

## **Full Length Research**

# **Preservation and Conservation of Information Resources in Mouau Library.**

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**This study examined preservation and conservation of information resources in MOUAU library. The study was guided by four specific objectives. The study employed descriptive survey research design, while the population of the study is one hundred and twenty (120), The complete census method was used as the sampling technique. Only one instrument (questionnaire) was used. Mean and standard deviation were used in analyzing data for the study. The study identified proper storage and handling, digitization, binding and repair, environmental maintenance, pest control, conservation training, reformatting, security measures and disaster preparedness as preservation and conservative practices in MOUAU library. , the study identified high temperature and humidity, light exposure, dust and pollutants, pest and infestation, mold and mildew, acidic paper, poor handling and storage, water damage, chemical reaction and human error as causes of deterioration of library materials, The study identified Use of Display Cases to Display Rare or Special Materials, Monitoring, Labeling and Signage, Binding and Repair, De-acidification of Materials, Digitization,, Digital Storage and Backup, Temperature and Humidity Control, and Lighting Control as techniques used in the preservation and conservation in MOUAU library. Metadata creation was not used as a technique for preservation and conservation of library resources., The study also identified Limited Funding, Lack of Expertise, Environmental Factors, Pest and Infestation, Water Damage, Human Error, Lack of Space for Storage and Awareness and Prioritization as challenges to effective preservation and conservation of library materials in mouau library. The study recommended that: The university should set aside 10% of her budget, if possible more than that for preservation and conservation of library resources., The university should employ more digitized techniques to preserve and conserve library resources, The university should put in place machineries for regulating temperature and humidity of library to ensure that library resources are safe., More awareness should be created by the university regulatory body in Nigeria on the need for university libraries to preserve and conserve library resources**

**Keywords:** Preservation and Conservation Practices, Challenges to Effective Preservation and Conservation of Library Resources, Preservation and Conservation Techniques and Library Resources

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## INTRODUCTION

### Background to the Study

Librarians in all over the world have the responsibility of acquiring, processing, disseminating information to users. Library is a repository of knowledge and a social institution saddled with the responsibility of disseminating knowledge to the people without any discrimination. Information collections are the priceless heritage of mankind as they preserve facts, ideas, thoughts, accomplishments and evidence of human development in multifarious areas, ages and directions. Preserving intellectual and cultural heritage becomes not only the academic commitment but also the moral responsibility of librarians, who are in charge since proper dissemination of library materials is only possible when the documents are in good and usable condition. Preservation of deteriorating information materials in libraries, according to Osunride and Adetunla (2017), has become a global phenomenon to which libraries must aggressively respond if the mission of meeting the information needs of their patrons would be achievable in this era of dwindling budgetary allocation to libraries.

Deterioration of information materials is one of the basic challenges facing library materials which are prone to wear and tear, shrinkage, cracks, brittleness, warping, bio-infestation, discoloration, abrasion, hole, dust and dirt accumulation. External causes of deterioration of collections include poor handling or storage, theft or vandalism, fire and flood, pests, pollution, light and incorrect temperature and relative humidity (Popoola, 2017; Alegbeleye, 2018; Walker, 2018). Almost all library collections are organic in nature, so they are in need of preservation and conservation. Books and other materials suffer damage or deterioration because of several groups of factors, some inherent in the materials and others beyond the control of the library. Each type of paper material, glue, plastic that goes into the manufacturing of a book, recording or optical media has its own combination of physical and chemical properties, and a life span. The other factors include all of the conditions surrounding the processing, storage and use of the materials. The deterioration of information materials is caused by either inherent chemical instability of the materials or the external environmental factors (Akussah, 2016). To avoid these heavy lose of materials in the library, preservation and conservation practices become imperative.

Preservation and conservation practices are focused at ensuring that significant library and archive materials, published and unpublished, in all formats are preserved in accessible form for as long as possible (IFLA-PAC China Centre, 2016). Preservation and conservation is the practice of minimizing or reducing the physical and chemical deterioration of documents. Jordan (2017) describes preservation and conservation as an umbrella term for an array of activities, principles, practices, and organizations that ensure the usability, longevity, and accessibility of recorded knowledge. These activities include; general collections repair, reformatting (microfilming, photocopying, and digitization), environmental monitoring and control, care and handling of materials, disaster preparedness and recovery, binding and preservation education and training.

In preservation, consideration is given to every element that promotes the protection of the materials including the housing, stable environment, storage system and security against such threats as theft, mutilation, disaster preparedness such as floods, fires, tornadoes, and earthquakes and poor handling. Preservation is, therefore, a more embracing concept while conservation can be described as the direct physical intervention arresting or slowing down deterioration of library materials which could be characterized as both preventive and interventive.

### Statement of the Problem

Libraries are the bedrock of higher institutions of learning such as the universities. They support the institutions' mandate of teaching, research and community service. University libraries are the information hubs of the learning community, empowering students and faculty to learn, do research and advance the frontiers of knowledge. However, it is observed that over the years, many factors have been militating against preservation and conservation of information resources in university libraries. Alegbelege (2018) stated that threats to information resources in library include theft, mutilation, hiding, other disruptive acts and bad attitudes towards library materials. Natural disasters such as flood, humidity, earthquakes, volcanic eruptions, windstorms among others have constituted security threats to library resources.

Preliminary observation by the researcher has also shown that university libraries in Nigeria are having high rate of deterioration of their information resources, some of which are caused by wear and tear, dust particles, bad shelving and biological agents. If the security of library resources is not guaranteed through adequate preservation and conservation, the cultural repository of the nation will be eroded. It is on this premise that this present study examined the nature of preservation and conservation of information resources in Michael Okpara University library, Umudike, Umuahia, Abia State.

## Purpose of the Study

The general purpose of this study is to examine the preservation and conservation of library information resources in MOUAAU library. The specific objectives of this study are, to:

1. To determine the preservation and conservation practices in Michael Okpara University library, Umudike, Umuahia, Abia State.
2. To examine the causes of deterioration of library materials in the university library.
3. To establish the techniques used in the preservation and conservation of library materials in the university library.
4. To identify challenges to effective preservation and conservation of library materials in MOUAAU library

## Research Questions

The following research questions were posed to guide the study:

1. What are the preservation and conservation practices in MOUAAU library?
2. What are the causes of deterioration of library materials in the MOUAAU library?
3. What are the techniques used in the preservation and conservation of library materials in the MOUAAU library?
4. What are the challenges to effective preservation and conservation of library materials in MOUAAU library?

## REVIEW OF RELATED LITERATURE

This chapter presents a review of related literature on the subject of the study. The review of literature is organized as follows:

### Preservation and Conservation Practices

In every library including university library, one major function of library and librarians is the management of information materials for effective utilization. Some of this management processes are preservation and conservation practices. The whole essence of preservation and conservation practices is to ensure that information materials are in good shape for use at any point in time. Preservation and conservation practices often include policies and strategies, environmental control, housekeeping activities, training in the handling of archival materials (patrons and staff), security, disaster management and access (Eden & Feather cited in Osunride & Adetunla, 2017). Preservation and conservation is the task of minimizing or reducing the physical and chemical deterioration of documents.

Preservation is defined in the IFLA Principles for the Care and Handling of Library Material to include "all the managerial and financial considerations including storage and accommodation provisions, staffing levels, policies, techniques, and methods involved in preserving library and archival material and the information contained therein" (IFLA, 2016). Trinkaus-Randall (2020) carried out a survey to determine the preservation needs of public, academic and special libraries, manuscript repositories, historical societies and town clerks' offices. His findings indicated that 70% of the institutions could not maintain a constant climate throughout the whole year and most respondents knew very little about the effect of the environment on their collections and also lack preservation knowledge. These have a great deteriorating effect on library materials thereby causing the library a great resource loss.

### Causes Deterioration of Information Resources

**Environmental Factors:** Temperature, humidity, and light exposure can cause materials to degrade over time. Libraries can control these factors by maintaining optimal storage conditions (Verticchio et al., 2021). **Pest Infestations:** Insects, rodents, and other pests can damage library materials. Integrated pest management techniques can help prevent infestations (Balliana et al., 2016). **Human Error:** Mishandling and improper use of library materials can lead to deterioration. Educating users about proper handling techniques is essential.

Deteriorating information materials in libraries has become a global phenomenon to which libraries must aggressively respond if the mission of meeting the information needs of their users will be achieved (Ngulube, 2022). Alegbeleye (2016)

wrote that six million volumes of books of the Library of Congress have deteriorated so badly that they cannot be given to users without the risk of irreparable damage. Several researches have been conducted to examine the causes of deterioration of library materials, Alegbeleye (2017), in his study on disaster control planning for libraries, archives and electronic data processing centers in Africa stated that a number of disasters have struck information centres and a lot of damage has been done to records, books and artifacts. The author observed that in 1988, records were destroyed when a record centre was burnt down by students in Sierra Leone.

In another incident, the Nigerian Institute of Policy and Strategic Studies Library experienced electrical failure resulting in a fire which destroyed many books, artifacts, and other monuments in 1987. Muhammad (2016) stated that much avoidable damage is done to books by well-meaning but untrained librarians through the use of pressure sensitive tapes, indeterminate use of polyvinyl acetate and other synthetic adhesives, use of highly acidic paper for protective wrappers, use of wood backing in print, picture and map frames, amateur lamination and improper storage. He also sees the following physical and chemical situations as responsible for deterioration of documents, either by one or more. Natural aging of paper since the major constituents are of organic nature. Such inevitable deterioration can be minimized to a large extent by proper house keeping. Alegbeleye (2023) found that majority of the microfilm strips examined had not only deteriorated but had also suffered from vinegar syndrome. Owoh (2020) submitted that paper identifies moulds as the most important bio-deteriorating agents of library materials. In addition to destroying, disfiguring and staining books, the moulds have been linked to numerous adverse human health effects that fall into three categories: allergic, toxic and infectious. The other biological agents include bacteria, insects and rodents.

The important insects in tropical environment are cockroaches and termites. Acid is the arch enemy of librarians because it is a direct cause of hydrolysis. Hydrolysis is a chemical product. As time goes by, acid contaminated paper loses its strength and becomes increasingly brown stained, and is eventually embrittled to the extent that it cannot be handled without crumbling. The pH value is a very reliable measure of acid content. pH is a measure of the hydrogen ion concentration of a substance. Acid has pH below 7, (1 to 6) while alkaline has pH value above 7 (8 to 14). According to Walker (2015), pH establishes a direct correlation between paper acidity and longevity. The more acidic the paper, the more short-lived it is. While expressing the difficulty in specifying an exact limit of pH value below which rapid acidic deterioration may take place, Alegbeleye (2016) agrees with other investigators that for permanence, pH should not be below 5.4. In other words, pH of 5.4 and below is considered as being very acidic.

Low relative humidity causes materials to become dry and brittle. Paper that is dried out can break and crumble as it is handled and flexed and covering materials on books such as vellum and shrink, causing boards to warp (Olatokun, 2018). Also, for every increase of 10 degree centigrade in temperature, the rate of chemical activity greatly doubles and thus the rate at which paper deteriorates also doubles. This presupposes that if paper materials are stored at low temperature, their life expectancy will be significantly lengthened.

Dust and other solid particles damage materials through abrasive action. Fine dry particles of any matter present in the air are known as dust, which is highly dangerous for the library and archival collections, composed of soil, metallic substances, fungus spores and moisture among other things. Since dust is air borne, it settles down on any surface of the object. Dust is hygroscopic in nature and when it is mixed with high humidity, it is transformed into dirt. If this dirt sticks to the surface of the books, it becomes difficult to remove.

Disasters scenario brought about by human error or natural events, pose the ultimate threat to collections. The results are immediate, calamitous and dramatic; unlike the slow and insidious process and deterioration that takes place in boxes and filing cabinets. Disasters, which can result from fire, flooding, storms, earthquakes or broken steam pipes, can damage or destroy a few items or entire collections. Vigilance, preparedness and recovery plans are the best guards against loss from disaster (Alegbeleye, 2017). Njeze (2022) states that where there is condensation or moisture due to high humidity, there is always the presence of biological growth such as contain proteins and carbohydrates in the form of sizing, paste or starch and other organic substances attractive to insects. The nature and extent of the damage depends not only on the insect and material but also on how promptly the infestation is discovered and controlled. Damage may vary from a few holes to complete destruction. The most common types of insects that attack paper are: termites, silverfish, cockroaches and booklice. The deterioration caused by biological agents such as microorganisms, insects and rodents is generally known as bio-deterioration. Almost all book components, be it paper, leather, textiles or straw board used for binding are prone to attacks by these biological agents.

The greatest enemy of information materials is the librarian or archivist who neglects his collections in the quest for ever more efficient management systems, People pose the most constant threats to archival collections, (Ogunmodede & Ebijuwa, 2023). Abuse, whether imposed by archival staff or users, intentional or not, results in the same damage and loss of materials. Actions that may be considered abusive include careless or rough handling of brittle paper and fragile bindings, destructive photocopy practices, disfiguring manuscripts with notation or marks, and spilling coffee or ashes on materials. The list of abusive action is endless. While much damage results from carelessness, abuse also includes such blatant actions as mutilation, vandalism and theft.

**Environmental Factors:** Temperature, humidity, and light exposure can cause materials to degrade over time. Libraries can control these factors by maintaining optimal storage conditions (Verticchio et al., 2021).

**Pest Infestations:** Insects, rodents, and other pests can damage library materials. Integrated pest management techniques can help prevent infestations (Balliana et al., 2016).

**Human Error:** Mishandling and improper use of library materials can lead to deterioration. Educating users about proper handling techniques is essential.

Deterioration in academic libraries refers to the degradation of library materials, including books, journals, and digital resources. According to a study, environmental factors such as temperature, humidity, and light exposure can contribute to the deterioration of library materials (Verticchio et al., 2021). Proper storage and handling practices can help mitigate these effects

## **Challenges to Effective Preservation and Conservation of Library Resources**

However, considering the dwindling budgetary allocation to the libraries in third world countries, necessary techniques and measures to savage the deteriorating state of library resources must be considered. The preservation and conservation techniques could be preventive or interventive (Ngulube, 2017)

Many cultural works are sensitive to environmental conditions such as temperature, humidity and exposure to light and ultraviolet light. Taking sufficient measures to protect materials in a controlled environment where such variables are maintained within a range of damage-limiting levels is called preventive conservation. Interceptive Conservation refers to any act by a conservator that involves a direct interaction between the conservator and the cultural material. These interceptive treatments could involve cleaning, stabilizing, repair, or even replacement of parts of the original object or consolidation such as securing flaking paint. Muhammad (2016) states that light from incandescent source generates heat and must be kept a distance from library collections. Blinds and shutters completely block out light from the sun, thus aid in temperature control by minimizing heat loss and heat generated by sunlight during the day. Filters made of special plastics help control Ultra violet (UV) radiation, and the use of special low UV florescent tubes is very important. Adcock (2018) states that pollution is important to librarians not only because of the physiological effect it has on users, but due to its deteriorating effects on library materials. Pollution from the atmosphere like common dust, particles of dirt or soot from industrial area settle on books and unless the materials are well protected degradation begins.

Maintaining suitable environment for library information materials will prolong their life span and enhance long term accessibility. The environmental factors that are typically monitored include temperature and relative humidity, air quality (gaseous and particulate), light sources and levels and micro and micro and microbiological infestation (Jordan, 2017). Effective environmental control depends on the use of appropriate furniture (closed shelves or shallow drawers), containers (horizontal or vertical file, print or document boxes), and housing (paper or polyester enclosures). Appropriate procedures incorporate integrated pest management and emergency preparedness into building and collections maintenance. Disasters, which can result from fire, flooding, storms, earthquakes or broken steam pipes, can damage or destroy a few items or entire collections. Vigilance, preparedness and recovery plans are the best guards against loss from disaster (Alegbeleye, 2017).

## **Preservation and Conservation Techniques**

Preservation and conservation techniques are crucial for maintaining library resources. Environmental control involves maintaining optimal temperature and humidity levels to slow down material deterioration. This proactive approach inhibits mold growth and prevents pest infestations, ensuring the longevity of library materials (Verticchio et al., 2021). Libraries can implement environmental monitoring systems and HVAC solutions to achieve this.

**Chemical De-acidification:** This process temporarily halts material deterioration by removing acids that cause degradation. Although effective, its benefits may be limited for fragile items (Sarasvathy, 2007). **Encapsulation:** A preservation technique that places fragile documents between transparent plastic films, creating protective barrier while allowing examination without direct contact. **Digital Imagery:** Scanning materials into digital formats enables swift transfers between libraries and permits extensive post-processing adjustments.

**Book Repair and Binding:** Professional bookbinders and conservators restore damaged books' structural integrity, ensuring their usability and longevity. **Pest Management:** Implementing preventive measures, such as regular inspections and thorough cleaning, minimizes the risk of pest infestations. **Lamination:** Sealing documents between plastic layers for protection, although potentially irreversible and posing long-term preservation risks.

## Library Resources

Library resources encompasses various materials and digital content that libraries provide to support learning, research, and community engagement. According to Ifijeh (2018), library resources include books, journals, databases, and digital media that cater to diverse user needs. These resources are carefully selected, acquired, and managed to ensure they meet the information needs of library patrons. Books, journals, and newspapers are traditional library resources that provide valuable information and knowledge (Brophy, 2017). E-books, online databases, and digital media offer convenient access to information and enhance the library's ability to support remote learning and research (Bawden & Robinson, 2017). Rare books, manuscripts, and archival materials are unique resources that require special handling and preservation (Crespo & Fernández, 2020).

Library resources play a vital role in supporting education, research, and community development. They provide access to knowledge, promote literacy, and foster critical thinking and information literacy skills (Kuhlthau, 2015). Libraries also offer a quiet and conducive environment for study and research, making them an essential part of the educational ecosystem.

Effective management of library resources is crucial to ensure their optimal utilization. This involves collection development, cataloging, classification, and preservation (IFLA, 2018). Libraries must also ensure that their resources are accessible and user-friendly, providing adequate support for patrons to navigate and utilize the resources effectively.

## History of MOUAU Library

The Michael Okpara University of Agriculture Umudike Library was established in 1994, following the promulgation of Decree No. 48 of 1992, which led to the creation of the university. Initially, the library shared facilities with the Federal College of Agriculture, Umudike, until the college relocated to Ishiagu, Ebonyi State, in 1995.

In 1993, the university began formal activities with the appointment of the first Council and Vice-Chancellor, Professor Placid C. Njoku. In 1994 the library was established with a mandate to support academic activities, including teaching, learning, research, and community service.

In 2011, the university library moved into the Library Annex. In 2013, the main university library building was occupied in Library Phase One.

The library has two main locations, with ten departments, including: Administrative Department, Circulation Department, Indexing and Documentation, Institutional Repository, Serials Department, Information and Communication Technology (ICT) Department, Cataloguing and Classification Department, Reference Department, Acquisition Department, Bindery Department

The library offers various services, including: Loan services, Reference and Information services, Current Awareness services, Indexing/Abstracting services, Documentation services, Bindery and Reprographic services Inter-library loan services, Document Delivery services, Scholarly database search and retrieval Book reservation services and Library Orientation

## RESEARCH METHODOLOGY

Presentation of methods and the procedures used for conducting the study are discussed in this chapter. They were discussed under the following headings: design of the study, area of the study, population of the study, sample and sampling technique, instrument for data collection, validation of the instruments, reliability of the instruments, methods of data collection and methods of data analysis

### Design of the Study

The descriptive survey design was used in conducting the study. According to Akuezuilo and Agu (2003), the descriptive survey research is used for collection of standardized information from a sample that is considered as representation of a particular group or population. Hence, the research design is appropriate for the study because it generated the relevant and useful data from a sample that is representative of the population of the study for generalization.

## Area of the Study

Area of this study is Abia State, Nigeria. Abia State (Igbo: *ÓhaAbia*) is a state in the South-East geopolitical zone of Nigeria, it is bordered to the northwest by Anambra State and northeast by the states of Enugu, and Ebonyi, Imo State to the west, Cross River State to the east, Akwalbom State to the southeast, and Rivers State to the south. Abia is the only Southeastern state that has boundaries with the other four Southeastern states in Nigeria.<sup>[5]</sup> It takes its name from the acronym for four of the state's most populated regions: Aba, Bende, Isuikwuato, and Afikpo (but Afikpowas later joined with a part of Enugu state to create Ebonyi state in 1996).<sup>[6]</sup> The state capital is Umuahia while the largest city and commercial centre is Aba

## Population of the Study

Population of the study is 120 staff of MOUAU library. The population is made up professional librarians and Para - professional librarians.

## Sample and Sampling Technique

The entire population (120) of library staff was used for the study. The sample consists of the entire population of library staff in the university studied. This method of using the entire population as sample is referred to as complete census method Ogomaka & Isaughedigh (1992), as cited in Nnadozie and Nwosu,(2016).

## Instrument for Data Collection

The instrument that was used in collecting data is the questionnaire. The questionnaire is titled: "Preservation and Conservation of Information Resources"(PCIR)". The questionnaire was arranged in two (2) sections. Section (A) requested bio data and has (3) items. Section (B) which answered research question. The session has four (4) clusters. Cluster (A) which has nine (9) items dealt with the preservation and conservation practices in MOUAU library. Cluster (B) has ten (10) items and dealt with causes of deterioration of library materials.. Cluster (C) has (10) items and dealt with the techniques used in the preservation and conservation of library resources in MOUAU library. Cluster (D) which has (8) items, dealt with the challenges to effect of preservation and conservation of library resources. The total number of item is 37.

The questionnaire was designed using a four point rating scale. The options are as follows: Extent, SA-Strongly Agree, A-Agree, D-Disagree, SD-Strongly Disagree. The response values used in this study are: 4, 3, 2 and 1.

## Method of Data Collection

The instrument was administered to library staff of MOUAU by the researcher. The researcher used one week to administer and collect the instruments. A total of 37 copies of the questionnaire were administered to staff of the library. The completed questionnaire was collected back after completion. This method ensured high return rate.

## Method of Data Analysis

The data collected were analyzed using descriptive statistics (mean and standard deviation) to answer the research questions.. For answering the research questions, any item with the mean value of 2.50 and above was regarded as aware, accessed, utilized and accepted, otherwise, they were regarded as not aware, not accessed, not utilized and rejected. Mean and standard deviation were used for all the research questions, where 2.50 was used as criterion mean.

Hence, any item with mean value of 2.50 and above was interpreted as Agreed, while any item with mean value of less than 2.50 was interpreted as Disagreed. The ratings of the questionnaire are assigned as follows:

- 0.50-1.49 – Strongly Disagreed
- 1.50-2.49 - Disagreed
- 2.50-3.49 - Agreed
- 3.50- 4.00– Strongly Agree

The mean was calculated thus:

$$\bar{X} = \frac{\sum FX}{N}$$

Where:

$\bar{X}$  = Mean

N = Total number of respondents

F = Frequency

$\sum$  = Summation Sign

The response value used in this study are: 4, 3, 2 and 1.

$$\text{Criterion Mean} = \frac{4+3+2+1}{4} = \frac{10}{4} = 2.50 \text{ (cut off point)}$$

## RESULTS AND DISCUSSION

This chapter presents the results of data analysis and discusses the findings of the study. It was presented under descriptive analysis, testing of hypothesis, findings and discussion of findings.

### Presentation of Results

#### Research Question One

What are the preservation and conservation practices in Michael Okpara University library, Umudike, Umuahia, Abia State?

#### Cluster A: Preservative and Conservative Practices

**Table 1.** Mean Responses of Library Staff on Preservation and Conservative Practices in MOUUAU Library = 120.

S/N	Item Statement	SA	A	D	SD	$\bar{x}$	STD	RMK
1	Proper Storage and Handling	70	50	0	0	3.58	0.49	SA
2	Digitization	60	30	20	10	3.17	0.99	A
3	Binding and Repair	50	50	15	5	3.21	0.81	A
4	Environmental Maintenance	55	45	16	4	3.32	0.77	A
5	Pest Control	60	45	15	0	3.38	0.69	A
6	Conservation Training	45	50	20	5	3.13	0.84	A
7	Reformatting	55	50	8	7	3.28	0.83	A
8	Security Measures	65	48	5	2	3.47	0.43	A
9	Disaster Preparedness	35	45	25	15	2.80	0.99	A
	Cluster Mean					3.26		A

**Cluster Mean = 3.26. Note:**  $\bar{x}$  = Mean, SD = Standard Deviation

The data presented in Table 1 above showed that cluster mean of the responses of MOUUAU library staff of all the 9 items is 3.26 (cluster mean), which is greater than the criterion mean of 2.50 on 4-point rating scale. This indicated that MOUUAU library staff agreed that all the items are preservation and conservative practices in MOUUAU library. The standard deviation values of the 9 items ranged from 0.49 - 0.99 which indicated that the responses of the respondents were close to one another and to the mean.

#### Research Question 2

What are the causes of deterioration of library materials in the university library?

**Cluster B: Causes of Deterioration of Library Materials****Table 2.** Mean Responses of Library Staff on Causes of Deterioration of Library Materials in MOUAAU Library = 120.

S/N	Item Statement	SA	A	D	SD	$\bar{x}$	STD	RMK
10	High Temperature and Humidity	85	30	5	0	3.67	0.56	SA
11	Light Exposure	40	45	30	5	3.00	0.87	A
12	Dust and Pollutants	38	48	25	9	2.96	0.91	A
14	Pest and Infestation	55	45	15	5	3.25	0.83	A
15	Mold and Mildew	60	55	5	0	3.46	0.57	A
16	Acidic Paper	46	54	14	6	3.17	0.82	A
17	Poor Handling and Storage	70	35	10	5	3.42	0.81	A
18	Water Damage	68	38	10	4	3.42	0.78	A
19	Chemical Reaction	47	53	14	6	3.18	0.82	A
20	Human Error	52	48	17	3	3.24	0.79	A
	Grand Mean					3.28		

**Cluster Mean = 3.28. Note:**  $\bar{x}$  = Mean, SD = Standard Deviation

The data presented in Table 2 above showed that cluster mean of the responses of MOUAAU library staff of all the 10 items is 3.28 (cluster mean), which is greater than the criterion mean of 2.50 on 4-point rating scale. This indicated that MOUAAU library staff agreed that all the items are causes of deterioration of library materials in MOUAAU library. The standard deviation values of the 10 items ranged from 0.56 - 0.79 which indicated that the responses of the respondents were close to one another and to the mean.

**Research Question 3**

What are the techniques used in the preservation and conservation of library materials in the university library?

**Cluster C: Techniques used in the Preservation and Conservation****Table 3.** Mean Response of Library Staff on Techniques used in the Preservation and Conservation of Library Materials in MOUAAU Library = 120

S/N	Item Statement	SA	A	D	SD	$\bar{x}$	STD	RMK
21	Use of Display Cases to Display Rare or Special Materials	55	35	20	10	3.13	0.97	A
22	Monitoring	70	35	10	5	3.42	0.81	A
23	Labeling and Signage	47	53	18	2	3.21	0.75	A
24	Binding and Repair	70	42	7	1	3.51	0.65	SA
25	De-acidification of Materials	46	54	14	6	3.17	0.82	A
26	Digitization	60	30	20	10	3.17	0.98	A
27	Metadata Creation	35	48	27	10	2.9	0.92	D
28	Digital Storage and Backup	65	45	8	2	3.44	0.69	A
29	Temperature and Humidity Control	85	30	5	0	3.67	0.56	SA
30	Lighting Control	40	45	30	5	3.00	0.87	A
	Grand Mean					3.26		

**Cluster Mean = 3.26. Note:**  $\bar{x}$  = Mean, SD = Standard Deviation

The data presented in Table 3 above showed that cluster mean of the responses of MOUAAU library staff of all the 10 items is 3.26 (cluster mean), which is greater than the criterion mean of 2.50 on 4-point rating scale. This indicated that MOUAAU library staff agreed that all the items are techniques used in the preservation and conservation in MOUAAU library. The standard deviation values of the 10 items ranged from 0.97 - 0.87 which indicated that the responses of the respondents were close to one another and to the mean.

#### Research Question 4

Challenges to effective preservation and conservation of library materials in MOUAAU library?

#### Cluster D: Challenges to Effective Preservation and Conservation

**Table 4.** Mean Response of Library Staff on Challenges to Effective Preservation and Conservation of Library Materials in MOUAAU Library = 120.

S/N	Item Statement	SA	A	D	SD	$\bar{x}$	STD	RMK
31	Limited Funding	87	28	5	0	3.68	0.56	
32	Lack of Expertise	15	25	50	30	2.21	0.95	
33	Environmental Factors	55	45	16	4	3.26	0.81	
34	Pest and Infestation	54	46	15	5	3.24	0.83	
35	Water Damage	65	41	10	4	3.39	0.77	
36	Human Error	54	46	17	3	3.26	0.79	
37	Lack of Space for Storage	75	35	8	2	3.53	0.69	
38	Awareness and Prioritization	38	58	18	6	3.07	0.81	
	Grand Mean					3.21		

**Cluster Mean = 3.21. Note:**  $\bar{x}$  = Mean, SD = Standard Deviation

The data presented in Table 4 above showed that cluster mean of the responses of MOUAAU library staff of all the 10 items is 3.21 (cluster mean), which is greater than the criterion mean of 2.50 on 4-point rating scale. This indicates that MOUAAU library staff agreed that all the items are challenges to effective preservation and conservation in MOUAAU library. The standard deviation values of the 10 items ranged from 0.56 - 0.81 which indicated that the responses of the respondents were close to one another and to the mean.

#### Summary of Findings of the Study

Specifically, based on the data analyzed, the study:

- 1 Identified proper storage and handling, digitization, binding and repair, environmental maintenance, pest control, conservation training, reformatting, security measures and disaster preparedness as preservation and conservative practices in MOUAAU library.
- 2 the study identified high temperature and humidity, light exposure, dust and pollutants, pest and infestation, mold and mildew, acidic paper, poor handling and storage, water damage, chemical reaction and human error as causes of deterioration of library materials
- 3 The study identified Use of Display Cases to Display Rare or Special Materials, Monitoring, Labeling and Signage, Binding and Repair, De-acidification of Materials, Digitization, , Digital Storage and Backup, Temperature and Humidity Control, and Lighting Control as techniques used in the preservation and conservation in MOUAAU library. Metadata creation was not used as a technique for preservation and conservation of library resources.
- 4 The study also identified Limited Funding, Lack of Expertise, Environmental Factors, Pest and Infestation, Water Damage, Human Error, Lack of Space for Storage and Awareness and Prioritization as challenges to effective preservation and conservation of library materials in MOUAAU library

#### Discussion of Findings

Discussions on findings of this study are presented as follows:

#### Preservation and Conservative Practices

The study revealed that the preservation and conservative practices In MOUAAU library include: proper storage and handling, digitization, binding and repair, environmental maintenance, pest control, conservation training, reformatting, security measures and disaster preparedness, This finding is in agreement with the study carried out by Sarasvathy (2017) his findings revealed that importance of preservation and conservation techniques include storage, and handling, binding and repair, and pest control in protecting rare library materials.

### **Causes of Deterioration of Library Materials**

The study showed that high temperature and humidity, light exposure, dust and pollutants, pest and infestation, mold and mildew, acidic paper, poor handling and storage, water damage, chemical reaction and human error as causes of deterioration of library materials. The findings of the study agreed with that of Guild and MacDonald (2004) which found the, humidity and light exposure.

### **Techniques used in the Preservation and Conservation of Library Materials**

This study found that use of display cases to display rare or special materials, monitoring, labeling and signage, binding and repair, de-acidification of materials, digitization, metadata creation, digital storage and backup, temperature and humidity control, and lighting control are techniques used in the preservation and conservation of library materials. The findings of this study agreed with that of Sarasvathy (2007) whose findings revealed techniques include the following: environmental control, pest management, book repair and binding, and digitization.

### **Challenges to Effective Preservation and Conservation of Library Materials**

The study found that limited funding, lack of expertise, environmental factors, pest and infestation, water damage, human error, lack of space for storage and awareness and prioritization. Lack of expertise was found not to be a challenge to effective preservation and conservation of library materials in MOUUAU library. The finding of this study conforms to that of Njeze (2018) who found that limited funding, environmental factors, pest and infestation, human error, and lack of space for storage are challenges to effective preservation and conservation of library materials.

## **CONCLUSIONS AND RECOMMENDATION**

### **Summary**

The study examined preservation and conservation of information resources in Michael Okpara University library. The study adopted descriptive survey research design. Four objectives and research questions guided the study. Population of the study is 150 library staff of MOUUAU library. The entire population of the study was used as sample. Only one instrument was used for this study. This is the questionnaire. The instrument was captioned: Preservation and Conservation of Information Resources Questionnaire (PCIRQ). The instrument was subjected to face validity. The validity of the instrument was ascertained by three experts from library and information science, The instrument has 38 items.

Data for the study were collected by the researcher through circulation librarian in the library. Out of the total of 150 copies of questionnaire administered to the library staff of MOUUAU, 120 copies were completed and returned. The data collected were analyzed using descriptive statistics such as mean and standard deviation to answer research questions. Based on the data collected, the study identified proper storage and handling, digitization, binding and repair, environmental maintenance, pest control, conservation training, reformatting, security measures and disaster preparedness as preservation and conservative practices in MOUUAU library. Causes of deterioration of library materials identified by the study as high temperature and humidity, light exposure, dust and pollutants, pest and infestation, mold and mildew, acidic paper, poor handling and storage, water damage, chemical reaction and human error.

The study identified Use of Display Cases to Display Rare or Special Materials, Monitoring, Labeling and Signage, Binding and Repair, De-acidification of Materials, Digitization, Metadata Creation, Digital Storage and Backup, Temperature and Humidity Control, and Lighting Control as techniques used in the preservation and conservation in MOUUAU library. The study also identified Limited Funding, Lack of Expertise, Environmental Factors, Pest and Infestation, Water Damage, Human Error, Lack of Space for Storage and Awareness and Prioritization as challenges to effective preservation and conservation of library materials in MOUUAU library.

### **CONCLUSION**

From the results and findings obtained in this study, the following major conclusions were drawn:

- (1) Proper storage and handling are the most adopted preservation and conservation practice in MOUUAU library.
- (2) High temperature and humidity are the greatest causes of deterioration of library materials in MOUUAU library.
- (3) Temperature and humidity control are the highest techniques used in preservation and conservation of library materials in MOUUAU library.
- (4) Limited funding is the greatest challenge to effective preservation and conservation of library materials in MOUUAU library.

## IMPLICATIONS OF THE STUDY

The findings of the study have implication for the management of university libraries in Nigeria who are directly responsible for the preservation and conservation of library materials. They must ensure that library materials are adequately preserved and conserved to enhance library operations and satisfy the needs of users.

However, the findings of the study on preservation and conservative practices in university libraries revealed that Proper storage and handling are the most adopted preservation and conservation practice in MOUAAU library. This has an implication on the academic performance of the students which reflects on the quality of graduate from the Nigerian universities. Therefore, since preservation and conservation leads to durability of library resources, and will also affect users academic performance, the management of the university libraries should ensure that the most suitable preservation and conservation practice is adopted.

The findings of this study on causes of deterioration of library materials revealed that. high temperature and humidity are the greatest causes of deterioration of library materials in MOUAAU library. This implies that there is need for the management of the university libraries to control temperature and humidity in the library so as to preserve and conserve resources in the library.

The finding of the study on techniques used in the preservation and conservation of library materials in MOUAAU library revealed that temperature and humidity control are the highest techniques used in preservation and conservation of library materials in MOUAAU library. the following preservation and conservation techniques were used in MOUAAU library to preserve and conserve resources: use of display cases to display rare or special materials, monitoring, labeling and signage, binding and repair, de-acidification of materials, digitization, , digital storage and backup, temperature and humidity control, and lighting control as techniques used in the preservation and conservation in MOUAAU library.

The findings of this study on challenges to effective preservation and conservation of library materials in MOUAAU library revealed that limited funding is the greatest challenge to effective preservation and conservation of library materials in MOUAAU library. This implies that there is an urgent need for the university management to increase funding for the university library to facilitate preservation and conservation of library resources. This will enable university library users' especially undergraduates to withstand the challenges which non preservation and conservation of library resources can cause which will invariably affect research and learning.

Government as the financiers or funding authorities of university libraries in the country should ensure that adequate funding is provided for resources in our university libraries, if they are to function efficiently and effectively. This study has revealed to the government that though preservation of resources in the university libraries academic performance of students can be enhanced, therefore, a lot need to be done to make sure that resources in the university library are properly preserves and conserved.

## RECOMMENDATIONS

The following recommendations have been made based on the findings, discussions and implication of the study:

1. The university should set aside 10% of her budget, if possible more than that for preservation and conservation of library resources.
2. The university should employ more digitized techniques to preserve and conserve library resources.
3. The university should put in place machineries for regulating temperature and humidity of library to ensure that library resources are safe.
4. More awareness should be created by the university regulatory body in Nigeria on the need for university libraries to preserve and conserve library resources.

## LIMITATIONS OF THE STUDY

The findings of the study was limited by the following factors: The researcher had planned to extend this study to other universities in the State but could not due to security and economic reasons.

## SUGGESTIONS FOR FURTHER STUDIES

In view of the limitations of the study, the following suggestions are made for further research:

1. A study on the preservation and conservation of resources in the Polytechnic libraries in Abia State.

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