STRATEGIES OF LIBRARY MATERIALS DIGITIZATION IN AN ACADEMIC LIBRARY: A STUDY

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ABSTRACT

This present study focused on different issues related to digitization of library collection of Presidency University, Kolkata. The university being more than 200 years old, houses a number of valuable hand written documents as well as thousands of old and rare books in different language (many of them printed in seventeenth century and eighteenth century). Initiatives have been taken few year back to preserve these documents. About fifty thousand pages of handwritten documents were already been digitized by the library and about ten thousand 'old and rare' books are under process. This study talks about the step by step progression of the digitization method followed; analyzed how different challenges are tackled during the process and also the benefits library users are getting from this digitization endeavor of the University library. Finally few suggestions are provided to overcome the challenges for any such future endeavors

Keywords: Digitization, Library Collection, Old and Rare Collection, University Library

1. INTRODUCTION

Libraries main objective is to collect and disseminate information to its users. Now a day a library's collection includes a vast range of materials from printed materials to digitized one. An academic library often has both kinds of materials in its collection. The born digital materials are often subscribed by the academic libraries to support current research in science and technology. Printed materials need to be preserved for their unique value.

Digitization of library print materials for their preservation has been an option by many academic libraries. Digitization has opened up new audiences and services for libraries, and it needs to be integrated into the plans and policies of any institution to maximize its effectiveness. Digitization is a complex process with many crucial dependencies between different stages over time. Utilizing a holistic life-cycle approach for digitization initiatives will help develop sustainable and successful project.

The importance of document preservation extends beyond academic and historical contexts. It plays a crucial role in legal systems, governance, and corporate operations. Preserved records are vital for resolving disputes, ensuring accountability, and maintaining transparency. Moreover, in an era where misinformation and disinformation are rampant, the ability to access authentic historical records is indispensable for informed decision-making. As we navigate the challenges of the digital age, it is imperative to recognize that preservation is not merely about safeguarding information but also about fostering a deeper understanding of our collective past and enabling the creation of a more informed future.

Sometimes Universities remains indecisive of digitization due to paucity of funds as well as for lack of clear knowledge about copyright laws, So they refrain themselves from the process of digitization. Digitization in India is a challenging issue because of budgetary constraints and lack of skills sets. However, there are Government and non-government agency which facilitates with funds and skilled man power for digitization of University materials. Institutional repositories are being created today for diverse communities and in different fields. Several University libraries have created their Institutional repositories (IR) to preserve and showcase their collections. With the availability of several free software packages at the recent time like, e-prints, green stone which are used for creation of IRs.

Presidency University being a rich history of two hundred years, its library has a great collection of old and rare valuable materials. Many of such materials were published back in seventeenth and eighteenth century. All these materials have huge value for the historians and researchers. The present study delves into the current status of Presidency University library digitization status exploring the benefits and challenges of digitization and

2. OBJECTIVES

The objectives of the study is

1) To analyze the present digitization status of the Presidency University library collection
2) To explore the benefits and challenges faced during the process of library collection digitization
3) To recommend suggestions to overcome the challenges for future endeavors.

3. METHODOLOGY

Data Collection: Literature review of scholarly articles, case studies, and archival documents.

Qualitative Analysis: Examination of digitization techniques across various periods.

4. LITERATURE REVIEW

A research by Marintan et al. (2024) described efforts to digitize ancient Javanese archives at "ReksaPustaka". The research shows that efforts to digitize Japanese manuscripts are carried out by making copies in the form of digital documents so as to increase the collection with better quality and make it easily accessible to library users. Sharma (2021) studied twenty-two heritage and modern libraries in the Jammu province of Jammu & Kashmir to understand the digitization status and types of services offered to users. The study concluded that a few of the libraries have initiated digitization projects to preserve the rare collection of documents.

Kim & Malceva (2022) argued that, while digitization has benefits, there are also some problems. The most obvious one is related to the quality of the digitized objects. In the course of digitizing, we may lose some important aspects of the original document. Another problem is related to access management. Proper mechanisms need to be put in place to determine the authenticity of materials, as well as to control unauthorized access and use. Yaya & Adeeko (2016) discusses the process of digitization of educational resources in academic libraries in Nigeria, the challenges faced by libraries. The paper concluded by pointing out some important measures that could help in resolving the challenges confronting the Nigerian academic libraries in digitizing their educational resources. Despite many benefits, there exist some universities that are yet to embark on library digitization. The article in addition discusses digitization workflow and gave some recommendations on library digitization best practices. Chigbundu et al. (2023).

Singh (2018) discussed the new activities, methods and technology used in digitization and formation of digital libraries. Digitization as a method of preservation is now a global phenomenon as well as the new trend in managing a library collection especially precious ones among academic libraries. Misra & Pandey (2014). Narasaiah et al. (2021) describes the initiatives taken at the Central Library of Jawaharlal Nehru University, New Delhi, to digitize and preserve the Grey Literature. It dwells upon how 18,000 theses and dissertations were digitized, and 7500 documents comprising 3lac pages were digitized and archived. Ansari (2010) in his study commented that there is no legal framework and concrete policies laid down by the government for digital preservation. A systematic and structured literature review, based on the conceptual and empirical published studies on digitization and digital preservation is done to sieve out the barriers and challenges of digitization projects. The findings of the study revealed that most digitization projects suffer with impediments such as, inadequate funding, lack of national-level digital preservation policy and absence of technical infrastructure while digitizing and preserving the cultural and heritage resources. (Pandey & Kumar (2020)).

5. PROCESS OF DIGITIZATION IN PRESIDENCY UNIVERSITY LIBRARY
5.1. PRESENT STATUS OF DIGITIZATION

Being a more than two hundred years old university, the Presidency university library has a good collection of printed materials which has a historic value. In addition to the current literature the library has a collection of old and a rare material, which includes old and rare books and many hand written administrative documents. Some of these documents being published in seventeenth century become most valuable one for researchers in this field.

In the 2019 about 50,000 (approx.) pages were digitized by an out sourced agency. The digitized files are than hosted in NDLI server, as the University servers do not have capacity to host such large amount of data at that time. The digitized documents were mainly hand written administrative documents. These hands written documents are very important because of their information content, like signature of many renowned historic persons who were once part of this institution. A few more documents were digitized at that time under the British Library Archive program.

Other than these, there are about twenty thousand collections of printed books which are published before 1947, which are identified, listed and kept separately in safe custody of the University library. These old and rare books, some of which are very fragile, have historic or archival value. These books also need to be digitized to preserve their information content.

Additionally, there are thousands of bound journals, published in eighteenth century and early nineteenth century, in the shelves of libraries rare section needs special attention for their archival value.

The first stage of the project took about one and half years to complete. The step by step procedure of the digitization process are discussed below-

1) Planning

At the very early stage of digitization process a specialized committee was formed. Members of this committee include library professionals, technical persons and specialist of digitization. The committee seated many times to decide on the working procedure of the digitization procedure. It was decided the digitization process will be performed by an outside agency as the University library has no proper infrastructure for the purpose.

2) Material Selection

It was decided that the whole process will be divided in to two phase. In the first phase the hand written documents will be digitized and in the next phase all the books will be considered for digitization. According to the decision of the committee the first phase was started. At the very beginning the documents are selected (whose term of Copyright has been over) and segregated. About fifty thousand pages were decided to digitize. Time calculated for the first phase is one year.

3) Contracting

In this step an outside agency was selected who will do the actual digitization. The University has to depend on the outside agency due to lack of proper man power, knowledgeable technical staff, and proper infra-structure. It was decided that the whole process will be performed within the University Library premises C-DAC, being a Govt. agency, has been selected for digitizing process. They have provided with scanners. For monitoring a library staff has been appointed.

4) Creation of Image

The documents to be scanned are first issued by the library person to the agency staff and they will do the scanning job. The documents were scanned using suitable overhead high resolution scanners with 300 DPI. The scanned images then cleaned and their resolution may increase for proper visibility and saved in PDF format. University staff will assist them in doing the actual work properly. All the created document images are then convert in full text searchable PDF.

5) Metadata Creation

Dublin Core metadata which is an International standard metadata code has been assigned to every document. The metadata has been created to each document so that these documents can be full text searchable. This part is performed in consultation library as well as with the NDLI.

6) Storage of Created Data

It is decided that the digitized files will be maintained in the NDLI, Kharagpur server, as the University does not have the capacity to host the project in their server in D-space software. The link of the archive is provided in the official web site of the University. The digitized collections are categorized in different communities according to subjects. All the documents are full text searchable with metadata set available in the site. The collections are freely accessible globally.

7) Preservation of the original document

As soon as the digitization procedure of a document completed the original document was immediately hand over to the Library person to keep it in its original place. The fragile documents are taken extra care I this regard for future use and reference.

6. BENEFITS AND CHALLENGES FACED DURING THE PROCESS OF DIGITIZATION

There are immense facilities of library collections digitization, like any other institutions Presidency library also get benefitted in terms of-

- **Preservation conservation of library materials:** Digitization process helps in proper preservation of valuable materials. After digitization the original old and rare documents of Presidency University library are now preserved properly. The materials are now kept in separate safe place. As their digital versions are available in public domain so the handling of the original document is less now, which again protected them from any further damage.

- **Data security:** In one hand the digitization of the library documents, saves the further damage of the original documents on the other hand the newly created digital image are also secured with digital security measures. All the digitized documents are available in PDF format and also watermarked as 'Presidency University' Library documents.

- **Space management:** In a modern library system space saving is a big issue. Digitization process decrease the space requirement as all the digital images required only virtual space and not any physical space. After digitization all the original old and rare documents are kept in compact storage (as their usage is very rare now).

- **Multiple usages at a time:** As the digitized materials kept in a virtual space, as a result now, these materials can be used by multiple users at the same time i.e. digitization increases usage of a material. The library webpage counts the total number of visitors of the page.

- **Worldwide usage/increased usage at the same time:** Digitization of Library materials increased usage of digitized materials globally as it is available through World Wide Web round the clock.

- **Less maintenance cost after digitization:** Though the initial cost for digitization process was quite high but now, the maintenance is very easy and cheap in comparison to the physical document maintenance earlier.

Even though there are immense benefits the library is getting after digitizing its valuable materials, but there are few challenges faced by the library during the process of digitization, like-

- **Lack of Experienced staff:**

It requires lots of practical knowledge of handling different issues related to each and every steps of digitization Experience related to choosing the materials to be digitized, calculation of time to be required etc. But unfortunately the Presidency University library, there is a lack of experienced staff needed to handle the process of digitization. Though the issues like selecting the materials to be digitized etc. was decided by the digitization committee but for handling the day to day activities lack of experience staff was a huge problem. To tackle the issue the whole process was out sourced by a Govt. agency.

- **Fund:** Budgetary constrain is one of the main challenge towards digitization process. Libraries often steps back due to the lack of sufficient fund. The present part of digitization of Presidency library documents was funded by Govt. of West Bengal. Presidency University library managed with a sectioned fund from West Bengal state Government as the Universities celebrating its two hundred years of establishment. Due to the budgetary constrain at present, only the first part of digitization is completed. The second part is pending till date. The library is now looking for other agencies for funding the second part of the digitization project.

- Infrastructure: Proper infrastructure is very much essential for starting a project of digitization. Good quality scanner, required software and other digital requirements are not sufficiently available in the library. In the first part all the infrastructures was provided by the out sourced agency only. For the second part of the digitization in house infrastructure facility is required to make it a continuous process, which again needs financial requirement to support the development of the proper infrastructure.

- **Copyright issues:** Copyright issues become vital for these kind projects where digitization of valuable documents involved. Lack of clear knowledge about copyright information created confusion in the process of digitization.

- **Lack of technical staff:** Experienced technical staff is very much crucial for a successful digitization, without which all the efforts may go in vain. For this particular project the Presidency University collaborated with IIT, Kharagpur, who shared their expertise with sound technical support to resolve the problem. But permanent technical staff is very important to maintain the digitized project for its purpose.

Time: The whole work of digitization is quite a time taking process. It needs patience to complete the procedure successfully.

7. SUGGESTIONS TO OVERCOME THE CHALLENGES FOR FUTURE ENDEAVORS

The future of document digitization lies in fostering interdisciplinary approaches and global cooperation. Some key areas for development include:

- The digitization of rare documents/manuscripts needs continuous funding from Government and non-government agencies. For developing in house infrastructure facilities for digitalisation of library materials and also for training of staff members.

- Developing/selecting cost-effective technologies for digitization in resource-limited settings. Inter departmental collaborations were suggested for successful digitization projects.

- Collaborative approach should be adopted along with other similar institute for sustainable digitization project in future. Digital preservation is no longer limited to archival institutions; it is a global responsibility involving governments, private entities, and international organizations.

- Integration of technologies like machine learning and AI are enhancing cataloguing, metadata creation, and restoration simulations, ensuring both accuracy and efficiency of newly digitized documents. Such integration ensures that the knowledge from ancient manuscripts to contemporary digital content remains accessible and relevant.

- Digital archives are vulnerable to cyber threats and require continuous investment in cyber security. Well protected cyber security system must be adopted to ensure proper preservation of the digitized archives.

- Decentralized Storage of digitised material recommended. Leveraging block chain and decentralized networks to create secure, tamper-proof archives.

- Public Engagement: Educating individuals and communities (historians, researchers) about the importance of preservation and encouraging them to contribute to these efforts.

8. CONCLUSION

The digitization process of library collection represents a transformative approach to preserve and provide access to our cultural heritage. As society moves further into the digital age, it must ensure that both physical and digital documents are preserved not just for historical value but also as a foundation for innovation and societal growth. Document preservation is not merely a technical endeavour; it is a moral and cultural imperative. By protecting the knowledge of the past, society safeguards its identity and equips future generations to address emerging challenges.

Digitization of old and rare documents and digital archive offers numerous benefits, including improved accessibility, enhanced search ability, and increased security. However, it requires meticulous planning, technical proficiency, and ongoing preservation efforts to overcome challenges and ensure the long-term sustainability of digitized archives. Collaboration among archivists, information technology specialists, and stakeholders is vital to successfully navigate the complexities of digitization and preserve the library materials for future generations. More over this kind of endeavor increases the prestige of the Institutions, as the digitized and freely available assets are visible from around the globe. However, Continuous evaluation and improvement are necessary to ensure the digitization process remains effective and up-to-date. Regular assessments, user feedback, and keeping abreast of technological advancements will help refine the digitization process and enhance the accessibility of the archives.

9. FUTURE SCOPE

- Research on integrating AI and quantum computing in document preservation and digitization techniques.
- Development of eco-friendly storage solutions to reduce the environmental impact of data centres.
- Exploration of collaborative networks for global digitization efforts.

CONFLICT OF INTERESTS

None.

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