated into the Msunduzi Municipality to form the Msunduzi Municipal Library Services. The main library, named the Bessie Head Library, together with ten branch libraries and one mobile library, aim to provide a comprehensive library service to all residents of the Msunduzi Municipal area. The Msunduzi Municipal Library was given legal deposit status as one of five legal deposit libraries in South Africa in 1960. This privilege has helped to make it one of South Africa's major research and information libraries. Legal deposit libraries play a unique and very important role as custodians, in perpetuity, of this country's cultural wealth and information. Through the Adult Reference Library and Periodicals Department, all the citizens of South Africa have access to this huge collection (Msunduzi Municipality 2018).

According to Singh (2019, pers. comm. 28 June), the Periodicals department of the Msunduzi Municipal Library is a department responsible and preparing for their digitization project. They have a digitization space prepared with digitization tools/infrastructure such as computers, digitization machines, and scanners, further; they have staff members allocated to undertake their digitization project. However, the project has not yet started due to a lack of enough storage capacity for digitized collection.

1.2.2. Don Africana Library

According to the eThekweni Municipality (2018), the Don Africana Library belongs to the eThekweni Municipality; it is located at the same premises as the Central Reference Library and is devoted exclusively to the Africana collection. It was named after David Don who was born in Scotland in 1840. He followed a banking career in Edinburgh and then in Bombay before settling in Natal in 1881. He and his wife lived in the Maze on South Ridge Road (now Marist Brothers School), where he set up a library for his collection of books, pamphlets, newspapers, maps and manuscripts. After he died in 1906, the contents of the house were sold on auction, but not his Africana collection. This was loaned to Durban Public Library in 1909. Later, in 1916, his wife and son donated the entire collection to the library. Its value defies arithmetic, especially those works dating back to the early 16th century.

According to Nene (2019, pers. comm. 15 June), the Central Reference Library of the eThekweni Municipal Library Services is a section responsible and preparing for their digitization project. This section has not yet gone far with preparations to embark on their digitization project other than having staff responsible for organizing the required infrastructures and other requirements of a digitization project.

1.2.3. University of Zululand Library

The University of Zululand (UniZulu) is located within the uMhlathuze Municipality, the fastest growing industrial hub and employer in northern KwaZulu-Natal. This university was developed in 1960; the KwaDlangezwa Campus is UniZulu's main campus and is

home to the university's four faculties and academic support departments. The urban Richards Bay Campus was completed in 2009 and is intended to further the university's entrepreneurial and vocational agenda, in conjunction with local industry partnerships and the maritime sector. The University of Zululand is a comprehensive university offering approximately 252 accredited degrees, diploma and certificate courses across the faculties of Arts, Education, Science and Agriculture, as well as Commerce, Administration and Law at the KwaDlangezwa and Richards Bay campuses. The University of Zululand has two libraries, namely; KwaDlangezwa - the Main Library - and the Richards Bay Library (University of Zululand 2018).

According to Biyela (2019, pers. comm. 19 June), the Electronic Resources and Metadata Management section of the University of Zululand Library is a section responsible for preparing their digitization project. They have a digitization space equipped with digitization tools/infrastructure such as computers, scanners and digitization machines, further; they have limited staff members allocated to prepare and undertake their digitization project. The project was launched and started but they had a problem of a limited storage capacity which resulted in a system crash and the project stopped. They are now preparing for enough storage capacity so that they will restart their digitization project.

1.2.4. Durban Local History Museums

Durban Local History Museums (2018) explains that the Durban Local History Museums are the museums under the eThekweni Municipality; they are full of colorful characters, interesting facts and rich cultures. Pieced together, these form the tapestry of our past, exposing both the blemishes and greatness of our humanity. A wide range of unique artefacts have been collected and donated to the museums. Most of these objects relate to the region and people of the eThekweni Municipality and the city of Durban. The artefacts that have been collected by the museum include photographs, paintings, posters, documents, objects, textiles, fashion, furniture, household items, workshop and agricultural implements, and archaeological items. The Durban Local History Museums consist of six branches, namely; Bergtheil Museum, Cato Manor Heritage Centre,

KwaMuhle Museum, Mpumalanga Heritage Museum, Old Court House Museum, Old House Museum, Pinetown Museum and Port Natal Maritime Museum.

According to Ntshangase (2019, pers. comm. 24 May), the Department of Heritage and Libraries of the eThekweni Municipality is a department responsible for preparing of their digitization project. They have a digitization space equipped with digitization tools/infrastructure such as computers and scanners, further; they have staff members allocated to prepare and undertake their digitization project. The project was launched, unfortunately, their storage system crashed due to a limited storage capacity and the project stopped. Currently, they are preparing for Augmented Reality (AR) software and enough storage capacity so that they will restart the digitization project.

1.3. Problem statement

The KwaZulu-Natal information providing agencies decided to embark on digitization projects of their collections. According to Fabunmi, Paris and Fabunmi (2009: 27) the invention of computer and the internet facility have posed new challenges to the practice of librarianship. They further say that the application of computer and Information and Communications Technology (ICT) to librarianship seems to be gaining push worldwide. Lastly, they state that library digitization has influenced the librarianship profession as library digitization has become part of the work of librarians and the majority of libraries have embarked in digitization.

According to Oweru and Mnjama (2014: 119), digitization is frequently suggested as an answer to the challenges of preserving analogue material. It can be debated that digitization is not a means of preservation but a powerful instrument for promoting awareness and appreciation. Digitization also allows libraries to provide access across barriers of time and space. The International Federation of Library Associations and Institutions (IFLA) and the International Council on Archives (ICA) (2002: 8) agree that digitization is not preservation and further claim that digitization is costly, not safer or more reliable than microfilming. However, the only ways in which digital reformatting contributes positively to preservation is when the digital surrogate reduces physical wear and tear on the original, or when the files are written to computer output microfilm

that meets preservation standards for quality and longevity. Therefore, a digitization project is no replacement for a preservation program based on reformatting on microfilm (or on de-acidification, conservation treatment or improved storage conditions).

According to Hirwade (2011: 20), there are a number of requirements that need to be met before embarking on a digitization project. Hence, Hirwade (2011: 21) proposes the three requirements to consider when preparing for a digitization project as being the provision of policy guidelines, the training of people involved, and the required infrastructure. Husmillo (2014: 10) mentions the following requirements for a digitization project:

- Time frame,
- Budget,
- Project activities,
- Staff and/or other technical services/requirements, and
- Results/outcomes.

On the one hand, Kanyengo (2009: 38-39) stipulates technical knowledge, legal issues, and financial issues. Therefore, the KZN information providing agencies preparing for the digitization projects need to consider digitization requirements such as digitization policy and guidelines, staff training, required infrastructure, budget/financial and legal matters when preparing for a digitization project.

According to Eloff and Prinsloo (2008: 65), digital technologies are quickly developing in Ghana as it is leading to the proliferation of digital items including digital heritage resources. This phenomenon has long happened in developed countries, where the risk of technological obsolescence and permanent loss of cultural heritage are major concerns. Ghana, as a developing country, faces an even wider range of challenges in effectively managing and preserving its digital collections. Bekele (2002) points out that there is a scarcity of periodicals and other literature in research institutions, universities, and technical schools in the developing countries. Thus, making students, scientists, administrators and other information seekers to have limited access to improvements made outside their domain. Therefore, creating a digital library is a great solution to these problems. Liu (2004: 342) reveals that most libraries

are not involving a lot of steps for processing the digitization of materials. The study conducted by Nyide (2014: 184) revealed that there are no observable digitization policies guiding the digitization project in the University of KwaZulu-Natal (UKZN) library. Pickover and Mohale (2013: 2) reported the similar results as Nyide (2014) as they reported that most institutions engaged in digitization projects are faced with problems of developing digitization policies and standards. Alhaji (2007: 234) identified similar results in his study as he identified a lack of policies as a challenge for digitization projects. These findings show that some information providing agencies do not consider necessary requirements for a digitization project in a preparation stage. Consequently, they face difficulties (such as lack of policies and guidelines, lack of steps involved in the digitization process, lack of required infrastructure, lack of staff training, financial issues and legal issues) for their digitization projects.

The Msunduzi Municipal Library, Don Africana Central Reference Library, University of Zululand Library and the Durban Local History Museums are the information providing agencies in KZN that are currently preparing for their digitization projects. According to evidence given by the library manager, Ntombela (2018, pers. comm. 26 July), the Msunduzi Municipal Library is facing problems in preparing for their digitization project. Therefore, this grabbed the researcher's attention and prompted him to do an investigation into the preparedness for digitization projects in KZN information providing agencies. Fabunmi *et al.* (2009: 27) agree that there are plentiful challenges facing the conversion of the traditional library to digital status, such as funding, storage and so on. Furthermore, they state that digitization takes time and it is costly to undertake.

Hammond and Davies (2009: 1) identify a number of problems that sprouted from different digitization projects as a result of a poor preparedness, and these problems include selection, standards and access. Trifunovic (2009: 9) adds the following problems faced by institutions preparing for digitization projects:

- "Lack of funds,
- Inadequate staff capacity to take on new projects and technologies, and
- The lack of national directives or guidelines on good practice and to ensure collaboration between institutions".

As a result, Hirwade (2011) proposes the three requirements to consider when preparing for the library digitization project, such as the provision of policy guidelines, the required infrastructure and the training of people involved.

1.4. Aim of the study

The aim of the study was to investigate the preparedness for digitization projects in KZN information providing agencies.

1.5. Objectives of the study

The following were the research objectives of the study:

- To find out how do the KZN information providing agencies prepare for their digitization projects,
- To identify types of collections that the KZN information providing agencies are preparing to digitize and why?
- To ascertain if the KZN information providing agencies have written policies and guidelines prepared to be followed when digitizing their collections, and
- To ascertain if there are prepared digitization processes that will be followed by the KZN information providing agencies when digitizing their collections.

1.6. Critical questions

In order to achieve the above objectives, the study generated the following critical questions:

- How do the KZN information providing agencies prepare for their digitization projects?
- What are the types of collections that the KZN information providing agencies are preparing to digitize and why?
- Are there any drafted policies and guidelines prepared to be followed by the KZN information providing agencies when digitizing their collections?

- What are the prepared digitization processes that will be followed by the KZN information providing agencies when digitizing their collections?

1.7. Importance of the study

According to Ramadass (2009: 8), possible motives push people to undertake research with a desire to get a research degree along with its significant benefits. It is the desire to face the challenge in solving the unresolved problems. The staff and management staff members at the Msunduzi Municipal Library, Durban Local History Museums, Don Africana Central Reference Library and University of Zululand Library will benefit from this study, as they will have a platform on which to share their concerns regarding preparation for their digitization projects. The other institutions and organizations that are planning or preparing for the digitization projects will benefit from this study as they will be able to identify the most challenging aspects when preparing for digitization projects and what to consider before they embark on a digitization project.

1.8. Overview of research methodology

A qualitative research approach with an interpretive paradigm was adopted by the study to investigate the preparedness for digitization projects in the KZN information providing agencies. Purposive sampling method was used in the study to sample the 19 staff members involved in digitization projects in the KZN information providing agencies as they were the targeted population. The researcher used semi-structured face-to-face interviews to collect data from the targeted population by asking open-ended and closed-ended questions. The research methodology used in this study is discussed in detail in Chapter 3.

1.9. Definition of relevant terms

The following defined terms are relevant to the study:

1.9.1. Academic library

Academic library refers to “a library that is an integral part of a college, university, or other institution of postsecondary education, administered to meet the information and

research needs of its students, faculty, and staff” (Reitz 2018). The above definition by Reitz (2018) will be adopted by the current study as it focuses on the staff members working in academic libraries preparing for their digitization projects in KZN. Legit (2020) says that “an academic library is usually established in any higher education, such as a college, a university, or an institution that possesses various collections of books for any university’s faculty or department aimed to help students, staff and researchers to carrying out researches, assignments, and even some leisure activities”.

1.9.2. Digitization

Digitization refers to “the process of creating a digital image of a physical item through the use of a scanner or digital camera” (American Library Association (ALA) 2013: 86). On the one hand, UNESCO (2015: 1) defines “digitization” as “the creation of digital objects from physical, analogue originals by means of a scanner, camera or other electronic device”. Furthermore, UNESCO mentions that it is undertaken as part of a process that includes:

- “Selection,
- Assessment including of needs,
- Prioritization,
- Preparation of originals for digitization,
- Metadata collection and creation,
- Digitization and creation of data collections, and
- Submission of digital resources to delivery systems and repositories”.

This definition is relevant to the study as its main focus is on digitization.

1.9.3. Library

Library refers to “a collection or group of collections of books and/or other print or non-print materials organized and maintained for use (reading, consultation, study, research, etc.)” (Reitz 2018). The researcher found it useful to define the term “library” as the current study focuses on information-providing agencies, which includes libraries.

1.9.4. Municipal library

Municipal library refers to “a public library established, maintained, and supported through taxation by a city, town, township, borough, village, or other municipality, whose board of trustees is appointed by municipality authority or elected, or whose library director reports to another office of the municipal government” (ALA 2013: 171). The above defined municipal library is one of the institutions the study focuses on and this prompted the researcher to define this term in the current study.

1.9.5. Museum

Museum refers to “a publicly or privately funded non-profit institution whose primary function is the preservation and display of collections of physical artifacts and specimens for the purposes of education, scholarship, and enjoyment” (Reitz 2018). Arinze (1999: 4) states that “the traditional role of museums is to collect objects and materials of cultural, religious and historical importance, preserve them, research into them and present them to the public for the purpose of education and enjoyment”. The term “museum” is used in the current study as a museum is one of the information providing agencies that the current study focuses on.

1.9.6. Preparedness

Preparedness refers to “the quality or state of being prepared” (Merriam-Webster 2018). This research project is on: Preparedness for digitization projects in KZN information providing agencies, and the researcher found it useful to define this term “preparedness”. Collaboration, planning, preparation and presentation are the most important aspects in any digitization project (Bulow and Ahmon 2011: 172). Hirwade (2011) proposes the three requirements to consider when preparing for the library digitization project, such as the provision of policy guidelines, the required infrastructure and the training of people involved. It is stressed by Hammond and Davies (2009: 8) that in a preparation stage, a proper planning should be done to the extent that it incorporates costing and time-frame for the digitization process.

1.10. Limitations and delimitations of the study

This study is limited to staff members involved in a preparation for digitization projects at the Msunduzi Municipal Library, Don Africana Central Reference Library, University of Zululand Library and Durban Local History Museums, because these are the only institutions preparing for digitizing their collections in KZN at present.

1.11. Structure of the research report

This study consists of five chapters and the following is a brief description and content of each chapter.

Chapter one: Introduction and background of the study

This chapter provided the introduction, background and objectives of the study, as well as critical questions generated to address these objectives. This chapter also provided the rationale for the study, an overview of the methodology used, definition of relevant terms, and the limitations and delimitations of the study.

Chapter two: Review of related literature

This chapter provides the theoretical framework adopted by this study and reviews literature related to this study.

Chapter three: Research methodology

Chapter 3 consists of the research design, approach and methods used in this study. Lastly, it provides the instrument used to collect data and an explanation of the data analysis for this study.

Chapter four: Presentation of results

This chapter presents the results obtained through the semi-structured face-to-face interviews.

Chapter five: Discussion of findings, conclusions and recommendations

Chapter five discusses the main findings in the context of the theoretical framework adopted by the study, relevant literature and the critical questions generated to address

the objectives of the study. Based on this discussion, conclusions are drawn and recommendations are made.

A list of references will be included and the necessary appendices will be attached.

1.12. Summary

This chapter introduced the research problem that the study examined and provided related background for the study. It included the objectives of the study, critical questions, rationale for the study, overview of research methodology, relevant definitions, limitations and delimitations of the study, and a structure of the research report. The following Chapter Two reviews literature consulted for this study.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1. Introduction

Sekaran and Bougie (2010: 38) refer to literature review as “a step by step process that involves the identification of published and unpublished work from secondary data sources on the topic of interest, the evaluation of this work in relation to the problem, and the documentation of this work”. According to Creswell (2014: 28), a literature review provides the framework for establishing the significance of the study, as well as the benchmark for comparing the results with other findings. Furthermore, Terre’Blanche (2008: 19) mentions that a research project does not exist in isolation but must build upon what has been done before. Bless, Higson-Smith and Sithole (2013: 49) add that it includes a search and study of existing writings on the problem under investigation. Therefore, before embarking on a project, a researcher should review previous work in the field. A literature review puts the researcher’s project into context by presenting how it fits into a specific field (Terre’Blanche 2008: 19). This chapter seeks to review the literature on preparedness for the digitization projects.

2.2. Framework for the study

This study adopted a framework called the Collections Digitization Framework (CDF). Tarani (2012: 1) states that “the Collections Digitization Framework is based on the service framework for digital libraries developed by the Digital Library Federation (DLF), whereby digitization activities have been formalized into discrete processes and functions”. According to Tarani (2012: 2), this framework aims to view and transform disparate activities within libraries into modular services that support the whole mission.

Collections Digitization Framework consists of seven stages (refer to Figure 2.1). Tarani (2012: 3) mentions that “in this framework, the collections digitization has been broken down into the following high-level business processes: decide, deploy, describe, digitize, deposit, display, and direct”. He then states that although the process has been identified as discrete and sequential, in practice some of these activities may overlap or

occur simultaneously. In addition, Tarani (2012: 4) mentions that this framework is designed to accommodate both single and multi-size digitization projects.

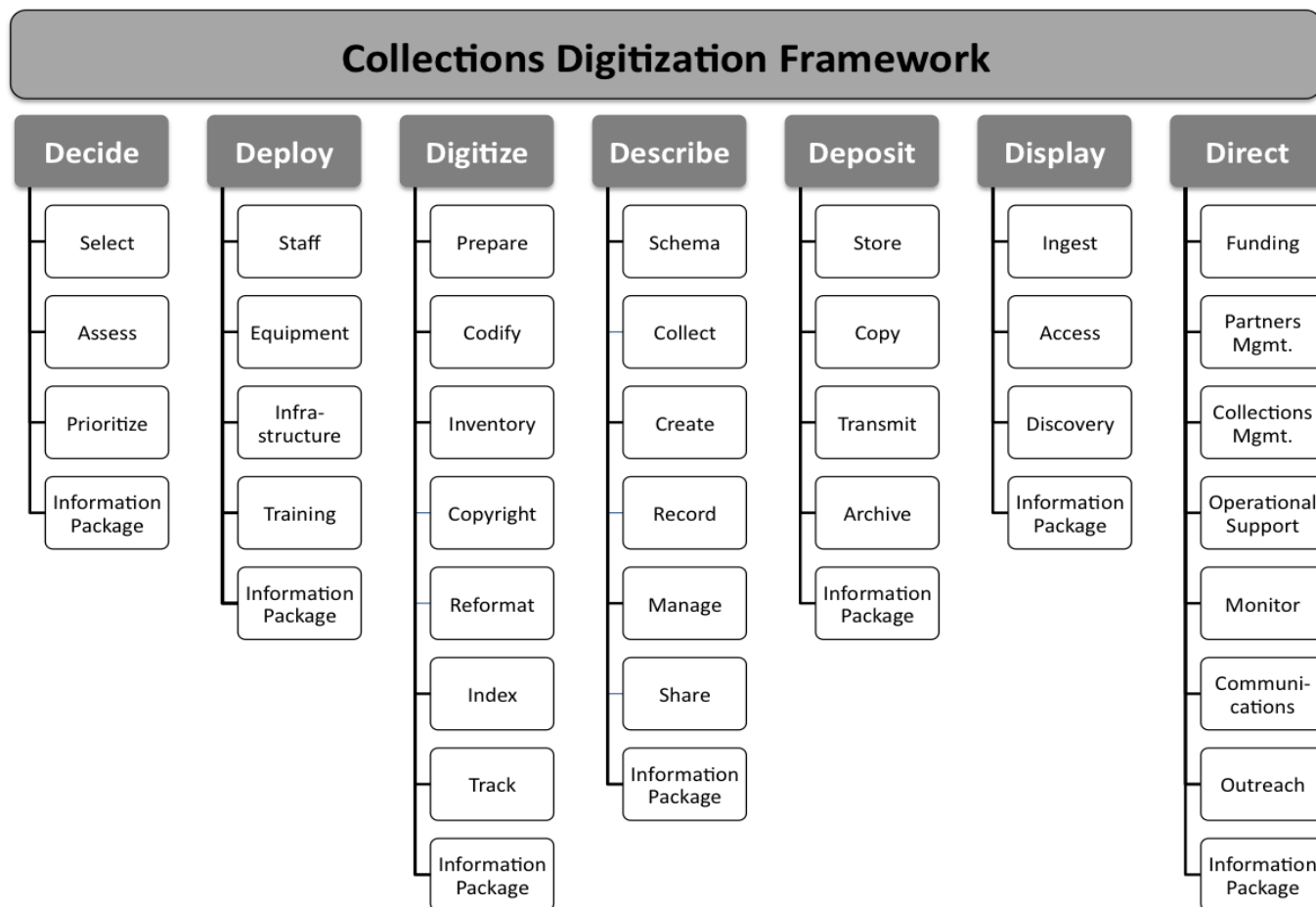


Figure 2.1: Collections Digitization Framework by Tarani (2012)

The seven stages of Collections Digitization Framework are discussed as follows:

Decide: Qualifying collections and items for digitization to support the library's mission. In this stage, you select candidate collections and items for digitization based on agreed upon criteria to support library goals; you assess evaluating items based on their physical condition, copyright restrictions, provenance, availability of existing records, etc.; you prioritize the rank selected items for digitization based on agreed upon criteria; and then, this information package is used for capturing pertinent information about selected items from owners, producers and selectors, which is passed on to subsequent business processes and entities (Tarani 2012: 4-5). This

stage helps institutions preparing for the digitization projects to consider significant things such as copyright restrictions, etc. when preparing for the digitization projects.

Deploy: Identify and mobilize required resources to support digitization activities. In this stage, you identify and deploy the necessary human resources (staff) for digitization; you secure and deploy required equipment (e.g., workstations, scanners, etc.) to support digitization; you deploy the necessary infrastructure components such as network and FTP (file transfer protocol) connectivity, user accounts, file server, etc.; you determine and address the training needs of staff engaged in digitization activities; and then, this information package may be used to capture and communicate pertinent information about equipment, infrastructure, staff skills, as well as training (Tarani 2012: 5). In this stage, institutions preparing for the digitization projects get a better understanding on what are the necessary resources to consider before embarking on a digitization project. These include necessary staff with relevant skills or training of staff, required equipment and infrastructure.

Digitize: Generate digital surrogates for physical items selected for digitization. In this stage, you prepare by organizing items for digitization by determining appropriate reformatting techniques, formats, file naming conventions, etc.; you codify by performing any linguistic or other processing that may be required e.g., transliteration or translation of foreign language items; you inventory by creating and managing the inventory of items to be digitized by assigning them unique identifiers; you determine and comply with applicable copyright and intellectual property rights of the physical items, and formulate appropriate access and use restrictions pertaining to digital surrogates; you reformat physical items to create their digital surrogates. This function may also include post-reformatting corrective and quality control measures necessary to ensure desired quality of digital surrogates; you index by taking necessary measures such as optical character recognition (OCR) to support subsequent use of digital surrogates; you track reformatting status of items based on agreed upon methods; and then, this information package function may be used for capturing information about digital surrogates for subsequent processing (Tarani 2012: 5-6).

This stage gives a guidance to the institutions preparing for digitization projects in terms of determining appropriate reformatting techniques, formats, and file naming conventions. It further helps these institutions to determine and comply with applicable copyright and intellectual property rights of the physical items, and formulate appropriate access and use restrictions pertaining to digital surrogates.

Describe: The creation, collection, dissemination, and management of metadata to describe digitized items. In this stage, you identify appropriate metadata standards (schema) for the items to be digitized; you collect by gathering the existing information for the selected items; you create descriptive and other necessary metadata for the selected items; you record electronically by capturing the required and necessary metadata during digitization activities for management and reuse; you manage existing and new metadata produced or consumed during digitization and also responsible for linking metadata to digital surrogates; you prepare and share metadata and re-purpose metadata to other desired metadata schemas; and then, this information package facilitates exchange of metadata between relevant business entities and processes (Tarani 2012: 6). This stage helps the institutions preparing for digitization projects to consider describing their digitized items using appropriate metadata standards (schema). It is further advised in this stage that the required and necessary metadata for digitized items are captured during digitization activities for management and reuse purposes.

Deposit: Facilitate submission of digital surrogates to appropriate local, archival, or access servers and repositories. In this stage, you store digital files in accordance with agreed upon guidelines and standards; you copy by creating additional copies of digital files as needed for sharing and safekeeping; you transmit by ensuring that desired digital files are successfully transmitted, whether electronically or otherwise, to desired target locations; you archive by safeguarding digital files based on agreed upon policies and procedures; and then, this information package is utilized for submission of digital files and metadata to appropriate target servers and systems for storage (Tarani 2012:6-7). This stage suggests that institutions preparing for digitization projects that they need to store their digitized collections in appropriate servers in accordance with

agreed upon guidelines and standards. Once stored, it must be shared or accessible to targeted or interested user group.

Display: Provide support for presenting, searching, and discovery of digital items through appropriate servers and systems. In this stage, you ingest by preparing and transferring digital files to relevant target servers and systems for the purpose of facilitating access; you access by verifying availability and accessibility of necessary digital files based on agreed upon access criteria; you make the discovery by making relevant metadata available to facilitate search and retrieval of digital items; and then, this information package is used for sharing digital files and associated metadata to enable access, display, and reuse of digital items on other target servers and systems as necessary (Tarani 2012: 7). According to this stage, the institutions preparing for digitization projects need to ensure that digitized items are stored in a server and system that allows them to be searchable and discoverable to users.

Direct: Planning, administration, and monitoring of the digitization activities. You secure funding for digitization initiatives and allocate resources and budgets; you can do partners management to identify, qualify, and manage partners for planning and implementation of digitization initiatives; you do collections management during and beyond digitization activities including policies, preservation, etc.; you provide operational support (people, process, and technology) to staff and stakeholders as necessary; you monitor by performing quality assurance and assessment of processes and functions to support digitization activities; you use different forms communication in order to provide timely and relevant information to stakeholders using appropriate means and messages and this also includes the responsibility of meeting any agreed upon reporting and status update requirements; you do outreach to promote existing and planned digitization initiatives to scholars, students, exhibitors, government, private funding agencies, etc.; and then, this information package may be used to capture and communicate pertinent information about various administrative functions such as selection and funding criteria, guiding policies and procedures, evaluation and assessment checklists, performance and status reports, as well as outreach materials (Tarani 2012: 7). It is advised by this stage that the institutions preparing for digitization

projects need to secure funding for digitization initiatives, plan and implement the digitization initiatives. Lastly, monitor the functions of digitization activities and provide necessary operational support to staff and stakeholders.

This model framework is related to this current study as it looked at the preparedness for digitization projects and it helped the researcher in fulfilling the objectives of the study.

2.3. Planning and preparedness for a digitization project

According to Bulow and Ahmon (2011: 172), collaboration, planning, preparation and presentation are the most important aspects in any digitization project. Alhaji (2007: 3) claims that preparing involves identifying countless tasks related to creating a digital library collection, developing strategies for handling these tasks, identifying required resources and formulating a timeline for accomplishing these tasks. Hammond and Davies (2009: 8) point out that the planning processes and costing for the digitization project are usually guided by the funding body's requirements. Hence, Mammond and Davies (2009: 8) recommend that the more knowledge you have about the materials to be digitized the better, as this would enable you to plan and prepare the project better. In the case where you have a poor knowledge of the materials to be digitized, it may end up costing you more and it may take longer to complete the project than anticipated; or you may not be able to digitize all of the content you had hoped to.

Hammond and Davies (2009: 8) emphasize that planning must be correctly done to the extent that it incorporates costing and time-frame for the digitization process. This includes that the people who will be managing the project must know how many records have to be digitized and in what condition they are. Moreover, the authors advice that in a case where they do not know, they must find out from individuals who have that kind of information, and if none of the individuals know, they must plan the project in such a way that it takes that into account by either allocating a contingency budget or by planning a project review halfway through.

Hirwade (2011) suggests a number of requirements that need to be met when preparing for a library digitization project. Hirwade (2011) proposes the three requirements for

implementing the library digitization project as being the provision of policy guidelines, the required infrastructure and the training of people involved. In addition to these requirements, Kanyengo (2009: 38-39) stipulates technical knowledge, and financial and legal issues. On the other hand, Husmillo (2014: 10) mentions the following requirements of the digitization project:

- Time frame,
- Budget,
- Project activities,
- Staff and/or other technical services/requirements, and
- Results/outcome.

Similarly, Nash, Sterkenburg and Wentzell (2011: 1) state that preparation for digitization project includes but not limited to labor, equipment, training of staff involved, location and facility, budget, timeline, and reflecting on the value added by digitization. Bulow and Ahmon (2011: 10-12) summarize four important requirements/phases to be considered when planning or preparing for a digitization project till the end. These phases are as follows:

- **“Phase one (1):** involves the selection of materials to digitize. Copyright issues need to be considered, as they may be the deciding factor whether it is worth digitizing those materials or not. This phase also includes deciding on the scanning preparations of the document.
- **Phase two (2):** concerns recording the scanned image, the creation of metadata, quality control and Optical Character Recognition.
- **Phase three (3):** concerns information for online presentation. This includes website development, marketing and promoting the end-product.
- **Phase four (4):** covers sustainability and involves the maintenance and long-term financing of the project”.

The University of Stellenbosch library (2019) provides seven (7) steps to consider when preparing for a digitization project. These include:

- **“Policy:** the very first thing to do is to formulate digital reservation policy, using open access, open standards, open source software and open systems.
- **Persistent Uniform Resource Locator (URL):** the next step involves deciding on an IR URL which has an easy name to remember and that will not change overnight, as this is important for visibility on the net, as well as for branding and marketing.
- **Personnel:** personnel will have to be appointed that will work on the digitization project(s). In addition to the library staff that would be involved in the digitizing of materials, there must be at least a library repository manager, a system administrator and a Web developer.
- **IT infrastructure:** this step involves budgeting for the necessary equipment, such as server hardware resources, for the IR.
- **Repository software:** step five involves the installation of the software, e.g. DSpace.
- **System backup and monitoring:** there must be plans in place for disaster recovery.
- **Launch:** the final stage involves the official launch of the repository to ensure that users are aware of its existence and purpose”.

The literature on planning and preparedness for a digitization project provided valuable insights that any information providing agency needs to be aware of when planning and preparing for the digitization project.

2.4. Reasons for digitizing a collection

According to IFLA (2002: 6), there are a number of reasons for implementing digitization projects, which benefit both users and institutions in one way or another. Alhaji (2007: 3) identified four reasons for digitization of library materials which are as follows:

- to provide developed information sharing,
- to provide better access,

- to provide broader access, and
- To provide improved preservation.

Husmillo (2014: 3) provides the following similar reasons to Alhaji (2007: 3) on “why digitize?”

- to help preserve the original materials,
- to provide a bigger access,
- to improve service, and
- To develop new resources.

Chan and Costa (2005: 143) point out that one of the key roles of a library is to provide access to information, and libraries are engaged in digitizing their materials as one of the methods for providing access to information. Jagboro, Omotayo and Aboyade (2012: 2) state that libraries digitize their materials for various reasons, such as providing wider access to collections, as a way to preserve aging materials and also to allow users to search collections comprehensively and rapidly from anywhere at any time. Jagboro et al (2012: 2) state that, in developing countries, digitization helps to prevent theft of library materials where libraries do not have electronic security systems as preventive measures. IFLA (2002: 8) supports Jagboro *et al.* (2012) when it indicates that libraries digitize their collection because it offers the opportunity to preserve the original by giving access to a digital surrogate.

Eke (2011: 1) mentions that digitization of dissertations and theses at the university libraries of Jos and the Obafemi Awolowo Universities (both in Nigeria) provided a model for the Ahmadu Bello University (ABU), also in Nigeria, under the Association of African Universities - Database of African Theses and Dissertation (AAU-DATAD) programme with an intention of providing worldwide access through the internet for all the theses and dissertations accepted for higher degrees at the university. Nsibirwa (2012: 74-78) provides factors that can cause deterioration of library material, such as environmental factors, including the building in which the materials are kept. In addition, Nsibirwa (2012) states that one of the reasons libraries do digitization of materials is for their preservation, and IFLA (2002: 8) differs from her by saying that “digitization is not a

solution to preservation and is also not a cheaper, safer or more reliable way to preserve materials than microfilming”.

Alhaji (2007: 4) warns that physical library materials are prone to wear and tear and can easily be lost to the library communities. This is not the case with digitized materials, and that is why libraries, archives and museums are embarking on digitization. Further, Alhaji (2007: 4) claims that digitized materials are less likely to be damaged and should it be damaged, it is easy to make an exact copy from the original. However, Alhaji (2007: 4) does mention that digital copies are occasionally exposed to computer viruses and can be corrupted. Asogwa and Ezema (2012: 9) agree that viruses and disasters can harm digitized material. This study sought to identify reasons for the KZN information providing agencies to embark on the digitization projects.

2.5. Benefits of digitizing a collection

According to Bulow and Ahmon (2011: 1), the digitization of library materials has a number of benefits and has also put new pressures on libraries, archives and museums. Jagboro *et al.* (2012: 2) agree that users can access the library's digitized materials from their office places even when the library is physically closed. The authors add that access to digitized content is not tied to its physical location nor operating hours. Jagboro *et al.* (2012: 2) state that the digitization of library materials provides wider access to materials as they are electronically available. According to Alhaji (2007: 3) and Jagboro *et al.* (2012: 2), digitized content can be accessed by many individuals at the same time, of which is something not possible with text resources.

According to IFLA (2002: 7), digitization gives institutions a chance to partner with other institutions and share resources. In support of IFLA (2002), Alhaji (2007: 3) adds that by digitizing library information, digitized libraries are able to share information among them, provided they have appropriate metadata and information exchange protocols. Vrana (2010: 326-327) states that one of the benefits of digitizing collection is that it helps in preservation of information and rises the profile of the information institutions as users worldwide access their collections remotely.

King (2009: 76) states that “digitization of collection will significantly increase the ability of researchers to search quickly through huge quantities of digitized collection, which would be a vast improvement over the former manual process”. Digitization may enable improvements in legibility or audibility through technical manipulation, even allowing discovery of information in ways heretofore impossible with the original materials (Gertz 2018). Furthermore, Gertz (2018) highlights that a vital role that digital copies play in the preservation of materials is that surrogate copies are accessed by many individuals and in this way the fragile and valuable originals are protected from being handled by individuals, thus prolonging its life.

2.6. Challenges for preparing a digitization project

Hammond and Davies (2009: 1) identify a number of challenges that sprouted from different digitization projects. These challenges include selection, standards and access as the key components for a digitization project. Trifunovic (2009: 9) adds the following digitization project challenges which he revealed in his study conducted in Serbia:

- absence of funds,
- insufficient staff capacity to take on new projects and technologies, and
- The lack of national directives or guidelines on decent practice and to ensure collaboration between institutions.

Trifunovic (2009: 10) further provides the following concerns of public libraries in Serbia regarding the digitization project such as:

- “What software should be used?
- How can adequate funding be obtained to last for longer periods in order to provide viable projects?
- How should copyright and other legal issues deriving from digitalization be dealt with because current copyright law does not deal with digital materials?”

Todorova *at al.* (2014: 18) identified the following main problems in the study they conducted on the digital preservation policies in Bulgaria and Turkey:

- “Lack of official approved national program for digitization of the Bulgarian cultural-historical and literary heritage;
- Lack of stable financial support of the digitization processes;
- Lack of union catalog and/or database for the existing digital collections; and
- Lack of working communication and partnership between the Bulgarian institutions which are responsible for the digitization project”.

On the one hand, Trifunovic (2009: 28) states that the main challenge is creating long-term sustainable digitization program, which will be recognized by the users (researchers) as trustworthy institutionalized resource (overcoming the discomfort of digital documents, virtual reality, concerns over reliability and quality, privacy intrusions, etc.) The National Research Foundation (2010: 2) claims that digitization is a costly exercise which requires detailed planning and established infrastructure, yet organizations are still embarking on digitization projects, regardless of financial constraints and diminishing institutional budgets. According to De Vries (2009: 7), some digitization projects run only for a short period of time of approximately two to three years because of the low funds for digitization projects. The current study sought to determine the challenges faced by the KZN information providing agencies regarding the preparedness for their digitization projects.

2.7. Selection criteria for collection to be digitized

Libraries cannot just engage in digitization for the sake of digitizing, but must think carefully and decide on which materials to digitize, such as special collections, etc. (Philip 2012). Hammond and Davies (2009: 12) caution that selection of content should be given careful consideration, as there is a diversity of factors that will affect the cost of the project and which need to be considered beforehand. This includes but not limited to the estimations of the content for digitization, the techniques used to capture the content, the preparation time required and ultimately the cost of the project.

Posgate (2008: 12) stresses that the project leader must be aware and know where the materials that make up the collection to be digitized are and if the materials are not local, how they will be gathered to be sent for digitization. Posgate further (2008: 12)

mentions that the condition in which the materials are as well of the quality which the end product will take on must be taken into consideration when deciding on how to handle these materials during digitization. Figure 2.2 below illustrates the proposed selection model of decision-making for digitization projects by Hazen, Horell and Merrill-Oldham (1998):

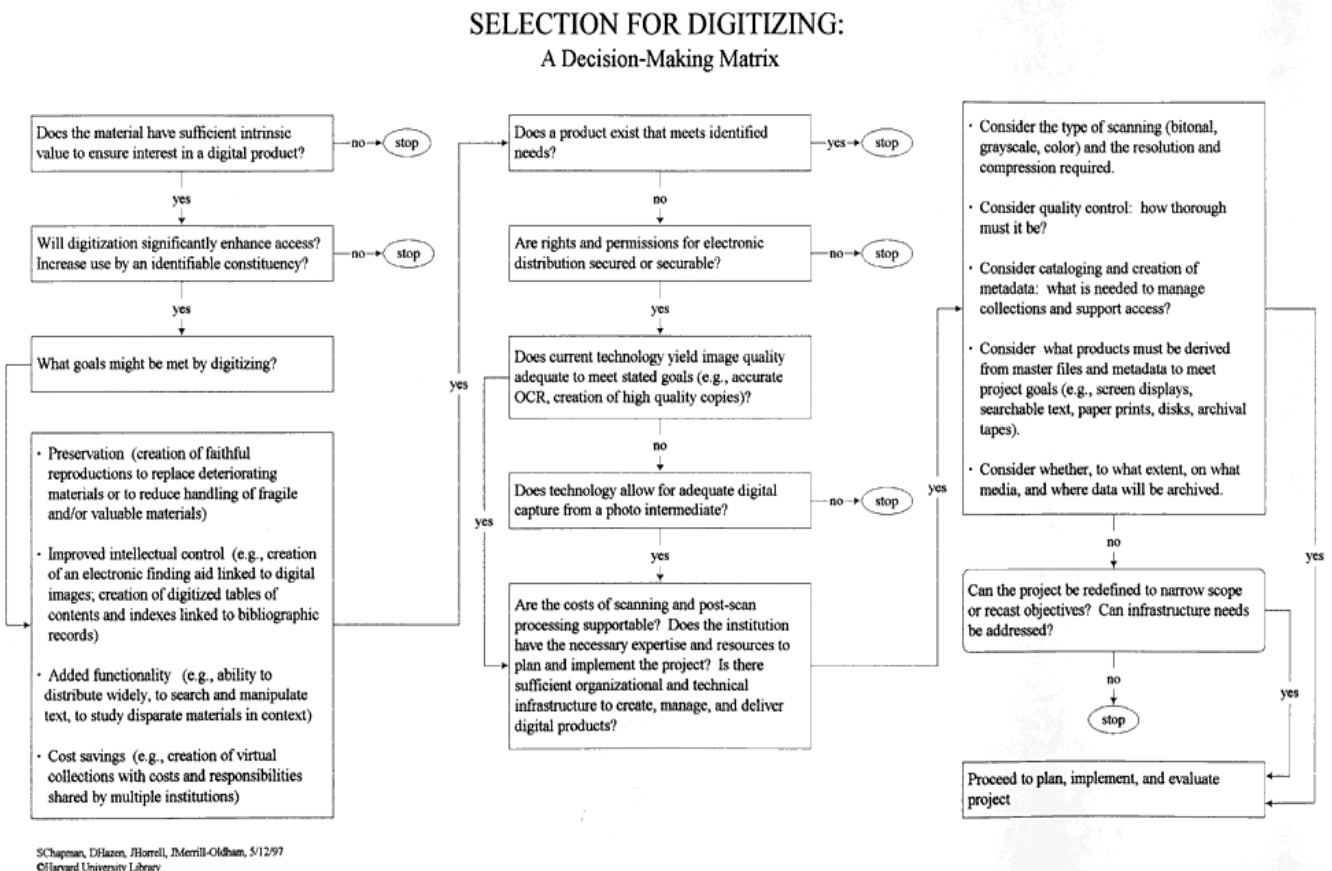


Figure 2.2: Proposed selection model of decision-making for digitization project by Hazen, Horell and Merrill-Oldham (1998)

In *Figure 2.2*, Hazen *et al.* (1998: iv) pose a number of questions to consider when selecting materials to digitize as a guide to help avoid using resources on materials that will not be worthwhile in the long run. According to Nyide (2014: 59-60), the selection of a research collection for digitization is one of the challenges facing digitization project planning. Hence, the library management or project team needs to consider a number

of things, including the costs involved, and whether or not the collection is worth the time.

Layton (2011) feels that you should know the users who will be using the materials in order to know their needs and how they will benefit from digitization. It will also help you decide how to present it to them. Asogwa (2011) suggests that “records to be digitized should be chosen only after a careful selection process”. Jagboro et al (2012: 2) state that most institutions digitize materials that are of immediate and curricular importance. The choice of materials to be digitized may include materials that are on high demand by users and only available in limited numbers or restricted in access.

Selection for digitization forms the online collections built by libraries, archives, historical societies, and other related institutions. In selecting well, institutions of all sizes and types concentrate on the parts of their collections that are best suited to digitization, make the most effective use of the technology, and meet their clients’ needs (Gertz 2018). Furthermore, Gertz provides the following selection criteria to be considered for the digitization project:

- “How do the materials relate to the institution’s collecting policy and to its other digital resources?
- Are they rare or unique?
- Do they provide accurate information in their subject area or contribute to broader or deeper coverage? Do they relate to areas poorly documented online?
- Is there a legal need to preserve the materials and make them widely accessible?
- Are they important for the functioning of the institution?
- Do they support current or new high-priority activities?
- Are they aesthetically appealing?
- Will they display well on-screen?”

Husmillo (2014: 9) agrees with (Gertz 2018) regarding the selection criteria for the digitization as she mentions the following:

- “Selection of materials and resources,

- Physical condition,
- Content,
- Availability of resources (budget, personnel, equipment), and
- Demand or use”.

Gertz (2018) says a value alone is not an adequate reason for digitization. Demand from users is vital. Digitizing and mounting materials publicly is a form of publishing and success in publishing means knowing and targeting the audience. However, the following questions are to be considered:

- Is there an active and current audience for the materials?
- Is current access to the original materials inadequate, perhaps owing to heavy use of popular items or to restricted access to fragile or costly items?
- If current demand is low, will digitization attract enough new viewers to justify the cost?

Klemm (2002: 5) mentions that digitization of library materials requires numerous decisions to be made, starting from deciding which materials to digitize, which software to use, right through to deciding on whether to keep the digitized hard copies or not. Layton (2011) stresses that it is vital to know the kind of collection you have, to understand what collection needs to be selected for the digitization. This includes the usage of the collection, how frequently it is used and what are the risks to damage and loss of materials in the collection. Layton (2011) goes on to suggest that frequently used materials are to be prioritized for digitization. The current study hoped to reveal the selection criteria that are used in determining the types of collection that the KZN information providing agencies are planning to digitize and why.

2.8. Staff training and skills for digitization

Jones (2001) feels that digitization projects for libraries, museums and archives require new skills and the lack of ICT skills are what librarians mostly lack. Kanyengo (2009: 39) notices a similar aspect as he states that the changes brought about by the digitization of materials result in a very urgent need for technical skills. Therefore, Jones (2001)

feels that the ICT skills and experience of staff need to be improved. Nyide (2014: 24) emphasizes that staff have to support the digitization project in order to avoid or minimize resistance from them as this will cause delays. According to Moodley (2009: 4), information workers need to possess exclusive skills to work in the digital information world. Posgate (2008: 9) emphasizes that since staff are likely to take up the biggest part of the budget, it is important to plan beforehand the staff requirements in terms of required skills.

Webb (2004: 35) highlights that “all components of an access system have to work together to ensure access to the digital information”. Thus, Mtshali (2016: 6) states that sufficient skills are needed by staff to do digital preservation and therefore they have to undergo specific training. Training is a systematic process of changing the behavior of the staff to ensure that organizational aims are accomplished. Information professionals, irrespective of their positions at work must be trained. The training programme should reflect the basic knowledge for the job which usually comes from education. A good training should include skill and experience acquisition (Ekwelem 2011: 4).

The current study seeks to find out if staff members in KZN information providing agencies were or will be trained for their digitization projects. According to Somers (2006: 73) digitization projects require a combination of skills from multiple staff with different areas of expertise. Somers (2006: 73-74) further mentions the following important skills for any digitization project:

- “Project management skills, and
- Database development and administration skills”.

Graduates and postgraduates coming from the library schools generally do not have sufficient skills and expertise to work confidently with information technology (IT)” (Ekwelem 2011: 4). Klemm (2002: 4) suggests that workers pool their skills on-line to solve problems. The library digitization project is a very involved process, which requires different specialized skills, ranging from scanning of the documents right through to archiving the completed material for easy access. There are many other stages involved in between, such as setting up the infrastructure, project management,

creating the metadata, quality control, legal, IT and human resource issues. It is therefore important to identify those skills and engage them in forums from the beginning.

Mohsenzadeh and Isfandyari-Moghaddam (2011: 347) state that information professionals need to be aware of the implications brought about by the changes in library environment, and develop technological and managerial skills to make them efficiently in using information and making it accessible. According to Isfandyari-Moghaddam and Bayat (2008: 852), specialized human resources are very significant elements in the success of digitization since the corps of specialized staff is not necessarily restricted to librarians as cataloguers, indexers and archivists, but also includes other fields such as information technology and project management. Isfandyari-Moghaddam and Bayat (2008: 852) identify 21 skills which the digital library staff should have. The following are those identified skills:

- “Ability to formulate search strategies,
- Know how to evaluate the websites,
- Be able to guide and educate users,
- Understand how to integrate network resources,
- Ability to catalogue and organize digital information,
- Understand visualization and digitization technologies,
- Be able to design user interfaces and portals,
- Have knowledge of analysis and interpretation of information,
- Project management,
- OCR (optical character recognition) ,
- Be aware of mark-up languages such as SGML, HTML and especially XML,
- Indexing & Abstracting,
- Technologies of databases,
- Programming,
- Web technology,
- Familiarity with web search tools,
- Management of e-publications,

- Information architecture (IA),
- Information literacy (plus literacy of computer and network),
- Metadata, and
- E-metrics and evaluation methods of DLs”.

According to Hammond and Davies (2009: 16), complete different staffing requirements are needed for digitization projects than for other roles in the library, as staff need specific skills. Isfandyari-Moghaddam (2008: 33) claims that for the digital libraries to be successful, it is vital that all staff have to learn the skills needed for working in digital libraries through on-going informal education. Nyide (2014: 51) points out that the library personnel need to be well-trained in order to acquire the knowledge and skills required for the successful implementation of digitization processes.

2.9. Digitization tools/infrastructure and facilities

Most institutions, especially in developing countries, can hardly keep up with the rapid pace of technological changes in digitization (Ezeani 2009: 15). When talking about digitization, UNESCO (2015: 1) says that digitization is “a creation of digital objects from physical, analogue originals by means of a scanner, camera or other electronic device”. According to Amollo (2011: 23), the right infrastructure includes the right equipment, skilled staff, management support, content developers or contributors and guidelines or standards. Amollo (2011: 24) adds that the correct infrastructure ensure an organized digitization process workflow, in which digitization is able to progress from one point to the next within the reputable system, with no or little obstacle.

Mishra, Vijaianand, Noufal and Shukla (2007: 251) claim that the setting up of the ICT infrastructure for digitization is one of the main components in the planning of the digitization project. Klapwijk (2010: 35-37) discusses the minimum criteria for the digital infrastructure, to which digitization projects should adhere:

- **“Network infrastructure of connectivity:** refers to network connectivity which ensures access to the repository.
- **Hardware:** equipment that supports rendered services to users and ensures the smooth running of procedures to digitize.

- **Backup and disaster recovery:** adequate hardware and software to support backup and a well-written disaster and recovery plan.
- **Identity and access management services (IAM):** refers to the use of an authentication service, where users will be able to authenticate and identify themselves on the system.
- **Security considerations:** refers to a firewall/server-based firewall to strengthen security measures against malicious interventions.
- **Storage:** refers to appropriate space for storage either on the physical hard drive of the server hosting the repository, a Storage Resource Broker (SRB) device, or it could be centrally located on an enterprise Storage Area Network (SAN)".

Adzic (2013: 48) points out that; there is necessary hardware equipment in implementing library material digitization. The worldwide market offers numerous types of scanners such as flat bottom scanners and scanners with a cradle and the selection of these scanners determined by the type of the material to be digitized. ZSR library (2011: 11-15) provides the following types of digitization scanners:

- **"Flatbed scanner** is used for anything small and flat, including loose photos, postcards, manuscripts and currency. Its negatives often require special inserts and expertise. It is cheap and easy to operate. It is also not as good for bound materials.
- **Overhead document scanner** is ideal for large manuscript collections. It is adjustable surface allows for good image capture from bound materials. It is fast and easy to operate. However, it is expensive.
- **Book scanner** is designed specifically for mass digitization of monographs. It is very fast and effective. It is also expensive to lease.
- **Sheet-fed scanner** is great for loose, flat, small, and sturdy items (like catalog cards or loose papers). It is extremely fast (hundreds of scans per minute). It is not a good option for images, manuscripts, or any materials of varying size.
- **Digital camera back and vacuum table** is an ideal for digitizing large and fragile flat items (great for maps). It requires a good amount of training and expertise to operate. It is also expensive".

Rosenberg (2005: 7) stresses that a sufficient ICT infrastructure, which include networked and internet-connected workstations, is a necessity for a library's offering and access to digital resources and to improve electronic services. Mishra *et al.* (2007: 251) agree that for digitization drives, institutions should at least provide the adequate infrastructure, which includes servers, PCs, scanners, internet bandwidth, hardware and software, required for a digitization project. In his study conducted in Serbia, Trifunovic (2009: 8) reveals similar results such as that, generally, Serbian public libraries are well equipped with basic hardware to allow them to commence with digitization projects. Such hardware includes scanners, computers, and cameras. Banach *at al.* (2011: 7) agree that the success of the digitization projects also depends on the hardware and software used to capture and manage the digital materials.

The literature on the digitization tools/infrastructure and facilities was reviewed as this current study was expected to identify technological tools and facilities that would be used by the KZN information providing agencies when digitizing their collections.

2.10. Copyright and intellectual property laws

Beagrie (2019) emphasizes that copyright is a vital component in all digitization projects. According TechSoup (2016: 18), copyright is a well-known concept behind copyright law, permissions, public domain, fair use, orphan works, risk management, and privacy concerns. Asogwa and Ezema (2012: 121) indicate that it is essential to have a clear understanding of the copyright law and rights of ownership before deciding on materials to digitize. Nicholson (2010: 8) warns that with copyright, there are legal issues that must be considered concerning the creation and maintenance of digitized materials. Lopatin (2006: 276) also lists copyright as the first issues to consider for a digitization project. Lopatin (2006: 278) states that information institutions must take into account whether or not the resources to be digitized are protected by copyright law or whether or not it is in the public domain, when they undertake a digitization project. Liu (2004: 342) agrees that before the beginning of the digitization process, librarians have to consider whether or not the digitized material will infringe copyright and intellectual property laws. Thus, Nyide (2014: 84) suggests libraries to consult with a copyright

attorney or specialist before starting a digitization project. Nicholson (2010: 12) advises libraries to make a decision concerning which works require copyright clearance. Nicholson (2010: 12) then provides a number of procedures that need to be followed if copyright clearance is needed, these procedures are as follows:

- Establish whether or not the works are in the public domain. If not, they need to establish who owns the copyright, e.g. individuals, institutions, organizations, shared or joint owners (known and anonymous), research organizations or funding agencies, and so on.
- Approach the relevant copyright holders. The Dramatic, Artistic and Literary Rights Organization (DALRO) have a mandate to clear only reprographic reproductions and transient electronic copies. Permission for works to be digitized or to convert, adapt, translate or migrate born-digital (soft copy) works need to be obtained directly from the rights holders.
- Establish whether the work has more than one copyright holder, e.g. a film, video or DVD can incorporate a number of different copyright works. Permission would be needed from all relevant copyright holders.
- Establish whether all parts of multimedia can be made accessible or whether there are embargoes on some.
- Establish whether there is any digital rights management systems with technological protection measures embedded in the works to be digitized, or in the born-digital works. The library would need to obtain the 'keys' or decryption codes from the rights holders to 'unlock' the content in order to enable access to these works and/or to engage in preservation or digital curation activities.

Hammond and Davies (2009: 13) found that institutions preserve contents that are copyrighted and other rights protected. Therefore, Hammond and Davies (2009: 13) suggest that, "in a case where the institution wants to digitize a collection that is rights protected, it is necessary to seek permission from the copyright owners in time". This is because clearing rights is time-consuming and expensive, as it sometimes requires

paying rights owners to clear the rights. The current study attempted to reveal if the KZN information providing agencies will do any legal consultations regarding copyright for their digitization projects.

2.11. Funding for a digitization project

Mtshali (2016: 7) says that funding for digitization is a crucial factor because many LIS institutions have valuable print records which need to be digitized so that they will be protected from damage and easily accessible at the same time. It does perhaps go without saying that funding is required for resources that ensure preservation and access to LIS institutions. According to Webb (2004: 35), it is important to have enough funding for the management of records and archives. Husmillo (2014: 32) makes the point that in order to obtain grants for the digitization project; you have to know of potential funding sources for libraries and information sector. Husmillo (2014: 32) further adds that managers of digitization projects must send letters of inquiries (LOI) to funding agencies to determine availabilities of grants. All instructions and requirements of the funding agency should be followed and they should be given recognition for their support. In order to do this successfully training on proposal writing should be done.

Amollo (2011: 16-17) identifies a lack of funding as one of the general obstacles for library digitization projects. Kipaani (2012) identifies something similar as he recognizes the managerial and financial constraints as one of the core challenges for the digitization projects. These constraints sometimes result in the digitization projects not being fully implemented. Alhaji (2007: 233) reveals similar findings as his study found that 30 Nigerian university libraries cited inadequate funding as a main constraint for digitization projects. The study conducted by Amollo (2011: 17) in Kenya also revealed that most libraries could not afford to digitize their materials due to cost and inadequate funding.

Cole (2002), voices that today's digitization project managers must give high priority to the factors such as reusability, persistence, interoperability, verification, and documentation when planning their projects. Furthermore, Cole (2002) asks digitization project funding agencies like the Institute of Museum and Library Services (IMLS) and

the National Science Foundation (NSF) to give considerable weight to these same factors when assessing programs and evaluating project proposals. This study was aiming to reveal if the KZN information providing agencies are funded for their digitization projects and that is why the researcher reviewed the literature on funding for the digitization project.

2.12. Implementation of a digitization project

Alhaji (2007: 4) states that the implementation process refers to the real steps required in setting up the collection. Furthermore, Alhaji (2007: 4) emphasizes that before the implementation of a digitization project, it is vital to obtain management approval for the plan and the required resources before continuing with the implementation of the project. According to Husmillo (2014: 17), the implementation phase basically means the actual implementation of project activities to achieve desired outcome and this includes the following:

- Monitoring and reporting,
- Contingency planning, and
- Quality control of outcomes.

Nyide (2014: 45) mentions implementation as one of the most important initial steps in a digitization project. In addition, Nyide (2014: 45) states that it is important to identify and designate project manager to lead the implementation of the digitization project from the beginning. Alhaji (2007: 4) supports Nyide (2014: 45) in this by stating that it is essential to have a full-time project manager for the duration of the implemented project. The literature on the implementation of the digitization project was reviewed as the current study hoped to discover if project managers were identified and designated to run the project for the implementation of digitization project.

2.13. Digitization policies and guidelines

The University of Stellenbosch Library (2019) mentions a digitization policy as a very important aspect to consider when starting a digitization project. According to Cole (2012), digital collection is created according to a certain collection development policy

that has been agreed upon and documented during the preparation of a digitization project. Todorova *et al.* (2014: 28) recommend digitization policies that contain detailed approaches about every single part of digitization and digital collections to be established at an institutional and national level. Liu (2004: 338) points out that most libraries are digitizing their collections, resulting in policy concerns and technology problems surrounding digitization becoming very vital. Liu (2004: 338) further identifies a lack of policies as a digitization challenge for most libraries in the United States of America (USA). Pickover and Mohale (2013: 2) report that libraries and archives engaged in digitization projects are facing challenges of developing digitization policies, strategy frameworks and standards. Liu (2004: 338) mentions that in-as-much as most libraries in the USA are involved with digitization processes but most of them still lack guiding policies regarding processes and procedures. This is also the problem in Nigeria and other countries, as Alhaji (2007: 234) points out that there is a lack of institutional policy is one of the main challenges of the digitization projects in Nigerian universities. Nyide (2014: 184) reveals in her study that even though there were strategies in place for digitization but when it comes to policies, there is either no digitization policy or the policy is not readily available in the UKZN library.

Klemm (2002: 5) says that institutions are always asked to design plans, proposals, samples, and better procedures and in the case of library digitization, institutions need to work on the digitization procedures for improvement on the project. Asogwa (2011) suggests the following guidelines for digitizing collections:

- “The process of digitization must not place original records at risk of damage from handling or use,
- The original analogue document or a digital version must always be kept,
- Records to be digitized should be chosen only after a careful selection process,
- The technological approach to digitization must satisfy project objectives and must accommodate the characteristics of the records, such as the principle of provenance or the sanctity of the original order, and

- Search tools are an essential part of a digitization project and must meet the needs of users”.

Klemm (2002: 4) says that digitization projects are time-consuming and expensive, and by understanding similarities and differences within and outside the institution, it will make it easier to adapt the strategies and policies in other institutions that have engaged in similar projects to suit your needs. According to Layton (2011), a digitization strategy is a statement for how an institution positions itself in the field of digitization and what it is planning to do about this. It also provides a library’s approach in relation to the digitization activities. Layton (2011) further states that this strategy is a crucial document aimed at providing focus and direction to meeting a goal, as well as the means for measuring progress towards meeting that goal.

Layton (2011) suggests that the digitization strategy and policy must be reviewed on a regular basis, either annual or bi-annually, to reflect changes that may have come up in the digitization process. Lastly, Layton (2011) provides guidelines to the drafting of the digitization strategy as a set of minimum information elements, to include:

- Know your users
- Know what you have,
- Determine your selection principles and rules, and
- Describe the digital items and collections.

The current study is expected to ascertain if the KZN information providing agencies have drafted policies and guidelines prepared to be followed when digitizing their collections.

2.14. Digitization process

Liu (2004: 342) notices that concerns are more based on the processes not involving a lot of steps for processing the digitization of materials, for example, scanning to be done without removing the binding of the materials. Asogwa (2011) suggests that digitization process must not place original records at risk of damage from handling or use. The

Dartmouth Library (2018) supports Asogwa's (2011) suggestion that it is significant to make sure that the process of digitization does not put the original materials at risk.

Adzic (2013: 48) highlights that before the beginning of the process of digitization, it is necessary to provide quite a lot of things such as appropriate technical equipment, the software that will allow the presentation of digitized material and trained staff that is able to carry out the process. According to ISPAT Guru (2016), there are plentiful stages in the life cycle of the digitization process. Digitization is the central activity of digital projects and consists of the process of converting information into digital form. The stages may differ depending on the nature of materials. These general stages of the digitization process are shown in *Figure 2.3*.



Figure 2.3: Steps in the digitization process

Nyide (2014: 24) emphasizes that decision-making is imperative when it comes to digitization processes. The current study sought to ascertain the prepared digitization processes that will be followed by the KZN information providing agencies when digitizing their collection and to find out if they have appropriate technical equipment for digitizing materials.

2.15. Data storage and information management of digitized collection

According to Hammond and Davies (2009: 21), managing information is one of the most challenging aspects of the digitization project. Consequently, Read (2012) stresses that data should be stored using appropriate standards to make sure they are usable and easily retrieved. According to Oliver (2015: 9), regarding the storage, some institutions are daunted by the prospect of storing digitized materials. Therefore, before beginning a digitization program, the matter of storage must be addressed. It should be kept in mind that there are tremendously inexpensive solutions, like external hard drives with a built-in back-up, compact discs, and cloud storage. This ensures that you can recover and access digital data if anything happens to one kind of storage, like format obsolescence or corruption. Hammond and Davies (2009: 21) state that keeping track of the content, the progress of the project and the information generated during the project is not easy. Furthermore, Hammond and Davies (2009: 21) provide the following examples:

- “The physical location of the content (e.g. in archives, in transit, or with a sub-contractor);
- The progress of each item of content (e.g. digitized, metadata generated);
- The digital files created (e.g. master file, low resolution files, playback copies);
- Associated information (e.g. rights clearance status and supporting evidence);
- Metadata; and
- The Quality Assurance (QA) status (e.g. has it been signed-off)”.

Nyide (2014: 56) warns that at the beginning of the digitization project there is a great need to make a decision on how tracking and information management is done and who will be responsible for it. This study sought to determine the information management systems (IMs) that are used or will be used by the KZN information providing agencies to store their digitized collection.

2.16. Cataloguing and classification/metadata standards

Metadata is generally defined simply as data about data and is an essential ingredient needed to support almost all current approaches to digital collection interoperability and aggregation. Metadata may be sub-classed as descriptive, administrative, or structural

and for some digitization projects full attention to all three subclasses of metadata will be required to ensure a successful digitization project (Cole 2002). TechSoup (2012: 19) mentions cataloguing and classification of digitized materials as one of the most important activities in the digitization project. According to Gorman (2006: 6), most of digital resources are not catalogued because of the cost of creating digital archives. However, according to Layton (2011), it is vital to clearly specify the format and media metadata to use for the collection when describing the digitized collections. He adds that the digitization strategy must be specific on which repository the digital collection will be stored. According to Cole (2012), good metadata records are objects themselves and therefore, should have the qualities of good objects, including achievability, persistence, unique identification, etc. Good metadata should be authoritative, verifiable and supports the long-term management of objects in collections.

According to Banach *et al.* (2011: 12), there are diverse types of metadata and all of them support the discovery, evaluation, selection, access, navigation, management and preservation of digital objects. Corrado (2017: 19) stresses that metadata is essential for digital preservation and there are standards that support storage, access, and retrieval. Those are required for any kind of digital library initiative, since otherwise digital files are completely invisible. Corrado (2017: 20) further mentions the following descriptive metadata which are: “Dublin Core, VRA (Visual Resources Association) Core, Rights metadata and Embedded metadata standards”. The ZSR library (2011: 29) continues by providing the following types of metadata standards used in describing digital collection: “Archives Encoded Archival Description (EAD) is a standard for encoding archival finding aids using XML in archival and manuscript repositories. Arts and Museums Categories for the Description of Works of Art (CDWA) is a conceptual framework for describing and accessing information about works of art, architecture, and other material culture. The Visual Resources Association (VRA) is the organization that provides a categorical organization for the description of works of visual culture as well as the images that document them. Darwin Core Biology Darwin Core (DCBDC) is a metadata specification for information about the geographic occurrence of species and the existence of specimens in collections. The Text Encoding Initiative (TEI) is a

standard for the representation of texts in digital form, chiefly in the humanities, social sciences and linguistics. NISO MIX Images Z39.87 Data dictionary is a technical metadata for digital still images (MIX) - NISO Metadata for Images in XML is an XML schema for a set of technical data elements required to manage digital image collections. Machine Readable Cataloging (MARC) is a librarianship standard for the representation and communication of bibliographic and related information in machine-readable form. Librarianship Metadata Encoding and Transmission Standard (METS) is an XML schema for encoding descriptive, administrative, and structural metadata regarding objects within a digital library. Librarianship Metadata Object Description Schema (MODS) is a schema for a bibliographic element set that may be used for a variety of purposes, and particularly for library applications. Librarianship Organic Bibliographic Information Schema (XOBIS) is an XML schema for modeling MARC data. Multimedia MPEG-7 is an ISO/IEC standard which specifies a set of descriptors to describe various types of multimedia information and is developed by the Moving Picture Experts Group. The Dublin Core Networked resource (Dublin Core) is an interoperable online metadata standard focused on networked resources”.

Carbonero and Dolendo (2013: 3) recommend that cataloguers should be skilful of doing descriptive cataloguing (identification of access points or the main entry and the appropriate use and understanding of International Standards Bibliographic Description). Sibiya (2016: 83) found that International Standards Bibliographic Description include Machine Readable Cataloguing (MARC), Anglo American Cataloguing Rules (AACR) and or Resource Description and Access (RDA). Carbonero and Dolendo (2013: 3) add that cataloguers must be able to do subject analysis (subject of the work and tracings) demonstrate an ability to identify a catalogue entry directly under the most specific subject heading that accurately represents its content). Sibiya (2016: 83) found that cataloguers from both academic and public libraries in KZN use Library of Congress List of Subject Headings (LCSH) and SEARS lists of subject headings when assigning subject headings for their collections. In terms of classification, Carbonero and Dolendo (2013: 3) say that cataloguers must be able to assign class numbers through the use of Dewey Decimal Classification (DDC) or Web

Dewey, Library of Congress Classification (LCC) and Universal Decimal Classification (UDC). This current study sought to determine the metadata standards that will be used for the digitized collection in the KZN information providing agencies.

2.17. Access to digitized collection

It is significant to make sure that data is accessible to both designated users and re-users, on a day-to-day basis. This may be in the form of publicly available published information. Robust access controls and authentication procedures may be applicable (Digital Curation Centre (DCC) 2019). Digitization expands access to information resources. By digitizing library collections, information will be accessible to all instead of a group of researchers. Digital projects allow users to search for collections quickly and comprehensively from anywhere at any time. Digitization simply makes the invisible to be visible. The majority users can access the same material at the same time without interruption. It also eliminates the difficult of distance, as users do not have to travel to libraries that possess the hard copies of library materials before they can access and use such materials (Fabunmi et al. 2009: 31).

According to Somers (2006: 2), it is important for libraries to ensure that more individuals can access information but also that the original documents are not exposed to too much wear and tear. This can be achieved through digitization. The current study aimed to reveal whether the digitized collection in the KZN information providing agencies will be accessible to the public or not.

2.18. Summary

This chapter discussed the theoretical framework for the current study as well as reviewed literature on different aspects of digitization. The next chapter, Chapter Three, discusses the methodology employed for this study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Introduction

Dawson (2002: 14) defines research methodology as “a philosophy or the general principle which will guide your research. It is the overall approach to studying your research topic and includes issues you need to think about such as constraints, dilemmas and ethical choices within your research”. Graziano and Raulin (2004) state that a research methodology is concerned with answering specific research questions. In this study, four (4) critical questions are investigated.

3.2. Research paradigm

There are many definitions of the term “paradigm”, however, Bryman (2012: 630) defines a term “paradigm” as a “cluster of beliefs and dictates which for scientists in a particular discipline influence what should be studied, how should be it done, and how results should be interpreted”. On the other hand, Neuman (2003: 541) defines a paradigm as a “general organizing framework for social theory and empirical research”. The paradigm is made up of ontology and epistemology (Mack 2010: 5). Ontology is defined by Mack (2010: 5) as claims and assumptions that are made about the nature of social reality, claims about existence, what it looks like, its components and how those components interact. Ontological assumptions are divided into two main streams: realism (the world of objectivity) and relativism (governed by subjectivity). This study was guided by the relativism stream. Poetschke (2003: 3) describes epistemology as the “theory of knowledge” and says that an individual’s epistemological position reflects the way we can know the world. Flick (2015: 20) identifies three (3) types of epistemological assumptions, namely positivism, interpretivism and pragmatism. The current study used interpretivism.

Babbie and Mouton (2006: 48-49) link the paradigms of social science to different methodological approaches by relating the quantitative approach to positivism and the qualitative approach to interpretivism. Consequently, this study adopted interpretivism since it is a qualitative study. The researcher’s decision on adopting an interpretive

paradigm is also influenced by Schutt (2006: 41) when he says that interpretivists' social science studies usually makes use of interpretivism.

3.2.1. Interpretive/constructive paradigm

The interpretive/constructive paradigm is described by Creswell (2003: 8) as the paradigm in which the researcher relies on participants' views of the situation being studied. He further states that the constructivist researcher relies more on the qualitative data collection methods and analysis. Wahyuni (2012: 21) says that interpretivist researchers favor to interact and have a dialogue with research participants in order to understand the social world from their experiences and the subjective meaning that they are attached to.

3.3. Research approach

Welman, Kruger and Mitchell (2010: 6) state that there are two main approaches in research, namely the qualitative and quantitative approaches. Du Plooy-Cilliers, Davis and Bezuidenhout (2018: 14) say that when you reach this stage in the research process, you should already have an idea of what or who you want to investigate. Your main consideration during this step would be whether you use a qualitative or quantitative approach, or even both, known as mixed-methods approach. Furthermore, they briefly distinguish between quantitative and qualitative approaches by referring to how you choose, collect, analyze and interpret the information that will serve as evidence. It also determines the data collection and analysis methods that you will use.

O'Leary (2004: 99) defines qualitative and quantitative as adjectives for type of data and corresponding modes of analysis, where quantitative data is presented through numbers and analyzed using statistics; and qualitative data is presented through words, pictures or icons and analyzed using thematic exploration. This study adopted a qualitative approach due to the nature of the information this study intends to obtain. This decision is also influenced by successful studies that have been conducted in the LIS field such as those of Nyide (2014), which was on "The digitization of theses and

dissertations at the University of KwaZulu-Natal,” and Mtshali (2016) which was on “Preservation of, and access to records at the KwaZulu-Natal Archives.”

3.3.1. Qualitative method

Welman *et al.* (2010: 6) mention the positivist approach as an approach based on philosophical approach known as logical positivism as one of the two main approaches in research. The positivist approach to research is also known as the quantitative approach. This approach is opposed by the anti-positivist approach which is also known as the qualitative approach. Kader (2007) explains that the qualitative research is more subjective; it is more in-depth, exploratory, interpretive and open-ended in nature. Lincoln (2011: 3-4) adds that the goal of qualitative research is to capture the understanding of the social phenomenon as the participants experience it and where the researcher is part of the phenomenon of interest. According to Du Plooy-Cilliers *et al.* (2018: 14), “a qualitative research presents interpretive data”.

3.4. Research design

According to Babbie and Mouton (2006: 74) a research design is “a plan of how the researcher methodically collects and examines the data necessary to answer the research questions”, while Coolican (2004: 19) explains research design as a step that researchers pursue to complete their study from the beginning to the end. From De Vaus’s point of view (2001: 9), a research design is more than a work plan in the sense that the work plan will flow from the project’s research design. He further adds that, the role of a research design is to make sure that evidence obtained allows the researcher to answer the research question.

Mtshali (2016: 65) says that researchers may adopt different kinds of research designs for their studies. According to Babbie and Mouton (2001: 83), there are three main research strategies: experiments, surveys and case studies. The researcher adopted a multiple case study research design for this study. The choice of research design by a researcher mainly depends on the nature of the research. Babbie and Mouton (2006: 75) recommend that attention has to be given to the research question and the research

problem. Durrheim (2006: 37) emphasizes that when designing the study, a researcher must be guided by the purpose of the research, the theoretical framework informing the research, the context within which the research is to be carried out and the research instruments engaged to collect and analyze the data.

3.4.1. Research method/strategy

For this study, the researcher used the type of case study called multiple case study research method. Baker (2006: 4) mentions that the case study method, particularly the multiple-case studies design, offers LIS researchers an established tool for accomplishing a deep understanding of a specific phenomenon. Moreover, he points out that the case study represents a specific tradition within the qualitative research paradigm and attempts, on the one hand, to arrive at a comprehensive understanding of the event under study but at the same time to develop more general theoretical statements about regularities in the observed phenomena.

3.5. Targeted population

According to Sekaran and Bougie (2016: 236) and Henn (2009: 153), “population is the entire group of people, events, or things that the researcher desires to investigate”. In addition, Bless *et al.* (2013: 394) defines the term “population” as a set of elements that the researcher focuses upon and to which the results obtained by testing the sample could be generalized. Sometimes it is called the target population. Savin-Baden and Major (2013: 32) state that “any group of, say, individuals, events or objects that share a common characteristic and represent the whole or sum total of cases involved in a study is called population”. Furthermore, they add that the separate individuals or objects belonging to the population are called the elements of the population.

The targeted population for this study was the staff members involved in the preparedness for the digitization projects in the Msunduzi Municipal Library, UniZulu Library, Don Africana Reference Library and Durban Local History Museums. The population for the current study was expected to consist of nineteen (19) staff members, but only twelve (12) participated in the study. The researcher managed to obtain

permission to collect data from only three institutions, namely; Msunduzi Municipal Library, UniZulu Library and Durban Local History Museums. Several attempts to obtain permission to collect data from the Don Africana Reference Library were unsuccessful. These attempts were made from May 2019 to December 2019 which included e-mails, telephone and cell phone calls. Table 3.1 presents the institutions in which the researcher collected data from and the number of staff members involved in preparing for digitization projects in KZN:

Table 3.1

Name of institution and the number of staff members

Name of institution	Number of staff members
Msunduzi Municipal Library	09
UniZulu Library	02
Durban Local History Museums	01
Total	12

The researcher obtained the number of staff involved in the digitization project from the Senior Librarian at the Periodicals Department in the Msunduzi Municipal Library, the Electronic Resource Librarian at the UniZulu library, and from the Head of the Durban Local History Museums.

3.6. Sampling

Maree (2016) refers to sampling as “the procedure of taking a sample from the targeted population and points out that there are two types of sampling, namely; probability and non-probability sampling techniques”. Kumar (2014: 234) defines probability sampling as “a sampling method whereby each and every element in the targeted population has an equal chance to be considered to form the sample of the study”. Maree (2016) mentions simple random sampling, systematic sampling, stratified random sampling and cluster sampling as the probability sampling techniques.

Non-probability sampling methods refer to samples that are selected based on the subjective judgment of the researcher, rather than random selection (Maree 2016: 197). Brink, Van der Walt and Rensburg (2012) state that non-probability sampling consists of the following types of sampling techniques: convenience sampling, quota sampling, purposive sampling or theoretical sampling, and special technique sampling, which include snowball or network sampling". This study adopted purposive sampling and the researcher is supported by Gelo, Braakmann and Benetka (2008: 275) when they say that "a qualitative approach usually adopts purposive sampling strategy".

3.6.1. Purposive sampling

Purposive sampling is based on the judgment of the researcher. This means that the participants should meet a specific criterion to be included as part of the sample of the study (Maree 2016: 198). Kumar (2012: 207) agrees that purposive sampling is when a researcher chooses only those people who, in the researcher's opinion, are likely to have the required information, as well as being willing to share it. Bless *et al.* (2013: 1770) reason that "purposive sampling rests on the assumption that the researcher knows what type of participant is needed". In this case, the researcher interviewed all staff members who are involved in preparing for digitization projects in the KZN information providing agencies.

3.7. Census

According to Remler and Van Ryzin (2011: 146), a term "census" refers to any study in which data is collected from the entire targeted population. De Vaus (2014: 66) agrees that a census is obtained by collecting data from every member of a group that is the population. The researcher used a census to all 12 staff members who are involved in preparing for digitization projects in the KZN information providing agencies and this was because the population was manageable. Krippendorff (2013: 121) supports the researcher's decision as he says that if the set of the population is manageable, the researcher has no need to reduce it by using relevance or random sampling.

Additionally, White and McBurney (2012: 429) mention the following advantages of a census study:

- It gives the high possibilities to identify negative feedback,
- Increase confidence interval, and
- It studies the entire population.

Lastly, Lavrakas (2020: 1) states that “a census can provide detailed information on all or most elements in the population, thereby enabling totals for rare population groups or small geographic areas”.

3.8. Data collection method/technique

Leedy and Ormrod (2015: 31) define data collection as “a systematic approach of gathering and measuring information from a variety of sources to get a complete and accurate picture of an area of interest”. Du Plooy-Cilliers *et al.* (2018: 14) highlight that data collection is one of the most significant aspect of any study. Researchers need to take great care when collecting data, because if it is collected incorrectly, it will lead to invalid results and findings. Nonetheless, before a researcher start to collect your data, a researcher needs to consider a very important fact, namely “time”. Leedy and Ormrod (2015: 31) further state that data is collected for a certain purpose and there are different methods that are used such as questionnaires, interviews, observation, experiments, and existing records. Durrheim (2008: 51) agrees with Leedy and Ormrod (2015: 31) that researchers use different methods to collect data and data collection methods include questionnaires, interviews, observation, experiments, etc.” For this study, the researcher used interviews to collect data from participants.

3.8.1. Interviews

The researcher used interviews to collect data from participants. In the current study, the researcher conducted semi-structured face-to-face interviews with the staff members involved in preparing for the digitization projects in KZN information providing agencies. This is because the researcher wanted to interact directly with the targeted population about their preparedness for digitization projects in their institutions.

3.8.1.1. Face-to-face interviews

The researcher designed an interview schedule for the study. Babbie and Mouton (2001: 249) mention that “in face-to-face interviews the researcher or interviewer asks the participants questions orally and records the participants’ responses”. Consequently, the researcher used a recording device during the interview process to collect data for the study. The researcher made appointments with heads of departments (HoDs) to ask for a permission to conduct interviews. Lastly, the researcher introduced the study before the interviewing of participants.

3.8.2. Pilot testing of the instrument

According to Sekaran and Bougie (2010: 210), “pre-testing involves the use of a small number of participants to test the appropriateness of the questions and their comprehension”. Therefore, the researcher pre-tested the instrument for the study by interviewing one staff member at the Durban University of Technology (DUT) library about digitization projects and this staff member and other staff members from the DUT were not included in the actual study. The researcher hoped to pre-test the instrument with more than one staff member at the DUT library, but several attempts to involve more staff members were unsuccessful. Pre-testing the instrument helped the researcher to determine whether all interview questions were understood or not. Fortunately, there was only one change to be made. The researcher changed “file size” to “file format”.

3.8.3. Validity and reliability

Babbie (2008) states that it is vital for the researcher to make sure that the chosen research methodology and data collection instruments used are both valid and reliable. According to Leedy and Ormrod (2005: 28), the validity of a measurement instrument is the extent to which the instrument measures what it is supposed to measure and reliability is the consistency with which a measuring instrument yields a certain result when the entity being measured has not changed (Neuman 2011: 377). For this study,

the validity and reliability of the instrument were tested through pilot testing of the instrument.

Bearden, Netemeyer and Mobley (2011: 60) state that validity determines the truthfulness of the research findings or the extent to which the researcher truly measured what was intended to be measured. Picardi and Masick (2014: 73-88) state that there are basic ways to access validity and they are:

- Content validity: is the extent to which the measuring instrument provides adequate coverage of the topic under study.
- Construct Validity: this approach evaluates a measure by how well the measure conforms to theoretical expectations.
- Criterion-related validity: this approach reflects the success of measures used for prediction or estimation.

The validity of this study was tested using content validity. The researcher ensured that all interview questions were in line with the topic and objectives of the study, framework and literature reviewed for this study. Struwing and Stead (2013: 138) explain that reliability is the extent to which test scores are accurate and consistent. In addition, Bless, Higson-Smith and Sithole (2013: 222) state that reliability is concerned with the consistency of measures. The researcher ensured that all interview questions were clear enough for the participants to answer and clarify where it was necessary.

3.9. Data analysis

Savin-Baden and Major (2013: 435) simply define data analysis as “a systematic search for meaning”. Business dictionary (2018: 22) refers data analysis as “a process of evaluating data using analytical and logical reasoning to examine each component of the data provided”. According to Babbie (2008: 122), once the data is collected in a suitable form, you are ready to interpret it and draw conclusions that reflect the interest, idea and theories that initiated the inquiry. In the data analysis, the researcher is required to spell out the purpose of the analysis. The researcher analyzed the collected data for this study using qualitative content analysis based on Tesch’s approach.

3.9.1. Tesch's approach

Tesch (1992: 142-145) provides detailed guidelines to develop an organizing system for qualitative data. The following are the eight steps of Tesch's approach to consider in qualitative data analysis:

Step 1: The researcher must to read the whole transcript carefully to get a sense of the whole data and to jot down some ideas (Theron 2015: 7) and (De Vos 1998: 343-344). Theron (2015: 7) adds that this gives the researchers the necessary contextual information and advices that if something come to mind about the data, the researchers should write these ideas down.

Step 2: The researchers start with one transcript and whilst going through it, ask themselves "what is this about?" The question does not refer to the content of the document but to the research topic. Then, the researchers write these topics in the margin of the document (Theron 2015: 7 and De Vos 1998: 343-344).

Step 3: According to De Vos (1998: 343-344) and Theron (2015: 7), after finishing this procedure for several documents, the researchers make a list of all the topics, one column per data document, placing all the columns on the same sheet. They need to compare all the topics and group similar topics together. Write these groups in columns, perhaps with headings that represent the major topics, the unique topics and leftovers" (Theron 2015: 7).

Step 4: "The researcher applies the list of themes or topics to the data". These themes or topics are abbreviated as codes and written next to the appropriate segments of the transcripts (De Vos 1998: 343-344). Theron (2015: 7) says that the researchers are then advised to be open for new categories and codes that may emerge. If any ideas about the data come to mind, the researchers should write it down in their notes (analytic memos).

Step 5: The researchers find the most descriptive wording for the themes or topics and categorize them. Further draw the lines between categories to show the relationships (De Vos 1998: 343-344). Theron (2015: 7) adds that the normal number of categories is between 20 and 50. Lastly, he says that this is the organizing system for the data.

Step 6: The researchers make a final decision on the abbreviation for each category and alphabetizes the codes (De Vos 1998: 343-344 and Theron 2015: 7). Theron (2015: 7) reminds researchers that they should remember that categories have ambiguous boundaries and a segment of data can fit into two or three categories.

Step 7: The data belongs to each category and the researcher performs a preliminary analysis, looking at all the material in one category at a time (Theron 2015: 7 and De Vos 1998: 343-344). The focus is now on the content of each category. During this process, keep the research question in mind in order to discard irrelevant data (Theron 2015: 7).

Step 8: In this step, if required, the researchers recode the existing data (Theron 2015: 7 and De Vos 1998: 343-344). The organizing system helps the researchers to give structure to their research reports (Theron 2015: 7).

3.10. Ethical consideration

Cohen, Manion and Morrison (2011: 62) state “that formal procedures for obtaining permission to conduct a research study must be carried out in all fields of research”. Hence, for this study, the researcher asked for an ethical clearance letter from the Institutional Research Ethic Committee (IREC) in the Durban University of Technology (DUT) and it was granted (see Appendix D). The researcher also asked for the gatekeepers’ permission to collect data from each institution participated in this study and, fortunately enough, it was granted.

3.11. Summary

This chapter introduced and discussed the research methodology used for the current study. This discussed research methodology, which includes a research paradigm, research approach, research design, targeted population, sampling, data collection, data analysis, and ethical consideration. The next chapter focuses on the presentation of the research results.

CHAPTER FOUR: PRESENTATION OF RESULTS

4.1. Introduction

This chapter presents the results for this study obtained through the semi-structured face-to-face interviews conducted by the researcher. The aim of this study was to investigate the preparedness for digitization projects in the KwaZulu-Natal (KZN) information providing agencies. The following were the research objectives of the study:

- To find out how do the KZN information providing agencies prepare for their digitization projects,
- To identify types of collections that the KZN information providing agencies are preparing to digitize and why?
- To ascertain if the KZN information providing agencies have written policies and guidelines prepared to be followed when digitizing their collections, and
- To ascertain if there are prepared digitization processes that will be followed by the KZN information providing agencies when digitizing their collections.

The researcher collected data using semi-structured face-to-face interviews from staff members involved in preparing for digitization projects in KZN, and analyzed data using the Tesch's method of data analysis.

4.2. The process of data analysis

Tesch's method of data analysis for qualitative research was used in presentation, interpretation and analysis of results of the research findings. The description of this method is discussed in Chapter Three. The researcher designed an interview schedule (refer to Appendix A) for the study and used a recording device during the interview process to record data for the study. The researcher listened to recordings and transcribed them to familiarize himself with the data. Thereafter, the researcher manually picked each transcript, and analyzed them individually until all of the transcripts were analyzed and similar topics were coded together. These similar topics were categorized after coding and merged with themes.

4.3. Categories and themes

The following table shows the categories and themes for the current study:

Table 4.1: Categories and themes

Categories	Themes
4.3.1. Biographical information	4.3.1.1. Name of institutions surveyed 4.3.1.2. Current position of participants 4.3.1.3. Qualification of participants 4.3.1.4. Years of experience in current position 4.3.1.5. Years of experience in digitization
4.3.2. Digitization	4.3.2.1. Preparedness for a digitization project 4.3.2.2. Benefits of digitizing collection 4.3.2.3. Challenges for digitization project 4.3.2.4. Types of collection institutions plan to digitize 4.3.2.5. Reasons for institutions preparing to digitize these collections 4.3.2.6. Selection criteria for collections to be digitized
4.3.3. Digitization project staff members	4.3.3.1. Staff members for the digitization project 4.3.3.2. Training on collections digitization 4.3.3.3. Staff support
4.3.4. Digitization tools and facilities	4.3.4.1. Digitization tools and facilities available for a digitization project 4.3.4.2. Rating the technical support

4.3.5. Collections digitization	4.3.5.1. Digitization policies and guidelines 4.3.5.2. Digitization process
4.3.6. Copyright and intellectual laws	4.3.6.1. Copyright owner for digitized collection 4.3.6.2. Copyright agreement with the copyright owners of the original work
4.3.7. Bibliographic standards	4.3.7.1. Bibliographic/metadata standards for cataloguing 4.3.7.2. File naming systems 4.3.7.3. File format for the digitized collection
4.3.8. Storage for digitized collection	4.3.8.1. Storage capacity for digitized collection 4.3.8.2. Security for digitized collection 4.3.8.3. External storage for recovery in case of disaster
4.3.9. Access and management of digitized collection	4.3.9.1. Access to digitized collection 4.3.9.2. Members with access to digitized collection 4.3.9.3. Information management system for digitized collection
4.3.10. Funding for a digitization project	4.3.10.1. Available funds for the digitization project 4.3.10.2. External funders for digitization projects
4.3.11. Operational support for a digitization project	4.3.11.1. Monitoring of the daily running of a digitization project
4.3.12. General comments on a digitization project	4.3.12.1. General comments on a digitization project

4.4. Presentation of results

The following are the findings from semi-structured face-to-face interviews with staff members involved in preparing for digitization projects in KZN. These findings do not include staff members from the Don Africana Reference Library which several attempts by the researcher to obtain permission to collect data were unsuccessful. To maintain the anonymity of the participants, they are referred as “respondent one (1) to respondent twelve (12)” and to maintain the anonymity of the institutions, they are referred as “institution one (1) to institution three (3)”. These results are presented in tables, and texts and frequency counts with percentages are presented where possible.

4.4.1. Name of institutions surveyed

A total number of twelve (12) staff members involved in the preparation for the digitization projects in the KZN information providing agencies participated in the current study. Participants were asked to state the names of their institutions in ensuring that they are the population of the expected institutions for the study. The following Table 4.2 presents the names of institutions and departments to which the 12 interviewed participants belonged.

Table 4.2

[N=12]

Name of institutions surveyed

Institution	Department	Frequency
Msunduzi Municipal Library	Periodicals Department	09
University of Zululand Library	Electronic Resources and Metadata Management	02
Durban Local History Museums	Department of Heritage and Libraries	01
Total		12

4.4.2. Current positions of participants

To establish the current positions of the participants, the researcher asked participants to mention their current positions during the interview process. The study revealed the following current positions for the staff members involved in preparation for digitization projects in the KZN information providing agencies:

- One (8%) of 12 participants is a Digitization Librarian,
- One (8%) of 12 participants is an Electronic Resource Librarian,
- Five (42%) of 12 participants are the Library Assistants,
- One (8%) of 12 participants is a Photographer,
- Two (17%) of 12 participants are the Librarians,
- One (8%) of 12 participants is a Senior Librarian, and
- One (8%) of 12 participants is an Information Librarian.

The current study revealed that most (five (42%)) of the 12 participants for the study are in the Library Assistant positions.

4.4.3. Qualification of participants

To reveal the qualifications of staff members preparing for the digitization projects in the KZN information providing agencies the participants were asked to confirm their educational qualifications and the results are as follows:

- Five (42%) of the 12 participants have grade 12 (Matric)
- One (8%) of the 12 participants has a post-graduate diploma in information studies.
- One (8%) of the 12 participants has a post-graduate diploma in library and information science.
- One (8%) of the 12 participants has a Bachelor of Technology (B-Tech) degree in photography.
- One (8%) of the 12 participants has an Honours degree in information science.
- One (8%) of the 12 participants has a B.Bibl. Honours.

- Two (17%) of the 12 participants have a master's degree in library information science.

These results show that grade 12 (matric) is the most dominant qualification with five participants (42%). This was followed by a Master's in Library and Information Science with two (17%) participants. It is a concern that the majority of the staff members involved in the digitization projects has only a matric qualification.

4.4.4. Years of experience in current position

To ascertain the years of experience for the staff members involved in the preparedness for the digitization projects in the KZN information providing agencies the participants were asked to indicate their years of experience in their current positions. This study ascertained the following years of experience for the staff members involved in digitization projects in the KZN information agencies in their current positions:

- Seven (58%) of the 12 participants have between 0-5 years' experience.
- Four (33%) of the 12 participants between 6-10 years' experience between 6-10 years, and
- One (8%) of the 12 participants has more than 15 years of experience in his position.

Most (seven (58%)) of the 12 participants for the study have between 0-5 years' experience in their current positions, while only one (8%) of the 12 participants have 15 or more years of experience in his current position.

4.4.5. Years of experience in digitization

The researcher established the years of experience in digitization of the staff involved in the preparedness for the digitization projects in the KZN information providing agencies by asking the participants to state their years of experience in digitization. The current study found the following results:

- Ten (83%) of the 12 participants have between 0-5 years' digitization experience.
- One (8%) of the 12 participants has between 6-10 years' digitization experience.

- One (8%) of the 12 participants has between 11-15 years' digitization experience.

The current study found that most (10 (83%)) of the 12 participants have 0-5 years' digitization experience. However, it is significantly encouraging that at least one (8%) of the 12 participants has between 11-15 years' digitization experience that is.

4.4.6. Preparedness for digitization project

To establish how institutions prepare for their digitisation projects the participants were asked how their institutions prepare for a digitization project. The following are the responses given by the participants during the interview processes:

Respondent 1 stated that:

"Digitization machines which are the combination of a computer linked with a scanner were bought. Digitization machines supplier facilitated digitization training for the staff on how to produce quality images, edit images and save them as well on how to use machines and to take care of them. The project manager was hired to oversee the implementation and to train staff on creating metadata for the digitized materials. The internal server acquisition is on process".

Respondent 2 answered:

"Firstly, we have identified material that requires to be digitized since we all are aware that we are moving into a digital age and access. There are specific materials that are significant in their nature like historical records important records and then make a decision based on that identification".

Respondent 3 said:

"They bought us digitization machines and assembled them here, a guy gave us a basic training and now we are just practicing".

Respondent 4 responded:

"What we did is that we awarded a tender for a company to look into our case and develop a digitization strategy".

Respondent 5 replied:

"We bought machines which are the best ones in order to produce the best; these machines were not bought in South Africa, but in France. After the installation of the digitization machines, we then have undergone training. We created a digitization space".

Respondent 6 answered:

"Okay, we do have three digitization machines that were bought from France and the supplier provided with basic training in 2016, I think. When I resumed the librarian position, I was told that I will deal with the digitization".

Respondent 7 said:

"The ... bought digitization machines and the machine supplier provided us with basic staff training for about three days not a professional training; we then had to figure it out on how to do some of the things as they advised us to keep practicing".

Respondent 8 confirmed that:

"The project manager was identified and that was ... from ... I think because she has the experience with regard to digitization, she was the one who basically did the research for us because we had no idea about digitization. We went with what she recommended for us with regard to what machines to buy by looking at our collection. When the digitization machine suppliers came to install the machines, they gave us a basic training with regard to scanning. But it was the guys who are going to do the actual scanning; they actually practiced on their own and they learnt a lot of what they know today through their self-taught but we are going to receive more training on metadata bit of it".

Respondent 9 highlighted something exciting when saying that even though their digitization project is in the preparation stage, they have started to practice digitization:

"We bought digitization machines, waiting for server and currently digitizing the ... collection for the practice".

This response was supported by respondent 12 when he mentioned that:

“When they bought these machines, they were aiming to make things easier but no formal training has been provided other than the two hours basic training that we received. We then kept on practicing with the machines”.

Respondent 10 raised her concern that:

“We were provided with training but we were not happy with it and there are three digitization machines available”.

Excitingly, respondent 11 stated that:

“There was and still is a commitment to capacitate the staffs that is involved in a digitization project. The basic training was there and then you are sent to refresher course”.

These comments indicate that most participants mentioned the purchasing of digitizing machines and short periods of training by the suppliers of the machines as some of the ways in which their institutions prepare for digitization projects.

4.4.7. Benefits of digitizing collection

During the interview process, participants from the KZN institutions preparing for the digitization projects were asked to mention the benefits of digitizing the collection with an aim of determining whether they know or understand the benefits of what they are preparing for (digitizing collection) or not. All 12 (100%) participants positively responded as follows:

When respondent 1 was asked about the benefits of digitizing collection, she said that:

“Benefits of digitizing a collection are the preservation of deteriorating library collection, especially legal deposit collection, as we cannot discard them. The easy access, as the librarians can use keywords, title or author to search the specific item for a library patron. To make our library collection to be easily accessed remotely, even if you are overseas, as our library collection will be

accessible on the allocated website and links will be provided to access the items”.

Respondent 2 mentioned that:

“It is long-term preservation, as preservation entails prevention of loss of the actual item and information and minimization of physical storage space”.

Respondent 3 went straight to the point by saying:

“It is preservation, remote access and cheap access”.

Respondent 4 responded as follows:

“Well, it is those two main, it has always been, and I believe it is access and preservation”.

Respondent 5 replied:

“Umm, for us the benefits will be the space, because once they are digitized, these ones will be stored off-site and users will use the digitized ones and then it will be the preservation of collection. Point number two, it will be more preserved as users will be using the digitized ones”.

Respondent 6 answered:

“Basically, it is preserving our collection and those who are outside our institution to have access to it, because some of our materials are fragile so it will be easy for our users to make of use the digitized ones”.

Respondent 7 simply noted that:

“It helps in terms of preserving collection from deteriorating and easy access once digitized under ... website”.

Respondent 8 said:

“Firstly, it is for the preservation of our collection and also access to the collection, because our collection goes as far back as far as from 1800. We need

to preserve that as the ... department and one of the ways of doing this is to digitize our collection”.

Respondent 9 shared his thought by saying:

“I think digitization will be the most used way to save our materials and provide easy access to our users even they are at their households”.

Respondent 10 highlighted his understanding and said:

“With my understanding, it helps to preserve collection; it makes it easily accessible to the public other than travelling to the library and easy retrieval of information”.

Respondent 11 stated that:

“It is access as it makes your collection easily accessible at anytime and anywhere and long-term preservation”.

Respondent 12 mentioned that:

“Digitization is important because users can be able to access information online, other than coming to the library to access information. Another thing is that once documents are digitized, they are then preserved and kept in a safe place. It also saves space, even though some people still believe in hard copies”.

Basically, the study revealed that participants believe that the main benefits of digitizing a collection is that it involves collection preservation, remote/online access, cheap and easy access, and it saves and creates space.

4.4.8. Challenges for preparing a digitization project

Participants were asked if they face challenges regarding their preparation for digitization projects. All 12 (100%) participants honestly confirmed that they are faced with challenges regarding their preparation for digitization projects. The researcher was then asked a follow-up question in order to identify those challenges in which the results are presented below.

4.4.8.1. Identified challenges for preparing a digitization project

All 12 (100%) participants confirmed that they are facing some challenges regarding their preparedness for the digitization projects in the KZN institutions and they were encouraged to voice out those challenges. They mentioned the following challenges:

Respondent 1 said that:

“The scanning process was started but the information we had has crashed as the current server being used by the ... and there was a need to get a bigger server or a specific server for the digitization project only. Expected date to start the project was early 2018, but because of funding challenges, the process of purchasing a server was delayed. Currently, the server was purchased and there are few touch-ups to be dealt with”.

Respondent 4 said that:

“Our challenge was where do we start and how do we embrace digitization in our? Visitors will visit us and expect to see us digitally and see some elements of digitization when they visit. They will expect things that are digitized”.

Respondent 5 replied:

“Our challenge is that the ... did not provide us with enough server storage to store our digitized collection. The funding as well as it is the one that stops us from getting a storage server”.

Respondent 6 answered:

“Firstly, it is training and the funds for storage server”.

Respondent 7 responded that:

“The main challenge is the space/storage server, funding, even though we have a little bit understanding in terms operating the digitization machines but we would like to have a professional training and knowledge on digitization”.

Respondent 10 highlighted a similar concern to responded 7 as he said:

“Our challenge is that we have a lack of enough server storage and sometimes machines get stuck and it rare that three of them finish the day working”. It is a pity that candidate 9 had similar concerns as candidates 7 and 10 as he said that: “Our biggest challenge is the space and that shows that we have a lack of funding”.

Respondent 2 noted an important thing as he stated that:

“It is a collaboration of the normal library system with digital aspect of it because at the end of the day these materials are inside the library. For instance, combining the ... with the library catalogue so the library users to need to be able to search and access these digitized material via the library system.” He added that: “it is maintenance of these technical tools and connection which poses much challenges when it comes to digitization project”.

Respondent 11 replied that:

“There is no IT dedicated personnel”.

Respondent 3 stated that:

“Right now is a space as we do not have server to store digitized collection. If were to be provided with server, we will have challenge number two which will be a website even though we have been provided with a demo and we were not happy with it. I would say the main problem is a lack of funding and staff training”.

Respondent 8 openly explained that:

“One of the big challenge is that we started initially with the project but we had to come to a standstill because we do not have our own server here at the library but we were using ... server and we were using too much of space. We then realized that we needed our own server, so that is where we stand at the moment, and the server is in the purchasing stage at the moment. So we are getting a new server just for our digitization. The other challenge is because some of our materials are so old from the 19th century like the 1800. Lots of it is

brittle and fallen into, so obviously you cannot take something like that and digitize. So they will need to be conserved first and then we will be able to digitize and preserve. That is basically the two main challenges”.

Respondent 12 mentioned that:

“There is a need for a server to save all the information, so the ... is stuck on funds and the process is delaying”.

Lack of storage server, funds and funding, training, and IT dedicated personnel are the most notable challenges faced by staff members involved in preparing for digitization projects in the KZN information providing agencies.

4.4.9. Types of collection institutions prepare to digitize

To establish the types of collection that the KZN information providing agencies prepare to digitize the participants were asked to mention the types of collection that their institutions are preparing to digitize. All 12 (100%) participants responded to this question. Participants from **Institution one** answered that their institution is preparing to digitize *photographs*, while participants from **Institution two** confirmed that their institution is preparing to digitize the *legal deposit serials collection*, and participants from **Institution three** confirmed that their institution is preparing to digitize *theses and dissertations*. The Table 4.3 below reflects these findings.

Table 4.3

[N=12]

Types of collection institutions plan to digitize

Institution	Type of collection
Institution one	Photographs
Institution two	Legal deposit serials collection starting with newspapers
Institution three	Theses and dissertations

4.4.9.1. Reasons for preparing to digitize these collections

Participants were further questioned as to why their institutions plan to digitize these collections with an aim of establishing the reasons for preparing to digitize these collections. This study found that most participants have similar views on why their institutions prepare to digitize these collections and they responded as follows:

Respondent 1 mentioned the following benefits of digitizing a collection:

“To preserve the collection, to save or open space for new collection, and the digitized materials will be moved to a remote space, for easy access, and to take advantage of digital era”.

Respondent 4 responded that:

“We digitize it because of its nature and to extend access.”

Respondent 5 replied that:

“It goes back to that point of access and preservation and people publish and deposit their publications to us hoping we manage them properly. It also saves the deteriorating ones”.

Respondent 6 answered:

“I think it goes back to what I have mentioned of which is to preserve collection and for other people to access it at any time 24/7”.

Respondent 7 stated that:

“This is to facilitate easy access and to save some of our collection that is old and deteriorating”.

Respondent 8 said:

“It is because of ... purposes; we have to retain what we receive and because of the age of our collection as well. In order to prevent too much of handling of our fragile material once it is digitized it will be available electronically 24/7 and people can actually sit in comfort of their home and be able to access our

information. It is basically the concept of taking the library now beyond our wall out to the community out there”.

Respondent 9 replied:

“Yingoba amanye awo asemadala and aseyavithika (It is because some of them are old and deteriorating)”.

Respondent 10 stated that:

“It is because they are deteriorating and losing information”.

Respondent 2 said that:

“It is to provide fresh perspective of any subject matter because it is research, new findings as theses and dissertations provide new learning area. So as you develop a new learning area you need to make sure that it is accessible by all means”.

Respondent 11 answered:

“Just remember in a broader sense, the rankings of the institutions depend on their research. This is also because of research visibility of the institution and for the new knowledge aspect”.

Respondent 3 noted that:

“In a broader sense, this is also because the university rankings depend on the research done and published by the institution”.

Respondent 12 answered:

“I think is to go with time. The time we live in today is not the same as before. As I have mentioned earlier that we also serve overseas users from the UK, USA, Canada, etc. they will be able to access our information online other than flying to here for the information”.

Participants mentioned valid points as to why do their institution plans to digitize the mentioned collection. These reasons included collection preservation, easy and global

online access, taking advantage of the digital era, and to save the old and deteriorating collections.

4.4.10. Selection criteria for collection to be digitized

To establish whether these institutions have prepared the selection criteria for collection to be digitized the participants were asked what will be their institution's selection criteria for the collection to be digitized. Twelve participants from these three institutions gave the following selection criteria: **Institution one**: is preparing to start with the ones that are in demand, and within that collection, they will start with the old ones and then the recent ones. **Institution two**: is preparing to start with the new collection and then the old ones. **Institution three**: is preparing to start with the rare or unique collection and then a general collection. The following Table 4.4 shows the institutional selection criteria that will be used to select collection to be digitized.

Table 4.4

[N=12]

Selection criteria for collections to be digitized

Institution	Selection criteria for collections to be digitized
Institution one	The ones that are in the demand collection and within that collection, they will start with the old ones and then the recent ones.
Institution two	The new collection and then the old ones.
Institution three	The rare or unique collection and then a general collection.

4.4.11. Staff members for the digitization project

To find out if the institutions have prepared enough staff members for their digitization projects the participants were asked if they think their institutions have enough staff members for the digitization project. The findings are as follows:

Respondent 1 said that:

"I am not sure but I heard that the management is looking into increasing the digitization staff which will be an added advantage by looking at the materials starting from 1800s that are waiting to be digitized".

Respondent 2 said:

"Definitely no, as you are saying it is always called a project but it's such a huge project that you cannot just make it as a small scale project done by a certain individual or expect to be done like other full day duties".

Respondent 3 highlighted that:

"By looking at the machines and the allocated staff, I would say "yes", but we will see as the project starts. However, it is uneasy to respond on behalf of the other staff that deals with other things like cataloguing, etc. until the project begins".

Respondent 4 responded that:

"I would say "yes" and I would say "no", it will depend because we are taking it bite by bite as we do not have a comprehensive project. As we engage to the project we will see the need to add".

Respondent 6 answered:

"I do not think so, because by looking at amount of ... to be digitized it is going to take us forever to digitize them as they date far back even though this is an on-going project".

Respondent 11 noted that:

"No, there is no capacity".

Respondent 5 said:

"No, as I think we need more staff to create the metadata".

Respondent 6 replied:

“No, due to the number of collection to be digitized since we have collection is dated back in the eighties”.

Respondent 8 and Candidate 12 answered:

“Yes, we do have enough staff”.

Respondent 9 and 10 said:

“Yes, but we might need more staff as the project starts”.

Respondent 7 responded:

“Okwamanje, mangibheka iStaff esinaso, imishini kanye nendawo esisebenzela kuyo ngingathi sanele kodwa-ke angisho ukuthi kungathokalakali iStaff esinye (For now, by looking at the allocated staff, available equipment and digitization space I can say “yes” but I am not saying more staff members should not be employed)”.

Five (42%) of the 12 participants think that staff members are enough for the digitization projects and another five (42%) of the 12 participants think there are not enough staff members. Nevertheless, two (17%) of the 12 participants are unsure if staff members are enough or not.

4.4.12. Training on collections digitization

To establish whether the institutions preparing for the digitization projects in KZN provide or have provided any training on collections digitization the participants were asked if they receive or have received any training on collections digitization. Ten (92%) of the 12 participants confirmed that they have received a training and two (8%) of the 12 participants confirmed that they have not received any training on collections digitization. Some participants made the following comments:

Respondent 11 replied:

“Yes I did, I think I have been fortunate that I worked in different institutions and had different trainings on digitization projects”.

Respondent 8 said:

“With the exception of that initial training, no training as yet; but there is going to be training in the pipeline which I am hoping is going to be soon”.

Respondent 9 responded:

“Yeah, as I have said that we got a basic training, we then learnt the other stuff along the way and we are willing to gain more that we do not know about the collection digitization”.

Respondent 7 and 12 answered:

“Yes, we were provided with the training”.

4.4.12.1. Sufficient training to undertake the digitization project

Those ten (83%) of the 12 participants who confirmed that they have received training in collections digitization were then asked if they think it was sufficient to undertake the digitization project. These participants gave the following reasons for their answers:

Respondent 1 positively replied:

“Yes, we did have a very short training, but as we kick off the training we are going to have more training. For now, I would say the training is insufficient to undertake the job, especially in administering the website”.

Respondent 4 responded:

“Yeah because most people understand now and they are actually able to do it”.

Respondent 5 honestly stated:

“Yeah, we did, but it was just a two-days training from the supplier and we had a challenge in terms of language barrier as they were the French-speaking people. I think we need more training”.

Respondent 6 highlighted that:

“We have received a basic training long time ago of which I think we need more training”.

Respondent 9 answered:

“Yes, but we are willing to have more trainings on collections digitization”.

Respondent 3 highlighted that:

“With a basic training that we received from a guy from ... and the practice and exploring we do with colleagues, I really believe we can be able to do our part”.

Respondent 7 said:

“Yeah, ngingathini? Yabakhona le encane esayinikwa ilaba bantu ababelethe imishini kodwa-ke ngoba ngishilo ukuth singakujabulela ukuthola iProfessional training sithole namaQualifications okuDigitize (Yeah, what I can say? We had a basic training from the digitization machine supplier, but it is as I have said that we would like to get any professional training and get certificates on digitization)”.

Respondent 10 said:

“Yeah, with the one that we been provided with we can be able to undertake the project”.

Respondent 11 answered:

“Yes, for me it was. Speaking for myself, yes it was”.

Respondent 12 responded:

“No, no, I cannot lie it is not enough. As I have said that, most of what we know is what we taught ourselves through practicing”.

The majority (five (50%)) of the ten participants from the KZN information providing agencies think that the training they received was sufficient for them to undertake digitization projects. Some participants feel that they need more training on digitization

and one other participant clearly stated that he could not lie; the training received was not enough.

4.4.13. Staff support

Participants were asked if their institutions give them enough support when preparing for a digitization project and eight (67%) of the 12 participants confirmed that they receive enough support from their institutions. Some participants further made the following comments on the asked question:

Respondent 3, 5, 12 and 7 answered:

“Departmentally, “yes” but our institution or parent organization lacks enough support”.

Respondent 8 honestly responded that:

“There is none”.

The researcher then asked a follow-up question to the eight participants who responded that “Yes” they receive support from their institutions. These findings are presented in 4.4.13.1.

4.4.13.1. Support received by staff

Those eight (67%) of the 12 participants who answered yes they receive support from their institutions when preparing for a digitization project, were asked which support they received and they responded as follows:

Respondent 1 answered:

“For now, the support we receive is sufficient. However, we are looking forward to get more support once the project officially starts”.

Respondent 2 said:

“It is training and financial support”.

Respondent 3 said that:

“Our institution gave us support by buying machines, providing us with basic training and once the project had to start we had a problem with server and we have been waiting for it for years now I am not talking about thing for two months. Here at the library, everyone wants to see this working as it will look good for the library but I think the ... do not understand the importance of the project by looking at how they lack the support”.

Respondent 5 replied:

“They came up with an idea and they service the digitization machines as scheduled”.

Respondent 7 answered:

“Our management does give us support but the ... lack support”.

Respondent 8 said:

“Well, they are supporting in the sense that machines were purchased and staffing was provided”.

Respondent 9 replied:

“Yes, they give us support but I feel like it is not enough by looking at the time we have been waiting for”.

Respondent 11 said:

“Training support”.

The buying of digitization machines/tools is the most support provided by the KZN information providing agencies to their staff members. Other participants mentioned support that included training and financial support.

4.4.14. Digitization tools and facilities

To establish whether the institutions have prepared enough digitization tools and facilities for their digitization projects the participants were asked what are digitization

tools and facilities available for the digitization project in your institution. They mentioned the following digitization tools and facilities available in their institutions:

- “Camera” was mentioned by one (8%) of the 12 participants.
- “Computer” was mentioned by six (50%) of the 12 participants.
- “Scanner” was mentioned by three (25%) of the 12 participants.
- “Digitization machine” was mentioned by seven (58%) of the 12 participants.
- “Storage server” was mentioned by three (25%) of the 12 participants.

The current study revealed that a camera (8%) is the digitization tool least available in the KZN information providing agencies preparing for digitization projects; whereas digitization machines (58%) and computers (50%) are the most available digitization tools.

4.4.15. Rating the technical support

Participants were asked to rate the level of technical support received from their institutions and options from which to choose were given with the aim of guiding the responses. Participants rated their organizations’ technical support as follows:

- “Very good” chosen by one (8%) of the 12 participants.
- “Good” chosen by three (25%) of the 12 participants.
- “Satisfactory” chosen by five (42%) of the 12 participants.
- “Poor” chosen by three (25%) of the 12 participants.

One participant also made the following comment in supporting his chosen answer: “Good, because the ICT staffs is always available on call”. The majority (five (42%)) of the 12 staff members involved in digitization projects in the KZN information providing agencies are satisfied with the technical support they receive from their institutions.

4.4.16. Digitization policies and guidelines

To reveal whether these institutions prepared the policies and guidelines for their digitization projects the participants were asked what are the prepared written policies and guidelines that would be followed by their institutions when digitizing their collection

and if it was possible to have a look at the policy. Unfortunately, out of three institutions surveyed, only one (33%) has a prepared digitization policy and guidelines available, as indicated below and two (67%) of three institutions do not have prepared digitization policy and guidelines. The following is the digitization policy and guidelines prepared to be followed by institution one:

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D4.3. Digitisation Project Proposal Procedure	31
D5. CAPTURING	31
D5.1. The Goal of Digital Capture	31
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D5.3. Care and Handling Guidelines	35
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4.4.17. Digitization process

To ascertain whether the institutions have prepared the digitization process for their digitization projects the participants were asked what are the prepared digitization processes that would be followed by their institutions and if it was possible to have a look at these processes, if documented. It was revealed by the current study that out of three institutions surveyed, two (67%) had prepared digitization processes, while only one (33%) did not have a prepared digitization process. The following are the prepared digitization processes for the institution 1 and 2:

Institution one: Digitization process

- Selecting
- Preparing
- Digitizing
- Capturing
- Describing
- Loading
- Storing
- Accessing
- Using

Institution two: Digitization process

- Selection of material to be digitized
- Preparing of material to be digitized
- Prepare the digitization machine
- Digitization of material
- Ensure the good format of digitized material
- Save to folder

This digitization process will continue once the actual digitization project begins.

4.4.18. Copyright owner for digitized collection

Copyright is one the most important aspects to be considered when it comes to collection digitization. Hence, participants were asked who will own the copyright for digitized collection that these institutions are preparing to digitize. The current study revealed the following results:

Respondent 1 said:

“It will be the original copyright owner, unless it was communicated about the handing over copyright to ... library services”.

Respondent 5 replied:

“As far as I know, the publisher or a custodian of work owns the copyright of the published work. Ours will be to make sure that no one violates the rights of digitized collection and protect them”.

Respondent 6 answered:

“I am not sure, but I think it will be the original owner because we are just housing the collection”.

Respondent 8 said:

“I guess it will be us because we are going to own the electronic version of it but that is my understanding”.

Respondent 9 said:

“I think it will be us”.

Respondent 10 said:

“Honestly, I have no information in that regard”.

Respondent 12 answered:

“Since we are a ... library, every publisher is entitled deposit a copy of any published work. Therefore, we own the deposited copies”.

By looking at the responses by the participants, there seem to be a low understanding and a lot of confusion in terms copyright laws to the staff members involved in preparing for digitization projects in the KZN information providing agencies.

4.4.18.1. Copyright agreement with the copyright owners of the original work

Those 10 (83%) of the 12 participants who answered that it would be their institutions were then asked if they have communicated and agreed with the copyright owners of the original work. The following are their responses:

Respondent 1 said:

"I am not aware if there is a pre-communicated agreement now, especially with the newspaper materials as the copyright sometimes does not belong to the newspapers as well but to the original authors. So, I guess that will be looked at carefully before the project starts and having our collection exposed to the public".

Respondent 2 replied:

"Yes, we are digitizing our own collection".

Respondent 11 simply said:

"Yes".

Respondent 3 responded:

"Firstly, there are many individuals and publishers whom we need to communicate with and some have passed on. I doubt that there is communication we had with them but I think there is a need to contact them. In fact, if I am an author, I would be happy if my work is digitized because a number people will have access to my publication".

Respondent 4 answered:

"Yes and we agreed to work out a memorandum of understanding with copyright owners".

Respondent 7 shared his thought by saying:

“I think there is a communication that our institution had with the copyright owners of the publications to be digitized”.

Respondent 8 said:

“Not me directly, but I think the project manager because obviously she has looked at the copyright issues and all of that”.

Respondent 9 noted that:

“I do not think so”.

Respondent 10 stated that:

“I am not sure”.

Respondent 12 answered:

“We will do the project without communicating with them because this is our collection, as they are entitled to deposit their published works as the law instructs them to do so”.

The majority (five (50%)) of the ten participants confirmed that they have communicated with the original copyright owners of collection that their institutions are planning to digitize. Some participants stated that they are not sure, some are not aware, some do not think so and one participant made it clear that they will undertake the project without communicating with them.

4.4.19. Bibliographic/metadata standards for cataloguing

To find out whether these institutions have prepared bibliographic/metadata standards for cataloguing for their digitization projects the participants were asked which bibliographic/metadata standards does their institutions use or will use in describing or cataloguing their digitized collection. Table 4.5 shows the bibliographic standards that these institutions use or will use in describing or cataloguing their digitized collection. All 12 (100%) participants responded to the question and it was revealed that all three

(100%) institutions will use Dublin Core Metadata standard, but Institution 2 will also use RDA.

Table 4.5

[N=12]

Bibliographic/metadata standards for cataloguing

Institution	Bibliographic standard
Institution one	Dublin Core Metadata standard
Institution two	Dublin Core Metadata standard and Resource Description and Access (RDA)
Institution three	Dublin Core Metadata standard

4.4.20. File naming systems

Participants were asked to confirm the file naming system which their institutions will use in naming the digitized collection. Twelve participants responded to the question and the below Table 4.6 captures that the majority (two: 67%) of three institutions will use the existing name on the original record, although only one (33%) of three institutions is unsure of the file naming system to use.

Table 4.6

[N=12]

File naming systems

Institution	File naming system
Institution one	Unsure
Institution two	Existing one on the record
Institution three	Existing one on the record

4.4.21. File format for the digitized collection

To determine whether the institutions have prepared the file format to be used for the digitized collection the researcher asked participants what will be the file format for the digitized collection. The following are the findings for the current study on the file formats that will be used by staff members involved in preparing for digitization projects in the KZN information providing agencies:

- 300 dots per inch (DPI)
- Tagged image file format (TIFF)
- Joint photographic expert group (JPEG)
- Postscript and portable document format (PDF)

These participants highlighted the following comments on the question:

Respondent 1 said:

“I forgot the details but will be mostly using Tagged image file format (TIFF) instead of Joint photographic expert group (JPEG)”.

Respondent 4 answered:

“300 DPI, but it will depend the type of ... we are digitizing for. For example, let’s say we are digitizing for a small ... has a small server, we can decide to make 150 DPI but more information is on the strategy”.

Respondent 3 explained that:

“It depends on the collection being digitized and the chosen format. Because of space we chose to use most convenience ones which are jpeg and 300 dpi but kuke kwakhulunywa indaba yokuthi kusetshenziswe uTIFF (There were talks to use TIFF) once we get enough storage server”.

Respondent 5 replied:

“You scan to into megabytes and you have to convert into... I just cannot tell out of hand but I remember that something like that has been explained to us”.

Respondent 6 answered:

"It is TIFF".

Respondent 7 stated:

"We will use TIFF and JPEG. You can use both or convert from TIFF to JPEG, it is possible".

Respondent 8 said:

"It all depends on the surface of the image 300 or 600 DPI. With our collection, 300 DPI have been working but into archive it is better to archive it into format"

Respondent 9 answered that:

"We are currently using JPEG and TIFF, when the user requests information; we scan it in both formats such as JPEG and TIFF and send them both so the user will use the right one for him".

Respondent 10 replied that:

"Currently, we agreed to use the JPEG".

Respondent 12 answered:

"I think we will use JPEG because it saves space and also use 300 DPI".

4.4.22. Storage capacity for the digitized collection

To establish whether the institutions preparing for the digitization projects in KZN have prepared enough storage capacity for their digitization projects the participants were asked if they think their institutions will have enough storage for the digitized collection. Participants responded as follows:

Respondent 1 replied:

"Fortunately, we had a problem with a server at the earlier stage and the problem is sorted, we are having a bigger server allocated for digitization only".

Respondent 2 answered:

“For now, it is not enough but those are the near future prospect”.

Respondent 4 responded that:

“Yes, we have a server, but normally they give us three and remember we need to do a back-up of the back-up”.

Respondent 5 replied:

“At the moment, no, not at all”.

Respondent 6 said that:

“I do not think it is going to be enough because the funds are from the council of which they do not understand the importance of library and digitization as they take the library as a service that does not profit the institution”.

Respondent 7 and 10 answered:

“No, I think it is not enough”.

Respondent 8 replied:

“Yes, because we are going to have our own server”.

Respondent 9 honestly said:

“To be honest with you, no”.

Respondent 11 answered:

“Yes but it will depend on the funds allocation”.

Respondent 3 responded that:

“That is exactly our problem; we do not have enough storage”.

Respondent 12 answered:

“If they can be able to provide us with a huge server, the space will be available”.

Participants were of different views when asked if they think their institutions will have enough storage for the digitized collection as some said “Yes” and some said “No”.

4.4.23. Security of digitized collection

To ascertain whether the institutions preparing for the digitization in KZN have prepared the security of the collection they are planning to digitize the participants were asked how their institutions ensure or will ensure the security of digitized collection. The responses were as follows:

Respondent 1 responded that:

“We are going to have our internal server, so even if our collection would be meddled with online, fortunately, we will be having everything stored on our server”.

Respondent 2 mentioned that:

“As it is happening with the already existing digitized materials, obviously, it will have to be linked with the ... standards and policies. The access will have to go via the credentials such as IP authentication and institutions’ credentials”.

Respondent 5 replied:

“We as digitizing staff have codes”.

Respondent 6 answered:

“I think we will have login details such as usernames and passwords”.

Respondent 7 mentioned that:

“Digitization staffs have administration passwords and digitization space has a closed access”.

Respondent 3 answered:

“We have usernames and passwords for computers. We should have had this interview two hours ago but because this room was locked, we delayed, of which that is a security on its own. Not everyone is allowed to make use of this room I only came with you here because we talking about the digitization other than that I would not come with you here.

Respondent 4 responded that:

“By making a back-up of a back-up; one is on site and the other is off site. In terms of admin passwords it is me ..., director and ”.

Respondent 8 said:

“There is going to be a program whereby whenever anybody access we will get a hit on our side for stats purposes. There will be software in place with regard to people who try to hack the system. So nobody else will be able to go in and interfere with our stuff but they will be able to view it, like in a catalogue”.

Respondent 9 highlighted that:

“The security is very tight because we have login passwords and no one from other departments enters or is allowed to enter the digitization room without our permission”.

Respondent 10 and 12 said:

“We all have login passwords”.

The results of the current study revealed that different institutions use the same security measures in ensuring the safety and security of their digitized collection. Participants mentioned security measures such as login details (administration passwords), closed access to the digitization area, hackers’ detection software and back-up storages.

4.4.24. External storage for recovery in case of disaster

To confirm if the institutions have prepared for any disaster of their digitized collection the participants were asked if their institutions have or will have external storage for recovery in case of disaster. It was a relief when all 12 (100%) participants confirmed that their institutions have or will have external storage in case of disaster. The following are the comments noted by the participants:

Respondent 1 responded that:

“Yes, there was a small discussion of saving our collection on cloud as well”.

Respondent 2 answered:

“Very soon, we are in a process of obtaining cloud storage”.

Respondent 4 and 8 answered:

“Yes, there a back-up server and it is off site”.

Respondent 3 said:

“U... wake wakhuluma ngayo (our manager once spoke about it) but we do not have it yet, however, we are looking forward to have any”.

Respondent 5 replied:

“Yes, our manager has mentioned that we will have external storage in case the system crashes we will have a back-up. I think these are the things that have been delaying us because we will need storage servers; the internal and external storage server”.

Respondent 6 answered:

“It should be, but again it goes back to the point of budget because the disaster can happen at any time”.

Respondent 7 replied:

“Yeah, noma ulwazi lami lungeluningi but babekade beshilo ukuthi sizoba naso” (Yeah, even though I have limited information regarding it but we were promised to have any).

Respondent 9 said:

“What we heard is that once collection is digitized, there will be a storage warehouse to store the hard copies but that is not yet finalized”.

Respondent 10 responded that:

“We were promised to have any”.

Respondent 12 answered:

“Yes, there were talks that there will be an external server because these technological things crash sometimes. The suggestion was to have two storage servers; the daily used one for the project and the external one for in case of the other crashes”.

4.4.25. Access to digitized collections

The researcher felt that it is important that digitized collection is publicly accessible. Hence, asked respondents if digitized collections by the institutions preparing for the digitization projects in KZN will be accessible to the public. Excitingly, eleven (92%) of twelve participants proudly confirmed that digitized collection will be publicly accessible while one (8%) of twelve participants responded that he is “Unsure”.

4.4.25.1. Members with access to digitized collections

Those 11 (92%) of the 12 participants who answered that their digitized collection will be publicly accessible were asked who would have access to this collection in terms of membership. Only eight (73%) of the 11 participants responded to this question and their responses were as follows:

Respondent 1 said:

“Both members and non-members because we want our ... materials to be accessible worldwide”.

Respondent 3 replied:

“As we speak, everyone who comes in our section we do not ask you if you are a member or not. So, it will be pointless for us ask someone from America to register with us, while he/she will use it once. I think there won’t be a library membership requirement in order to make use of our digitized collection”.

Respondent 4 responded that:

“Yes, I can make an example for you. When researchers or anyone who wants information comes in, we pull out the ... so as soon as we finish the digitizing the..., we keep a computer where they will keyword in and retrieve it”.

Respondent 6 answered:

“For both members and non-members because we have users from overseas that fly to access information from our collection”.

Respondent 7 stated:

“Yes, that is our wish to make the digitized collection to be accessible to everyone”.

Respondent 8 said:

“Yes, that is the whole idea of it not only preserving our collection but making it accessible to the public. It is like when people come to read our collection, you do not necessary need to be a member”.

Respondent 9 noted:

“I think everyone will have access even when sitting at home or anywhere as we also deal with users from overseas”.

Respondent 12 answered:

“As long as you know the website, you will be able to access the information”.

Participants show that they are caring about the information seekers as they stressed that both members and non-members will have access to the digitized collection.

4.4.25.2. Access fee to digitized collection

To establish whether the institutions preparing for the digitization projects in KZN will provide free access to the users or not, the participants were asked if the access will be free of charge to users or will they be charged for. Eleven (92%) of the 12 participants responded to this question as follows:

Respondent 1 said that:

“This one was never communicated with us, so I am not sure about the management plan on that”.

Respondent 2 answered:

“Yes, it is free until some other policies come up”.

Respondent 3 responded:

“Yes, it will be a person with his data; we will just give access to the digitized information”.

Respondent 4, 6, 7 and 10 answered:

“Yes, it will be free”.

Respondent 5 replied:

“Yes, as that is the main point”.

Respondent 8 said:

“Yes”.

Respondent 9 and 12 said:

“Yes, as long as you have a data”.

The majority (10 (91%)) of the 11 participants assured the researcher that there will be no access fee for the digitized collection as long as you have internet access.

4.4.26. Information management systems (IMS) for the digitized collection

To establish whether the institutions have prepared the IMS for the digitized collection in KZN the participants were asked if their institutions have an information management system for the digitized collection. Positive results were obtained in that 10 (83%) of the 12 participants said that their institutions have or will obtain information management systems (IMS) while a disappointing two (17%) of the 12 participants answered “No”. Some participants gave the following replies:

Respondent 1 responded that:

“I am not sure, but I know that our materials will be uploaded straight on our website”.

Respondent 6 answered:

“We do not have it as yet or I can say I do not know of any”.

Respondent 8 said:

“Yes, we are going to have a website so people can get into that and also link on the ... website that takes you through the library and from the library to that collection”.

Respondent 9 and 12 said:

“I am sure there will be the one and it will be the website”.

Respondent 10 said:

“They said we will continue with the existing one”.

4.4.26.1. Information management systems used for the digitized collection

The researcher asked those ten (83%) participants who answered that their institutions have IMSs for digitized their collection to name those IMSs the institutions use or will use. The following are the IMSs that are or will be used:

- DSpace was mentioned by two (20%) of the ten participants.
- OCLC WorldShare/Cat was mentioned by one (10%) of the ten participants.

Moreover, seven (70%) of the ten participants mentioned that their institutions will create a website where they will store their digitized collection.

4.4.27. Available funds for the digitization project

To establish whether the institutions are financially prepared for their digitization projects the participants were asked whether the required funds are available and 11 (92%) of the 12 participants gave the following responses:

Respondent 1 answered:

"Yes, we do have funds from the KZN Department of Arts and Culture grant".

Respondent 2 said that:

"I am unsure, but I think the issue of funding can always be worked around should the project appear to be useful. For instance, as you were saying 'there are already talks of the cloud storage' the fact that we are in a discussion of that option, somewhere somehow the funds might be a problem".

Respondent 3 said:

"Mmm no, we wish that Motsepe visits us".

Respondent 4 and 8 simple answered:

"Yeah/Yes".

Respondent 5 replied:

"There are allocated funds for this project".

Respondent 6 responded:

"I think they do have the funds".

Respondent 11 said:

"No, and I think this is because of the top management of the institution".

Respondent 7 said:

"No, this is a huge on-going project".

Respondent 9 responded that:

"For now, I can say no, but maybe after a financial year things will be fine".

Respondent 12 answered:

"No, because if we do have funds we would be already up and running as we already have the machines".

Five (46%) of 11 participants answered “Yes” while another five (46%) answered “No” and one (9%) of the 11 participants answered “Unsure”.

4.4.27.1. Sufficient funds to complete a digitization project

Those five (42%) participants who confirmed that their institutions have funds were asked if they think these funds are sufficient to complete the digitization projects. All five (42%) participants made the following comments:

Respondent 1 answered:

“I am not sure if these funds will be enough”.

Respondent 4 said:

“Yeah, they are sufficient”.

Respondent 5 replied:

“By the look of things, we do not have enough funds; hence this project has not been started till today”.

Respondent 6 highlighted:

“It can never be sufficient because they will always have to add it on the budget since this is an on-going project”.

Respondent 8 noted similar a concern as candidate 6 as they answered that:

“Funds will never be sufficient since this is an on-going project”.

Respondent 8 simple replied with:

“No”.

The majority (three (60%)) of the five participants were of the opinion that the available funds are not sufficient to complete their digitization projects.

4.4.28. External funders for the digitization projects

To ascertain whether the institutions have external funders for their digitisation projects the participants were asked if their institutions have external funders for their digitization

projects. Only one (8%) of the 12 participants responded that their institution has an external funder, while the majority of ten (84%) participants said their institutions do not have external funders, and only one (8%) participant responded that their institution has external funders.

4.4.28.1. Names of external funders for the digitization projects

To identify the external funder/s for the digitization project that one participant who confirmed that his institution has external funders was encouraged to mention that or those funders. This participant mentioned the KwaZulu-Natal Department of Arts and Culture as the external funder of their digitization project.

4.4.29. Monitoring the daily running of a digitization project

To confirm whether the institutions have prepared staff to monitor the daily running of their digitization projects the participants were asked if their institutions will have staff that will monitor the daily running of a digitization project. All 12 (100%) participants confirmed that their institutions will have staff that will monitor the daily running of a digitization project. Some participants made the following comments:

Respondent 2 said that:

“There is one person who is dedicated to the project from basically the implementation of the whole project in terms of making sure that is maintained and working properly. No specific department”.

Respondent 4 answered:

“Yeah, a ... is identified as main to oversee and monitor the daily running”.

Respondent 9 said:

“Yes, and we were once told that more staff members will be added because there will be more things to be done that require people with different skills”.

4.4.30. General comments on a digitization project

To establish whether the participants have comment/s on preparedness for the digitization projects the researcher asked participants to provide comment/s on the digitization project, if they have any. The following are the comments made by the 12 respondents:

Respondent 1 commented that:

“At the moment, the details are quite blurring as the project has not started as yet. There is still a lot to be done and communicated on the project but so far the preparations are going well as we have everything. For now, we are just waiting for the project manager to come and attend us that is it”.

Respondent 4 commented that:

“We are looking forward to have an Augmented Reality (AR) app in which you will hold a tablet next to the artifact and the information will come up. We are working on how we use gadgets for visitors to improve their experience, interaction and engagement”.

Respondent 2 commented that:

“I have a comment with regard to your project’s topic; I think it is very interesting compared to the presentations I have received. I think the KZN universities should start a digitization project for a digitization of the indigenous documents to make them accessible”.

Respondent 5 commented that:

“This is a big project which aims to assist the whole world because once we go online, everyone will have access to our information; even those from overseas will have access to our collection other than us emailing the information to them. This project will put the library and the ... on the world map”.

Respondent 6 commented that:

“I think we need a staff member/s with an IT-related background because we are relying on the staff from the ICT department of which they take their time if we have issues”.

Respondent 8 commented that:

“Digitization is a new process for us but it is something that is very current and we have to keep abreast of changes because we are a ... library so it is our duty to make sure that we preserve our collection for future generation. Even though we are going to digitize but we still have to keep our original hardcopies because of ... status”.

Respondent 9 commented that:

“Digitization is a very good thing which I would like our institution to take serious and I would like us to get an educational support so that we will have more knowledge about digitization”.

Respondent 10 commented that:

“I would like the supplier of the digitization machines to make sure that they come and fix the digitization machines as soon as possible if they have a problem. This is because sometimes they take weeks to a month to come if we have a problem with the machines”.

Respondent 12 commented that:

“I think this project should have started already but because of storage space, we have delayed. Therefore, I suggest that any institution planning for a digitization project should consider a storage space as one of the important things as it becomes a problem if it is not enough”.

Respondent 3 commented that:

“Ummm, before you start something like this, I advise that you do your homework in terms of what you will need. Things like funding are important for the easy kick

starting of the project in terms of staff training, machines and server buying as I believe that in life there is nothing called losing, but you either win or learn so this is a lesson learnt”.

Respondent 7 commented that:

“Icomment engingayisho nje ukuthi iDigization iTechnonolgy enhle kakhulu eza nento engajwayelekile kubantu ezokwenza kube lula kubantu ukuthi bekwazi uku-access izinto kalula (My comment is that digitization is a very good technological thing that comes with a rare thing to the people which will make them easily access information)”.

4.5. Summary

Chapter 4 presented the findings for the study. These findings were based on the collected data from semi-structured face-to-face interviews. The main findings of the study are discussed in the following chapter (Chapter Five).

CHAPTER FIVE: DISCUSSION OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS OF THE STUDY

5.1. Introduction

Chapter 4 presented the findings obtained by means of semi-structured face-to-face interviews from staff members involved in digitization projects in KZN information providing agencies. This chapter discusses the findings relevant to the objectives of the study and the critical questions that were generated to address these objectives. The broad objective of the study was to investigate the preparedness for digitization projects in the KZN information providing agencies. The following were the generated critical questions to meet the objectives of this study:

- How do the KZN information providing agencies prepare for their digitization projects?
- What are the types of collections that the KZN information providing agencies are preparing to digitize and why?
- Are there any drafted policies and guidelines prepared to be followed by the KZN information providing agencies when digitizing their collections?
- What are the prepared digitization processes that will be followed by the KZN information providing agencies when digitizing their collections?

5.2. Discussion of the main findings

The following is a discussion of the main findings relevant to the objectives of the study and the critical questions that were generated to address these objectives, including the broad objective of the study. This is done in the context of the model framework adopted by this study and the relevant literature that was reviewed.

5.2.1. Preparedness for digitization projects in the KZN information providing agencies

This study sought to investigate the preparedness for digitization projects in the KZN information providing agencies. Findings relating to this research question are discussed under broad themes.

5.2.1.1. Preparedness for a digitization project

The Collections Digitization Framework (CDF) which is model framework adopted for this study indicates seven stages that need to be considered when planning or preparing for a digitization project. These stages include decide, deploy, digitize, describe, deposit, display and direct. Under these stages there are sub-stages that detail what resorts under each of these stages (Tarani 2012). According to Bulow and Ahmon (2011: 172), the key to a successful digitization project is a collaboration, planning, preparation and presentation. Alhaji (2007: 3) claims that planning or preparing involves identifying numerous tasks related to creating a digital library collection, developing strategies for handling these tasks, identifying necessary resources and formulating a timeline for finishing these tasks.

The findings for this study indicated that most participants were being prepared by the digitization machine suppliers in the form of giving them training in how to operate the digitization machines supplied, even though some participants stated that “they are not satisfied with the training received”. Hence, the Collections Digitization Framework suggests that staff should be skilled and trained when preparing for digitizing (Tarani 2012). Some participants were confident that there are still more training that they will receive as well as refresher training sessions. Ekwelem (2011: 4) emphasizes that information professionals must be trained, irrespective of their positions at work. Furthermore, Ekwelem (2011) also states that the training programme should reflect the basic knowledge for the job, which normally comes from education and insists that proper training should include skills and experience acquisition.

In the Collections Digitization Framework, a framework used to inform this study, it is clearly stated that once you have identified and deployed the necessary staff for

digitization, you then secure and deploy the necessary equipment such as workstations, scanners, and others to support the digitization project (Tarani 2012). Fortunately, participants in this study highlighted that their institutions bought digitization tools and facilities such as cameras, computers, scanners and digitization machines, employed more staff such as project managers, to oversee their digitization projects and provide advises.

These findings are in line with Amollo's (2011: 24) point of view that the correct infrastructure for digitizing includes the right equipment, skilled staff, and management support. Some participants are preparing themselves by practicing while others mentioned that their institutions created a digitization space. One participant stated that his "... *institution awarded a tender for a company to look into their case and develop a digitization strategy*". Hirwade (2011) supports some of these findings in his proposed requirements for the implementation of a library digitization project, namely: the provision of policy guidelines, the required infrastructure and the training of people involved. By looking at the framework (CDF) for this study, there are some of important aspects of digitization that the KZN information providing agencies did not do in terms of preparedness for the digitization projects. These include confirming the applicability of copyright and intellectual property rights of the physical items, securing funding for digitization initiatives and allocating resources and budgets (Tarani 2012). Therefore, these findings show that there is no proper planning for digitization projects in the KZN information-providing agencies. Lastly, some participants agreed on a good suggestion that any institution or organization planning to embark on a digitization project should do their homework in terms of what they will need, because it becomes a problem if they do not have enough of the required resources.

5.2.1.2. Challenges for preparing a digitization project

Hammond and Davies (2009: 1) highlight that there is a number of challenges when preparing for different digitization projects. All 12 (100%) participants honestly confirmed that they are faced with challenges regarding the preparation for their digitization projects in the KZN information providing agencies. The researcher was then asked a

follow-up question in order to identify those challenges, the results of which are presented in 5.2.1.2.1.

5.2.1.2.1. Identified challenges for preparing a digitization project

The Collections Digitization Framework mentions file server storage as one of the necessary infrastructure components in the “Deploy” stage (Tarani 2012). According to Hammond and Davies (2009: 21), managing information is one of the most challenging aspects of the digitization project. The majority of participants mentioned a lack of a storage server as one of the challenges they are facing regarding their preparation for digitization projects in the KZN information providing agencies. In the “Deposit” stage of the CDF, the submission of digital surrogates to appropriate local, archival, or access servers and repositories is expedited. Moreover, this includes the submission of digital files and metadata to appropriate servers and systems for storage (Tarani 2012: 6-7). Therefore, this is a problem in the KZN information providing agencies as this study found that they lack storage servers to store their digitized collection. Oliver (2015: 9) notes that the majority of institutions are daunted by the prospect of storing digitized resources. Hence, he advises that before embarking on a digitization project, the issue of storage must be addressed.

Trifunovic (2009: 9) reveals in his study that there are not enough capacity in terms of staff to handle digitization projects and technologies. This current study revealed similar findings in that it found that there are no dedicated IT personnel for digitizing in the KZN information providing agencies who prepare for digitization projects. Unfortunately, the Collections Digitization Framework indicates that institutions preparing for digitization projects should identify and mobilize the required resources to support digitization activities, and this includes identifying and deploying the necessary human resources (staff) for digitization (Tarani 2012). One participant commented that he thinks they need a staff member/s with an IT related background because they are relying on the staff from the ICT department who takes their time if problems are being encountered. Jones (2001) advises that digitization projects for libraries, museums and archives

require new skills and most librarians lack the information communication technology (ICT) skills.

Nyide (2014: 51) points out that the library personnel need to be well trained in order to acquire the required knowledge and skills required for the successful implementation of digitization processes. Participants mentioned “training” as the challenge regarding their preparation for digitization projects in the KZN information providing agencies. One participant has even noted a valid point that their “main challenge is training as they have a little bit of understanding in terms of operating the digitization machines but they would like to have professional training and knowledge on digitization”. Trifunovic (2009: 9-10) mentions that a lack of funds and how to obtain enough funds for a longer period in order to provide viable projects are also challenges for digitization projects. Participants confirmed that their institutions have a lack of funds for the digitization projects. Husmillo (2014: 32) advises that in order to obtain grants for the digitization project, you have to know potential funders for libraries and related fields.

The Collections Digitization Framework stressed that digital files and metadata should be submitted to appropriate target servers and systems for storage (Tarani 2012). Luckily, one participant shared a critical concern that their “challenge is to collaborate the normal library system with the digital aspect of it, because at the end of the day, these materials are in one library but they are in different systems”. This is also a problem in other countries like Bulgaria and Turkey, as seen in Todorova *et al.* (2014: 18) identifying the absence of a union catalog and/or database for the existing digital materials as one of the primary challenges in the study he conducted on the “Digital preservation policies in Bulgaria and Turkey”. Another participant indicated that their “challenge is users’ expectation, as users expect to see a digitized collection”. Another participant had a similar concern and said they are looking forward to have an Augmented Reality (AR) app in which you will hold a tablet next to the artifact and the information will be supplied by the tablet. The other challenge ascertained by this study is that a part of the “collection to be digitized is old, brittle and falling into pieces, so they need to be conserved first so that they will be able to digitize and preserve them”.

5.2.2. Types of collections that the KZN information providing agencies are preparing to digitize and why

To achieve this objective, the following critical question was generated: What are the types of collections that the KZN information providing agencies are preparing to digitize and why? Here too, the main findings are discussed under broad themes.

5.2.2.1. Types of collection institutions prepare to digitize

Philip (2012) reminds us that libraries cannot merely engage in digitization for the sake of digitizing, but must think carefully and decide on which materials to digitize, such as special collections and others. Participants from Institution 1 confirmed that their institution is preparing to digitize photographs, while those from Institution 2 confirmed that their institution is preparing to digitize the legal deposit serials collection. Bekele (2002) agrees with this current study's findings as he states that there is a scarcity of periodicals and other literature in research institutions, universities, and technical schools in the developing world. Further, giving information seekers limited access to innovations puts this information outside their domain. Therefore, creating a digital library is an excellent solution to these problems.

Participants from Institution 3 confirmed that their institution is preparing to digitize theses and dissertations. It seems like more academic libraries are embarked on digitizing their theses and dissertations as Eke (2011: 1) mentions that digitization of theses and dissertations at the university libraries of Jos and the Obafemi Awolowo Universities (both in Nigeria) provided a model for the Ahmadu Bello University (ABU), also in Nigeria, under the Association of African Universities - Database of African Theses and Dissertations (AAU-DATAD) programme with an aim of providing global access over the internet to all the theses and dissertations recognized for higher degrees at the university level. Nyide (2014) also conducted a study at the University of KwaZulu-Natal in KZN, South Africa, entitled: "The digitization of theses and dissertations in the UKZN library".

5.2.2.2. Reasons for preparing to digitize these collections

According to IFLA (2002: 6), there are a number of reasons for implementing digitization projects, which benefit both users and institutions in one way or another. This study found that most participants have similar views on why their institutions prepare to digitize these collections. The majority of participants from the institutions preparing for their digitization projects in KZN mentioned that their reasons are to preserve the collection and to facilitate remote/online access, as well as access at any of the day. IFLA (2002: 8) and Jagboro *et al.* (2012) agree that libraries digitize their collection because it offers the opportunity to preserve the original by giving access to a digital surrogate. In this study, one participant suggested that the KZN universities should start a digitization project for the digitization of the indigenous documents in order to make them accessible. Participants further mentioned that they plan to digitize these collections because they want to save physical space, to take advantage of digital the era and to go with a trend because of its nature, to save deteriorating collection, and for legal deposit purposes. Husmillo (2014: 3) and Alhaji (2007: 3) have similar reasons which agree with the findings of this study on “why digitize?” These reasons include: “to help preserve the original materials, to provide/increase access, to improve service, and to build/develop new resources”.

5.2.2.3. Selection criteria for collection preparing to digitize

The Collections Digitization Framework advises that institutions preparing for digitizing should generate digital surrogates for physical items selected for digitization by preparing and organizing items for digitization by determining appropriate reformatting techniques, formats, file naming conventions, and so on. Hammond and Davies (2009: 12) cautioned that selection of materials for digitization should be given careful consideration, as there are a various factors that might affect the cost of the project and which need to be considered beforehand. In this study, all 12 (100%) participants from three institutions preparing for their digitization projects in KZN provide the following selection criteria for collection to be digitized: Institution 1 is preparing to start with the documents that are in high demand, and within that collection, they will start with the old

ones and then the recent ones; Institution 2 is preparing to start with the new collection and then the old one, and Institution 3 is preparing to start with the rare or unique collection and then the general collection. Layton (2011) notes that knowing your users makes it easier to understand their needs and decide which materials to digitize and how digitization of these digitized materials will benefit them, as well as how to present it to them.

5.2.3. Drafted policies and guidelines prepared to be followed by the KZN information providing agencies when digitizing their collections

This study wanted to ascertain if the KZN information providing agencies have drafted policies and guidelines prepared to be followed when digitizing their collections. Findings relating to this research objective are discussed in 5.2.3.1.

5.2.3.1. Digitization policies and guidelines

The University of Stellenbosch Library (2019) states that, a digitization policy is a very significant aspect to consider when embarking on a digitization project. Todorova *et al.* (2014: 28) recommend digitization policies that contain complete approaches to every single point of digitization and state that digital collections should be established at institutional and national levels. It was ascertained by this study that out of the three institutions preparing for the digitization projects in KZN, only one (33%) has a digitization policy and guidelines preparedly available (refer to section 4.4.16 in chapter 4). Liu (2004: 338) identified a lack of policies as a digitization challenge for most libraries in the USA. This is also the problem in Nigeria as Alhaji (2007: 234) points out that one of the main challenges of the digitization projects in Nigerian universities is the absence of institutional policy.

In addition, this current study revealed that two (67%) of the three KZN information providing agencies preparing for digitization projects do not have prepared digitization policy and guidelines. Hence, the Collections Digitization Framework indicates that digitization activities should be done in accordance with agreed guidelines and standards (Tarani 2012). Seemingly, this problem can be traced back in the province of

KwaZulu-Natal, South Africa, as Nyide (2014) conducted a study on the digitization of theses and dissertations in the UKZN Library. Nyide (2014: 184) revealed in her study that there were strategies in place for digitization, but when it comes to policies, there were no visible digitization policies guiding the project in the UKZN Library.

5.2.4. Digitization processes prepared to be followed by the KZN information providing agencies when digitizing their collections

This study searched for digitization processes prepared to be followed by the KZN information providing agencies when digitizing their collections and the main findings are discussed in 5.2.4.1.

5.2.4.1. Digitization process

In the “Digitize” stage of the digitization project, the Collections Digitization Framework advises the following process: you prepare by organizing resources for digitization by determining appropriate reformatting techniques, file naming conventions, formats etc.; you codify by performing any linguistic required, e.g. transliteration or translation of foreign language materials; you inventory by making and managing the inventory of materials to be digitized by allocating them unique identifiers; you determine and comply with applicable copyright and intellectual property rights of the physical materials, and formulate appropriate access and use restrictions pertaining to digital surrogates; you reformat physical materials to create their digital surrogates. This function may also include post-reformatting corrective and quality control measures essential to safeguard desired quality of digital surrogates; you index by taking required measures such as optical character recognition (OCR) to support subsequent use of digital surrogates; you track reformatting status of materials based on agreed upon methods; and then, this information package function may be used for capturing information about digital surrogates for subsequent processing (Tarani 2012). Liu (2004: 342) states that concerns are mostly based on not involving a lot of steps for processing the digitization of collections, for example, scanning to be done without removing the binding of the materials. It was revealed in the current study that out of three institutions preparing for

the digitization projects in KZN, two (67%) have prepared digitization processes for their digitization projects, whereas one (33%) does not have a digitization process prepared for their digitization project. Refer to (refer to section 4.4.17 in Chapter 4) for the digitization processes for these two (67%) institutions. According to ISPAT Guru (2016), there are numerous steps in the life cycle of digitization process and these steps may differ depending on the nature of resources to be digitized. ISPAT Guru (2016) adds the following steps in the digitization process:

- “Initiation and the start of the project, selection of documents/records for digitization, preparation of documents
- Conversion of information in digital form
- Editing of the digitized documents and their storage method
- Organization for digital collection using metadata
- Access and maintenance”.

Nyide (2014:24) stressed that the decision-making is significant when it comes to digitization processes.

5.3. Conclusions of the study

The previous section discussed the main findings of the study and these findings were supported by the literature that was reviewed and the theoretical framework adopted by this study. The conclusions of this study are based on the major findings obtained through face-to-face semi-structured interviews from the staff members involved in the preparedness for digitization projects in the KZN information providing agencies. Based on the discussion in this chapter, this section draws the following conclusions to determine if the objectives of this study were addressed:

- The findings for this study indicated that most participants from the KZN information providing agencies are being prepared by the digitization machine suppliers giving them training on how to operate the digitization machines supplied. These information providing agencies buy digitization tools and facilities, they employ staff and they have created a digitization space. Some

participants are preparing themselves by practicing digitizing. All 12 (100%) participants honestly confirmed that they are faced with challenges regarding their digitization projects. A lack of storage server, funds and funding, training, and dedicated IT personnel for digitizing are the most notable challenges faced by staff members preparing for digitization projects in the KZN information providing agencies.

- This study found that Institution 1 is preparing to digitize photographs, Institution 2 is preparing to digitize legal deposit serials collection and Institution 3 is preparing to digitize theses and dissertations. Participants mentioned that their institutions are preparing to digitize these collections because of the following reasons: collection preservation, easy and global online access, taking advantage of the digital era, and to save the old and deteriorating collection. These institutions will use different selection criteria in selecting the collection to be digitized.
- This study revealed that out of three institutions preparing for the digitization projects in KZN; only one (33%) has a digitization policy and guidelines preparedly available (refer to section 4.4.16 in Chapter 4), and two (67%) institutions do not have prepared digitization policy and guidelines;
- It was ascertained by the current study that out of three institutions preparing for the digitization projects in KZN, two (67%) have digitization processes preparedly available (refer to section 4.4.17 in Chapter 4), while only one (33%) does not have a prepared digitization process.

The researcher hopes that these conclusions will be useful to the KZN information providing agencies preparing for their digitization projects and other institutions and organizations planning or preparing for their digitization projects. However, in case of any gap/s that need/s to be filled in this study, the researcher feels that this study can be extended by any other interested researchers in filling those gaps.

5.4. Recommendations of the study

Based on the findings of this study and discussions, the study makes the following recommendations:

- This study recommends that institutions and organizations preparing for digitization projects should prepare the following before they embark on the digitization project: a well-planned digitization strategy, a big enough storage server/capacity, enough funds and funding, professional or enough staff training on digitization, digitization tools/infrastructure and facilities, and IT dedicated personnel for digitizing.
- Institutions and organizations preparing for digitizing their collection should prepare a selection criterion in selecting collection to be digitized.
- The study recommends that institutions and organizations preparing for digitizing their collection should prepare a digitization policy and guidelines to be followed when digitizing collection.
- Institutions and organizations preparing for digitizing their collection should prepare digitization processes to be followed when digitizing collection.
- This study recommends that institutions and organizations preparing for digitizing collection teach their staff about copyright laws when planning to digitize their collection.
- The researcher recommends that researchers interested in the field of digitization do a research on what happens after the digitization projects are done.

5.5. Summary and conclusion

This final chapter (Chapter 5) discussed the main findings of the study and relevant literature was also presented to support the research findings. The discussion of main findings was structured in terms of the critical questions generated to address the objectives of the study. Based on these discussions, conclusions have been drawn and recommendations were made.

The researcher is confident that this study achieved its four main objectives, which were: (1) to find out how do the KZN information providing agencies prepare for their digitization projects; (2) to identify types of collections that the KZN information providing agencies are preparing to digitize and why; (3) to ascertain if the KZN information providing agencies have drafted policies and guidelines to be followed when digitizing their collections; (4) to ascertain the digitization processes that will be followed by the KZN information providing agencies when digitizing their collections.

It is believed that the critical questions generated to address these objectives as well as the research instrument designed for the study (interview schedule) was appropriate in collecting the data required to reply to the critical questions.

The researcher hopes that in addressing these objectives, this study has indicated some significant trends and issues regarding the preparedness for digitization projects in the KZN information providing agencies and hopes that these institutions seriously look at the recommendations. It is also believed that the outcomes of this study will contribute to the KZN information providing agencies preparing for digitization projects and to the library and information sector (LIS) at large, especially to those LIS agencies/institutions and organizations planning or preparing for digitization projects.

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APPENDIX A

Research interview schedule

Preparedness for digitization projects in Kwazulu-Natal (KZN) information providing agencies.

The aim of this study (Master of Management Sciences in Library and Information Science at the Durban University of Technology) is to investigate the preparedness for digitization projects in KwaZulu-Natal (KZN) information providing agencies.

The study has the following research objectives:

- How do the KZN information providing agencies prepare for their digitization projects?
- What are the types of collections that the KZN information providing agencies preparing to digitize and why?
- Are there any drafted policies and guidelines prepared to be followed by the KZN information providing agencies when digitizing their collections?
- What are the prepared digitization processes that will be followed by the KZN information providing agencies when digitizing their collections?

BIOGRAPHICAL INFORMATION

1. What is the name of your institution?
2. What is the name of your department?
3. What is your current position?
4. What is your highest academic qualification/s?
5. How many years of experience do you have in this position?
6. How many years of experience do you have in digitization?

PREPAREDNESS FOR DIGITIZATION PROJECT

7. How did your institution prepare for a digitization project?
8. Are there any challenges faced regarding the digitization project? If yes, what are those challenges?

BENEFITS FOR DIGITIZING COLLECTION

9. What are the benefits of digitizing collection?

COLLECTION TO BE DIGITIZED

10. What are types of collection does your institution prepare to digitize, for example, books, newspapers, photos, artifacts, etc.?
11. Why does your institution prepare to digitize this collection, for example, to preserve collection, to facilitate remote access, to facilitate 24/7 access to collection?
12. What will be the selection criteria for collection to be digitized, for example, you will start with rare or unique collection and then a general collection, old collection and then recent ones, in demand collection and then undemand ones, etc.?

STAFF SUPPORT FOR A DIGITIZATION PROJECT

13. Do you think your institution has enough staff members for the digitization project?
14. Do you receive or have received any training on collections digitization? If yes, do you think it was sufficient to undertake the digitization project?
15. Does your institution give you enough support? If yes, which support do you receive?

DIGITIZATION TOOLS AND FACILITIES

16. What are digitization tools and facilities available for the digitization project in your institution, for example, computers, scanners, cameras, etc.?

17. If you are asked to rate the level of technical support from your organization, how much rate would you give, for example, very good, good, satisfactory, poor, etc.?

COLLECTIONS DIGITIZATION

18. What are prepared written policies and guidelines that will be followed by your institution when digitizing your collection? Is it possible to have a look at the policy?

19. What is the prepared digitization process that will be followed by your institution? If this process is documented, is it possible to have a look at this document please?

COPYRIGHT AND INTELLECTUAL LAWS

20. Who will own the copyright for digitized collection, for example, institution or the original owner of copyright of the work?

20.1. If it is your institution, then, have you communicated and agreed with the copyright owners of the original work?

BIBLIOGRAPHIC STANDARDS

21. Which bibliographic standard does your institution use in describing or cataloguing the digitized collection, for example, metadata standards, etc.?

22. What naming system will be used or you will use the existing one on the original record?

23. What will be the file format for the digitized collection?

STORAGE FOR DIGITIZED COLLECTION

24. Do you think your institution will have enough storage for the digitized collection?

25. How does your institution ensure the security of digitized collection?

26. Does your institution have or will have external storage for recovery in case of disaster?

ACCESS AND MANAGEMENT OF DIGITIZED COLLECTION

27. Will the digitized collections be accessible to the public? If yes, who will have access to this collection, for example, members, non-members, and or both?
28. Will the access be free of charge to users or they will be charged? If they will be charged, how much will the access fee be?
29. Does your institution have an information management system for the digitized collection? If yes, what system do you have?

FUNDING FOR A DIGITIZATION PROJECT

30. Does your institution have funds for the digitization project? Are these funds sufficient to complete the digitization project?
31. Does your institution have external funders? If yes, who are those funders, donors, etc.?

OPERATIONAL SUPPORT FOR A DIGITIZATION PROJECT

32. Does your institution have prepared staff that will monitor the daily running of the digitization project?

GENERAL COMMENTS ON A DIGITIZATION PROJECT

33. Please provide comment/s on a digitization project if you have any.

Thank you for your time in answering questions for this study. I will share the results with you if you would like to.

APPENDIX B



LETTER OF INFORMATION

Title of the Research Study: Preparedness for digitization projects in KwaZulu-Natal (KZN) information providing agencies.

Principal Investigator/s/researcher: Ndumiso Shelembe, Qualifications: Bachelor of Technology (B-Tech) Degree in Library and Information Studies and a National Diploma (NDip.) in Library and Information Studies.

Co-Investigator/s/supervisor/s: Dr. Mogiveny Rajkoomar (Supervisor), Qualifications: PhD in Library and Information Science.

Brief Introduction and Purpose of the Study: This study will investigate the preparedness for digitization projects in KwaZulu-Natal information providing agencies. The main purpose of this study is to find out how does the KZN information providing agencies prepare for their digitization projects and if they have challenges in preparing for these digitization projects.

Outline of the Procedures: Participant is kindly requested to participate in the interview process of the study at Durban Local History Museums. This process will take approximately twenty (20) minutes and participant is expected to voluntarily participate individually in this study.

Risks or Discomforts to the Participant: This study does not have foreseeable risks or discomfort to participants.

Benefits: This study will be of benefit as the results will contribute to the LIS schools teaching digitization, to LIS students, any other institutions other than LIS that are preparing for the digitization projects nationally and internationally. The researcher is looking forward to publish the outputs on LIASA in Touch. The researcher would like to publish the results of this study in the South African Journal of Library and

Information Science (SAJLIS) and it will be freely available on the DUT Repository.

Reason/s why the Participant May Be Withdrawn from the Study: There will be no adverse consequences for the participant should they choose to withdraw.

Remuneration: Participant will not receive any monetary or other types of remuneration.

Costs of the Study: Participant is not expected to cover any costs towards the study.

Confidentiality: Participant will not provide his/her name during the interview process and audio recordings will be kept in a locked facility by the researcher.

Research-related Injury: In case of a research-related injury or adverse reaction of the participant there will be no any compensation.

Persons to Contact in the Event of Any Problems or Queries:

Please contact the researcher (Mr. Ndumiso Shelembe) on 084 303 6245, my supervisor (Dr. Mogiveny Rajkoomar) on 031 373 6776 or the Institutional Research Ethics Administrator on 031 373 2375. Complaints can be reported to the Director: Research and Postgraduate Support, Prof S. Moyo on 031 373 2577 or moyos@dut.ac.za.



CONSENT LETTER

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, **Ndumiso Shelembe**, about the nature, conduct, benefits and risks of this study.
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

Full Name of Participant

Date

Time

**Signature / Right
Thumbprint**

I, **Ndumiso Shelembe**, herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Full Name of Researcher

Date

Signature

Full Name of Witness (If applicable)

Date

Signature

Full Name of Legal Guardian (If applicable)

Date

Signature

APPENDIX C

P.O. Box 399
Pietermaritzburg
3200
28 May 2019

Request for Permission to Conduct Research

Dear Sir/Madam,

My name is Ndumiso Shelembe, a Master of Management Sciences in Library and Information Science student at the Durban University of Technology. The research I wish to conduct for my Masters involves the “Preparedness for digitization projects in KwaZulu-Natal (KZN) information providing agencies”.

I am hereby seeking your consent to conduct a research on your institution.

I have provided you with a copy of my proposal which includes copies of the data collection tools (interview schedule) and consent and/ or assent forms to be used in the research process, as well as a copy of the approval letter which I received from the Institutional Research Ethics Committee (IREC).

If you require any further information, please do not hesitate to contact me on the following details: contact number: 084 303 6245 and email address: ndumison.shelembe@gmail.com. Thank you for your time and consideration in this matter.

Yours Sincerely,

Mr. Ndumiso Shelembe

Durban University of Technology

APPENDIX D



Faculty Research Office
Durban University of Technology

6 May 2019

Mr N. Shelembe

Student Number: **21209692**

Degree: Masters of Management Sciences in Library and Information Science

Email: ndumison.shelembe@gmail.com

Dear Mr Shelembe

ETHICAL APPROVAL: LEVEL 2

Your email correspondence in respect of the above refers.

I am pleased to inform you that the Faculty Research Committee (FRC) at its meeting on 28 February 2019, has granted preliminary permission for you to conduct your research ***"Preparedness for digitization projects in KwaZulu-Natal (KZN) information providing agencies"***.

You are required to present this letter to each of the sites (Msunduzi Municipal Library, Don Africana Central Reference Library, University of Zululand Library and the Durban Local History Museums) of data collection to obtain full permission to conduct the research at those sites. Please also note that each of your questionnaires must be accompanied by a letter of information and a letter of consent for each participant, as per your research proposal.

A summary of your key research findings may be submitted to the FRC on completion of your studies.

Kindest regards.

Yours sincerely

Dr Delene Heukelman
Faculty Research Coordinator (Acting)
