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# Status of Digital Data Preservation in Libraries of Nepal

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## Abstract

The purpose of this paper is to survey the awareness of digital data preservation and to identify the process of digital data preservation in libraries of Nepal. For this study, a purposive sampling method was used to collect data. Data were collected through interviews with library personnels. The findings reveal that most Nepali libraries are poor in sustainable data preserving the digital data of their libraries and do not have well-managed metadata preservation practices. The only process they followed was copying the entire data onto external hard-drives, which were then stored in a secure location to protect against external damage. This study provided an overview to develop the strategy for digital data preservation and raised awareness about the properties of digital data.

**Keywords*:*** Active preservation, digital data, digital library, digital preservation, dystems' librarian

## Introduction

The term "digital age" is frequently used to characterize the 21st century. From the beginning of the 2010s, digital platforms are effective modern technology for better work completion. These digital platforms require digitalization and digitization of processes in several sectors (Frank et al., 2023). This transformation is a continuous process with the advent and further development of technologies. The conference paper published by the Indian Statistical Institute discussed various dimensions of information communication technology (ICT) that have potentially transformed the way of serving patrons inside the information centres. Further, it highlighted technology development and its utilization in libraries for rendering enhanced services by adapting the fact of library automation (Bhoi, 2017).

Digital data production is out of the full and semi-library automation process. Library automation is the use of computers and computer-based products and services to carry out various library operations

and functions, including the supply of different services and the creation of output products. The use of automatic and semiautomatic data processing devices, or computers, to carry out routine library housekeeping tasks like acquisition, circulation, cataloguing, reference, and serials control, is known as library automation (Das & Chatterjee, 2015). The library's primary four responsibilities are distribution, preservation, organisation, and selection. (Chatterjee, 2017). In this digital age, after adopting digital systems the way of primary responsibilities are also transformed. Further, many hidden complications and complex issues are explored in managing and disseminating such digital data.

Several studies have been conducted on "data preservation" across various perspectives. Among those, the paper was presented at the International Federation of Library Associations and Institutions (IFLA) conference, which focused on the curation possibilities of digital data and the keen interest of scientific communities. The paper shows that there was a lack of understanding, proper methods, and standards for preserving and curating the digital data of their research. Further, the paper expresses a lack of clear understanding and consensus on the role of libraries in digital curation and digital data preservation. Libraries closely engage with scientists and ensure the proper organization, preservation, and dissemination of information or data. Thus, librarians are responsible for digital data preservation, but the extent of their competencies in handling such digital data still needs to be demonstrated (Osswald & Strathmann, 2012).

Digital data preservation is crucial, yet the efforts made for it in libraries are few and indefinite. This study attempts to trace the currently adopted means and methods for digital data preservation by Nepali libraries. It has mirrored the current procedures applied by them. It is worth figuring out gaps in digital data preservation by Nepali libraries.

**Methods**

The researcher has adopted a qualitative research design for the study and interviewed ten librarians from libraries across Nepal. Inside the Kathmandu Valley, an interview was done physically, and outside the valley, time was arranged for a telephone interview in the middle of 2023. The sampled libraries were Birat Medical College (BMC) Library, Research Centre for Educational Innovation and Development (CERID) Library, Karnali Academy of Health Science (KAHS) Library, National Archive of Nepal Library (NAN) Library, Nepal National Library (NNL), South Asian Association for Regional Cooperation (SAARC) Library, Samshodhana Mandala, Supreme Court Library, Tribhuvan University Central Library (TUCL), and Tribhuvan University Teaching Hospital (TUTH) Library. The primary data was collected using structured interviews from the respondents and analysed.

**Finding and Discussion**

During the study, libraries have digital data stored and broadcasted from the server center where they were allocated a certain space. Until the allocated space is sufficient, the problem of data preservation could be less urgent. It is the present situation of Nepali libraries. They still have enough space available (Table 1). Since space scarcity is not an alarming problem at present, libraries are still enjoying leisure time related to data preservation.

Digital data preservation, often referred to as "digital preservation," is a crucial responsibility for librarians in libraries of all sizes and types. Ensuring the long-term preservation of digital data necessitates a well-defined strategy and the involvement of trained and dedicated personnel, commonly known as "system librarians".

**Table 1**

*Allocated and consumed space with description*

| Library | Space Allocated | Consumed | Description |
|---|---|---|---|
| BMC Library | 2TB | - | - |
| CERID Library | - | 339 KB | 4297 bibliographic detail is 339 KB |
| KAHS Library | - | 25.8 MB | 4575 bibliographic detail is 97KB, 30 PDFs of thesis are 25 MB |
| NAN Library | 2 TB | 790 GB+60TB+10K Reels | 10000 reels, 3000 Digitized |
| NNL | 2 TB | 650 GB | - |
| SAARC Library | 4 TB | 638 GB | 10K bibliographic detail, Audio, Video, Report, Conference Proceeding |
| Samshodhana Mandala | Not Yet | 480 GB | 23626 manuscript pages, 12K bibliographic detail |
| Supreme Court Library | 500 GB | 10 GB | 8500 bibliographic detail, 100 files on DSpace |
| TUCL | 1 TB | 450 GB | 150K bibliographic detail, 15K files on DSpace |
| TUTH Library | Unlimited | 50 MB | 5000 bibliographic detail is 50 MB |

The backup and file format practices in Nepali libraries are outlined here. The BMC Library has a backup system in place using local PCs and pen drives, and the stored data is in Excel and Word formats. The CERID Library relied on pen drives for backup and uses Excel files for data formatting. The KAHS Library used external hard drives and CDs to back up its digital data, all of which are saved in Excel format. The NAN Library stored its backup data in external hard drives, third-party servers (GIDC), and reels, and uses PDF, Excel, and TIFF file formats. The NNL used external hard drives and third-party servers (DOTC) to back up its PDF, JPEG, MP4, and FLV data formats. The SAARC Library used external hard drives and CDs to back up PDF, JPEG, MPEG, and AVL data. The Samshodhana Mandala relied on external hard drives for backup and uses PDF, Excel, TIFF, and JPEG file formats. The Supreme Court Library stores its data backups in external hard drives using the PDF format. TUCL and TUTH Library both have backup systems in place, with TUCL using the third-party server (GIDC) and saving data in PDF and JPEG formats, while TUTH Library stores its data in XLSX/CSV format on local servers, and an IT technician had taken its scheduled backup. Overall, these libraries have different backup methods and file format practices, which play an essential role in preserving their collections and data (Table 2).

**Table 2**

*Backup and file formats of library data*

| Library | Backup | File Formats |
|---|---|---|
| BMC Library | Backup local PC, Pen-drive | XLSX/CSV, DOC, DOCX |
| CERID Library | Pen-drive | XLSX/CSV |
| KAHS Library | Ext. HDD, CD | XLSX/CSV |
| NAN Library | Ext. HDD, Third-Party server, Reels | PDF, XLSX/CSV, TIFF |
| NNL | Ext. HDD, Third-Party server, | PDF, JPEG, MP4, FLV |
| SAARC Library | Ext. HDD, CD | PDF, JPEG, MPEG, AVL |
| Samshodhana Mandala | Ext HDD | PDF, XLSX/CSV, TIFF, JPEG |
| Supreme Court Library | Ext. HDD | PDF |
| TUCL | GIDC | PDF, JPEG, |
| TUTH Library | Local Server, IT | XLSX/CSV |

Data backup becomes a critical component of information management and long-term preservation. Data backup has a wider scope of protection against data loss, security against cyber threats, disaster management, continuity of library services, preservation of intellectual work, and legal and institutional requirements. Data backup system is built on four essential components as source data, backup storage, backup method, and recovery mechanism. Backup can generally be stored in external devices, network storage (on-site servers), cloud storage and hybrid mode, that combination of local and cloud servers. In general, full backup, incremental backup, differential backup, mirror backup, cloud backup, remote backup, and snapshot backup are in practice for backing up the library data (Kljun, 2016).

The backup cycle must follow the principles, including follow scheduled intervals, maintain multiple copies, protecting backup data, reducing human error, and regularly validating the restoration process and documentation (Hwang et al., 2001).

However, current data preservation practices primarily involve saving files on various secondary storage devices. Simply storing data on HDDs, CDs, or pen drives and protecting these devices from dust and physical damage, further maintaining optimal temperature and humidity, does not guarantee the longevity of the digital data. Digital preservation required something more than this. To truly ensure digital data preservation, it is essential to engage in continuous data management practices with the help of an active preservation strategy. This includes regularly copying, refreshing, and migrating data using the latest available technology (Singh & Nyaichyai, 2020). Additionally, it is crucial to consistently backup this data on the same device or another storage medium. By doing so, it mitigates the risks of data corruption, obsolescence of storage formats, and potential hardware failures, ensuring that the data remains accessible and intact over time.

Professionals should have the essential skills to design and implement effective preservation strategies. The approach to digital preservation should be tailored to the library's size and budget, ensuring that appropriate measures are in place for data integrity, accessibility, and usability over time, choosing the strategic layout design for digital data preservation (Singh, 2023). By prioritizing digital preservation, libraries can safeguard valuable digital resources and ensure they remain accessible for future generations. One of the most important jobs of librarians is to keep digital information safe. For the long-term preservation of such digital data, the proper strategy is required with trained and dedicated manpower. Depending on the requirements, budget allocated and the nature of patrons the libraries should design and implement a strategic layout for the proper management of digital objects or digital resources.

Conventional digital preservation strategies encompass a variety of techniques to ensure long-term access and usability of digital resources and the most common is a Backup supply that involves creating multiple copies of data to prevent loss (Muir, 2004). Digital preservation strategy includes technology preservation, which involves maintaining the original hardware and software; technology emulation, which replicates obsolete systems. On Modern platforms and information migration involve transferring data to newer formats or systems. Information encapsulation ensures that all necessary metadata and context are stored with the data.

**Conclusion**

Digital data are produced in the library, either born-digital or turned digital data. According to the fifth law of library science, "a library is a growing organism," predicting that this amount of digital data will rise exponentially day by day. Thus, proper strategies must be accommodated inside information centres, libraries, and the information industry to store, organize, preserve, and retrieve essential information. For this cloud storage, active preservation software should be utilized, and mirror backups, multiple location storage, and the use of external devices should be implemented. From time to time , digital data should be copied, transferred, updated, and replicated using the latest technologies for storage and preservation.

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