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A brief review of digitization as a modern and technical face of Manuscript Preservation

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A B S T R A C T

Manuscripts are the treasure of knowledge reflecting the intellectual expertise of ancient scholars. Preserving these repositories of information and ensuring their easy access is crucial and is need of an hour. In today's modern and digital world, the most preferred method of preservation of manuscript is digitization. This article is a brief review of digitization as a new age preservation method for manuscripts.

Key words: Manuscripts, Ayurveda, digitization, preservation.

INTRODUCTION

Manuscripts are the treasure of knowledge reflecting the intellectual expertise of ancient time scholars. These are the handwritten documents offers insight about the various aspects of human history, culture and evolution. India has a rich heritage of manuscript in the world. Unfortunately, we have lost many of these treasures, but still we have managed to conserve many of them. This rich manuscript heritage of India possesses a threat of disappearance. So, the Invaluable heritage of India in the form of manuscripts needs to be documented, preserved and made accessible to the present and future generations for dissemination of knowledge. Digitization has a pivotal role in preserving manuscripts for today's tech-savvy generation.

What is Manuscript?

A manuscript is a handwritten composition on paper, bark, cloth, metal, palm leaf or any other material dating back at least seventy-five years that has significant scientific, historical or aesthetic value.[1]

The word manuscript is a combination of words 'Manu' and 'Scriptus', where 'Manu' is hand and 'Scriptus' means to write.[2]

What is Preservation of Manuscripts?

The term preservation does not literally means preserving something but it includes a series of processes like conservation, reconstruction, restoration and preventive conservation of manuscripts. Manuscripts are preserved by traditional methods and by modern methods. Digitization is an emerging technique for manuscript preservation.

What is Digitization or digital preservation of manuscript?

Digitization is a process of conversion of old and rare handwritten manuscripts in a digital file format so that they can be read either from the computer screen or from their printout and can be shared online to the others. So, the technical meaning of Digitization is acquiring, converting, storing and providing information in digital formats that is standardized, organized and available on demand.[3]

REVIEW ARTICLE May 2024

What are the Objectives of Digitization?

Preservation: The primary objective of digitization is preservation of our valuable manuscripts which are source of cultural, historical, and scholarly materials. Digital copies can be accessed without risk of damage to the original items.

Accessibility: This is the most important reason in the field of research. Where there is a high demand from users or researchers and from the library or source has the desire to improve access to a specific collection, then the first choice would be digitization.

Digitization facilitates easy accessibility to the information by making it available online or through digital repositories, allowing a wider audience, students and researchers to view and study the content remotely.

Seamless Searching: Digital formats provide an effortless and rapid keyword searching, indexing, and metadata tagging, making it easier to find specific information within documents or collections.

Enhanced access and use of new forms: Sometimes researcher needs to visit a specific repository or libraries to obtain certain original manuscript for research purpose. The digital form provides an easy access to the researcher. Digital copies can be easily manipulated, interpreted and shared, facilitating research, collaboration, and educational purposes.

Space saving: By digitizing physical materials, institutions and libraries can reduce the need for storage space and associated costs.

Long-term sustainability: Digitization aims to ensure the long-term availability of digital content through ongoing preservation and maintenance activities.

Reduction in Handling: Most of the manuscripts are fragile and damaged. So, the technology like digitization needed to create a backup copy for such endangered material. It also reduces the handling of such fragile and damaged material.
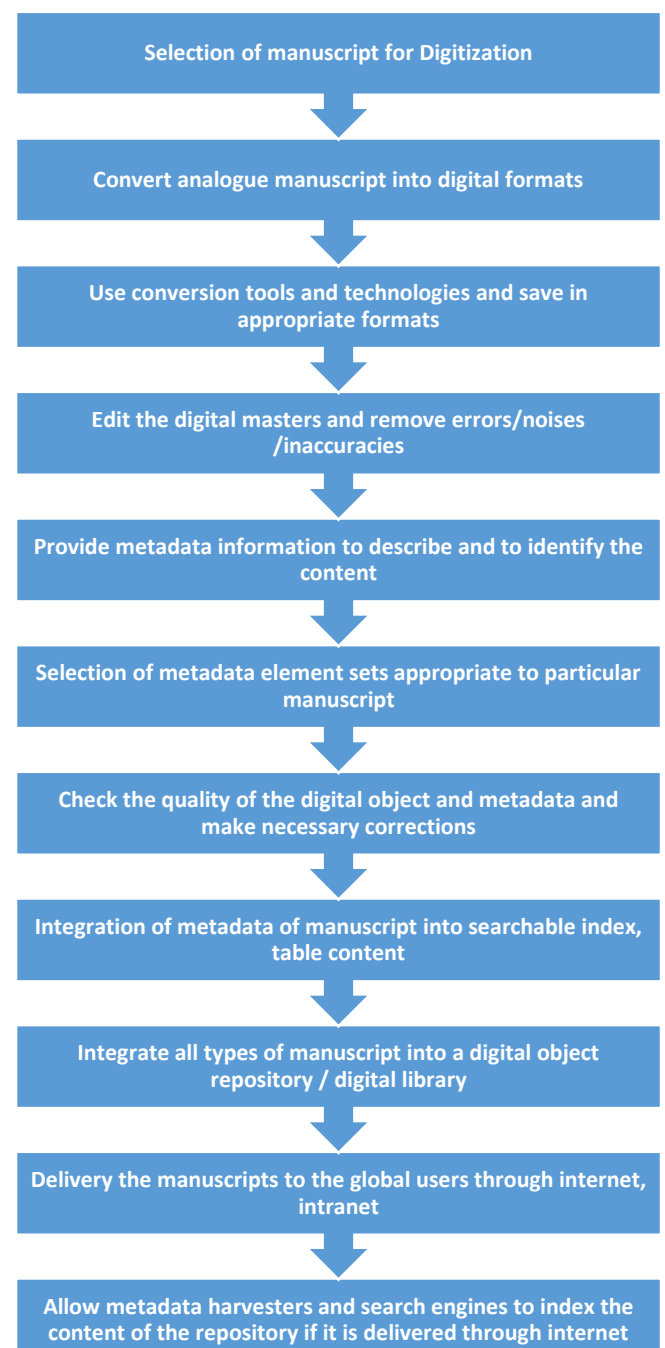
What is Process of digitization?

It is a process of converting target material (for e.g. manuscripts) into digital format.[4] It also facilitate

storage of the same in a digital medium and the providing access using retrieval software. Digitization is a modern technique of preservation and restoration of data.

The process of digitization involves several stages with varying hardware and software technologies. Converting documents into electronic formats encompasses the following steps:

The chart given below highlights various steps Involved in the digitization process.[5]

```
Selection of manuscript for Digitization
          ↓
Convert analogue manuscript into digital formats
          ↓
Use conversion tools and technologies and save in
appropriate formats
          ↓
Edit the digital masters and remove errors/noises
/inaccuracies
          ↓
Provide metadata information to describe and to identify the
content
          ↓
Selection of metadata element sets appropriate to particular
manuscript
          ↓
Check the quality of the digital object and metadata and
make necessary corrections
          ↓
Integration of metadata of manuscript into searchable index,
table content
          ↓
Integrate all types of manuscript into a digital object
repository / digital library
          ↓
Delivery the manuscripts to the global users through internet,
intranet
          ↓
Allow metadata harvesters and search engines to index the
content of the repository if it is delivered through internet
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REVIEW ARTICLE May 2024

Digitization Process Chart

What is need of digitization of manuscripts ?

Manuscripts are the emblem of our ancient history, traditions, culture, wisdom and the most important intellectuality. These good things should be passed on to the future generations for their prosperity and development. In this digital era, to achieve this goal, digitization of manuscripts is a better choice. It not only achieves preservation aspect but also accessibility.

What are the advantages of digitization of manuscript?

- Preservation: Protects fragile manuscripts from physical deterioration.

- Accessibility: Allows wider access to rare and valuable texts.

- Easy searching: Enables efficient searching and retrieval of information.

- Space-saving: Reduces physical storage requirements.

- Collaboration: Facilitates collaborative research and sharing of resources.

- Conservation: Minimizes the risk of loss due to natural disasters or theft.

What are the disadvantages of digitization of manuscript ?

- Cost: Initial setup and ongoing maintenance can be expensive.

- Technical Challenges: Requires specialized equipment and expertise.

- Compatibility: Formats may become obsolete over time, leading to potential data loss.

- Quality Concerns: Digitization may result in loss of fidelity or detail compared to the original.

- Copyright Issues: Legal complexities may arise regarding ownership and usage rights.

- Vulnerability to Cyber Threats: Digital collections are susceptible to hacking, viruses, and data corruption.

Digital Face of India

The Indira Gandhi National Centre for the Arts was inaugurated by Prime Minister Rajiv Gandhi on November 19, 1985, to initiate digital preservation of manuscripts. In July 2000, a pilot project was launched by the National Archives of India, collaborating with the Department of Science and Technology and the National Institute of Advanced Studies, Bangalore, focusing on digitizing rare manuscripts like the Bhagavad Gita, Ramayana, and Mahabharata onto CD-ROMs. The National Library of India in Kolkata initiated the 'Down the Memory Lane' program for digitizing manuscripts and rare books. Nanakshahi, established in 2001, is a Punjab-based trust for the Digital Sikh Reference Library, known as 'Virsa,' housing 150 manuscripts of Sri Guru Granth Sahib and other rare manuscripts at the Government Museum and Art Gallery in Chandigarh.[6]

Below given a list of Indian National archives and total number of manuscripts they possess:-

- Khuda Baksh Oriental Public Library, Patna - 20,060

- Scindia Oriental Research Institute, Ujjain - 18,695

- Punjab University, Chandigarh - 18,395

- State Central Library, Hyderabad – 17,000

- Rampur Raza Library, Rampur - 15,000

- Kurukshetra University, Kurukshetra - 5,500

- National Library, Kolkata - 3,258

- Rajasthan State Archives, Bikaner – 14,000

- Asiatic Society, Kolkata - 32,000

- University of Calcutta, Kolkata - 13,000

- Aligarh Muslim University, Aligarh - 12,000

- Govt. Manuscript Library, Allahabad - 11,000

- Govt. Oriental Manuscript Library, Chennai - 72,620

- Central Institute of Buddhist Studies, Leh - 10,000[7]

RESULT

Digitization is an emerging technology in the preservation of historical manuscripts. This article explains the intersection of tradition and technology, exploring how digitization methods are revolutionizing the field of manuscript preservation. To convert analog materials into digital formats utilizing advanced imaging techniques, digitization offers new methods for preserving and disseminating valuable cultural artifacts. This overview highlights the pivotal role of digitization in manuscript preservation ensuring the accessibility and longevity of our shared heritage.

DISCUSSION

Digitization has transformed the field of manuscript preservation by introducing modern and technical approaches to the preservation of these valuable and historical documents.

Digitization enables the preservation of fragile manuscripts by creating high-quality digital surrogates that can be accessed remotely.

By reducing physical handling and exposure to environmental factors, digitization helps prolong the lifespan of these invaluable cultural artifacts. Additionally, digitized manuscripts can be made accessible to a global audience, transcending geographical barriers and facilitating scholarly research, education, and public engagement.

The digitization of manuscripts provides researchers with unprecedented access to primary source materials. Scholars can conduct in-depth analysis, comparison, and interpretation of digitized manuscripts from diverse collections without the limitations of physical proximity.

Digitization also enables text mining, computational analysis, and data visualization techniques that enhance scholarly inquiry and contribute to interdisciplinary research endeavors.

Modern digitization technologies, such as high-resolution imaging, multispectral imaging, and 3D scanning, offer advanced capabilities for capturing and analyzing manuscript content. These technologies enable the detection of hidden or degraded features, the enhancement of faded text and illustrations, and the reconstruction of damaged or fragmented manuscripts.

By harnessing the power of computational tools and algorithms, digitization enhances the accuracy, efficiency, and depth of manuscript preservation efforts.

Despite its benefits, digitization presents challenges in terms of technical requirements, resource allocation, and sustainability.

The initial investment in equipment, infrastructure, and expertise for digitization projects can be substantial.

Moreover, ensuring the long-term preservation and accessibility of digital collections requires ongoing maintenance, updates, and migration to compatible formats and platforms.

Institutions must address these challenges through strategic planning, collaboration, and investment in digital preservation strategies.

Ethical Considerations: Digitization raises ethical considerations related to copyright, intellectual property rights, and cultural heritage ownership.

Institutions must navigate legal frameworks, obtain permissions, and adhere to ethical guidelines when digitizing manuscripts, especially those with restricted access or cultural sensitivity. Collaborative partnerships with source communities, stakeholders, and rights holders are essential for promoting responsible digitization practices and respecting diverse cultural perspectives.

CONCLUSION

Manuscripts are the treasure of knowledge and these should be preserved in such forms which are easily accessible to all and preserved for long duration. Digitization is an upcoming and important mean of preservation of manuscripts. It protects manuscripts from deterioration. The digitization of manuscripts represents a pivotal shift in the field of preservation, merging tradition with technology to safeguard our

REVIEW ARTICLE May 2024

cultural heritage for future generations. Throughout this overview, we have explored how digitization offers a modern and technical approach to manuscript conservation, enabling the preservation, accessibility, and analysis of historical documents in ways previously unimaginable. Digitization has empowered institutions and researchers to digitize manuscripts with unprecedented precision and detail, capturing the essence of these artifacts while minimizing physical handling and exposure to environmental factors. By harnessing advanced imaging techniques and digital preservation strategies, digitization ensures the longevity and accessibility of manuscripts, transcending geographical boundaries and facilitating global collaboration in scholarly research and education. Moreover, digitization has opened new avenues for interdisciplinary inquiry, enabling scholars to explore manuscripts in innovative ways and uncover hidden insights that enrich our understanding of the past. From textual analysis to visual reconstruction, digitization provides researchers with powerful tools to unlock the wealth of knowledge contained within historical manuscripts and share it with diverse audiences worldwide. However, digitization also presents challenges, from technical complexities to ethical considerations surrounding copyright and cultural heritage ownership. Addressing these challenges requires ongoing collaboration, investment, and commitment to responsible digitization practices that respect the integrity and rights of source communities. As we navigate the evolving landscape of digitization and manuscript conservation, it is essential to remain vigilant in our efforts to balance tradition

with innovation, ensuring that the digitization process continues to serve the interests of preservation, scholarship, and public access. By embracing the modern and technical face of manuscript conservation, we can uphold our collective commitment to preserving our cultural heritage for generations to come.

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