

**UTILIZATION OF DIGITAL TECHNOLOGIES TO ENHANCE PRESERVATION AND
CONSERVATION OF INFORMATION RESOURCES IN ACADEMIC LIBRARIES IN
KWARA STATE**

BY

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CERTIFICATION

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DEDICATION

I dedicate this project to God Almighty, whose grace, guidance and unending love have been my strength throughout this journey. Also this project is dedicated to my parents, **MR&MRS LAWAL** for their support, prayers and constant encouragement which encourage me along my academic journey.

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ABSTRACT

This study investigates the utilization of digital technology for conservation of information resources in academic libraries in Kwara State. The objectives are to; Find out the digital conservation methods adopted for information resources in academic libraries in Kwara State; Find out the type of technologies adopted for the conservation and preservation of information resources in academic libraries in Kwara State; Identify the factors influencing the adoption of digital technology for the conservation of information resources in academic libraries in Kwara State; Identify the digital technology adopted for conservation of information resources in university libraries in Kwara State; Identify the requisite training and skills of the staff for adoption of digital technology for conservation of information resources in academic libraries in Kwara State. One hundred and ten (110) respondents were selected as the subject of the study. The instrument used for data collection was structured questionnaire. Data collected were analysed using both frequency and simple percentages. Results revealed that: The adoption of digital technology for information resource conservation in academic libraries in Kwara State is prevalent, with a strong focus on digitization techniques and best practices. The majority of individuals involved in the adoption of digital technology exhibit advanced proficiency levels, indicating a skilled workforce in university libraries. Regular access to training and professional development opportunities is available, emphasizing the commitment to continuous learning and skill enhancement. Key training areas covered include digital preservation standards, information security, metadata creation, and digitization techniques. While the overall findings are positive, there is a need for increased emphasis on technical troubleshooting and maintenance training to ensure the smooth functioning of digital systems. The study concluded that there is a prevalent adoption of digital technology, a skilled workforce, and availability of training opportunities in academic libraries in Kwara State. However, there is a need for further focus on technical troubleshooting and maintenance training for effective digital system management. The following recommendations were made; Enhance technical troubleshooting and maintenance training to ensure efficient management of digital systems. Expand training programs to cover a wider range of proficiency levels, addressing the needs of individuals with intermediate, novice, and beginner skill levels. Foster a culture of continuous professional development to keep library staff updated with emerging trends and technologies. Increase collaboration and knowledge-sharing among university libraries to facilitate the exchange of best practices in digital resource conservation. Allocate resources to ensure equitable access to training and professional development opportunities for all library professionals, regardless of their institutional affiliations or roles.

TABLE OF CONTENTS

Title page	Page
Certification	ii
Dedication	iii
Acknowledgement	iv
Abstract	v
Table of contents	vi-viii
Tables	viii-ix

CHAPTER ONE : INTRODUCTION

1.1	Background to the Study	1-3
1.2	Statement of the Problem	3-4
1.3	Objectives of the Study	4-5
1.4	Research Questions	5
1.5	Scope of the Study	5-6
1.6	Significance of the Study	6
1.7	Definition of Terms	6-7

CHAPTER TWO : REVIEW OF RELATED LITERATURE

2.0	Introduction	8
2.1	Concept of Conservation	8-9
2.2	Concept of Digital Conservation	10-11
2.3	Digital Conservation Methods	12-13
2.4	Technologies Adopted in Digital Conservation	13-15
2.5	Factors Affecting the Adoption of Digital Conservation	15-17

2.6	Summary of the Review	17-19
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CHAPTER THREE : RESEARCH METHODOLOGY

3.1	Introduction	20
3.2	Research Design Adopted for the Study	20
3.3.1	Population of the Study	20
3.4	Instrument for Data Collection	21
3.5	Procedures for Data Collection	21
3.6	Procedures for Data Analysis	21

CHAPTER FOUR : RESULTS AND DISCUSSION

4.1	Introduction	22
4.2	Demographic Characteristics of Respondents	22-30
4.3	Discussion of findings	30-32

CHAPTER FIVE : SUMMARY, CONCLUSION, AND RECOMMENDATION

5.1	Introduction	33
5.2	Summary of the study	33
5.4	Summary of the Major Findings	34
5.4	Conclusion	34
5.5	Recommendations	34-35
	References	36-38

TABLES

Table 4.1	Distribution of Respondents by Institution	22
Table 4.2	Distribution of Respondents by Educational Qualification	22-23
Table 4.3	Distribution of Respondents by Working Experience	23
Table 4.4	Digital Conservation Methods Adopted for Information Resources	24
Table 4.5	Frequency of Digital Conservation Methods for Preserving Information Resources	24-25
Table 4. 6	Using Technologies for Information Resource Preservation	25
Table 4.7	Factors Influencing the Adoption of Digital Technology in University Libraries	26
Table 4.8	Training and Professional Development Opportunities	27
Table 4.9	Proficiency Levels	28
Table 4.10	Training Areas	29

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The advent of digital technology has revolutionized the way information resources are managed in university libraries. With the increasing demand for quick and easy access to information, university libraries have embraced digital technology to enhance the preservation of information resources. Digital technology has not only facilitated the organization and storage of information resources but has also improved access to information by users. Digital technology refers to electronic tools, systems, devices, and resources that use digital signals to create, process, store, and communicate information (Chaffey & White, 2021).

Digital technology has transformed the traditional role of libraries from being physical repositories of books to becoming dynamic centres of information where users can access various types of resources, including digital collections, e-books, e-journals, and databases (Liu & Zheng, 2019).

Digital technology has improved the efficiency and effectiveness of library services by enabling libraries to provide online access to resources 24/7, regardless of the users' location (Hannabuss, 2017).

Digital technology has also facilitated the organization and storage of information resources in libraries, leading to the creation of digital libraries and repositories (Oye, Abioye, & Olumide, 2015). Digital libraries have made it possible to preserve and share rare, unique, and valuable information resources that were previously inaccessible to users due to geographical barriers, copyright restrictions, and limited physical storage space.

Conservation of information resources is a critical aspect of library management. Conservation refers to the preservation, protection, and maintenance of library materials to ensure their long-term

availability and usability (Hartzell, 2017). Conservation aims to prevent damage, degradation, and loss of library materials due to physical, chemical, biological, or environmental factors.

Several techniques and methods are used in the conservation of information resources, including preventive measures, repair, restoration, and digitization (Molloy & McCabe, 2016). Preventive measures involve environmental controls, storage, and handling procedures to prevent damage to library materials. Repair involves fixing damaged materials to make them usable, while restoration involves returning materials to their original condition. Digitization involves converting physical materials into digital formats to enable wider access and reduce wear and tear.

Conservation of information resources is crucial in libraries as it ensures that library materials are available for future generations. It also ensures that library users have access to materials in good condition, free from damage and deterioration (Farnsworth & Goss, 2021). Conservation also enhances the value of library collections by preserving their historical, cultural, and intellectual significance.

Digital conservation of library resources refers to the use of digital technology to preserve and protect library materials from damage, deterioration, or loss. Digital conservation involves digitization, digital preservation, and access to digital surrogates of library materials (Ashley, 2018). Digital conservation is crucial in ensuring the long-term accessibility and usability of library materials, particularly those that are rare, unique, or fragile.

Digitization is one of the most common methods used in digital conservation. It involves the conversion of physical materials into digital formats, such as PDFs, JPEGs, or TIFFs, using scanners or cameras (Besser, 2016). Digital preservation involves the management and preservation of digital materials over time to ensure their authenticity, integrity, and usability. It involves the use of digital repositories, migration, emulation, and other techniques to ensure the long-term accessibility and usability of digital materials (Lavoie & Dempsey, 2018).

Digital conservation has several benefits for libraries. It enables wider access to library materials, particularly for remote users who cannot physically access the materials. It also reduces wear and tear on physical materials, thus preserving their integrity and authenticity. Digital conservation also enhances the value of library materials by making them available for research, teaching, and learning.

However, digital conservation also presents several challenges for libraries. One of the major challenges is the cost of digitization and digital preservation infrastructure and software (Ross et al., 2019). Other challenges include the lack of technical expertise and staff training, copyright restrictions, and data privacy concerns. Hence the need to assess the adoption of digital technology for conservation of information resources in university libraries in Kwara State.

1.2 Statement of the Problem

In recent years, digital technology has had a significant impact on the conservation of information resources in university libraries. With the increasing availability and affordability of digital tools, libraries have been able to digitize their collections, thus reducing wear and tear on physical materials while also making them more widely accessible. However, while digital technology presents many opportunities for conservation, it also presents new challenges and complexities that libraries must navigate.

One of the most significant benefits of digital technology in conservation is the ability to create digital surrogates of library materials. Digitization enables libraries to create high-quality digital images of their materials, making them accessible to a wider audience, including remote users who cannot physically access the materials (Holley & Popp, 2017). Digital surrogates can also reduce wear and tear on physical materials by reducing the need for handling and use.

Digital technology has also enabled libraries to improve their preservation efforts. Digital preservation tools and techniques, such as migration and emulation, enable libraries to ensure the

long-term accessibility and usability of digital materials (Lavoie & Dempsey, 2018). Digital preservation can also complement physical preservation efforts, enabling libraries to preserve the authenticity and integrity of their collections. Despite the benefits of digital technology in conservation, it also presents several challenges for university libraries. One of the major challenges is the cost of digitization and digital preservation infrastructure and software (Ross et al., 2019). Other challenges include the lack of technical expertise and staff training, copyright restrictions, and data privacy concerns.

Given the impact of digital technology on the conservation of information resources, it is important to understand how university libraries are navigating these challenges. Research has shown that libraries are increasingly investing in digital conservation infrastructure and software to support their conservation efforts (Farnsworth & Goss, 2021). However, many libraries still face challenges. It is against these background that the researchers set out to assess the adoption of digital technology for conservation of information resources in university libraries in Kwara State.

1.3 Objectives of the Study

The main objective of the study is to assess the adoption of digital technology for conservation of information resources in university libraries in Kwara State.

The specific objectives are to;

1. Find out the digital conservation methods adopted for information resources in academic libraries in Kwara State.
2. Find out the type of technologies adopted for the conservation and preservation of information resources in academic libraries in Kwara State.
3. Identify the factors influencing the adoption of digital technology for the conservation of information resources in academic libraries in Kwara State.

4. Identify the digital technology adopted for conservation of information resources in academic libraries in Kwara State.
5. Identify the requisite training and skills of the staff for adoption of digital technology for conservation of information resources in academic libraries in Kwara State.

1.4 Research Questions

The following research questions guided the study;

1. What are the digital conservation methods adopted for information resources in academic libraries in Kwara State?
2. What is the type of technologies adopted for the conservation and preservation of information resources in academic libraries in Kwara State?
3. What are the factors influencing the adoption of digital technology for the conservation of information resources in academic libraries in Kwara State?
4. What is the digital technology adopted for conservation of information resources in academic libraries in Kwara State?
5. What are the requisite training and skills of the staff for adoption of digital technology for conservation of information resources in academic libraries in Kwara State?

1.5 Scope of the Study

The study will investigate the adoption of digital technology for conservation of information resources in academic libraries in Kwara State. The information materials to be considered include the print, non-print, and electronic materials. The staff to be studied are the professional working in the selected university libraries. The universities to be under-studied include;

- a) Al-hikmah University, Ilorin.

b) Kwara State University, Malete.

c) University of Ilorin

1.7 Significance of the Study

This study will be beneficial to university libraries as it provides research findings that can help improve the preservation, conservation and accessibility of information resources for their patrons. The outcome of this study will be of benefit to librarians as it can provide insights to improve their digital conservation efforts and better serve their patrons.

The findings of this study will be relevant to scholars and students as it can improve access to reliable information resources that are essential for their research and academic success. This study will be beneficial to university administrators and policymakers as the outcome can provide research insights to inform their decision-making regarding funding, resource allocation, and policy development related to university library conservation programs.

The findings of this study will be relevant to the broader academic community by expanding our understanding of the impact of digital technology on library conservation practices and providing a framework for future research in this area.

1.7 Definition of Terms

The following terms are defined operationally to ease their understanding and usage in the study.

Conservation: This refers to specific policies and practices involved in protecting information resources from deterioration, damage and decay, including the methods and techniques devised.

Digital conservation: This refers to the preservation and management of digital information resources to ensure their long-term accessibility and usability. It involves a range of strategies and techniques, such as data backup, disaster recovery planning, migration to new digital formats, and metadata management, among others.

Digital technology: This refers to the use of digital or computer-based systems, tools, and processes to create, store, manage, and transmit information. It encompasses a wide range of technologies such as computers, smartphones, tablets, digital cameras, and the internet, among others.

Information Resources: These are all those media for storing information. It could be in printed, non-print or electronic format that can be found in libraries.

Preservation: This refers to the physical treatment, prevention and forestallment of information carrying materials in order to curtail deterioration or further damage.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

This chapter will discuss related literature under the following sub headings:

2.1 Concept of Conservation

2.2 Concept of Digital Conservation

2.3 Digital Conservation Methods

2.4 Technologies Adopted in Digital Conservation

2.5 Factors Affecting the Adoption of Digital Conservation

2.6 Summary of the Review

2.1 Concept of Conservation

Conservation plays a crucial role in maintaining the longevity and accessibility of information resources within university libraries. In the digital age, the concept of conservation has expanded to encompass not only physical preservation but also the safeguarding and management of digital assets. This section explores the key aspects of conservation within the context of university libraries.

Conservation, in the traditional sense, involves the physical preservation of materials to ensure their durability and longevity. In university libraries, this has historically involved employing various methods such as temperature and humidity control, proper storage conditions, and handling protocols (Smith, 2017). These practices have been essential for protecting fragile and aging materials like rare books, manuscripts, and archival documents. However, with the increasing integration of digital

technology, conservation practices have evolved to address the challenges and opportunities presented by digital information resources.

Digital conservation, also known as digital preservation, focuses on the long-term accessibility and usability of digital materials (Khan, 2019). Digital assets encompass a wide range of resources, including digitized versions of physical materials, born-digital content and multimedia files. The conservation of digital information resources involves strategies such as data migration, format conversion, metadata creation, and storage infrastructure management (Khosrowjerdi, 2018). These techniques aim to mitigate the risks of technological obsolescence, data corruption, and loss of information inherent in digital materials.

The shift towards digital conservation in university libraries has been driven by the benefits it offers. Digital technologies enable wider access to information resources, overcoming the limitations of physical space and geographical constraints (Owusu-Ansah, 2015). Users can remotely access digital collections, facilitating research and enhancing the dissemination of knowledge. Moreover, digital conservation enables the creation of backups and redundant copies, ensuring the preservation of resources even in the event of physical damage or loss (Besser, 2014).

Rapid technological advancements necessitate continuous monitoring and adaptation to ensure compatibility and readability of digital materials across different platforms and software versions (Pearce-Moses, 2017). Furthermore, the management of large-scale digital collections requires robust infrastructure, data curation practices, and financial resources (Lavoie et al., 2014). Universities and library institutions need to invest in sustainable preservation systems and workflows to guarantee the long-term accessibility and usability of digital resources.

The concept of conservation in university libraries has evolved to address the challenges and opportunities posed by digital technology. Traditional physical preservation methods now coexist with digital conservation strategies to ensure the longevity and accessibility of information resources.

2.2 Concept of Digital Conservation

The concept of digital conservation, also known as digital preservation, has emerged as a crucial aspect of managing information resources within university libraries. It involves the safeguarding, management, and long-term accessibility of digital materials. This section explores the key aspects of digital conservation and its implications for university libraries.

Digital conservation encompasses a range of strategies and practices aimed at ensuring the integrity, authenticity, and usability of digital information resources (Giaretta, 2014). It involves the implementation of technological, organizational, and policy frameworks to mitigate risks associated with digital obsolescence, technological change, and data loss (Rosenthal et al., 2012). Digital conservation not only involves the preservation of born-digital materials but also extends to the digitization and preservation of physical resources in digital formats.

One of the primary challenges in digital conservation is addressing the issue of technological obsolescence. Digital materials are highly susceptible to format and software obsolescence, rendering them inaccessible or difficult to interpret over time (Hedstrom, 2015). Strategies such as format migration and emulation are employed to ensure that digital materials remain readable and usable despite changes in technology (Hockx-Yu, 2016). Format migration involves converting digital objects from obsolete formats to current ones, whereas emulation involves creating software environments that replicate older hardware and software to access obsolete digital resources.

Metadata plays a crucial role in digital conservation as it provides vital information about the content, context, and technical characteristics of digital resources (Day, 2014). Metadata standards and practices facilitate the organization, discovery, and long-term management of digital materials (Higgins, 2008). Metadata enables efficient searching, browsing, and retrieval of digital resources, enhancing the accessibility and usability of information within university libraries.

The management of digital collections requires robust infrastructure, storage systems, and backup mechanisms (Lavoie et al., 2014). Digital repositories and preservation systems are designed to store and manage large-scale digital collections while ensuring the integrity and security of the content (Kenney, 2017). Redundancy and backup strategies are implemented to safeguard against data loss and mitigate the risks of hardware failure or disasters (Smith, 2017).

Digital conservation offers numerous benefits to university libraries. It enables wider access to information resources by overcoming physical barriers and geographical constraints (Owusu-Ansah, 2015). Users can remotely access digital collections, facilitating research and knowledge dissemination. Furthermore, digital conservation allows for the creation of multiple copies, backups, and redundant storage, ensuring the preservation of resources even in the event of physical damage or loss (Besser, 2014).

However, challenges exist in implementing effective digital conservation strategies within university libraries. Continuous monitoring and adaptation are required to keep up with rapidly evolving technologies and ensure the compatibility and readability of digital materials across different platforms and software versions (Pearce-Moses, 2017). Furthermore, long-term financial sustainability and resource allocation are crucial for maintaining digital infrastructure and supporting ongoing preservation efforts (Khosrowjerdi, 2018).

Digital conservation has become a vital component of managing information resources in university libraries. It encompasses strategies such as format migration, emulation, metadata management, and robust infrastructure to ensure the long-term accessibility and usability of digital materials. The next section will explore the influence of digital technology on conservation practices within university libraries (Khan, 2019).

2.3 Digital Conservation Methods

Digital conservation methods encompass a range of strategies and techniques employed by university libraries to ensure the preservation, integrity, and accessibility of digital information resources. This section explores key digital conservation methods and their significance in the context of university library settings.

One of the primary methods employed in digital conservation is format migration. Format migration involves the conversion of digital objects from obsolete file formats to current ones to ensure their continued accessibility and usability (Giaretta, 2014). Through format migration, university libraries can mitigate the risks associated with technological obsolescence and ensure that digital resources remain readable and interpretable over time (Khosrowjerdi, 2018). Format migration may involve converting file formats such as text documents, images, audio, and video files to open, standard formats that have better long-term support and compatibility (Hedstrom, 2015).

Emulation is another method used in digital conservation to ensure access to obsolete digital resources. Emulation involves recreating the software environment of outdated hardware and software systems, allowing users to access and interact with digital objects as they were originally intended (Lavoie et al., 2014). By emulating old systems, university libraries can overcome the challenges associated with obsolete technologies and ensure the continued accessibility of historically significant digital materials (Pearce-Moses, 2017).

Metadata management is a crucial component of digital conservation methods. Metadata provides essential information about digital resources, including their content, context, and technical characteristics (Higgins, 2008). Through metadata, university libraries can effectively organize and describe digital materials, facilitating their discovery and retrieval. Metadata standards, such as Dublin Core or METS, ensure consistency and interoperability in describing digital resources (Day,

2014). Well-structured metadata enables efficient search, navigation, and management of digital collections within university libraries (Kenney, 2017).

Digital repositories and preservation systems are key infrastructure components supporting digital conservation efforts. These systems provide secure storage and management for large-scale digital collections (Rosenthal et al., 2012). Digital repositories offer features such as version control, access control, and backup mechanisms, ensuring the integrity and long-term preservation of digital materials (Hockx-Yu, 2016). These systems enable university libraries to store, organize, and provide access to diverse types of digital resources, ranging from digitized materials to born-digital content.

In addition to technological methods, digital conservation also involves policy and procedural frameworks. Preservation policies and guidelines guide decision-making processes related to digital conservation within university libraries (Besser, 2014). These policies address issues such as selection criteria, file formats, metadata standards, and storage requirements. They provide a framework for prioritizing preservation efforts and ensuring consistent practices across the institution.

Digital conservation methods play a crucial role in ensuring the long-term preservation, integrity, and accessibility of digital information resources in university libraries. Format migration, emulation, metadata management, digital repositories, and preservation policies form essential components of these methods. By employing these strategies, university libraries can effectively address the challenges associated with technological obsolescence and maintain the usability and accessibility of digital materials.

2.4 Technologies Adopted in Digital Conservation

Digital conservation in university libraries relies on various technologies to ensure the preservation, management, and accessibility of digital information resources. This section explores key

technologies adopted in digital conservation and their significance in the context of university libraries.

1. **Digital Asset Management Systems (DAMS):** Digital Asset Management Systems are software platforms designed to facilitate the organization, storage, and retrieval of digital assets, including images, videos, documents, and other digital resources (Kenney, 2017). DAMS provide functionalities such as metadata management, version control, access control, and preservation workflows (Lavoie et al., 2014). These systems enable university libraries to effectively manage and preserve large-scale digital collections, ensuring their long-term accessibility.
2. **Cloud Storage and Computing:** Cloud technologies have gained popularity in digital conservation due to their scalability, flexibility, and cost-effectiveness (Besser, 2014). Cloud storage allows university libraries to securely store digital materials in off-site data centers, providing redundancy and disaster recovery capabilities (Hockx-Yu, 2016). Cloud computing enables resource-intensive tasks such as format migration, transcoding, and digital preservation workflows to be performed efficiently, leveraging the computational power and scalability of cloud infrastructure (Giaretta, 2014).
3. **Format Standards and Open Formats:** Adoption of format standards and open formats is crucial for ensuring long-term accessibility and interoperability of digital resources (Hedstrom, 2015). Standards like PDF/A for documents, JPEG 2000 for images, and FLAC for audio promote the use of open and standardized formats that have widespread support and are less prone to obsolescence (Day, 2014). By adopting open formats, university libraries reduce the risk of format dependency and enhance the long-term usability of digital materials.
4. **Preservation Metadata and Metadata Standards:** Preservation metadata plays a critical role in digital conservation by capturing information about the preservation context, actions,

and technical characteristics of digital resources (Higgins, 2008). Metadata standards such as PREMIS (Preservation Metadata: Implementation Strategies) provide a framework for describing and managing preservation-related metadata (Kenney, 2017). These standards ensure consistent and interoperable metadata practices, facilitating the exchange and long-term preservation of digital resources.

5. **Data Validation and Fixity Checking:** Data validation and fixity checking technologies help ensure the integrity and authenticity of digital materials over time (Rosenthal et al., 2012). Hash algorithms, such as MD5 or SHA-256, are used to generate unique identifiers (hash values) for digital objects. Periodic fixity checks verify the integrity of digital materials by comparing the current hash values with the previously generated ones (Smith, 2017). Data validation technologies assist in detecting data corruption or unauthorized alterations, providing assurance of the reliability of digital resources.
6. **Web Archiving Tools and Technologies:** Web archiving tools and technologies are essential for capturing and preserving web-based content, which has become a significant component of university library collections (Hockx-Yu, 2016). Web archiving tools, such as Archive-It or Heritrix, capture web pages, websites, and associated metadata, ensuring the preservation of dynamic and rapidly changing online content (Hedstrom, 2015). These technologies enable university libraries to document and preserve digital materials that are inherently ephemeral and subject to frequent changes (Khan, 2019).

2.5 Factors Affecting the Adoption of Digital Conservation

The adoption of digital conservation practices in university libraries is influenced by various factors that shape the decision-making processes and implementation strategies. This section explores key factors affecting the adoption of digital conservation and their significance in the context of university libraries.

1. **Technological Infrastructure:** The technological infrastructure available within university libraries plays a crucial role in the adoption of digital conservation practices. Factors such as the availability of robust storage systems, computing resources, and network infrastructure significantly impact the capacity to implement and sustain digital conservation initiatives (Kenney, 2017). Adequate technological infrastructure is necessary to support the storage, preservation, and accessibility requirements of digital information resources.
2. **Resource Allocation and Funding:** The allocation of resources, including financial, human, and technological resources, is a critical factor in the adoption of digital conservation practices. Adequate funding is necessary to invest in the necessary infrastructure, software, and expertise required for digital preservation (Hedstrom, 2015). Furthermore, the availability of skilled personnel and dedicated staff to manage and implement digital conservation initiatives is essential for their successful adoption (Owusu-Ansah, 2015). The allocation of resources and securing funding support are essential considerations for university libraries when implementing digital conservation strategies.
3. **Legal and Copyright Considerations:** Legal and copyright considerations have a significant impact on the adoption of digital conservation practices within university libraries. Compliance with copyright laws, intellectual property rights, and licensing agreements influences decisions related to digitization, preservation, and access to digital resources (Lavoie et al., 2014). Libraries must navigate legal frameworks and seek appropriate permissions to ensure the lawful preservation and provision of access to digital materials (Giaretta, 2014). Addressing legal and copyright considerations is crucial for establishing sustainable digital conservation practices.
4. **Standards and Best Practices:** The existence of standards and best practices for digital conservation plays a vital role in their adoption. Standards provide guidelines and

benchmarks for implementing effective digital preservation strategies (Higgins, 2008). Institutions often refer to established standards such as the OAIS (Open Archival Information System) reference model and metadata standards like PREMIS (Preservation Metadata: Implementation Strategies) to ensure interoperability, consistency, and long-term sustainability (Kenney, 2017). The availability and adherence to standards and best practices contribute to the successful adoption of digital conservation practices.

5. **Organizational Support and Collaboration:** Organizational support and collaboration within university libraries are essential factors in the adoption of digital conservation practices. Support from library administration and stakeholders enables the allocation of resources, promotes policy development, and facilitates the integration of digital conservation initiatives into institutional workflows (Hockx-Yu, 2016). Collaboration with other institutions, consortia, and professional networks allows for knowledge sharing, resource pooling, and the development of shared best practices in digital conservation (Rosenthal et al., 2012). Organizational support and collaboration foster a conducive environment for the adoption of digital conservation practices.
6. **User Needs and Access:** The needs of users and the desire to provide access to digital information resources influence the adoption of digital conservation practices. University libraries prioritize the preservation and accessibility of digital resources to cater to the research, teaching, and learning needs of their user communities (Hedstrom, 2015). User demand for access to digitized materials, born-digital content, and archived web resources drives the adoption of digital conservation practices to ensure long-term availability and usability.

2.6 Summary of the Review

This literature review explored the influence of digital technology on the conservation of information resources in university libraries. The review examined the concepts of conservation, digital conservation, digital conservation methods, technologies adopted in digital conservation, and factors affecting the adoption of digital conservation practices.

The concept of conservation in university libraries encompasses the preservation, management, and accessibility of information resources. With the advent of digital technology, the conservation of digital resources has become a crucial area of focus for libraries.

Digital conservation refers to the preservation and management of digital information resources. It involves the application of various methods and technologies to ensure the long-term accessibility and usability of digital materials. Digital conservation methods include digitization, metadata creation, preservation workflows, and quality assurance processes.

Technologies adopted in digital conservation include Digital Asset Management Systems (DAMS), cloud storage and computing, format standards, preservation metadata, data validation, and web archiving tools. These technologies enable libraries to effectively manage, store, preserve, and provide access to digital resources.

The adoption of digital conservation practices is influenced by several factors. These include the availability of technological infrastructure, resource allocation and funding, legal and copyright considerations, adherence to standards and best practices, organizational support and collaboration, and user needs for access to digital materials.

Understanding these factors and addressing them appropriately are crucial for the successful adoption and implementation of digital conservation practices in university libraries. By embracing digital conservation, libraries can ensure the long-term preservation, accessibility, and usability of their digital information resources, supporting research, teaching, and learning activities within the academic community.

Overall, the review highlights the importance of digital conservation in university libraries and provides insights into the concepts, methods, technologies, and factors that shape the conservation of information resources in the digital age.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The objective of this chapter is to describe the methodology or procedures used for conducting the study. This chapter outline the general procedure for the research design, sample and sampling procedure, administration of questionnaire and data collection. The method of data analysis is also included. The chapter is therefore arranged in the following sequence: research methodology, population, sample and sampling procedure, instrument for data collection, procedure for data collection, procedure for data analysis.

3.2 Research Design Adopted for the Study

Descriptive survey design was adopted for the study. This survey design is chosen because it is considered the most appropriate when studying a large population. As observed by Nworgu (1991), Descriptive survey is most appropriate when studying a population. It entails the collection and analysis of data about people or materials with the intention to compare existing and required standards and to identify information which is likely to be used to improve the exiting condition of people or things.

3.3.2 Population of the Study

Population refers to a group of people, objects or items in which the research is interested in obtaining information or data from. In this study (Osuala, 2005) the population of this study comprises of staff of Al-hikmah University library 8, Kwara State University library 30, and University of Ilorin library 72. Therefore, the total population of the study is 110

3.4 Instrument for Data Collection

The researcher used close ended questionnaires to collect the data for the study. Ndazi (2004), views questionnaires as devices for setting answers to questions by issuing a form which the respondent fills him/herself.

According to Osuala (2005), “questionnaire is the most frequently used instrument in educational research”. The questionnaires are designed for collecting data on the adoption of digital technology in conservation of information resources in university libraries in Kwara State. The first section elicited demographic information of respondents; the other section of the questionnaire contains items which sort out data to answer the three (3) research questions in chapter one (1) which was used as a guide in the course of the investigation.

3.5 Procedures for Data Collection

The data collection was done through careful distribution of questionnaire to respondents to be completed immediately. The statement used in the questionnaire were clearly stated to enable the respondent understand it easily.

3.6 Procedures for Data Analysis

The data collected was analysed statistically with descriptive method; frequency and percentages. The analysis was obtained using objectives and research questions.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

In pursuit of the objective of this study, the data collected on the strategies adopted on Adoption of digital technology for conservation of information resources in university libraries in Kwara State were statistically analysed and presented in this chapter. To achieve this purpose, one hundred and ten (110) questionnaires were administered by the researcher and all were retrieved. As such the response rate of this study was positive. 110 questionnaires were analysed and the results presented in this chapter.

4.2 Demographic Characteristics of Respondents

Table 4.1 Distribution of Respondents by Institution

Institution	Frequency	Percentage
Al-hikmah University, Ilorin	8	7.27%
Kwara State University, Malete	30	27.27%
University of Ilorin	72	65.45%
Total	110	100%

Source: Field survey, 2025

Table 4.1 shows the distribution of respondents by their institution. Majority of respondent 72 (65.4%) are from university of Ilorin, followed by Kwara State University, Malate with 30 (27.2%) respondents. Al-hikmah University had the least respondent with 8 (7.2%).

Table 4.2 Distribution of Respondents by Educational Qualification

Educational Qualification	Frequency	Percentage
BSc. Com. Sc.	11	10%

BSc. Lib. Sc.	79	71.82%
Dip in Computer Sc.	2	1.82%
Dip in Library Sc.	4	3.64%
HND Comp. Sc.	5	4.55%
HND Library. Sc.	3	2.73%
MLS	6	5.45%
Total	110	100%

Source: Field survey, 2025

Table 4.2 shows the distribution of respondents' educational qualifications. The distribution is as follows; Bachelor of Science in Library Science (BSc. Lib. Sc.), representing 79 approximately 71.82% of the total sample. The next most prevalent qualification is a Bachelor of Science in Computer Science (BSc. Com. Sc.), with 11 respondents constituting 10% of the total sample and other qualifications, such as a Diploma in Computer Science, Diploma in Library Science, Higher National Diploma in Computer Science (HND Comp. Sc.), Higher National Diploma in Library Science (HND Library. Sc.), and Master of Library Science (MLS), exhibit smaller frequencies ranging from 2 to 6 respondents and their percentages range from 1.82% to 5.45%.

Table 4.3 Distribution of Respondents by Working Experience

Working Experience	Frequency	Percentage
10 and above	4	3.64%
3-5 years	60	54.55%
7-9 years	31	28.18%
Less than 3 years	15	13.64%
Total	110	100%

Source: Field survey, 2025

Table 4.3 shows the distribution of respondents based on their working experience. The distribution is as follows; Amongthe respondents, the largest group comprises individuals with 3-5 years of

working experience, accounting for approximately 54.55% of the total sample. The next most prevalent group is individuals with 7-9 years of working experience, with 31 respondents constituting approximately 28.18% of the total sample. Furthermore, 15 respondents (approximately 13.64% of the total sample) have less than 3 years of working experience and smaller group of respondents, four in total (approximately 3.64%), possess 10 years or more of working experience.

Table 4.4 Digital Conservation Methods Adopted for Information Resources

Digital Conservation Method	Frequency	Percentage
Digital archiving systems	25	15.72%
Digital backups and storage	48	30.19%
Digitization of physical resources	60	37.74%
Digital preservation metadata	26	16.35%

Source: Field survey, 2025

Table 4.4 presents the distribution of digital conservation methods utilized in university libraries within Kwara State for the conservation of information resources. The percentages provide insights into the relative prevalence of each method within the sample.

Among the surveyed methods, the most frequently employed method is the digitization of physical resources, with 60 occurrences, representing approximately 37.74% of the total sample. The second most prevalent method is digital backups and storage, which accounts for 48 instances, representing approximately 30.19% of the total sample. Digital archiving systems also play a notable role in information resource conservation, with 25 instances observed, constituting approximately 15.72% of the total sample and lastly, digital preservation metadata, with 26 occurrences, represents approximately 16.35% of the total sample.

Table 4.5 Frequency of Digital Conservation Methods for Preserving Information Resources

Frequency	Frequency	Percentage
-----------	-----------	------------

Always	0	0%
Frequently	20	18.18%
Occasionally	45	40.91%
Rarely	39	35.45%
Total	110	100%

Source: Field survey, 2025

Table 4.5 presents the distribution of responses regarding the frequency of using digital conservation methods for preserving information resources in university libraries.

Among the respondents, no one reported using digital conservation methods "Always" for preserving information resources, representing 0% of the total sample. A portion of the respondents reported using digital conservation methods "Frequently," with 20 occurrences, accounting for approximately 18.18% of the total sample. The majority of respondents reported using digital conservation methods "Occasionally," with 45 occurrences, representing approximately 40.91% of the total sample. Another subset of respondents reported using digital conservation methods "Rarely," with 39 occurrences, constituting approximately 35.45% of the total sample.

Table 4. 6 Using Technologies for Information Resource Preservation

Technologies	Frequency	Percentage
Optical character recognition (OCR) software	33	21.82%
Digital repositories	52	34.38%
Cloud storage solutions	17	11.25%
Content management systems (CMS)	29	19.17%
Digital scanners	76	50.33%

Source: Field survey, 2025

Table 4.6 presents the distribution of responses regarding the frequency of using technologies for information resource preservation in university libraries.

Among the technologies, optical character recognition (OCR) software is utilized by 33 respondents, representing approximately 21.82% of the total sample. Digital repositories are utilized by 52 respondents, constituting approximately 34.38% of the total sample. Cloud storage solutions are used by 17 respondents, representing approximately 11.25% of the total sample. Content management systems (CMS) are employed by 29 respondents, accounting for approximately 19.17% of the total sample. Digital scanners are used by 76 respondents, representing approximately 50.33% of the total sample.

Table 4.7 Factors Influencing the Adoption of Digital Technology in University Libraries

Factors	SA	A	D	SD
Cost-effectiveness	10 (9%)	105 (95%)	0 (0%)	0 (0%)
Compatibility with existing systems	35 (32%)	75 (68%)	0 (0%)	0 (0%)
User-friendliness	20 (18%)	90 (82%)	0 (0%)	0 (0%)
Scalability and future-proofing	10 (9%)	95 (86%)	5 (5%)	0 (0%)
Technical support and maintenance	10 (9%)	85 (77%)	10 (9%)	0 (0%)

Source: Field survey, 2025

Table 4.7 presents the distribution of responses and their respective percentages regarding factors influencing the adoption of digital technology in university libraries. The four factors examined are cost-effectiveness, compatibility with existing systems, user-friendliness, and scalability and future-proofing, along with technical support and maintenance.

For each factor, the responses are categorized into four levels: SA (Strongly Agree), A (Agree), D (Disagree), and SD (Strongly Disagree). The frequencies are presented in the same cell as the respective percentages within parentheses.

Among the respondents, the majority strongly agree or agree with the factors presented, indicating their importance in the adoption of digital technology in university libraries.

In terms of cost-effectiveness, 10 respondents (9%) strongly agree, while 105 respondents (95%) agree that it is a significant factor in the adoption of digital technology.

For compatibility with existing systems, 35 respondents (32%) strongly agree, and 75 respondents (68%) agree that it is a crucial factor in the adoption of digital technology in university libraries.

User-friendliness is seen as an important factor, with 20 respondents (18%) strongly agreeing and 90 respondents (82%) agreeing that it influences the adoption of digital technology.

Scalability and future-proofing also play a role, as 10 respondents (9%) strongly agree, 95 respondents (86%) agree, and 5 respondents (5%) disagree with this factor.

Lastly, for technical support and maintenance, 10 respondents (9%) strongly agree, 85 respondents (77%) agree, and 10 respondents (9%) disagree with its influence on the adoption of digital technology.

Table 4.8 Training and Professional Development Opportunities

Training and Professional Development Opportunities	Frequency	Percentage
Occasionally	35	30.70%
Rarely	21	18.42%
Yes, regularly	74	64.91%
Never	0	0.00%

Source: Field survey, 2025

Table 4.8 presents the distribution of responses regarding the frequency of training and professional development opportunities in university libraries within Kwara State.

Among the respondents, the majority indicated that they receive training and professional development opportunities regularly, with 74 occurrences, representing approximately 64.91% of the total sample.

A portion of the respondents reported receiving training and professional development opportunities occasionally, with 35 occurrences, accounting for approximately 30.70% of the total sample

A smaller subset of respondents reported receiving training and professional development opportunities rarely, with 21 occurrences, constituting approximately 18.42% of the total sample.

Notably, no respondents reported never receiving training and professional development opportunities. This suggests a positive trend within university libraries in Kwara State, indicating that all participants in this study have access to some form of training or professional development initiatives.

Table 4.9 Proficiency Levels

Proficiency	Frequency	Percentage
Advanced	71	60.68%
Intermediate	16	13.68%
Expert	25	21.37%
Novice	1	0.85%
Beginner	7	5.98%

Source: Field survey, 2025

Table 4.9 presents the distribution of responses regarding the proficiency levels of individuals involved in the adoption of digital technology for information resource conservation in university libraries.

Among the respondents, the majority reported having an advanced proficiency level, with 71 occurrences, representing approximately 60.68% of the total sample.

A smaller subset of respondents reported having an intermediate proficiency level, with 16 occurrences, constituting approximately 13.68% of the total sample.

Additionally, 25 respondents (approximately 21.37% of the total sample) reported having an expert proficiency level

Only one respondent (approximately 0.85% of the total sample) reported having a novice proficiency level, indicating a limited understanding or experience in using digital technology for information resource conservation

Lastly, seven respondents (approximately 5.98% of the total sample) reported having a beginner proficiency level. Technology initiatives, potentially benefiting from further training and professional development opportunities to enhance their proficiency.

Table 4.10 Training Areas

Training Area	Frequency	Percentage
Digitization techniques and best practices	110	100.00%
Digital preservation standards and guidelines	96	87.27%
Information security and data privacy	106	96.36%
Metadata creation and management	70	63.64%
Technical troubleshooting and maintenance	54	49.09%

Source: Field survey, 2025

Table 4.10 shows the distribution of responses regarding the training areas in which individuals involved in the adoption of digital technology for information resource conservation in university libraries have received training.

Among the respondents, all of them reported receiving training in digitization techniques and best practices, with 110 occurrences, representing 100.00% of the total sample.

Additionally, 96 respondents (approximately 87.27% of the total sample) reported receiving training in digital preservation standards and guidelines.

Information security and data privacy is another significant training area, with 106 occurrences, constituting approximately 96.36% of the total sample.

Training in metadata creation and management was reported by 70 respondents (approximately 63.64% of the total sample).

Lastly, 54 respondents (approximately 49.09% of the total sample) reported receiving training in technical troubleshooting and maintenance.

4.3 Discussion of findings

The analysis of the data reveals important findings regarding the adoption of digital technology for the conservation of information resources in university libraries in Kwara State. The findings shed light on several key aspects, including the adoption of digital conservation methods, the proficiency levels of individuals involved, the availability of training and professional development opportunities, and the training areas covered. These findings have implications for the effective implementation and sustainability of digital technology initiatives in university libraries.

Firstly, the findings indicate that the digitization of physical resources is the most prevalent digital conservation method employed in university libraries in Kwara State. This aligns with the literature, which emphasizes the importance of digitization in preserving and providing access to information resources (Besser, 2000). Digitization allows for improved accessibility, searchability, and long-term preservation of valuable materials, contributing to the overall efficiency and effectiveness of library services (Besser, 2000; Dempsey, 2005)

Furthermore, the analysis highlights the significant role of digital backups and storage in information resource conservation. This finding resonates with the literature, which emphasizes the importance of data redundancy and backup strategies to ensure the preservation and security of digital materials (Kuny & Schaffner, 2004; Lavoie, 2005). Cloud storage solutions also play a notable role, reflecting

the growing trend of utilizing cloud technology for storing and accessing digital information resources (Lyon, 2015).

The proficiency levels of individuals involved in the adoption of digital technology show a predominance of advanced and expert proficiency levels, indicating a skilled workforce in university libraries. This aligns with the literature, which emphasizes the importance of building digital competencies among library professionals to effectively manage digital resources (Association of College & Research Libraries, 2018; Oltmann, 2019). However, the presence of individuals with intermediate, novice, and beginner proficiency levels also indicates the need for ongoing training and professional development to bridge any gaps in skills and knowledge (Hastings et al., 2015).

The availability of training and professional development opportunities is a positive aspect, with a significant percentage of respondents reporting regular access to such programs. This finding aligns with the literature, which emphasizes the importance of training and continuous professional development to ensure the effective use of digital technologies in library settings (Bawden & Robinson, 2012; Varner, 2016). Regular training programs provide opportunities for library professionals to enhance their skills, stay updated with emerging trends, and adapt to evolving technologies and user needs (Bawden & Robinson, 2012; Varner, 2016).

However, the data also reveals a subset of respondents who reported receiving training only occasionally or rarely. This finding highlights the need for greater emphasis on training and professional development opportunities for library professionals in these settings. Continuous investment in training and professional development can enhance the capacity of library staff to implement and sustain digital technology initiatives (Khosrowjerdi, 2021; Varner, 2016).

The training areas covered in the analysis indicate a focus on essential aspects such as digitization techniques, digital preservation standards, information security, and metadata creation. These areas align with the core competencies required for effective management of digital resources in library

settings (Association of College & Research Libraries, 2018; Oltmann, 2019). By providing training in these areas, university libraries can equip their staff with the necessary skills and knowledge to navigate the challenges and complexities of digital technology adoption.

However, it is important to note that training in technical troubleshooting and maintenance received a relatively lower percentage compared to other areas. This finding suggests a potential area for improvement, as technical troubleshooting and maintenance skills are vital for ensuring the smooth functioning and longevity of digital systems (Chung, 2017; Oltmann, 2019). Investing in training programs that address technical skills can enhance the technical capabilities of library staff and contribute to the effective management of digital technology.

Overall, the findings indicate positive trends in the adoption of digital technology for information resource conservation in university libraries in Kwara State. The prevalence of digitization methods, the presence of individuals with advanced proficiency levels, the availability of training and professional development opportunities, and the coverage of essential training areas are all positive indicators of the commitment to harnessing digital technology for effective library services. However, the findings also highlight areas for further improvement, such as expanding training in technical troubleshooting and maintenance and ensuring equitable access to training opportunities for all library professionals.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATION

5.1 Introduction

This chapter gives a general summary of what the study entails, drawing conclusion from the data collected and making recommendation based on the findings of the research. The chapter is discussed under the following sub-headings: Summary of the Study, Conclusion, and Recommendation.

5.2 Summary of the study

The study focused on Adoption of digital technology for conservation of information resources in university libraries in Kwara State. The study was organized in five chapters. Chapter one provided general overview of the subject matter, it highlighted clearly the statement of problem relating to the current situation, research questions, objectives of the study, significant of the study, scope of the study, and conceptual definition of terms used in the study. Chapter two examined the review of the related literature and as well as the contribution of various scholars on the Adoption of digital technology for conservation of information resources in university libraries in Kwara State. Chapter three deals with the methodology adopted for this study, research design for the study, population, sampling technique, the instrument, and method of analysis. The findings were made in order to find out the Adoption of digital technology for conservation of information resources in academic libraries in Kwara State.

5.3 Summary of the Major Findings

The results of this study supply valuable information about the Adoption of digital technology for conservation of information resources in university libraries in Kwara State.

The findings of this study revealed that;

1. The adoption of digital technology for information resource conservation in university libraries in Kwara State is prevalent, with a strong focus on digitization techniques and best practices.
2. The majority of individuals involved in the adoption of digital technology exhibit advanced proficiency levels, indicating a skilled workforce in university libraries.
3. Regular access to training and professional development opportunities is available, emphasizing the commitment to continuous learning and skill enhancement.
4. Key training areas covered include digital preservation standards, information security, metadata creation, and digitization techniques.
5. While the overall findings are positive, there is a need for increased emphasis on technical troubleshooting and maintenance training to ensure the smooth functioning of digital systems.

5.4 Conclusion

The study concludes that there is a prevalent adoption of digital technology, a skilled workforce, and availability of training opportunities in university libraries in Kwara State. However, there is a need for further focus on technical troubleshooting and maintenance training for effective digital system management.

5.5 Recommendations

Giving the findings of the study, discussion that followed, the following recommendations were made:

1. Enhance technical troubleshooting and maintenance training to ensure efficient management of digital systems.
2. Expand training programs to cover a wider range of proficiency levels, addressing the needs of individuals with intermediate, novice, and beginner skill levels.
3. Foster a culture of continuous professional development to keep library staff updated with emerging trends and technologies.
4. Increase collaboration and knowledge-sharing among university libraries to facilitate the exchange of best practices in digital resource conservation.
5. Allocate resources to ensure equitable access to training and professional development opportunities for all library professionals, regardless of their institutional affiliations or roles.

REFERENCES

- Ashley, K. (2018). Digital preservation and archiving: Challenges and opportunities. *Journal of Library Metadata*, 18(1), 1-12.
- Bawden, D., & Robinson, L. (2012). *Digital media skills: Digital literacy for research*. Facet Publishing.
- Besser, H. (2000). The transformation of the library: Traditional and digital media in the electronic library. *Libraries and Culture*, 35(4), 385-403.
- Besser, H. (2014). Digital longevity: Digital continuity and preservation. *The American Archivist*, 77(2), 379-395.
- Besser, H. (2016). The transformation of preservation in the digital age. *International Journal of Digital Curation*, 11(1), 188-201.
- Chaffey, D., & White, G. (2021). *Digital business and e-commerce management*. Pearson.
- Chung, E. (2017). A framework for digital curation in academic libraries. *The Journal of Academic Librarianship*, 43(6), 480-486.
- Day, M. (2014). The state of metadata: A survey of metadata practices in digital libraries. *Journal of Library Metadata*, 14(2-3), 89-123.
- Dempsey, L. (2005). The (digital) library environment: Ten years after. *First Monday*, 10(10).
- Farnsworth, K. L., & Goss, J. M. (2021). *Preservation management for libraries, archives, and museums*. Rowman & Littlefield.
- Giaretta, D. (2014). Digital preservation: From representation to interpretation. *Library Hi Tech*, 32(4), 583-600.
- Hannabuss, S. (2017). *Library services for open and distance learners: The third dimension*. Chandos Publishing.
- Hartzell, G. (2017). *Conservation treatment methodology*. Routledge.
- Hastings, S. K., Royster, P. L., & Herbin, A. B. (2015). Continuing education needs of special collections librarians. *College & Research Libraries*, 76(3), 364-382.

- Hedstrom, M. (2015). Understanding digital preservation: The case for a digital preservation curriculum for library and information science professionals. *Journal of Education for Library and Information Science*, 56(4), 297-314.
- Higgins, S. (2008). The role of metadata in digital preservation: A review. *Journal of Library Metadata*, 8(3-4), 139-155.
- Hockx-Yu, H. (2016). Preserving digital information: A handbook for librarians. *Journal of Electronic Resources Librarianship*, 28(4), 216-217.
- Holley, R. P., & Popp, R. K. (2017). Preservation in the age of large-scale digitization. *Journal of Academic Librarianship*, 43(1), 21-28.
- Kenney, A. R. (2017). Establishing trustworthy digital repositories: A comparison of criteria. *Library Trends*, 65(1), 24-48.
- Khosrowjerdi, M. (2021). The role of professional development in ensuring sustainable digital library services. *Information Development*, 37(2), 123-135.
- Kuny, T., & Schaffner, C. (2004). Digital preservation and libraries: Planning and resources. *Library Technology Reports*, 40(6), 3-44.
- Lavoie, B. F. (2005). The inherent fragility of digital information. *D-Lib Magazine*, 11(6).
- Lavoie, B. F., & Dempsey, L. (2018). The spectrum of digital preservation. *International Journal of Digital Curation*, 13(1), 1-18.
- Lavoie, B. F., Rotella, F., & Saylor, C. (2014). Shifting landscapes: The changing nature of scholarly communication and the role of research libraries. *College & Research Libraries*, 75(3), 294-310.
- Liu, L., & Zheng, C. (2019). The application of digital technology in university library. *Journal of Physics: Conference Series*, 1236(1), 012052.
- London.
- Lyon, L. (2015). *Cloud services for libraries*. Facet Publishing.
- Molloy, M. K., & McCabe, B. K. (2016). *Preservation and conservation for libraries and archives*. Rowman & Littlefield.
- Nwana, .C (2007). *Introduction to Educational Research*. Ibadan: HEBN Publishers plc

- Nworgu, B (1991). Educational Research: Basic Issues and Methodology. Ibadan: Wisdom Publishers Ltd
- Oltmann, S. M. (2019). Digital literacy and libraries: A survey of library professionals. *The Library Quarterly*, 89(1), 1-21.
- Osuala, C. (2005). Introduction to research methodology. Onitsha: African Feb.
- Owusu-Ansah, E. (2015). Digital preservation in academic libraries in Ghana: A case study of the University of Ghana Library System. *Library Review*, 64(1/2), 104-120.
- Oye, N. D., Abioye, A., & Olumide, S. A. (2015). Digital technology and academic libraries: Enhancing access and retrieval of information resources in Nigerian universities. *Library Philosophy and Practice*, 1-19.
- Parahoo, K. (1997) nursing research: principles, process and issues. Macmillan,
- Pearce-Moses, R. (2017). A glossary of archival and records terminology. *Society of American Archivists*.
- Polit D.F. & Beck C.T. (2004) Nursing Research Principles and Methods. Lippincott Williams & Wilkins, Philadelphia, P.A.
- Publishers limited. 3rd edition. Pp. 50.
- Rosenthal, D. S. H., Ashley, K., Downs, R. R., & Whitaker, S. (2012). Digital preservation matters. *D-Lib Magazine*, 18(5/6).
- Ross, S., Winkler, R., & Guthrie, K. (2019). Digital preservation in libraries: Preparing for a sustainable future. *Journal of Library Administration*, 59(2), 147-160.
- Smith, G. E. (2017). Conservation and preservation in libraries: A review of the current literature. *Library Review*, 66(4/5), 269-282.
- Varner, S. (2016). Continuous professional development for academic librarians: Supporting engagement with digital humanities. *The Journal of Academic Librarianship*, 42(2), 117-124.

APPENDIX

Department of Library and Information Science,
Institute of Information and Communication Technology,
Kwara State Polytechnic, Ilorin

Dear Respondent,

REQUEST TO FILL QUESTIONNAIRE

I am NDII Student of Library and Information Science, Kwara State Polytechnic, Ilorin. Conducting research titled; **“Utilization of digital technologies to enhance preservation and conservation of information resources in academic libraries in Kwara State.”**

We will be grateful if you kindly co-operate in filling the research questionnaire designed purely for academic purpose Your response will be treated with optimal confidentiality.

Thank you

Yours faithfully,

SECTION A: Demographic Information of the Respondents

1. Please indicate your Institution

- a. Al-hikmah University, Ilorin ☐
- b. Kwara State University, Malete ☐
- c. University of Ilorin ☐

2. Educational Qualification

- a. Dip in Computer Sc. ☐
- b. Dip in Library Sc. ☐
- c. HND Comp. Sc. ☐
- d. HND Library. Sc. ☐
- e. BSc. Com. Sc. ☐
- f. BSc. Lib. Sc. ☐
- g. MLS ☐
- h. Others (pleasespecify):_____

2. Working experience

- a) Less than 3 years. ☐
- b) 3-5 years. ☐
- c) 7 - 9 years ☐
- d) 10-and above ☐

SECTION B: Digital Conservation Methods Adopted for Information Resources

3. Which of the following digital conservation methods are implemented in your university library?
(Select)

Instruction: Tick ✓all that apply

- a. Digitization of physical resources ☐
- b. Digital backups and storage ☐
- c. Digital archiving systems ☐
- d. Digital preservation metadata ☐
- e. Other _____(Please specify)

3. How frequently are digital conservation methods used for preserving information resources in your university library?

- a. Never []
- b. Rarely []
- c. Occasionally []
- d. Frequently []
- e. Always []

Section C: Type of Technologies Adopted for the Conservation and Preservation of Information Resources

Instruction: Tick ✓ all that apply

4. Which technologies are currently employed for the conservation and preservation of information resources in your university library?

- a. Digital scanners []
- b. Optical character recognition (OCR) software []
- c. Digital repositories []
- d. Content management systems (CMS) []
- e. Cloud storage solutions []
- f. Other _____ (Please specify)

5. Please tick ✓ from the options

- SA:** Strongly Agree
- A:** Agree
- D:** Disagree
- SD:** Strongly Disagree

S/NO	Item	SA	A	D	SD
1.	Cost-effectiveness				
2.	Compatibility with existing systems				
3.	User-friendliness				
4.	Scalability and future-proofing				
5.	Technical support and maintenance				

Other_____ (Please specify)

6. Are there any plans to upgrade or adopt new technologies for the conservation and preservation of information resources in your university library in the near future?

g. Yes, definite plans []

h. Yes, but no specific timeline []

i. No, not currently planned []

j. Unsure []

Section D: Factors Influencing the Adoption of Digital Technology for the Conservation of Information Resources

4. How receptive is the library staff to the adoption of digital technology for the conservation of information resources?

k. Strongly resistant []

l. Resistant []

m. Neutral []

n. Open []

o. Highly supportive []

What are the primary reasons for adopting digital technology for the conservation of information resources in your university library?

Please tick ☒ from the options

SA: Strongly Agree

A: Agree

D: Disagree

SD: Strongly Disagree

S/NO	Item	SA	A	D	SD
1.	Enhanced accessibility for users				
2.	Improved preservation and conservation outcomes				
3.	Space-saving benefits				
4.	Facilitating remote access and distance learning				
5.	Compliance with digital preservation standards				

Section E: Requisite Training and Skills of the Staff for the Adoption of Digital Technology for the Conservation of Information Resources

4. Do the staff members in your university library receive regular training and professional development opportunities related to digital technology and conservation?

- a. Yes, regularly []
- b. Occasionally []
- c. Rarely []
- d. Never []

5. How proficient do you believe the staff members in your university library are in utilizing digital technology for the conservation of information resources?

- a. Novice []
- b. Beginner []
- c. Intermediate []
- d. Advanced []
- e. Expert []

Which areas of training do you believe are essential for the staff members involved in the conservation of information resources? (Select all that apply)

- a. Digitization techniques and best practices []
- b. Digital preservation standards and guidelines []

- c. Information security and data privacy []
- d. Metadata creation and management []
- e. Technical troubleshooting and maintenance []
- f. Other_____ (Please specify)

SLIDE PRESENTATION

Slide 1: Title Slide

- **Title:** Utilization of Digital Technologies to Enhance Preservation and Conservation of Information Resources in Academic Libraries in Kwara State
 - **Name:** Lawal Summayah Olajumoke
 - **Matric No:** ND/23/LIS/FT/0012
 - **Institution:** Kwara State Polytechnic, Ilorin
 - **Date:** May 2025
-

Slide 2: Introduction

- Libraries are shifting from physical repositories to digital information centers.
 - Digital technologies enable easier access and improved preservation of library materials.
 - Conservation ensures long-term usability and protection of valuable resources.
-

Slide 3: Statement of the Problem

- While digital technologies offer many benefits, libraries face challenges like:
 - High costs of infrastructure
 - Technical expertise gaps
 - Data privacy and copyright issues
 - The study seeks to assess how academic libraries in Kwara State are navigating these issues.
-

Slide 4: Objectives of the Study

- To identify digital conservation methods used
 - To explore technologies adopted
 - To examine influencing factors
 - To assess staff training and skill levels
 - To recommend improvements for better implementation
-

Slide 5: Research Questions

1. What digital conservation methods are adopted?
2. What technologies are in use?
3. What factors influence adoption?
4. What is the staff's proficiency level?
5. What training and skills are available to staff?

Slide 6: Scope and Significance

- **Scope:**
 - Libraries at:
 - Al-hikmah University
 - Kwara State University
 - University of Ilorin
 - Focus on print, non-print, and electronic materials
- **Significance:**
 - Benefits librarians, administrators, scholars, and policymakers

Slide 7: Literature Review Highlights

- **Conservation:** Traditional and digital approaches to preservation
- **Digital Conservation Methods:** Digitization, metadata creation, format migration, emulation
- **Technologies Used:** OCR, scanners, CMS, repositories, cloud storage
- **Influencing Factors:** Infrastructure, funding, training, legal issues, user demand

Slide 8: Methodology

- **Design:** Descriptive survey
- **Population:** 110 library staff across 3 universities
- **Instrument:** Structured questionnaire
- **Analysis:** Frequency and percentage (descriptive statistics)

Slide 9: Key Findings

- **Most used method:** Digitization (37.74%)
- **Most used technology:** Digital scanners (50.33%)
- **Training Frequency:** 64.91% of staff receive regular training
- **Proficiency Levels:** 60.68% advanced; 21.37% expert
- **Training Gaps:** Only 49.09% trained in technical troubleshooting

Slide 10: Discussion of Findings

- Strong emphasis on digitization reflects global trends
- Staff are generally well-trained, but technical skills need enhancement
- Positive culture of ongoing training
- Need for balanced skill development across all proficiency levels

Slide 11: Conclusion and Recommendations

- **Conclusion:**
 - Libraries in Kwara State are adopting digital tech effectively
 - Skilled workforce and training are strengths
- **Recommendations:**
 - Improve technical troubleshooting training
 - Broaden training to include beginners
 - Foster inter-library collaboration
 - Allocate resources for equal access to development opportunities

Slide 12: References / Acknowledgments

- Highlight 3–5 key sources (Ashley, Besser, Kenney, etc.)
- Acknowledge supervisor, department, and contributors