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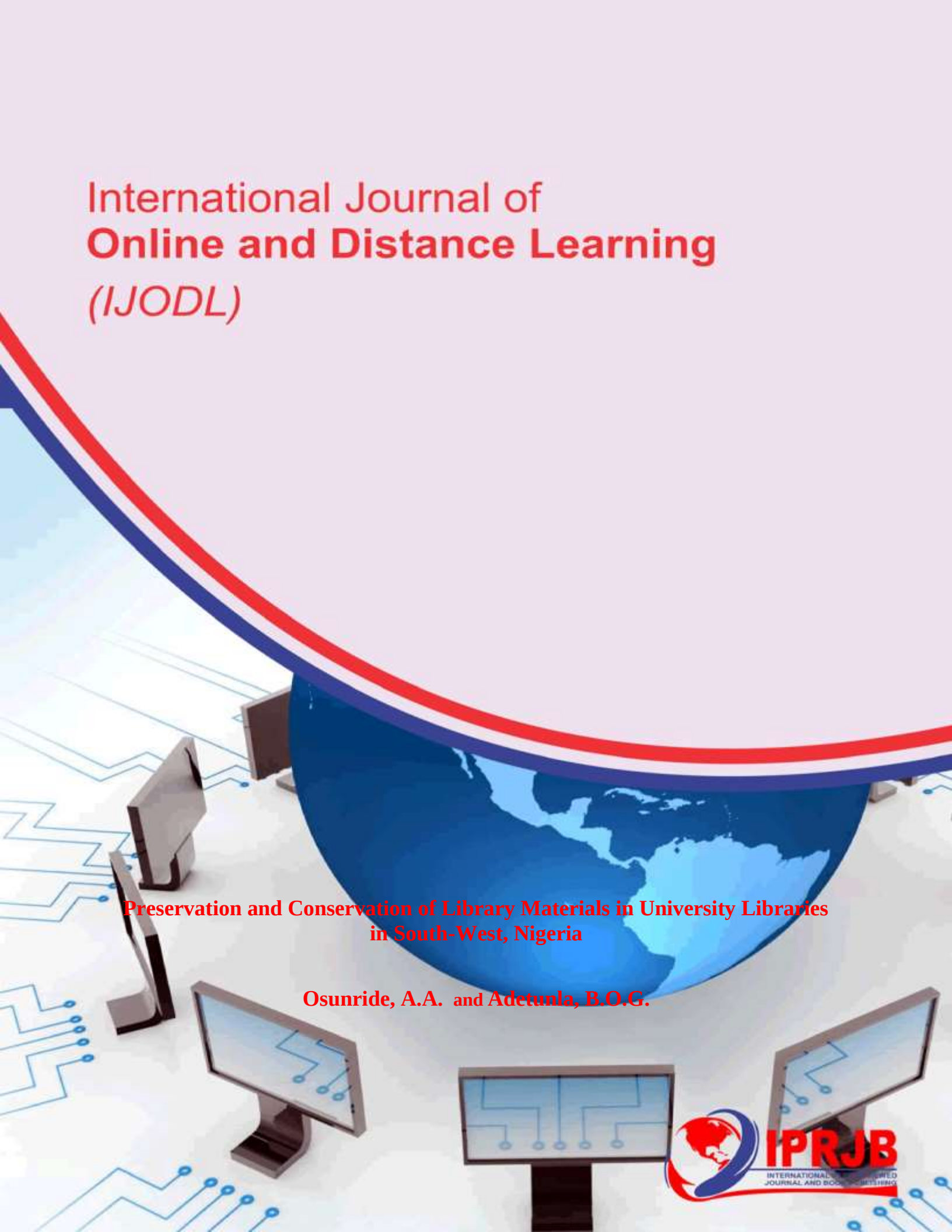

# Preservation and Conservation of Library Materials in University Libraries in South-West, Nigeria

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# Preservation and Conservation of Library Materials in University Libraries in South-West, Nigeria

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## Abstract

**Purpose:** Libraries in third world countries despite the constraints of finance confronting them still make huge investment on acquisition of library resources. Deterioration of library resources has been one of the greatest challenges plaguing the libraries. In order to savage these library resources and the libraries from a colossal loss of her heritage, this study examines preservation and conservation of library materials in university libraries in South-West, Nigeria.

**Methodology:** The study adopted a descriptive survey design. A total enumeration technique was used for selecting 308 respondents for the study. Questionnaire was used for data collection and was analyzed using descriptive statistics.

**Findings:** The findings revealed that library security is the most used measure of preservation and conservation practices. Dust and particulate matter are the greatest causes of deterioration to library materials. The finding further revealed that dusting, cleaning and proper shelving are the major techniques adopted by the libraries.

**Study conclusions and recommendations:** The study concluded that lack of proper preservation and conservation practices in the universities are the cause of resource loss and deterioration. Therefore, the study recommended that libraries should deploy modern preservation and conservation tools such as technologically enabled ICT devices which will aid adequate storage and enhance the durability and longevity of information materials in the libraries.

**Keywords**: *preservation, conservation, libraries, universities. South-west*

## 1.0 INTRODUCTION

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 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, 2003; Alegbeleye, 2008 & Walker, 2013).

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, 2006). To avoid these heavy loose 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, 2006). Preservation and conservation is the practice of minimizing or reducing the physical and chemical deterioration of documents. Jordan (2003) 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 interceptive (Ngulube, 2003; Ogunmodede & Ebijuwa, 2013).

Njeze (2012) in her study on deterioration of library materials in University libraries in SouthWest Nigeria found that there was high rate of deterioration in the studied universities, some of which are caused by wear and tear, dust particles, Bad shelving and biological agents. It therefore becomes imperative for a study on preservation and conservation to be carried out in the above said universities to savage the situation in the midst of this dwindling budgetary allocation to libraries in Nigeria. It is against this backdrop that this study investigates the preservation and conservation of library materials in university libraries in South-West Nigeria.

## 1.1 Objective of the Study

i. determine the preservation and conservation practices in the university libraries in South-West, Nigeria; ii. examine the causes of deterioration of library materials in university libraries in South-West,

Nigeria iii. establish the techniques used in the preservation and conservation of library materials in university libraries in South-West, Nigeria

## 1.2 Research Questions

i. What are the preservation and conservation practices in the university libraries?

ii. What are the causes of deterioration of library materials in the selected university libraries?

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

## 1.3 Scope of the Study

This study seeks to evaluate the preservation and conservation practices among university libraries the in the South-West, Nigeria. The libraries include all public and 10 first generation private universities in the South-West. Studying both public and private universities would give a comprehensive study of the preservation and conservation practices among the universities in the South-West, Nigeria.

## 2.0 LITERATURE REVIEW

In every 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 and Feather, 1997).

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 in them" (IFLA, 2010).

Trinkaus-Randall (1990) 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. 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

Alegbeleye (1996) wrote that six million volumes of books of the Library of Congress have deteriorated so badly that 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 (1993), 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. He 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.

Mahapatra (2003) stated that much avoidable damage is done to books by well- meaning but uniformed 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 see 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 housekeeping.
Alegbeleye (2007) found that majority of the microfilm strips examined had not only deteriorated but had also suffered from vinegar syndrome. Olubanke (2010) 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, (1to 6) while alkaline has pH value above 7 (8 to14). According to Walker (1985), 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 (1996) 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 (Harvey,1993).

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 (Thomas, 1981).

Dust and other solid particles damage materials through abrasive action (Harvey, 1993). 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 hydroscopic 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, 1993).

Maravilla (1994) 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, (Harvey, 1992). 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

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 preventive or interventive (Ngulube, 2003)

**Preventive Conservation***:* 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.

**Interventive Conservation***:* Interventive Conservation refers to any act by a conservator that involves a direct interaction between the conservator and the cultural material. These interventive treatments could involve cleaning, stabilizing, repair, or even replacement of parts of the original object or consolidation such as securing flaking paint.

Muhammad (2006) 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 (1998) 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, 2003).

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 (Wilcox, 1995; Roberts, 1995).
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, 1993).

## 3.0 METHODOLOGY

This study adopted survey research design. This design allowed for data to be collected. The population for this study cut across all categories of personnel in the academic libraries in the South-West, Nigeria. A total of (13) public and (10) private university libraries in South-West Nigeria of 468 library staff were used as the population of this study. Table 1 shows the list of academic libraries in South-West, Nigeria.

**Table 1 Public University Libraries and Private University Libraries**

| S/N | Public University Libraries | Private University Libraries |
|---|---|---|
| 1 | Kenneth Dike Library,University of Ibadan, Ibadan. | Caleb University |
| 2 | Fatiu Akesode Library, Lagos State University, Ojo. | Pan African University |
| 3 | University of Lagos Library, Lagos. | Laz Oti, Babcock University |
| 4 | University Library, Federal University of Technology, Akure | Redeemer University |
| 5 | Ladoke Akintola University of Technology Library, Ogbomosho | Achiever University |
| 6 | Ekiti State University Library, Ado-Ekiti. | Wesley University |
| 7 | Nimbe Adedipe Library,University of Agriculture, Abeokuta | Joseph Ayo Babalola University |
| 8 | Osun State University (UNIOSUN )Library, Osogbo | Oduduwa University |
| 9 | Tai Solarin University of Education, Ijebu-Ode Library | Ajai Crowder University |
| 10 | Ondo State University of Science and Tech., Okitipupa | Lead city university |
| 11 | Hezekiah Oluwasanmi Libray, Obafemi Awolowo University | Afe BabalolaUniversity |
| 12 | Adekunle Ajasin University Library, Akungba Akoko | ElizadeUniversity |
| 13 | Federal University Oye-Ekiti Library, Oye-Ekiti | Adeleke University |
| | **Total** | **Total** |

A structured questionnaire was designed and administered to the librarians and paraprofessionals in the sampled libraries. A total enumiration technique was used to select 308 library workers with over ten (10) years working experience as the respondents. A library staff with over ten (10) years working experience would have been involved in preservation and conservation process at one point or the other. 308 questionnaires were administered but only 292 (82%) questionnaires was returned and found useful for data analysis. Data analysis was done using relevant descriptive statistics, specifically, percentage distribution and frequency counts, means and standard deviation were generated on most of the items in the questionnaire.

## 4.0 RESULTS AND DISCUSSION OF FINDINGS

Research question 1: What are the preservation and conservation practices in the university libraries?

**Table 2**

| Preservation and conservation practices | Very Important | Important | Less important | Not Important | Mean | Std. Deviation |
|---|---|---|---|---|---|---|
| Security of library materials | 91.1 | 8.1 | | 9.0 | 3.9 | 0.4 |
| Disaster recovery procedure | 68.6 | 27.9 | 1.7 | 1.7 | 3.6 | 0.6 |
| Environmental control | 87.2 | 10.2 | 1.9 | 0.9 | 3.8 | 0.5 |
| Handling of library materials | 83.1 | 14.7 | 1.3 | 0.9 | 3.8 | 0.5 |
| Training of staff on preservation of library materials | 6o.4 | 34.8 | 3.5 | 1.3 | 3.5 | 0.6 |
| Restoration of degraded library materials | 60.3 | 35.3 | 3.6 | 0.9 | 3.5 | 0.6 |
| Funding | 62.2 | 31.1 | | 6.7 | 3.5 | 0.8 |

Research question 2: What are the causes of deterioration of library materials in University Libraries in south west Nigeria?

**Table 3: Mean and standard deviation scores of causes of deterioration of library materials**

| Print Materials | Non | Little Extent | Moderate Extent | Great Extent | Mean | Std. Deviation |
|---|---|---|---|---|---|---|
| High acidity levels of book materials | 29.7 | 36.0 | 19.4 | 14.8 | 2.2 | 1.0 |
| Excessive Light | 32.9 | 37.5 | 14.3 | 15.4 | 2.1 | 1.0 |
| Air pollution | 40.7 | 33.1 | 11.3 | 14.9 | 2.0 | 1.1 |
| Poor book-shelving | 32.0 | 38.7 | 15.1 | 14.1 | 2.1 | 1.0 |
| Dust and particulate matter | 23.0 | 33.1 | 29.6 | 14.3 | 2.4 | 1.0 |
| Relative humidity | 22.7 | 41.8 | 22.0 | 13.6 | 2.3 | 1.0 |
| Wear and tear due to rough handling | 14.7 | 51.1 | 21.9 | 12.2 | 2.3 | 0.9 |
| High temperature levels | 23.3 | 39.4 | 25.8 | 11.5 | 2.3 | 0.9 |
| Biological agents (e.g Termite, Cockroaches, Spider, Rodents etc) | 30.8 | 35.1 | 18.8 | 15.2 | 2.2 | 1.0 |
| **Non- Print Materials** | | | | | | |
| Moisture | 45.0 | 29.2 | 14.0 | 11.8 | 1.9 | 1.0 |
| Excessive Light | 46.7 | 23.9 | 16.9 | 12.5 | 2.0 | 1.1 |
| Oxidation | 41.0 | 29.5 | 17.2 | 12.3 | 2.0 | 1.0 |
| Dust | 32.7 | 35.2 | 13.9 | 18.1 | 2.2 | 1.1 |
| Magnetism | 38.9 | 38.2 | 9.5 | 13.5 | 2.0 | 1.0 |
| High humidity and heat | 35.3 | 36.7 | 14.4 | 13.7 | 2.1 | 1.0 |
| Atmospheric Pollutants | 34.9 | 40.7 | 10.2 | 14.2 | 2.0 | 1.0 |
| Biological Agent | 39.5 | 29.5 | 14.9 | 16.1 | 2.1 | 1.1 |

Table 3 reveals that all the identified causes of deterioration of library materials among the sampled institutions' Air pollution is the least cause of deterioration of print material with a mean score of 2.0 while moisture has less effect on none print materials with a mean score of 1.9. The most profound cause of deterioration on both print and non-print was found to me dust and particular matter with a mean score of 2.4 and 2.2 respectively. The spread of mean score shows that nearly all the identified causes of deterioration have little extent of effects on the library materials. This implies that very little is required by the management to improve the effects of those causes on the library materials since their effects are little.

Research Question Three: What are the techniques used in the preservation and conservation of library materials?

**Table 4:**

| Preservation and conservation techniques | Very often | Often | Occasionally | Never | Mean | Std. Deviation |
|---|---|---|---|---|---|---|
| Binding | 57.7 | 26.1 | 13.4 | 2.8 | 3.4 | 0.8 |
| Encapsulation | 22.3 | 25.4 | 27.7 | 24.6 | 3.2 | 4.8 |
| Photocopying | 38.2 | 27.7 | 30.9 | 3.1 | 3.1 | 1.4 |
| Digitization | 27.8 | 26.4 | 28.5 | 17.3 | 2.6 | 1.1 |
| De-acidification | 20.1 | 28.6 | 17.5 | 33.8 | 2.3 | 1.1 |
| Cleaning and dusting | 70.2 | 21.1 | 7.4 | 1.4 | 3.6 | 0.7 |
| Shelving library materials to allow for free flow of air | 71.4 | 21.6 | 5.6 | 1.4 | 3.6 | 0.7 |
| Use of insecticide and insect repellant for library materials techniques | 35.3 | 32.4 | 28.4 | 4.0 | 3.0 | 0.9 |
| Installing air – conditioners in your library | 51.3 | 22.2 | 7.2 | 19.4 | 3.1 | 1.2 |
| Provision of adequate security system to prevent theft mutilation and defacing of paper based materials | 64.1 | 27.5 | 3.8 | 4.5 | 3.5 | 0.8 |

Table 4 shows that majority of the respondents and or institutions often and very often practiced many of the preservation and conservation techniques, the top among the practices include binding with a mean of 3.4±0.8, Cleaning and dusting as well as Shelving with the means of 3.6±0.7, Provision of adequate security system with a mean of 3.5±0.8. Other practices include installing air – conditioners with a mean of 3.1±1.2, Use of insecticide and insect repellant with a mean of 3.0±0.9 among others. It means that over all, most of the institutions libraries have good preservation and conservation practices.

The results in the Table 5 shows the frequency of use of the various preservation techniques such as filming, microfilming, optical discs, CD-ROM, video cassette, sound discs among others. The results as shown in the tables revealed that all of the identified techniques are used on average by

all the sampled university libraries with a means of between 2.3 and 2.8 on the scale of 4points. Hence, overall, one could emphatically say, the university libraries has good grasp of the various preservation techniques.

## 5.0 DISCUSSION

On the issue of preservation and conservation practices in university libraries, the analysis showed a high level of practices of preservation and conservation ranging from Cleaning and dusting , Shelving, Provision of adequate security system practices, installing air – conditioners, Use of insecticide and insect repellant which is in agreement with the previous studies conducted by Adeleke, Aina, and Lateef (2011)

The analysis on the causes of deterioration of library materials revealed that common causes include high acidity, excessive light, air pollution, poor book shelving, relative humidity, moisture, oxidation among others. External causes of deterioration of collections include poor handling or storage, theft or vandalism, fire and flood, pests, pollution, light and high temperature and relative humidity. Dust and particulate matter are the greatest cause of deterioration while moisture and air pollution are the least causes which is in agreement with Alegbeleye (1993) and Walker (2013).

However, the analysis shows that the libraries employed various technique such as the frequency of use of the various preservation techniques such as filming, microfilming, optical discs, CDROM, video cassette, sound discs among other in the preservation and conservation of information materials, these findings contradict the results of Olatokun (2008) who reported that preservation and conservation techniques, though adopted in the university libraries were not effectively used. He also reported that cleaning and dusting of library materials was the commonly used technique

## 5.1 CONCLUSION AND RECOMMENDATION

Academic libraries down the ages have been tailored towards teaching, learning, scholarly work and research activities with a view to achieving the mission and vision of the institutions. This study has established that lack of proper preservation and conservation practices in the universities are the cause of resource loss and deterioration. Dust and Particulate matter was found to be the greatest cause of information resources' deterioration. Also relative humidity, wear and tear, high acidity level and high temperature level have significant effect on the library materials in university libraries in South-West Nigeria. As a result of these, this study recommends thus:

- The libraries must ensure effective dusting and cleaning of the library resources.
- A thorough weather and environmental control evaluation must be carried out in these universities. Installation of air-conditioners becomes necessary
- De-acidification should become the common practice of the libraries
- The libraries should deploy modern preservation and conservation tools such as technologically enabled ICT devices which will aid adequate storage and enhance the durability and longevity of information materials in the libraries.

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