Importance of Digitization Process in Textiles

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ABSTRACT: Digitization has started to play a major role in sustainability of rare Traditional Indian Textile Designs. Global factors like Modernization, Globalization and Technology upgradation has lead to the destruction of Traditional Crafts. Hence the need to preserve the designs has become the need of the hour. The epistemology of Digitization process in textiles and the fundamental principles of digitization have been discussed in this study. It has given an outline and key concepts such as, defining digitization, examining process, assessing archival concerns and dissemination compression techniques. The purpose of digitization, Strategies behind digitization, its benefits, issues and challenges of digitization has been clearly discussed in this study.

KEYWORDS: Digitization, Textile, Design, Preservation, Archive, Access

I. INTRODUCTON

Textile is a very complex field and largest sector next to agriculture. Textile includes all materials that are woven, knitted and non-woven as well as the raw material from fibre, yarn and fabric. Textile includes other ancillary industries like trims and accessories. Design plays a vital role in textile aesthetically and functionally. Design implies all the process, appearance and functions of both material and machines in textiles.

Design is categorized into two types:

- Structural Design – Forms the physical part of the textile material woven or knitted, eg. Weave design, checks, stripes, plaids etc.
- Decorative Design – Designs that are developed over the textile surface embroidered, printed, flocked, smocked, quilted, beaded etc.

The designs that are created on textile surface like traditional embroideries such as Kantha, Kashida, Kasuti, Phulkari, Chikankari, Rabari, Kutch, Chamba rumal, tribal embroideries, printed design works like block prints, screen print, stencil printing, traditional painting works like Kalamkari, Madhubhani, tie and dyed techniques, batik prints etc cannot be preserved forever for a number of reasons. As years pass by the textile materials gets faded out; the material gets dull and finally unusable. Unless we have alternative arrangement for recapturing and reproducing it the design details will be lost forever. Fortunately technological advances have provided us with suitable alternatives for preserving such valuable designs created by traditional craftsmen across the country.

The capabilities of digital technology, digitization and its importance and various steps involved in the digitization process and efforts to preserve, manage and provide access to scholarly information, digitization pre requisites, the practical experience of digitization of two major projects carried out by TISS Library has been discussed by Koganuramath, Muttayya M and Angad, Mallikarjun (2010).
The technology based digitization encourages preservation by limiting the handling of original records, access strategy and impact of a digitization program on the institutions other public service activities has been discussed by the Preservation Committee of the Canadian Council of Archives (2002). It also discussed the cost and complexities inherent in the development of a digitization program.

The IFLA (2014) has discussed the design of the new digital collection will be determined by the goals of the institution, its functions and intended users. As digital collections and projects grow over time, it is useful to contemplate the future development and interactions with other collections from the same or other institutions and also

discussed workflow for creating the digital collection and metadata, and also recommends some useful recommendations regarding digitization and preservation.

II. RELATED STUDIES

Digitization is a process to capture an analog signal into digital form. The term digitization is a shorthand phrase that describes the process of making a digital version of a 'Real World' object or event, enabling the design of the textile materials to be stored displayed and manipulated on a computer, and disseminated over networks and/or the World Wide Web.

The first automatic system for digitization of strong-motion accelerogram was developed by Trifunac and Lee (1979), using Photos on P-1000 Photo densitometer by Optronics, commercially available hardware for image processing and a data generated Nova-3 minicomputer. It took only two or three hours to digitize a typical record using the new system. Textile materials may be captured using a scanner or a digital camera and to optimize the clarity, OCR software may be employed to the captured textile material. The numerical system used by the computers is called binary and is made up of a series of ones and zeros. These ones and zeros are commonly referred to as 'bits' of information.

Digitizing involves the process of spatial data acquisition, geometry modelling, digital archiving and web based representation. Moreover, there are several survey and digitizing techniques working and developing such as traditional manual methods, topographic methods, photogrammetric methods and scanning methods. The most popular on application and developing is 3D Scanning technology right now.

3D digitizing technology apply in several fields, including manufacturing industry, medical sciences, entertainment industry and cultural heritage (Addison and Alonzo, 2006; Bernlt and Carlos, 2000; Levoy, 1999)
More Computer aided design and reverse engineering are employed in a wide range of applications in the field of Science and industry, together with animation techniques and web application (Fontana et al, 2001; Li et al, 2007; Pieraccini, 2001

ISO)/TR 13028:2010 describe the Implementation guidelines for digitization of Records.
A fundamental point to note from any digitization process is that the binary or digital channel are relatively narrow, and only a partial representation of an analogue object can ever only be rendered in digital form. In other words, the digital objects can ever only be a version of real thing. The digitizer therefore has to make informed decisions about what level of detail is required in the digital version of a textile material, for that digital version to serve its intended purpose.

III. PURPOSE OF DIGITIZATION IN TEXTILES

The purpose of digitization is to:
- To preserve the age old materials for long use that is important and valuable for future.
- To facilitate new forms of access and use.
- Better and enhanced access to a defined stock of research material
- Creation of a single point of access to documentation from different institutions concerning a special subject
- Support for democratic considerations by making rare textile crafts more widely accessible.
- Better search and retrieval facilities for library types of materials.
- Enhance access
- Improve preservation
- To give the institution opportunities for the development of its technical infrastructure and staff skill capacity.
- Digital projects allow the users to search collections rapidly and comprehensively from anywhere at any time.

IV. DIGITIZATION STRATEGY

Before starting to digitize it is necessary to formulate a digitization strategy. This document should provide a clear description of the purpose and objectives of digitization; identify its scope (Textile material – woven and knitted designs, embroidery designs, print design etc) and the volume (large-scale digitization, selective digitization); identify

strategic approaches (cooperation between institutions, domestic resources, outsourcing); and define methods of digitization and applicable standards.

The strategy may contain also information on the institutional ecosystem that ensures digitization and digital preservation, as well as a sustainable source of funding for these activities. Partnership and engagement should be incorporated as a means of leveraging capacity and support for the digitization strategy whose outcomes should also be presented to the public. The policy which is derived from the strategy should include principles that serve as the conceptual foundation as well as helping to prioritize projects.

Originals shall be maintained and protected under appropriate preservation conditions for as long as they remain usable.

The strategy should also include an intellectual property policy providing guidelines on the management of the intellectual property issues that arise in relation to digitization processes.

V. MAIN STEPS IN DIGITIZATION

Digitization is an action formulation process. It requires lots of preparatory process as well as planning and execution process. The following is the action formulation process and the purpose of such process has been explained below.

a) The Planning process
- Identification of material to be digitized and rights related thereto.
- Assessment of resources needed.
- Decisions on Standards.
- Definition of methods and timing of quality control.
- Assessment of risks, including current and future drawbacks.

Before starting up the process it is essential to plan all the required parameters and system which has to be followed for the digitization. What material is to be digitized, the grades and qualities of the material has to be sorted out, and important aspects like methods to be adopted, time required, risk assessment chart has to be prepared.

b) The Pre-digitization process:
- The selection of materials to be digitized.
- Quality control of the objects to be digitized – an assessment of their state of preservation and need of cleaning.
- Any treatment that may be required or possible.
- The collection of metadata (especially descriptive and structural metadata).
- Bibliographic and archival preparation.

After the planning process is over next process is controlling, correcting and rectifying the materials and the process known as pre treatment of the material before digitization so as to obtain a clear identity for the material is very essential.

c) Digital conversion
- Digitization process.
- Availability of professional equipment.
- Quality control.
- The creation of digital masters from which access copies are made.

Digital conversion is the process of preparing the material in such a way that the metadata fed is clear, readable and executable by various global system that handles digitized materials.

d) The Post digitization process
- Control of metadata related to long-term preservation.
- Submission of information to delivery and repository systems, data collection and management.
- Making digitized copies and metadata available online.
- Assessment and evaluation of the project.
- Quality control.

Digitized materials information must be identifiable, retrievable and the desired details must be readily available anytime for any users. Hence the control of metadata, assessment and evaluation of the digitized material is very essential process.

VI. BENEFITS OF DIGITIZATION

Digitization process has lots of advantages over the traditional methods of record keeping. The following are some of the important benefits of digitization:

a) Access – Digitized content provides the advantage of search over print media.
b) Preservation – Digital information can be copied and does not depend on having a permanent object and keeping under guard, but on the ability to make multiple copies, presuming at least one of them survives.
c) Reduced cost of handling – Digitization reduces the cost of handling, storing and duplicating paper documents in some case can reproduce the lost documents.
d) Organization and dissemination – Digital or electronic data can be indexed and stored in a document retrieval system.
Ding, Choo Ming (2000) has elaborated the works of Getz (1997), Line (1996) and Mckinley (1997) on the advantages of digitization. They maintained that:
 i. Digitization means no new buildings are required; information sharing can be enhanced and redundancy of collections reduced.
ii. Digitization leads to the development of Internet in digitalized based libraries. As Internet is now the preferred form of publication and dissemination.
iii. Digital materials can be sorted, transmitted and retrieved easily and quickly.
iv. Access to electronic information is cheaper than its print counterpart when all the files are stored in an electronic warehouse with compatible facilities and equipment.
v. Digital texts can be linked, thus made interactive; besides, it enhances the retrieval of more information.
In the light of the following advantages, it is natural today to find more information being digitized and uploaded into the Internet or Compact-Disc Read Only Memory (CD-ROM) in order to be made correspondingly accessible globally.

VII. DIGITIZATION ISSUES AND CHALLENGES

The digitized material may contain information on the institutional ecosystem that ensures digitization and digital preservation, as well as a sustainable source of funding for these activities. A lot of barriers and challenges stands before formulating such strategies. The issues and challenges of digitization are:

a) Data size – The changes and improvements of storage medium put serious questions about the future of digitized material and their alteration.
b) Document types – The type of data format an object has to be digitized is a complex concept since it need to be supported globally.
c) Multilingual Text Support – The language in which the digitizing process need to be standardized play a crucial role.
d) Technology Obsolescence – Technology never remain constant, with update and improved technology day by day the digitizing process must also be improved.
e) Copyrights – The issues regarding copyright raise serious matters before the digitizers in digitization. As a final solution to this matter, the digitizers must be given permission to digitize copyright works in connection with digitization.

VIII. CONCLUSION

This paper has given an introduction to the fundamental principles involved in the digitization process. It has outlined some key concepts and themes, such as, defining digitization, examining pathways, introducing the notion of 'fit for purpose', and assessing archival concerns and dissemination compression techniques. It provides recommendations applicable to the strategic planning level, the policy which is derived from the strategy should include principles that serve as the conceptual foundation as well as helping to prioritize projects. Hence Digitization is a very effective tool required not only by textile sector but also all other relevant fields where sustainability is very essential.

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BIOGRAPHY

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