

STATUS OF DIGITIZATION AND DIGITAL PRESERVATION OF CULTURAL HERITAGE RESOURCES IN THE CULTURAL HERITAGE INSTITUTIONS OF INDIA

A Abstract submitted to the
Babasaheb Bhimrao Ambedkar University, Lucknow
in fulfilment of Requirement for the Award of Degree of

Doctor of Philosophy

in Library and Information Science



by

Rahul Pandey

Enrollment No. 167/18

SUPERVISOR

Dr. Vinit Kumar

Assistant Professor

DEPARTMENT OF LIBRARY & INFORMATION SCIENCE
SCHOOL OF INFORMATION SCIENCE AND TECHNOLOGY
BABASAHEB BHIMRAO AMBEDKAR UNIVERSITY

(A CENTRAL UNIVERSITY)

VIDYA VIHAR, RAEBARELI ROAD, LUCKNOW-226 025
UTTAR PRADESH, INDIA

2022

ABSTRACT

Introduction

Culture plays a vital role in expressing any country's customs, traditions, beliefs, and religions and cultural heritage is an expression of the living patterns of people from previous generations. This cultural heritage has been gathered, preserved, and housed for a long time in a variety of cultural heritage institutions across the country in the form of text-based resources, visual resources, and multimedia resources. However, with the development of technology, the role of GLAMs has expanded beyond the collection, storage, and preservation of cultural heritage materials to include improving access to cultural materials; increasing collaboration for resource sharing; and making art objects more discoverable to a wider audience. To close the gap, cultural heritage institutions (CHIs) started digitization projects that let them turn their analogue materials into digital ones. These projects have a number of benefits, such as making documents easier to find, saving space, allowing multiple people to use the same document at the same time, and making documents less fragile.

Objectives of the Study

The objectives of the present study are as follows:

1. To identify the types of cultural heritage resources available in the cultural heritage institutions of India.
2. To find out the underlying reasons for the digitization and digital preservation of cultural heritage resources in the cultural heritage institutions of India.
3. To identify the factors considered by cultural heritage institutions in digitization policy.
4. To analyse the different criteria used by the cultural heritage institutions while selecting any material for digitization.

5. To assess the significant challenges faced by cultural heritage institutions in digitising and preserving their heritage collections.
6. To understand the preferred collaborative digital activities among the cultural heritage institutions in India.
7. To identify the practices followed for the digital storage and digital preservation of cultural heritage resources by cultural heritage institutions.
8. To study the different metadata elements used to describe the particular art objects available in the cultural heritage institutions.

Population and Scope of the Study

- The Ministry of Culture, Government of India, divided its cultural heritage into two sections, namely, tangible cultural heritage and intangible cultural heritage.
- Tangible cultural heritage includes artistic creations, built heritage such as buildings and monuments, and other physical or tangible products of human creativity that are invested with cultural significance in society.
- On the other hand, intangible cultural heritage refers to the practises, expressions, rituals, habits, and knowledge that we have inherited from our past generations, and we always try to learn something new from all of those.
- The present study is limited to the Tangible Cultural Heritage Institutions under the Ministry of Culture, Govt. of India because the major goal of the study is to assess the status of digitization and digital preservation of cultural heritage resources and to know Several types of art objects are available in various cultural heritage institutions (CHIs) in India. Because these types of art objects are available in tangible CHIs, we include them in our research.
- The Ministry of Culture includes 13 tangible CHIs and one national culture fund under the tangible CHIs.
- For the present study, we include all 13 CHIs in our study, and we exclude the national culture fund (NCF) from the study because the NCF is a funding agency

that approves the proposals of CHIs and provides financial aid to achieve their goals.

- For the collection of secondary data, researcher visited the official website of the National Portal and Digital Repository for Museums of India (<https://museumsfindia.gov.in/repository>).
- To assess the technical information, the Human-Centred Design and Computing (HCDC) Group at the Centre for Development of Advanced Computing (C-DAC) Pune
- The details of the tangible cultural heritage included in the study are as below:

S.No.	Name of cultural heritage	abbreviation
1	Archeological Survey of India	ASI
2	National Museum	NM
3	National Gallery of Modern Art	NGMA
4	Indian Museum	IM
5	Victoria Memorial Hall	VMH
6	Salarjung Museum	SJM
7	Allahabad Museum	AM
8	National Council of Science Museums	NCSM
9	National Museum Institute of History of Art, Conservation and Museology	NMI
10	National Research Laboratory for Conservation of Cultural Property	NRLC
11	National Mission for Monuments and Antiquities	NMMA
12	National Mission for Manuscripts	NMM
13	Gandhi Heritage Site Mission	GHSM

1.15 Hypotheses

H1-Among all the cultural heritage institutions in the country, the National Museum has digitised its maximum number of objects.

H2-To provide long-term access to the heritage collection for future generations is one of the major reasons for digitising the cultural resources.

H3-The physical condition of the art object or document is the most significant criteria in the selection of material to be digitised.

H4-There is no uniformity in the application of metadata entry elements by different cultural heritage institutions in various art object categories.

1.16 Methodology

The major aim of the present study is to know the status of digitization and digital preservation of cultural resources in the cultural heritage institutions of India. This study will be completed by following these steps:

1. **Data Collection:** In the present study, a survey method was employed using a structured questionnaire for primary data and website analysis was used for secondary data.
2. **Population and Sample:** Under the Ministry of Culture, Govt. of India, there are 13 Tangible Cultural Heritage Institutions working, and they are all the population of study, and researcher take the whole population as a sample of the study.
3. **Analysis:** After the collection of data, it has been presented through tables for a better and easier understanding of each aspect discussed in a questionnaire.

For the visual representation of data graphs and charts were also used where it was essential.

4. **Result and Discussion:** The results and discussion will be interpreted and reported in the final report.

1.17 Chapterisation

The entire research work will be completed in five sections. The logical structure of chapters, sections, and sub-sections, including completed studies, helps the readers and the researchers of the specific field understand the background of the concepts, ideas, and opinions of various experts.

1. Introduction: This chapter provides a brief overview of the concepts, research problems, objectives, needs, significance and hypotheses of the study.

2- Review of Literature: This chapter contains a critical appraisal of the previous studies that are closely related to the current study to understand the methodology, analysis tools, correct approaches of investigation, and probable results.

3-Methodology: This chapter will list out the steps followed during the conduct of this study. including the sample, sample size, data collection tool, technique, and analysis methods.

4-Analysis: This chapter presents the analysis of the collected data, which will help assess the major findings of the study.

5- Summary & Findings: This chapter summarizes the study and includes the final results. This chapter further lists some suggestions, recommendations, and areas of further research.

Major findings of the study

- **Cultural heritage resources available in the museums**

It was found from the analysis that a total of more than 13.64 lakhs (1364627) art objects are available in the five museums and among them, IM represents 73.86% of the total art objects followed by NM (14.65%), AM (5.27%), SJM (4.12%) and VMH (2.08%).

- **Digitized art objects in the museums**

It was observed that out of five museums, NM has the maximum digitized collection (80997) followed by AM (62659) and IM (48733). The collection of NM represents 30.34% of the total online available collection in museums followed by AM (23.47%), IM (18.25%), SJM (17.79%) and VMH (10.12%).

- **Status of digitised art objects in museums**

The results of the study revealed that 19.55% of the heritage resources available in the museums were digitised and available online for users and VMH has digitised its maximum heritage resources (95.16%) followed by AM (87.02%), SJM (84.47%), NM (40.49%) and IM (4.83%). On other hand, if we observe the digitized content in terms of the number of art objects then we found that NM provides access to the maximum number of digitised objects (80997).

- It was revealed that AM has more than 20 categories of objects and among them beads (35.14%) have the maximum number of objects followed by coins (31.49%) and terracotta (9.49%).
- It was seen from analysis that the SJM has more than 150 kinds of art object categories and among them Porcelain category holds the maximum number of

art objects (13.38%) followed by soldier (9.56%) and toy army collection (9.28%).

- **Common art objects in museums**

There were 14 categories that were common to at least two museums, and of those, four—coin, painting, manuscript, arms, and armor—were present in each of the five institutions. It was also found that among the top five digitized object categories the coin category has got the first rank with 33.91% followed by beads (8.36%), painting (7.44%), manuscripts (3.80%) and decorative art objects (3.82%).

Digitization in National Gallery of Modern Art (NGMA)

- It was observed that NGMA has the collection of 17000 objects including its head office and two branches (Mumbai and Bengaluru) and they digitized 85.53% objects of their collection. Regarding the maximum number of objects, it was found that NGMA have 57.19% paintings followed by drawing (15.16%) and sketches (11.70%).

Digitization in ASI and NCSM

- There are 52 Archeological site museums under ASI out of which 02 ASI namely ASI Goa and ASI Nagarjunakonda have been digitised their resources through JATAN: Virtual museum builder software and the digitization in rest 50 museums is being done in phase-wise manner.
- The NCSM do not have archeological and historical artifacts however exhibits including old artifacts are regularly maintained and kept in working condition through standard upkeep procedure and regular maintenance.

Status of digitization in National Missions

- It was found from the study that NMM has documented 44.07 lakhs manuscripts till march 2021 and they are working in 5th phase from 2018 and till march 2021 they digitized 3.30 lakhs manuscripts consists of 3.3 crore pages.
- NMMA has uploaded the images and detailed information of 1259866 antiquities and 11406 built heritage on their portal until March 2021.
- GHSM has uploaded the 21181 books consists of 2156420 pages of the works of Mahatma Gandhi on their Gandhi Heritage Portal.

Major reasons for digitizing the cultural heritage collection

- Preserve the heritage material for future generations, high demand from users for heritage material in digital format, to enhance the accessibility of document/object 24*7 from anywhere, to make art objects more discoverable to a broader audience and multiple users can access the information simultaneously were the major reasons for digitising the heritage collection among the cultural heritage institutions.

Factors considered by cultural heritage institutions in digitization policy

- It was found from study that the digital preservation and access to the digitized content to users has the highly significant factor (81.81%) considered by cultural heritage institutions in their digitization policy followed by selection of material and metadata creation (72.72%).

Criteria used for selecting material for digitization

- Regarding the highly preferred criteria for selecting material for digitization respondents highly prefer the Preservation for a future generation criteria with

the average score of 4.36 followed by physical condition of document (4.27) and historical/ cultural value of the document (3.72).

Challenges faced by cultural heritage institutions in digitization

- It was observed from the study that majority of the respondents (27%) faced the problem of infrastructure/ equipment shortfall followed by lack of expertise and selection of material to be digitized.

Collaborative digital activities among cultural heritage institutions

- It is indicated from the results that among the cultural heritage institutions of the country 81.81% of the institutions are working collaboratively with other institutes while only 18.18% institutions are not engaged in any collaborative digital activity.
- The majority of the respondents accepted that their institute is engaged in the promotion of shared collection (63.63%) followed by creating exhibits from a shared collection (54.54%).

Practices followed by cultural heritage institutions in digitising their resources

- Regarding the preferred master file format in cultural heritage institutions, it was seen that more than 50% of institutions prefer TIFF format for their master file and 36.36% institutions prefer JPEG format and PDF/PDF-A format in their institute.
- From the study, it was found that the majority of the cultural heritage institutions prefer online magnetic media/cloud storage to store their digitised material (54.54%).

Resolutions used by cultural heritage institutions in digitising the cultural resources

- It was found from the study that there are different parameters for scanning the documents of various categories, the majority of the institutions prefer 72 DPI (Dots per Inches) for cultural objects while in some cases they also used 96 DPI, 240 DPI, 300 DPI and 600 DPI.

File naming convention used by cultural heritage institutions in digitising their resources

- The study found that in the cultural heritage institutions each institute is following the basic guidelines recommended by the National Archives and Record Management (NARA) for file naming convention which includes a to z character, 0-9 number, hyphen and underscore.

Conclusion

The current study represents the extensive cultural heritage resources found in the nation's various CHIs and their level of digitization. The digitization initiatives have been taken in different phases for the conversion of the physical artefacts into digital format in the museums of national importance, and each museum is effectively involved in these initiatives. The content is continuously digitised, preserved, and uploaded to national-level missions' portals for wider user access and for future generations. Professionals working on digitization and preservation projects as well as academics interested in digitising cultural content in GLAMs will find this research particularly interesting.