A Study on Preservation and Conservation Practices and Techniques in University Libraries of Karnataka

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Abstract

The study mainly highlights on preservation and conservation techniques and policies adopted by the university libraries in Karnataka. This study evaluates number of materials preserved and conserved at the library, opinion about when they library collections are binded, extent of preservation and conservation techniques adopted in the library, opinion about written or unwritten policy guiding the preservation of the library resources, opinion about different preservation and conservation activities done at the library, causes for deterioration of print and non-print library resources, extent of problems faced by various factors, extent of use of digital preservation techniques and information about whether the library has formal preservation policy. For this purpose the researchers prepared a well structured questionnaire as a tool for data collection and the collected questionnaire has been analyzed and presented in the form of suitable tables. The article concludes with appropriate suggestions.

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Keywords
Preservation; Conservation; University Libraries; Digital Resources; Print Resources, Karnataka

Electronic access
The journal is available at www.jalis.in

Journal of Advances in Library and Information Science
ISSN: 2277-2219 Vol. 11. No.1. 2022. pp.58-66

1. Introduction

The processes of preservation, conservation and restoration are applied to safeguard the library materials from further decay and deterioration. Preservation is the process in which all actions are taken to check and retard deterioration whereas conservation includes proper diagnosis of the decayed material, timely curative treatment and appropriate prevention from further decay. The preventive measures which include all forms of indirect actions aimed at increasing the life expectancy of undamaged or damaged elements of cultural property. It comprises all the methods of good house-keeping, caretaking, dusting, periodical supervision and prevention of any possibility of damage by physical, chemical, biological and other factors. The curative measure consists of all forms of direct actions aimed at increasing the life expectancy of undamaged or damaged elements of cultural property. It includes repairing, mending, fumigation, de-acidification, lamination, and other jobs which are required considering the physical condition of the individual document. The present study was conducted to assess the preservation and conservation techniques and policies adopted by the university libraries inKarnataka.

2. LiteratureReview

Finnell (2011) determined the normal preservation and conservation technique of washing brings about bending or disposal of micro stamps on different kinds of paper. The study concludes that the normal practice of submerging pages in the water to assist with eliminating soil and reduce stains could twist security stamps applied to particular kinds of paper. The meaning of the review is to make mindfulness among unique collections, or rare book divisions of the need to reapply a security stamp for specific kinds of paper after preservation treatment and to suggest further research around here. Kibe (2010) analyzed information on the techniques to preserve and conserve, present day paper-based record materials, which were harmed by fermentation, oxidation, and chemical causes, and the systems to embrace the strategies in libraries and archives. Agrawal (2010) offered information on the preservation of birch-bark manuscripts in India. It says that the Indian National Trust for Art and Cultural Heritage (INTACH) is the actuated for its preservation. It examines the different preservation and conservation techniques for the manuscripts, for example, water solution for eliminating stains and mounting the documents to a

microscope instrument slide for immersion. In addition, preservation and conservation, the social legacy of India is imperative, yet there are more significant issues that should be tended to genuinely.

Galbraith and Seago (2009) examined the moderation techniques that should be considered by libraries and gatherers in the preservation and conservation of rare books and manuscripts. These techniques incorporate the support of satisfactory humidity and temperature levels and execution of burglary counteraction measures. The critical jobs of the storerooms in ensuring social curios are referenced. Bosc (2009) offered information on three preservation and conservation focuses in Malaysia and Singapore which gather, save and oversee public and private chronicled records of public and authentic importance. It expresses that preservation and conservation focus in the two nations are proficient with gifted staff, and best in class techniques and materials. Preservation and conservation focus incorporate the Singapore National Archives of Conservation Laboratory.

3. Objectives of the Study

The objectives behind conducting the present study are:

4. To identify the preservation and conservation techniques for print and electronic resources in university libraries.
5. To know the preservation and conservation practices in the university libraries in Karnataka.
6. To investigate the causes and nature of deterioration of print resources in university libraries.
7. To know the written or un-written policies guiding the conservation and preservation of the library resources in the universities.
8. To assess preservation and conservation activities in university libraries.
9. To know the extent of problems faced by various factors to print and non-printresources in the university libraries.
10. To identify the extent of use of digital preservation techniques in university libraries.

4. Methodology

The scope of the study is restricted to preservation and conservation of information resources in university libraries in Karnataka. At present Karnataka state has a total of 64 universities and all the university are covered under the study. The survey method was adopted, using questionnaire as a tool for data collection. A structured questionnaire was designed and distributed among all the university librarians in Karnataka. A total of 64 questionnaires were distributed among the person who holds the position of University Librarian in Karnataka State, of which 64 filled-up questionnaires were received back consisting of 100.00% responses. In addition to questionnaire method, interview schedule and observation method were also used to collect required information as a supplement to the questionnaire method to bring more clarity to the data which are essential and use for analysis and interpretation of data.

5. Data Analysis

The data was collected by different methods were analyzed and interpreted and the same is presented in the following tables.

5.1. Gender Wise Distribution of Respondents

The gender wise distribution of the respondents under the study is shown in Table-1. Out of the 64 total respondents, 47 (73.44%) are 'Male' and the remaining 17 (26.56%) are 'Female'.

Table 1: Gender Wise Distribution of Respondents

Gender	State Govt. University (N=32)	Deemed University (N=13)	Private University (N= 19)	Total (N=64)
Male	26 (81.25)	05 (38.46)	16 (84.21)	47 (73.44)
Female	06 (18.75)	08 (61.54)	03 (15.79)	17 (26.56)
Note: Figures in parentheses indicate percentage				
$\chi 2=10.284$, df=2, P=0.00584599				

5.2.Number of Materials Preserved and Conserved at the Library.

The information about number of materials preserved and conserved at the libraries has been summarized in Table-2. About17 (26.56%) of respondents opined that their libraries have preserved and conserved '01 to 20000' materials, followed by 15 (23.44%) of

respondents opine that they have preserved and conserved '60001 to 80000' materials, 10 (15.63%) of respondents opine that they have preserved and conserved 'Above 100000' materials, 09 (14.06%) of respondents opine that they have preserved and conserved '80001 to 100000 materials and 06 (09.38%) of respondents opine that they have preserved and conserved '20001 to 40000' materials.

Table 2: Number of Materials Preserved and Conserved at the Library

Number	State Govt. University (N=32)	Deemed University (N=13)	Private University (N= 19)	Total (N=64)
01 to 20,000	10 (31.25)	02 (15.38)	05 (26.32)	17 (26.56)
20,001 to 40,000	04 (12.50)	00 (00.00)	02 (10.53)	06 (09.38)
40,001 to 60,000	06 (18.75)	03 (23.08)	00 (00.00)	09 (14.06)
60,001 to 80,000	01 (03.13)	06 (46.15)	08 (42.11)	15 (23.44)
80,001 to 1,00,000	04 (12.50)	02 (15.38)	01 (05.26)	07 (10.94)
Above 1,00,000	07 (21.88)	00 (00.00)	03 (15.79)	10 (15.63)
Note: Figures in parentheses indicate percentage				
$\chi 2=21.397$, df=10, P=0.01848918				

5.3. Opinion about when they Library Collections are Binded.

The opiniongathered about when they library collections are binded has been summarized in Table-3. About 58 (90.63%) of respondents opine that library collections are binded when 'Damaged inner joints' with mean value 1.7586 and SD 0.8572. About 57 (89.06%) of respondents opine that library collections are binded when 'Loose joints' with mean value 1.7719 and SD 0.8587. About 57 (89.06%) of respondents opine that library collections are binded when 'Damaged paper cover' with mean value 1.7543 and SD 0.8641. About 53 (82.81%) of respondents opine that library collections are binded when 'Drought' with mean value 1.9056 and SD 0.8744. About 52 (81.25%) of respondents opine that library collections are binded when 'Insect damage' with mean value 1.9038 and SD 0.8827. About 46 (71.88%) of respondents opine that library collections are binded when 'Damage caused due to variation in relative humidity/ temperature' with mean value 1.8478 and SD 0.9081. About 44 (68.75%) of respondents opine that library collections are binded when 'Title labels Missing/damaged'with mean value 1.75 and SD 0.8012.About 44 (68.75%) of respondents opine that library collections are binded when 'Damaged Spine'with mean value 1.8636 and SD 0.8684. About 40 (62.50%) of respondents opine that library collections are binded when 'Humidity'with mean value 2.2 and SD 0.8124.About 38 (59.38%) of respondents opine that library collections are binded when 'Title Worn Off'with mean value 1.7631 and SD 0.8089.About 31 (48.44%) of respondents opine that library collections are binded when 'In Good Condition'with mean value 2.2258 and SD 0.8312.About 19 (29.69%) of respondents opine that library collections are binded when damaged due to 'Winds, pollution, etc.' with mean value 1.4210 and SD 0.4937. The Table also highlights the opinion gathered about when they library collections are at the libraries of State Government, Deemed and Private Universities are shown in below in detail.

Table 3: Opinion about when they Library Collections are Binded

Condition of Library collection	State Govt. University (N=32)	Deemed University (N=13)	Private University (N= 19)	Total (N=64)	Mean	SD
In good condition	08(25.00)	08(61.54)	15(78.95)	31(48.44)	2.2258	0.8312
Damaged spine	20(62.50)	10(76.92)	14(73.68)	44(68.75)	1.8636	0.8684
Loose joints	29(90.63)	12(92.31)	16(84.21)	57(89.06)	1.7719	0.8587
Damaged inner joints	30(93.75)	12(92.31)	16(84.21)	58(90.63)	1.7586	0.8572
Damaged paper cover	30(93.75)	11(84.62)	16(84.21)	57(89.06)	1.7543	0.8641
Title worn off	18(56.25)	11(84.62)	09(47.37)	38(59.38)	1.7631	0.8089
Title label missing/ damaged	21(65.63)	13(100.00)	10(52.63)	44(68.75)	1.75	0.8012
Insect damage	23(71.88)	11(84.62)	18(94.74)	52(81.25)	1.9038	0.8827
Drought	23(71.88)	12(92.31)	18(94.74)	53(82.81)	1.9056	0.8744

Humidity	10(31.25)	12(92.31)	18(94.74)	40(62.50)	2.2	0.8124
Damage caused due to variation in relative humidity/ temperature	23(71.88)	07(53.85)	16(84.21)	46(71.88)	1.8478	0.9081
Winds (particles, pollution, etc.)	11(34.38)	08(61.54)	00(00.00)	19(29.69)	1.4210	0.4937
Note: Figures in parentheses indicate percentage and because of multiple choice options the percentage is exceeded to more than 100%.						

5.4.Preservation and Conservation Techniques Adopted in the Library.

The extent of preservation and conservation techniques are adopted in the library has been summarized in Table-4. About 29 (31.25%) of respondents opine that they have 'Very often' adopted lamination technique, followed by 20 (31.25%) opined as 'Often', 13 (20.31%) opined as 'Occasionally' and 02 (03.13%) of respondents opined as 'Never'.About 30 (46.88%) of respondents opine that they have 'Very often' adopted binding technique, followed by 25 (39.06%) opined as 'Often', 08 (12.50%) opined as 'Occasionally' and 01 (01.56%) of respondents opined as 'Never'.About 28 (43.75%) of respondents opine that they have 'Often'adopted microfilming technique, followed by 14 (21.88%) opined as 'Very often', 14 (21.88%) opined as 'Occasionally' and 08 (12.50%) of respondents opined as 'Never'.About 26 (40.63%) of respondents opine that they have 'Often' adopted deacidification technique, followed by 17 (26.56%) opined as 'Very often', 12 (18.75%) opined as 'Never' and 09 (14.06%) of respondents opined as 'Occasionally'.About 28 (43.75%) of respondents opine that they have 'Often' adopted jacketing technique, followed by 18 (28.13%) opined as 'Very often', 13 (20.31%) opined as 'Occasionally' and 05 (07.81%) of respondents opined as 'Never'.About 28 (43.75%) of respondents opine that they have 'Very often' adopted photocopying technique, followed by 24 (37.50%) opined as 'Often', 11 (17.19%) opined as 'Occasionally' and 01 (01.56%) of respondents opined as 'Never'.About 29 (45.31%) of respondents opine that they have 'Often'adopted digitization technique, followed by 27 (42.19%) opined as 'Very often' and 08 (12.50%) of respondents opined as 'Occasionally'.About36 (56.25%) of respondents opine that they have 'Often'adopted emulation technique, followed by 13 (20.31%) opined as 'Very often', 10 (15.63%) opined as 'Occasionally' and 05 (07.81%) of respondents opined as 'Never'.About 25 (39.06%) of respondents opine that they have 'Often'adopted Encapsulation technique, followed by 20 (31.25%) opined as 'Very often', 12 (18.75%) opined as 'Occasionally' and 07 (10.94%) of respondents opined as 'Never'.About 31 (48.44%) of respondents opine that they have 'Often' adopted Replication technique, followed by 22 (34.38%) opined as 'Very often', 10 (15.63%) opined as 'Never' and 01 (01.56%) of respondents opined as 'Occasionally'.About 35 (54.69%) of respondents opine that they have 'Very often' adopted cleaning and dusting of library materials technique, followed by 18 (28.13%) opined as 'Often', 09 (14.06%) opined as 'Occasionally' and 02 (03.13%) of respondents opined as 'Never'.About 24 (37.50%) of respondents opine that they have 'Very often' adopted Re-binding technique, followed by 22 (34.38%) opined as 'Often', 12 (18.75%) opined as 'Occasionally' and 06 (09.38%) of respondents opined as 'Never'.About 29 (45.31%) of respondents opine that they have 'Often' adopted shelving of library materials to allow free flow of air technique, followed by 24 (37.50%) opined as 'Very often', 10 (15.63%) opined as 'Occasionally' and 01 (01.56%) of respondents opined as 'Never'.About 30 (46.88%) of respondents opine that they have 'Very often' installing of air-conditioners in the library to allow free flow of air, followed by 15 (23.44%) opined as 'Often', 12 (18.75%) opined as 'Occasionally' and 07 (10.94%) of respondents opined as 'Never'.About 25 (39.06%) of respondents opine as 'Occasionally' towards provision of adequate security to prevent theft, vandalism and mutilation and defacing of paper-based materials, followed by 21 (32.81%) opined as 'Very often', 15 (23.44%) opined as 'Often' and 03 (04.69%) of respondents opined as 'Never'.About27 (42.19%) of respondents opine as 'Occasionally' towards use of insecticide and insect repellent for library materials preservation, followed by 18 (28.13%) opined as 'Often', 17 (26.56%) opined as 'Very often' and 02 (03.13%) of respondents opined as 'Never'.

Table 4: Preservation and Conservation Techniques Adopted in the Library

Preservation and Conservation Techniques	1	2	3	4
Lamination	29 (45.31)	20 (31.25)	13 (20.31)	02 (03.13)
Binding	30 (46.88)	25 (39.06)	08 (12.50)	01 (01.56)
Microfilming	14	28	14	08

	(21.88)	(43.75)	(21.88)	(12.50)
Deacidification	17 (26.56)	26 (40.63)	09 (14.06)	12 (18.75)
Jacketing	18 (28.13)	28 (43.75)	13 (20.31)	05 (07.81)
Photocopying	28 (43.75)	24 (37.50)	11 (17.19)	01 (01.56)
Digitazation	27 (42.19)	29 (45.31)	08 (12.50)	00 (00.00)
Emulation	13 (20.31)	36 (56.25)	10 (15.63)	05 (07.81)
Encapsulation	20 (31.25)	25 (39.06)	12 (18.75)	07 (10.94)
Replication	22 (34.38)	31 (48.44)	01 (01.56)	10 (15.63)
Cleaning and dusting of library materials	35 (54.69)	18 (28.13)	09 (14.06)	02 (03.13)
Re-binding	24 (37.50)	22 (34.38)	12 (18.75)	06 (09.38)
Shelving of library materials to allow free flow of air	24 (37.50)	29 (45.31)	10 (15.63)	01 (01.56)
Installing of air-conditioners in the library	30 (46.88)	15 (23.44)	12 (18.75)	07 (10.94)
Provision of adequate security to prevent theft, vandalism and mutilation and defacing of paper-based materials	21 (32.81)	15 (23.44)	25 (39.06)	03 (04.69)
Use of insecticide and insect repellent for library materials preservation	17 (26.56)	18 (28.13)	27 (42.19)	02 (03.13)
Note: Figures in parentheses indicate percentage				
[1-Very often ; 2-Often; 3-Occasionally; 4-Never]				

5.5. Written or Unwritten Policy Guiding the Preservation of the Library Resources.

The opinion gathered about written or unwritten policy guiding the preservation of the library resources has been summarized in Table-5. About 29 (87.88%) of respondents opine as 'Yes' towards 'Does your library have a preservation policy?' and 04 (12.12%) of respondents opine as 'No'.About 27 (81.82%) of respondents opine as 'Yes' towards 'Is the policy written?' and 06 (18.18%) of respondents opine as 'No'.About 29 (87.88%) of respondents opine as 'Yes' towards 'Is the policy adhered to in the library?' and 04 (12.12%) of respondents opine as 'No'.About 23 (69.70%) of respondents opine as 'Yes' towards 'Does it provide directions to staff?' and 10 (30.30%) of respondents opine as 'No'.About 22 (66.67%) of respondents opine as 'Yes' towards 'Does the policy help in library security?' and 11 (33.33%) of respondents opine as 'No'.About 27 (81.82%) of respondents opine as 'Yes' towards 'Does the policy address disaster?' and 06 (18.18%) of respondents opine as 'No'.About 26 (78.79%) of respondents opine as 'Yes' towards 'Does the policy have positive impact on staff in handling library materials?' and 07 (21.21%) of respondents opine as 'No'.About 27 (81.82%) of respondents opine as 'Yes' towards 'Does it provide restoration of degraded materials?' and 06 (18.18%) of respondents opine as 'No'.About 26 (78.78%) of respondents opine as 'Yes' towards 'Does the policy enhance preservation positively?' and 07 (21.21%) of respondents opine as 'No'. The Table-29 also provides university wise information gathered i.e. State Government, Deemed and Private Universities in detail.

Table 5: Written or Unwritten Policy Guiding the Preservation of the Library Resources

Preservation Policy issues	**State Govt. University (N=17)**		**Deemed University (N=11)**		**Private University (N= 05)**		**Total (N=33)**	
	Yes	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
Does your library have a preservation policy?	16(94.12)	01(05.88)	09(81.82)	02(18.18)	04(80.00)	01(20.00)	29(87.88)	04(12.12)
Is the policy written?	14(82.35)	03(17.64)	10(90.91)	01(09.09)	03(60.00)	02(40.00)	27(81.82)	06(18.18)
Is the policy adhered to in	17(100.00)	00(00.00)	07(63.64)	04(36.36)	05(100.00)	00(00.00)	29(87.88)	04(12.12)

the library?								
Does it provide directions to staff?	13(76.47)	04(23.52)	06(54.55)	05(45.45)	0480.00)	01(20.00)	23(69.70)	10(30.30)
Does the policy help in library security?	11(64.71)	06(35.29)	08(72.73)	03(27.27)	03(60.00)	02(40.00)	22(66.67)	11(33.33)
Does the policy address disaster?	15(88.24)	02(11.76)	07(63.64)	04(36.36)	05(100.00)	00(00.00)	27(81.82)	06(18.18)
Does the policy have positive impact on staff in handling library materials?	16(94.12)	01(05.88)	08(72.73)	03(27.27)	02(40.00)	03(60.00)	26(78.79)	07(21.21)
Does it provide restoration of degraded materials?	17(100.00)	00(00.00)	07(63.64)	04(36.36)	03(60.00)	02(40.00)	27(81.82)	06(18.18)
Does the policy enhance preservation positively?	15(88.23)	02(11.76)	09(81.81)	02(18.18)	02(40.00)	03(60.00)	26(78.78)	07(21.21)

5.6. Preservation and Conservation Activities Done at the Library.

The opinion gathered about different preservation and conservation activities done at the library has been summarized in Table-6.About 32 (50.00%) of respondents opine as 'Often' they do 'Tip-ins', followed by 20 (31.25%) of respondents opine as 'Always' they do 'Paper repair with archival tape', 19 (29.69%) of respondents opine as 'Often' they do 'Tightening the hinges', 20 (31.25%) of respondents opine as 'Often' they do 'Spine repair', 19 (29.69%) of respondents opine as 'Often' they do 'Hinge and joint repair' and 19 (29.69%) of respondents opine as 'Often' they do 'Repacking recasting of cloth or bindings'.

Table 6: Preservation and Conservation Activities Done at the Library

Parameters	**1**	**2**	**3**	**4**	**5**
Tip-ins	10 (15.63)	32 (50.00)	2 (03.13)	10 (15.63)	10 (15.63)
Paper repair with archival tape	20 (31.25)	17 (26.56)	14 (21.88)	06 (09.38)	07 (10.94)
Tightening the hinges	10 (15.63)	19 (29.69)	17 (26.56)	09 (14.06)	09 (14.06)
Spine repair	14 (21.88)	20 (31.25)	17 (26.56)	05 (07.81)	08 (12.50)
Hinge and joint repair	16 (25.00)	19 (29.69)	15 (23.44)	0 5 (07.81)	09 (14.06)
Repacking recasting of cloth or bindings	15 (23.44)	19 (29.69)	05 (07.81)	12 (18.75)	13 (20.31)
Note: Figures in parentheses indicate percentage					
[1-Always; 2-Often; 3-Sometime; 4-Seldom; 5-Never]					
$\chi 2=38.152$, df=20, P=0.00848442					

5.7.Causes for Deteriorationof Print and Non-Print Library Resources.

The information obtained about the causes for deterioration of print and non-print library resources has been summarized in Table-7. About 29 (45.31%) of respondents opine as 'Moderate Extent' towards cause of deterioration of print resources by bad shelving, followed by 35 (54.69%) of respondents opine as 'Moderate Extent' towards cause of deterioration of print resources by high acidity levels, 28 (43.75%) of respondents opine as 'Moderate Extent' towards cause of deteriorationof print resources by dust, 27 (42.19%) of respondents opine as 'Moderate Extent' towards cause of deterioration of print resources by poor shelf/rack, 27 (42.19%) of respondents opine as 'Little Extent' towards cause of deterioration of print resources by moisture, 28 (43.75%) of respondents opine as 'Little Extent' towards cause of deterioration of print resources by air pollution, 31 (48.44%) of respondents opine as 'Little Extent' towards cause of deterioration of print resources by high temperature level, 26 (40.63%) of respondents opine as 'Little Extent' towards cause of deterioration of print resources by relative humidity, 27 (42.19%) of respondents opine as 'Moderate Extent' towards cause of deterioration of print resources by excessive light, 26 (40.63%) of respondents opine as 'Moderate Extent' towards cause of deterioration of print resources by wear and tear due to excessive photocopying.

Table 7: Causes for Deterioration of Print and Non-Print Library Resources

Causes of Deterioration(Print)	**1**	**2**	**3**	**4**
Bad shelving	10 (15.63)	18 (28.13)	29 (45.31)	07 (10.94)

High acidity levels	10 (15.63)	07 (10.94)	35 (54.69)	12 (18.75)
Dust	06 (09.38)	19 (29.69)	28 (43.75)	11 (17.19)
Poor shelf/rack	10 (15.63)	21 (32.81)	27 (42.19)	06 (09.38)
Moisture	06 (09.38)	27 (42.19)	21 (32.81)	10 (15.63)
Air pollution	07 (10.94)	28 (43.75)	19 (29.69)	10 (15.63)
High temperature level	06 (09.38)	31 (48.44)	16 (25.00)	11 (17.19)
Relative humidity	07 (10.94)	26 (40.63)	21 (32.81)	10 (15.63)
Excessive light	06 (09.38)	17 (26.56)	27 (42.19)	14 (21.88)
Wear and Tear due to excessive photocopying	15 (23.44)	11 (17.19)	26 (40.63)	12 (18.75)
$\chi 2=51.611$, df=27, P=0.00294955				
Causes of Deterioration(Non-Print)				
Atmospheric Pollutants	11 (17.19)	22 (34.38)	24 (37.50)	07 (10.94)
Biological Agents	06 (09.38)	28 (43.75)	22 (34.38)	08 (12.50)
Dust	08 (12.50)	19 (29.69)	25 (39.06)	12 (18.75)
Frequent Use	06 (09.38)	28 (43.75)	22 (34.38)	08 (12.50)
Humidity and Heat	06 (09.38)	21 (32.81)	26 (40.63)	11 (17.19)
Moisture	06 (09.38)	28 (43.75)	20 (31.25)	10 (15.63)
Magnetism	08 (12.50)	18 (28.13)	22 (34.38)	16 (25.00)
Excessive Light	22 (34.38)	25 (39.06)	10 (15.63)	07 (10.94)
Oxidation	05 (07.81)	29 (45.31)	16 (25.00)	14 (21.88)
Note: Figures in parentheses indicate percentage				
1-No Extent; 2-Little Extent; 3-Moderate Extent; 4- Very Great Extent				
$\chi 2=49.708$, df=24, P=0.00154216				

About 24 (37.50%) of respondents opine as 'Moderate Extent' towards cause of deterioration of non-print resources by atmospheric pollutants, followed by 28 (43.75%) of respondents opine as 'Little Extent' towards cause of deterioration of non-print resources by biological agents, 25 (39.06%) of respondents opine as 'Moderate Extent' towards cause of deterioration of non-print resources by dust, 28 (43.75%) of respondents opine as 'Little Extent' towards cause of deterioration of non-print resources by frequent use, 26 (40.63%) of respondents opine as 'Moderate Extent' towards cause of deterioration of non-print resources by humidity and heat, 28 (43.75%) of respondents opine as 'Little Extent' towards cause of deterioration of non-print resources by moisture, 22 (34.38%) of respondents opine as 'Moderate Extent' towards cause of deterioration of non-print resources by magnetism, 25 (39.06%) of respondents opine as 'Little Extent' towards cause of deterioration of non-print resources by excessive light, 29 (45.31%) of respondents opine as 'Little Extent' towards cause of deterioration of non-print resources by oxidation.

5.8. Problems Faced by various Factors.

The information gathered about extent of problems faced by various factors has been summarized in Table-8. About 24 (37.50%) of respondents opine as 'Very often' they problems are faced by proximity of sea/river/pond, followed by 30 (46.88%) of respondents opine as 'Often' they problems are faced by proximity of other humid zone, 26 (40.63%) of respondents opine as 'Often' they problems are faced by proximity of source of air pollution' and 21 (32.81%) of respondents opine as 'Often' they problems are faced by proximity of sliding ground'.

Table 8: Problems Faced by various Factors

Factors	1	2	3	4
Proximity of sea/river/pond	24 (37.50)	17 (26.56)	13 (20.31)	10 (15.63)
Proximity of other humid zone	07 (10.94)	30 (46.88)	15 (23.44)	12 (18.75)
Proximity of sources of air pollution	12 (18.75)	26 (40.63)	13 (20.31)	13 (20.31)
Proximity of sliding ground	06 (09.38)	21 (32.81)	19 (29.69)	18 (28.13)
Note: Figures in parentheses indicate percentage				
[1-Very often; 2-Often; 3-Occasionally; 4-Never]				
$\chi 2=25.065$, df=09, P=0.00290011				

5.9. Use of Digital Preservation Techniques

The extent of use of digital preservation techniques at the library has been summarized in Table-9. About 30 (46.88%) of respondents opine as 'Often' towards extent of digital preservation techniques by refreshing, followed by 27 (42.19%) of respondents opine as 'Often' towards extent of digital preservation

techniques by technology preservation, 32 (50.00%) of respondents opine as 'Often' towards extent of digital preservation techniques by migration, 35 (54.69%) of respondents opine as 'Often' towards extent of digital preservation techniques by emulation, 19 (29.69%) of respondents opine as 'Occasionally' towards extent of digital preservation techniques by encapsulation, 23 (35.94%) of respondents opine as 'Occasionally' towards extent of digital preservation techniques by microfilming.

Table 9:Use of Digital Preservation Techniques

Digital Preservation Techniques	1	2	3	4
Refreshing	17 (26.56)	30 (46.88)	13 (20.31)	04 (06.25)
Technology preservation	19 (29.69)	27 (42.19)	14 (21.88)	04 (06.25)
Migration	16 (25.00)	32 (50.00)	10 (15.63)	06 (09.38)
Emulation	10 (15.63)	35 (54.69)	14 (21.88)	05 (07.81)
Encapsulation	12 (18.75)	17 (26.56)	19 (29.69)	16 (25.00)
Microfilming	11 (17.19)	14 (21.88)	23 (35.94)	16 (25.00)
1-Very often; 2-Often; 3- Occasionally; 4-Never				
$\chi 2=45.849$, df=15, P=0.00005619				

5.10. Information about Whether the Library has Formal Preservation Policy.

The informationgathered about whether the library has formal preservation policy has been summarized in Table-10. About 47 (73.43%) of respondents opine as 'Yes' that they are planning the stages and 17 (26.56%) of respondents opine as 'No'. About 28 (43.75%) of respondents opine as 'Yes' that they handle individually and informally and 36 (56.25%) of respondents opine as 'No'. About 13 (20.31%) of respondents opine as 'Yes' that another library handles preservation for them and 51 (79.68%) of respondents opine as 'No'.

Table 10: Information about Whether the Library has Formal Preservation Policy

Parameters	State Govt. University (N=32)		Deemed University (N=13)		Private University (N= 19)		Total (N=64)	
	Yes	No	Yes	No	Yes	No	Yes	No
In planning the stages	23(71.87)	09(28.12)	11(84.61)	02(15.38)	13(68.42)	06(31.57)	4(73.43)	17(26.56)
Are handled individually and informally	12(37.50)	20(62.50)	07(53.84)	06(46.15)	09(47.36)	10(52.63)	28(43.75)	36(56.25)
Another library handles preservation for us	03(09.37)	29(90.62)	07(53.84)	06(46.15)	03(15.78)	16(84.21)	13(20.31)	51(79.68)
Note: Figures in parentheses indicate percentage								

6. Suggestions

Based on the above results the following suggestions are made for further improvement in preservation and conservation techniques and policies adopted by the university libraries in Karnataka.

- The university library guide and policy formulation that will help against every form disturbing behavior can be displayed at the visible location in every library. Library staffs can make regular watch in between for proper checking of books on shelves; library staff must be made aware about preservation and conservation.
- A general policy on preservation and conservation of print and non print materials should be formulated by the government or university level.
- Orientation on how to effectively preserve library collections can be organized regularly for all library staffs. Digitations technology can be used.
- Institutions should organize seminars, workshops, conferences etc. in order to create awareness among library staffs about the preservation and conservation. Library organizes training courses in project management in preservation and conservation issues, and digitization, to the benefit of library professionals.
- Library budget to be increased for procurement of ICT infrastructure for providing preservation and conservation of resources.

- Semi professionals or professionals' staffs have to be deputed/recruited to carry out routine preservation of conservation activities.

7. Conclusion

This study provided insight into the preservation and conservation techniques and policies adopted by the university libraries in Karnataka. The comprehensive information was obtained on number of materials preserved and conserved at the library, opinion about when they library collections are binded, extent of preservation and conservation techniques adopted in the library, opinion about written or unwritten policy guiding the preservation of the library resources, opinion about different preservation and conservation activities done at the library, causes for deterioration of print and non print library resources, extent of problems faced by various factors and extent of use of digital preservation techniques. There is a need for common policy on preservation and conservation of library materials which should be applicable to all the universities in Karnataka.

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