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ASSESSMENT OF CONSERVATION AND PRESERVATION OF INFORMATION RESOURCES IN ACADEMIC LIBRARIES IN NORTHWEST NIGERIA

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Abstract
This study was designed to assess the method of conservation and preservation of information resources in academic libraries in North-West Nigeria. The design of the study was descriptive survey research design. Three research questions guided the study. The targeted population for the study was 408 library staff from four university libraries in North-West Nigeria which are Kashim Ibrahim Library, Ahmadu Bello University Zaria, University Library Bayaro University, Kano, University Library Umaru Musa Yar'Adua University Katsina and Abdullahi Fadiyo Library, Usman Danfodiyo University Sokoto. Taro Yamen's formula for infinite population was used to get the sample size of 202. Proportionate stratified random sampling was used for each stratum. Questionnaire was used as instrument for data collection. Data were analyzed using frequencies and percentages to answer the research questions. The findings of the study revealed the types of information resources conserved, and causes of deterioration of information resources. Based on the findings, it was recommended that a well-equipped bindery unit with trained staff should be established to take care of all preservation and conservation issues.
Keywords: *Academic Libraries, Conservation, Deterioration, Information Resources, Preservation.*

Introduction

Academic libraries are created to serve their parent institution; they help those institutions that created them to achieve their aim. Academic libraries even

though are dependent institutions, are created to promote general and practical education in Nigeria as a whole. Academic library is the core of the academic activities, where all pertinent information and materials are collected, organized, preserved for easy retrieval and purposeful exploitation in a continuous process of information dissemination. Babalola (2007) stated that "the fundamental role of the library is educational which should be operated as a dynamic instrument of education". In view of this, Odetoyinbo (2012) equally asserted that academic library is a building, a service point, a material, an instructional and self-development centre which operates as an integral part of the entire school environment" The primary purpose of the academic library is not only to provide books, journals and other instructional materials in support of the academic programme of the institution, but also to encourage the formation of a life-long habit of reading much and reading well. Therefore, Academic libraries like any other libraries in education are an information centre which is no longer an open space but a world where teaching and learning laboratories and recreational reading takes place. The information resources of the library range from print to non-print resources. Print resources comprised textbooks, hard copy journals and other information resources in print form. Non print information resources include video-cassettes, sound recordings, slides, tape/slide programmes, films, and filmstrips among others. They require special equipment such as film projector, videocassette/players, slide projectors, audio cassette player among others to exploit the information contained in them. The need to store the long lasting nature of the library information resources is the hall mark of this research which entails preservation and conservation. Conservation and preservation are essential library activities if properly implemented has the capability of sustaining and promoting library activities for a very long time.

Preservation is often used interchangeably with conservation, besides; there is a subtle difference between the two. Preservation suggests that natural resources will be left undisturbed, while conservation usually indicates some resource management. The process of conservation and preservation are applied to safeguard the information resources from further decay and deterioration. Preservation is the process by which all actions are taken to check and retard deterioration whereas conservation includes proper diagnosis of the decayed information resources, timely curative treatment and appropriate prevention from further decay. Anjaiah (2008) stressed that the words "preservation and conservation" are often used interchangeably to mean the process of keeping an object safe from harm or loss, damage, destruction or decay and maintaining it in a reasonably sound condition for present and future use. The author further

maintained that these two words are different, though interrelated and overlapping connotations. conservation is primarily concerned with ensuring that the original artifact is maintained and secured. Similarly, the term to conserve, defend, guard, keep, maintain, sustain among of others are synonyms for preservation. Peservation of information resources can be seen as the totality of the steps necessary to ensure the permanent accessibility of a particular information resource for posterity, which entails transfer of information to another medium, such as microfilm and electronic material.

Generally, available literature has shown that libraries and their resources are essential tools for education and these resources are generally ephemeral (short life span) and as such because of the constant use they undergo every day in libraries especially in academic libraries, they are bound to tear and wear. But despite these facts, they are bound to be used, which is why preservation and conservation is imperative. Academic libraries in North West Nigeria were established and founded by their parent universities to serve the community since its inception. It had materials worth millions of naira, therefore preservation and conservation of the library resources played a major role in preserving these resources for posterity and future use. In another view, the inadequate funding also affected preservation and conservation activities due to the expensive nature of library resources.

Purpose of the Study

The purpose of this study was to assess preservation and conservation of information resources in Academic libraries in North West Nigeria. Specifically is to:

1. assess the types of information resources that are conserved and preserved in Academic libraries.
2. determine the causes of deterioration of information resources in Academic libraries.
3. Identify types of deterioration of information resources in academic libraries

Research Questions

1. What are the types of information resources that are conserved and preserved in Academic libraries?
2. What are the causes of deterioration of information resources in Academic libraries?
3. What are the types of deterioration of information resources in academic libraries?

Review of related Literature

Type of information resources preserved in Academic Libraries

Information resources to Popoola and Haliso (2009) are those information bearing materials that the library collect, store, organize and disseminate to users in order to satisfy their present and future information needs. They are the materials in the library that make services possible. These are the materials which users come to consult, read, or borrow. Information resources are many and varied; they include paper based and machine readable materials. Paper based information resources include books, dictionaries, encyclopedias, journals, newspapers, magazines, vertical files materials, maps and atlases, gazetteers to mention a few while Machine readable materials include CD-ROM, databases, electronic journals and electronic books, tapes and records, films and many more according to the author above.

Library information resources refer to all those media for storing information such as textbooks, journals, newspapers, and magazines, patents and standards, handbooks and manuals, directories, gazetteers, encyclopedias, atlases and maps, calendars and diaries, vertical files, theses and dissertations, tapes, videos, films, optical discs, cassettes, magnetic tapes among others (IFLA,2010). Similarly, library information resources can simply be defined as book materials, microforms and electronic information materials capable of meeting information needs of the users (Popoola, 2013). Popoola further submitted that until 1980's, preservation and conservation of library information materials was thought to be relevant to rare book materials by librarians and curators of collection of special materials. But information resources are bound to deteriorate or breakdown with time through the aging process, and to replace them may be difficult and expensive if not practically impossible.

Preservation as the branch of library and information science is concerned with maintaining or restoring access to artifacts documents, different from conservation which refers to the treatment and repair of individual items to slow decay or restore them to useable state. In the same view, Harrods Librarian Glossary (2013) defined "preservation" as the managerial and financial considerations including storage, techniques and methods involved in preserving library and archival materials and the information contained in them". Preservation involves all the measures taken to guarantee the safety of prints and non-print materials in the libraries. Similarly, Okonkwo (2009) defined "preservation" as the totality of measures for maintaining the integrity of document and the information contained in them which include all the managerial and financial considerations, storage and accommodation provisions, staffing level policies, techniques and methods involved in safe guarding

documentary materials.

Deterioration

Deterioration is a state of depreciation in value or in quality. Therefore, if this is applied to information resources it is known to be a state in which information resources in a state of depreciating in value as well as in quality. Deterioration begins the very day an information resource is invented or a book is published. Deterioration in library concept is a complex subject considering different materials used in making of print and non-prints information resources in the library. Deterioration occurs due to natural causes for example moisture, dryness, and acid, and dust, heat, cold and ultra-violate radiation. It can also due to chemical reaction reactions used on these materials. Also, it can be biological as in insects, bacteria, fungi among others (Olajide, 2013).

This refers to the process of gradual decline or worsening in the quality, condition, or functionality of something over time. It is a broad term that can be applied to various contexts, including physical objects, infrastructures, health, mental abilities, environmental conditions, and more (Edmondson, 2003).

In the context of physical objects and infrastructure, deterioration can occur due to factors like wear and tear, exposure to environmental elements, lack of maintenance, or natural aging processes. In the context of health, deterioration refers to the worsening of a person's physical or mental condition. This can happen due to aging, chronic illness, disease progression, or other factors affecting their well-being (Matangira, 2013).

Therefore, the deterioration of information resources refers to the degradation of decline in the ability of information over time. Information resources can include physical documents, digital files, databases, and any other sources of information. Several factors contribute to the nature of deterioration of these resources.

Causes of deterioration of information resources

Specifically, the causes of deterioration of information resources are discuss under the following sub-headings:

Humidity: Relative humidity is defined as the amount of water vapor in a volume of air expressed as a percentage of maximum amounts that the air could hold at the same temperature. The warmer the air, the more water vapor it is capable of holding. Thus, the relative humidity decreases. Humidity causes problems if it is either too high or too low. High humidity speeds up deteriorative chemical reactions. Under conditions of extremely high humidity, water-soluble ink can

offset and coated papers can stick together. Low relative humidity causes materials to become dry and brittle. Paper that dried out can break and crumble as it is handled and flexed and covering materials on books such as vellum shrink, causing boards to warp (Alegbeleye cited by Ogunmodede &Ebijuwa, 2012). Relative humidity below forty five percent (45) endangers paper. On the contrary, relative humidity above sixty five percent (65) will lead to an abnormal increase in biological activity, since fungi starts growing above the sixty five (65) level and insects flourish at higher humidity. Furthermore, excessive humidity also acts upon the fiber of paper, softening them and diluting certain inks used to write documents (Ogunmodede & Ebijuwa, (2012).

Temperature: Paper deterioration as a result of complex chemical reactions varies directly with temperature. They are speeded up at higher temperature and slowed down at a lower 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. Papers stored a high temperature are also known to have suffered from physical breakdown, change in color among others. High degree of temperature is also known to accelerate the rate of biological activity (insect and mould).

Light: Light is very vital in the provision of services in libraries and archives, as much as possible materials have to be identified and read. On the other hand it is one of the greatest enemies of materials especially paper in any library, there are both artificial light (controlled) and natural light (less controlled). All types of light contribute in any way to cellulose degradation and fading of pigments and dyes. It speeds up the oxidation of paper and thus its chemical breakdown. It causes paper to be yellow or brown. Certain portions of the light spectrum are more harmful than others. Light is the most important cause of fading in information materials (Alegbeleye cited in Abdulrazaq, (2015). The problem associated with fading of books is traced to the use of unfiltered fluorescent light and the effect of sunlight. Many libraries and information centers, are unaware of the insidious effects of fluorescent lighting systems therefore,use them because they provide greater illumination than the incandescent lighting system.

Dust and Dirt's: Dirt, dust and other solid particles can damage materials through abrasive action. Fine dry particles of any matter present in the air are known as dust. Dust, which is highly dangerous for the library and archival collection, composed of soil, metallic substances, fungus spores and moisture

among other things. Since dust is air bone, 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 and if this dirt sticks to the surface of the books, it becomes difficult to remove. Dust acts as a nucleus around which moisture collects and this moisture provides the necessary humidity for growth of fungus and for chemical reactions, which lead to the information acids. Since dust and dirt are solid particles of varying size and hardness they exert abrasion on the surface of water book (Ogunmodede and Ebijuwa, 2012).

Water: Water occurs in all normal state of matter, solid, liquid and gas. It acts as a physical agent of deterioration by causing hygroscopic materials to undergo dimensional changes. Water, which is harmful to information resources may come from sources like natural calamities, human negligence, leaking roofs, defective plumbing and through open windows during rainy season. Excessive water brings about biological attack on paper, which is usually manifested as the growth of fungus or mildew. The effects of water are stained paper, rooted leather, smeared ink; weaken adhesive, sustained fungi among others. Water also does injury to steel furniture due to rusting.

Insufficient space: It stands to reason that the more crammed and cluttered the storage area is, the greater the risk of deterioration through breakage, abrasion, poor maintenance, loss and neglect in general. Furthermore, a disorganized, confused and unsystematic collection cannot be used effectively and this negates the reason for having the collections. Whereas it is difficult to create space when it is limited, additional storage can be created through more efficient use of space. Space usage should be carefully planned and effective space saving measures should be sought constantly.

Biological Agents/Factors: Maravilla (2014) states that where there is condensation or moisture due high humidity, there is always the presence of biological growth such as contained in 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 Book lice, Book warm or Book Beetles (Adekele , Okusaga, & Lateef, 2004)

Nature of Deterioration of Information Resources

Edhebe in Fadehan (2009) reported that deterioration of information resources occurs in various forms which include:

Brittleness of Information Resources: Research has confirmed that brittle paper documents are very difficult to repair or bind and most often cannot withstand photocopying and heavy use. Brittleness may result from desiccation caused by high temperature among others. The test for brittleness is fairly simple and objective. Alegbeleye cited by Abdularzaq, (2015) refers to it as the fold endurance test which considers the number of double folding as a measure of brittleness. The book was considered very brittle if it broke after two double folding.

Discoloration and Staining: Paper documents over time; get discolored as a result of the interplay of several factors, Walker cited by Adeleke, (2004). The most prominent cause is the reaction of radiant energy with lignin if present in the paper. This darkens the color of the paper, turning it brownish or yellowish. Discoloration results in the reduction of legibility and makes reproduction fairly difficult.

Human Factor: Men are the greatest enemies of the materials on which they record their thoughts. To the long list of great libraries vandalized by conquering armies or burned in hate, added the incalculable loss and damage by petty, theft, malicious mischief and careless handling by individuals. Improper and faulty actions taken by library staff may cause deterioration to library materials (Ogunmodede & Ebijuwa, (2012). Cheap and improper materials are often used for mending and repairing. Wrong insecticides are used for fumigation, repairing, restoration and lamination work, which are usually done by untrained personnel. All these are types of deterioration of library materials (Mahapatra & Wamukoya, 2007).

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 library collections. Abuse, whether imposed by library 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.

Research Methodology

The study adopted descriptive research design, and covered the North West Zone of Nigeria, which comprises seven (7) states. The states: Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto and Zamfara. Four university libraries in North West has been used for this research work, namely: Kashim Ibrahim Library, ABU Zaria, Bayaro university central library, BUK Kano, Adulahi Fodio Library UDU Sokoto, and prof. Bello Daura Library UMYU Katsina. The population of the study comprised all the four hundred and eight (408) library staff from the four university libraries under study, The sample size for the study was 202, purposively sampling technics was used in the study. Taro Yamen formulae was used for getting the sample size . Proportionate stratified random sampling technique was used to stratify library staff into four strata based on population. A self developed questionnaire titled "Assessment of Conservation and Preservation of Information Resources in Academic Libraries in North-West Nigeria (ACPIRALQ) was used to collect data from the selected respondents used for the study. The data collected was analyzed using descriptive and inferential descriptive statistics of frequency counts, percentages was used to answered research questions.

Data Analysis

Table I Percentage Response on Types of Information Resources conserved in academic Libraries

SN	Item s	yes %	No %	Remark
1	Books of various type	191 (94.6)	11 (5.4)	accepted
2	Reference Resource	182 (90.1)	20 (9.9)	accepted
3	Serial material	170 (84.2)	32 (15.8)	accepted
4	Electronic resources	168 (83.2)	34 (16.8)	accepted
	Grand %	**85.2**	**14.7**	accepted

Source: Field work 2017

The data presented in table 1 reveals the mean response on types of information resources conserved in Academic libraries in North West Nigeria. Study of the table revealed that information resources conserved in academic libraries include books of various type (94. 6), reference Resources (90.1), serial

material (84.2), and Electronic resources (83.2) were (accepted) conserved in academic libraries.

Table 2: percentages responses on causes of deterioration of information resources

S/N	Items	Yes %	No%	Remark
1	High acidity level	179 (88.6)	23(11.4)	Accepted
2	Mice	172 (85.1)	30 (14.9)	
3	Air pollution	173 (85.6)	29 (14.4)	Accepted
4	High temperature level	178 (88.1)	24 (11.9)	Accepted
5	Relative humidity	173 (85.6)	29 (14.4)	Accepted
6	Excessive light	183 (90.6)	18 (8.9)	Accepted
7	Dust and particles	177 (87.6)	25(12.4)	Accepted
8	Rodents	172 (85.1)	30(14.9)	Accepted
9	Bad shelving	169 (83.7)	33 (16.3)	Accepted
10	Insect	177 (87.6)	25 (12.4)	Accepted
11	Mould	170 (84.2)	32 (15.8)	Accepted
12	Fugus	172 (85.1)	30 (14.9)	Accepted
13	Flooding	174 (86.1)	28 (13.9)	Accepted
14	Earthquakes	156 (77.2)	46 (22.8)	Accepted
15	Fire	160 (79.2)	42 (20.8)	Accepted
	Grand %	**84.7**	**15.3**	

Source: Field work 2017

The data presented in table 2 reveals the response scores from the Academic libraries in North-West Nigeria regarding the causes of deterioration of information resources. A further study of the table revealed the major causes of deterioration of information resources include: Excessive light (90.6), High acidity level (88.6), High temperature level (88.1), Dust and particles (87.6), Dust and particles (87.6), Flooding (86.1) respectively. The table also revealed other causes of deterioration of information resources to include: Fugus, Earthquakes, Mould, bad shelving, rodents, mice and air pollution were all accepted as the causes of deterioration of information resources in academic libraries.

various information resources to meet the information and recreational needs of clientele. The library staff therefore, keeps these information resources in good physical condition to make them available for users at all times (Popoola & Haliso, 2009). The whole essence of embarking on preservation and conservation programmes by library staff was to safeguard the available information resources from total deterioration in order to meet the ever-increasing information demands of users in academic libraries.

The study also found that excessive light high acidity level, high temperature level, dust and particles, insects, flooding, air pollution, relative humidity, rodents, fungus, mice, mould, fire, and earthquakes were factors that caused deterioration of information resources in academic libraries. This result agrees with the findings of Ogunmodede & Ebijuwa (2013) who noted that humidity, temperature, light, atmospheric pollutants, dust and dirt water, disaster, insufficient space and biological factors such as insects, rodents and mice are the causes of deterioration of information resources in libraries. Also, these findings corresponded with that of Marravilla (2014) who reported that light is the greatest enemies of paper-based information resources, the author maintained that light contribute to cellulose degradation and fading of pigments and dyes. It speeds up the oxidation of paper and thus its chemicals breakdown and causes paper to be yellow or brown. This could be caused by both artificial light (controlled) and natural light (less controlled) which is traceable to use of unfiltered fluorescent light and the effect of sunlight. Information resources that are subject to damage by light are pigments and dyestuff, including inks, paper, and other cellulose materials and various other organic materials (Mahmood & Mari, 2014). The researchers further noted that, there are two effects of light on paper that result in its ultimate embrittlement and deterioration. First, it has a bleaching action that causes some whitening of paper and fading of colored papers and certain inks. Second, it causes array lignin, which may be present in the paper, to react with other compounds and turns it yellow or brownish. It is this reaction that results in newspapers turning yellow or exposure to light.

Result of the study disclosed the types of deterioration of information resources as brittleness stickiness of coated paper-based resources, theft, mutilation and vandalism, stained paper, weaken adhesive, rooted leather, sustained fungi, sustained holes, dilution of inks, physical breakdown of the information resources. This result is consistent with the findings of Adeleke & Lateef (2009) who revealed that brittleness of information resources, discoloration and staining as well as human factors such as theft, mutilation and vandalism are the major nature of deterioration of information resources in libraries. They

maintained that brittleness is caused by high temperature while stickiness of paper and sustained fungi were caused by high relative humidity. Stained paper rooted leather, and sustained holes are caused by insects. Mahmood and Mari (2014) reported that deterioration of information resources is caused by insects such as termites, silverfish, cockroaches, booklice and alike. Dilution of inks and discoloration of information resources are caused by excessive light while theft, mutilation vandalism were caused by man.

Summary

This study was designed to assess conservation and preservation of information resources in academic libraries in North West Zone of Nigeria. This study was carried out in Kaduna State, Kano State, Katsina State and Sokoto State. three research questions guided the study; the data collected through questionnaire were answered using frequency counts, percentages. The study adopted descriptive research design. The population of the study comprised 408 library staff from the four academic libraries in North West Zone with the sample size of 202.

Conclusion

Based on the result of the findings, it was concluded that conservation and preservation have become a driving force in safeguarding and securing academic library information resources from deterioration.

Recommendations

1 An improvement in the storage environment should be paramount. This involves the storage of information resources in an environment in which the storage temperature and humidity levels are controlled. Air conditioning is perhaps the most efficient method of bringing about this.
2 A well-equipped bindery section with trained staff should be established to take care of all preservation and conservation issues.
3 All academic libraries should adopt everyday care methods. This involves dusting, cleaning and re-shelving of information resources to avoid their deterioration through dust particles and inappropriate shelving.
4 Light filters should be installed in libraries because complete darkness and humid environment is a breeding ground for moulds, insects and rodents and therefore some light will raise the temperature and reduce the level of humidity.

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