

Digital Library A Channel to Achieve Sustainable Information Society

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Abstract

In the process of attaining the objective of National Education Policy 2020 Government of India initiated a system where digitally born and digitized resources club together in an accessible form in the public domain. Access to these resources provided for everyone to complete their education, research, and for any other purpose in which users are interested. The availability of digital resources has led to different perspectives on how library collections should be developed, managed, and preserved. Digital technology opens up a new perspective for information society (IFLA). Today, besides preserving and providing access to 'born digital material' several libraries engage in converting non-digital resources to digital with the use of the latest technology. The process of building a digital collection and providing easy and free access to the digital library needs assessment of certain important issues. Along with this preservation policy and methods are also need to be reworked and reframed. The present paper throws light on the issues related to the selection policy, collection development policy, and need of digital library. Also, quality control, library budget, data management techniques, document encoding, copyright, and rights management are covered in the article. This will be a valuable addition to the literature on digital libraries and will also help to plan and strategies digital library services.

Keywords: Digital Library; Academic Library; Information Society; Preservation; Collection Development; Library Users.

INTRODUCTION

One of the major objectives of the National Education Policy of India (NEP) 2020 is to

promote digitization and usage of digital resources; thus education will reach at the grassroots level of India. In the process of attaining this objective Government of India initiated a system where digitally born and digitized resources club together in an accessible form in the public domain. Intending to provide free access for everyone to complete their education, research, and any other purpose they are interested in. A prominent example of this initiative is the National Digital Library of India. The NEP aims to achieve equal and quality education at all levels to create an inclusive information society (NEP 2020). The availability of digital resources has led to different perspectives on how library collections should be developed, managed, and preserved. Digital technology opens up a new perspective

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for information society (IFLA). Libraries play a crucial role in the development of society and are the prime providers of information; also they are the rapid users of information and communication technology as well as the new digital technology. Today, besides preserving and providing access to 'born digital material' several libraries are involved in converting non-digital resources to digital with the use of the latest technology. Allard, 2002 stated that digital libraries are more in demand because of their infrastructure that combines end-user needs with technology and efficiently the vast amounts of complex data. The concept includes two corresponding ideas: the technologies used for creating, searching, and using information in the electronic environment and the human aspects of information seeking. Library users increasingly anticipate everything to be immediately available on the web, free of charge at each point of service, with the assurance of permanent access, very often through one central access point, i.e. online portal or digital library.

Several national and international initiatives are taken for the development of digital libraries and to support an inclusive information society. The trigger point in this regard was recorded when the United Nations conducted a phase World Summit for information society (WSIS); including the first phase in Geneva in December 2003 and the second phase in Tunis in 2005. More than 170 countries participated in this world summit. The World Summit for information society (WSIS) anticipated people centric, inclusive and developed oriented inclusive information society by 2030 where every individual can create, access, utilize, and share information. Further, WSIS highlighted harnessing potentials of crosscutting information and communication technology (ICT) to achieve sustainable development goals, considering the important role that ICT has to play in the overall development of the nation. The key principles endorsed by WSIS are;

- Promotion of ICT in the nation's development
- To create an inclusive information society
- Providing access to information and knowledge
- Providing equal opportunity to all to contribute information, ideas and knowledge

It was discussed that ICT in education will help to enhance the global platform for the sharing of information and reduce barriers to equitable access

to information for economic, social, political, health, cultural, educational, and scientific activities.

Further, they define the role of public institutions such as libraries, archives, and museums in the protection of information to support an inclusive information society. It was recommended that there should be a mechanism to provide easily accessible information and strengthen the access points to preserve the documentary records. The role of content creators, publishers, and producers, as well as teachers, trainers, archivists, librarians, and learners, is considered significant in creating and promoting the information society, particularly in the least developed countries.

IFLA Initiative for Digital Library

In addition to this in December 2010 International Federation of Library Associations and Institutions (IFLA) provided a manifesto for digital libraries. The motto of this manifesto was bridging the digital divide and the information divide by making accessible the world's rich culture and heritage for all through digital libraries. This manifesto is endorsed based on the United Nations' sustainable goals and UNESCO recommendations for information accessibility. It encourages all nations, and organizations to build digital libraries for the development of inclusive information society. It also promotes the sharing of knowledge at a global level to support education, research, tourism, and sharing of scientific and cultural heritage for all. As a result, everyone will get the opportunity to participate constructively in the development of their social environment.

IFLA's manifesto defines digital libraries as:

"An online collection of digital objects, of assured quality, that are created or collected and managed according to internationally accepted principles and standards for collection development and made accessible coherently and sustainably, supported by services necessary to allow users to retrieve and exploit the resources".

Further its explanation is added about collaborative digital libraries formulating a vital part of the library services and system by applying new technology and providing easy access to the digital collection. A collaborative digital library allows public and research libraries to form a network of digital information in response to the needs of the information society. The systems of all partners in a collaborative digital library must be able to interoperate. It complements digital archives and initiatives for the preservation of information resources.

Digital Environment and Academic Libraries

Academic libraries play a very important role in the education, research, and overall development of students. The 21st century users are digitally born users and they anticipate that libraries should provide information services remotely as well as expediently to fulfill their information needs. As rightly said by Buchanan, et al. (2012) library users do not bother from where they are seeking information, what matters for them is easy availability, time saving, and free-of-cost information. Therefore libraries also need to ponder on users' expectations, their information needs, and the provision for easy accessibility of information.

They need to reframe their collection development policy, document preservation policy, and integration of information and communication technology to provide a digital library interface for Generation Z readers and researchers.

Traditionally libraries are used to collect, process, disseminate, and preserve non-digital materials for current and future generations. However, with the inclusion of ICT, the nature of library services and functions is upgraded drastically. Digital resource generation become one of the substantial parts of the library organization. The need to have a mechanism in place that allows a library to capture, in route, the information resources as it is delivered to the end-user was realized and discussed by the world's library professionals, researchers, and information scientists (Frumkin & Kessler 2014). The process of building a collection for a digital library and providing easy and free access to the digital collection needs assessment of certain important issues. Along with this preservation policy and method also need to be reworked and reframed. For instance, one has to reassess the selection policy of material, collection development policy, and preservation and conversion techniques. Also, quality control, library budget, data management techniques, document encoding, copyright, and rights management are some areas that need to be considered while planning and designing a digital library. The next part of the paper discussed each stage in detail.

Selection Policy for Digitization

It is always useful when planning a digitization project should look at policies established by other institutions to draft the policies for digitization. The material (non-digitized) selected for digitization should match the information needs of the users; it should have specific objectives and significance

for preservation. Every material should have intellectual and research value which means selected content must justify all the efforts, costs, and other resources that will be needed. Cleveland (1998) articulated that the most important thing that needs to be considered is each decision should be weighed against a cost-benefit analysis for the end users and the institution. The research scholars and academicians could be part of the resource selection committee for digitization. Another point of consideration is selection for digital conversion should work under the premise of access and ease of use, rather than physical deterioration. The selection of material for digitization could be affected both by its physical condition and by the existing quality of the bibliographical descriptions available for it. Material that is fragile damaged and in poor condition may present too many risks of further damage being caused by handling to allow it to be scanned without special care or some basic conservation treatment. This will involve additional costs, and the institution will need to consider whether other collections in better condition should have priority, or whether the costs of preparation and conservation should be built into the costs of the overall digitization project

Collection Management in Digital Environment

Digital collection management and development involves the organization of images, naming of images, and description of images, use of metadata, and use of technology to create a digital library.

The possibility of being able to use a collection of digital images in the way it was intended depends not only on conversion standards and quality controls but also on how the collection is managed. Malhotra, A. (2007) stated if the purpose is to meet not only short-term needs but also to provide accessibility over time, steps have to be taken to satisfy both current use and the expectations of future users. Computers are not able by themselves to interpret logical relationships in a collection of source documents, for example, sequences of folders and pages. Therefore, this has to be mirrored in the way the scanned image files are named. There are two approaches for this: (1) to use a numbering scheme that reflects numbers already used in an existing cataloging system, or (2) to use meaningful file names. Both approaches are valid, and what best fits a certain collection or group of source documents should be chosen.

In the digital domain, there is a heavy dependence on correct labeling for future retrieval. Serious consideration must be given to descriptive

metadata. Nair & Jeevan (2006) confirmed that to describe digital images there is a need for metadata that is structured data about data. Metadata can also be defined as data that facilitates the management and use of other data. The use of metadata is closely related to rules for the description and cataloging of printed publications, archival records, and artifacts. The difference is that in the digital world, additional categories of metadata are required to support computer navigation and the management of data

Files (Malhotra, 2007). Metadata describing digital images can contain information of different kinds. The Library of Congress project "Making of America II" in 1998 identified three categories of metadata:

- *Descriptive metadata* for description and identification of information resources, it is ideally meant for resource discovery and identification.
- *Structural metadata* defines the physical structure of a complex entity to facilitate navigation, presentation, and information retrieval.
- *Administrative metadata* for management and processing, mainly deals with the rights, permissions, and ownership information.

There are two main approaches to metadata solutions: data management techniques and document encoding.

Data management techniques

The new terminology like big data, data mining and text mining will illustrate the massive growth of digital data available for research purposes (Elo, 2020). Hence, a meticulous bibliographic description of material in the digital environment is essential for quick and easy retrieval purposes. Metadata is the data that describes the content and attributes of any particular item in a digital library (Cleveland, 1998). The level of descriptive metadata (data about data) always determines the degree of retrieval. Therefore, it is of crucial importance that a digital imaging project starts to decide the deepest level at which the digital images will be searched and retrieved. Elo, K. (2020) described metadata as an ontological model providing a structure for information arrangement, it aimed to fulfill the ontological model with material-related descriptive information. Because without proper metadata, it is simply a meaningless document collection of files, values, and characters. Moreover, existing metadata like finding aids indexes, etc. has to be surveyed,

and if adequate, linked to the image files. Nair & Jeevan (2006) and Digby, T. (2021) mentioned most common file format for storing master versions of digital images is TIFF (Tagged image file format). The practice of recording metadata into the TIFF header is widespread, and the advantages are obvious: it ensures a close connection between the source document, the conversion process, and the image file that is the result of the conversion. Libraries all over the world have for decades used MARC (Machine Readable Cataloguing) as a metadata standard, (Cleveland 1998) stated that to meet new demands in retrieval, for the Web, the Dublin Core Metadata initiative at the beginning of the 1990s presented with a set of fifteen descriptive elements of metadata. These elements are intended to be simple, international, and cross-sectorial. Dublin Core is today one of the most widely accepted metadata standards in the world.

Document encoding

Initially, many digital projects and programs use SGML (Standard Generalized General Markup Language) or parts of it like XML (extensible Markup Language). The purpose is to bind together images and give access to structural elements in single objects or whole collections. Document encoding can also be used in systems where data are taken from underlying databases and transformed into standardized representations for exchange. Nowadays many open-source software are available to create digital libraries for instance Dspace, Greenstone, and much-known Koha. Kucirkova, N. (2018) advocated that the software providers of digital libraries should make sure that the digital platform is in line with the latest data preservation, management, privacy, and security regulations and that they protect not only users' privacy but also the titles they stock against illegal use, copying or distribution. Digital libraries can be extremely beneficial to encouraging sharing, exploration, and new ways of learning and teaching

Conversion techniques

It is a process to convert source documents into scanned images, all data is converted to a particular file format for storage. There are several widely used image formats in the market, some of them are meant both for storage and compression. The physical condition of the source documents can affect the conversion in different ways. Fading text, bleed-through of ink, burned pages, and other kinds of damage sometimes destroy the informational content but more often set physical limitations on

the possibilities of catching information during the scan. Therefore, the need for pre-scanning treatment of the source documents has to be identified. Resolution is another important issue in the scanning, the higher the resolution and higher the file size, and better the quality of the image. However, sometimes the resolution in the high image gets de-pixelized and the file unnecessarily becomes heavy (Malhotra 2007). It is important to maintain the balance between smaller file sizes and better-quality images.

Quality control programme

One has to ensure that the types of equipment and language used for document scanning and storing of images should be universal. Maintaining the quality of source documents for a longer duration is mandatory for every digitization project. The digitized document should be accessible easily and should not compromise the quality of original content since it contributes to the sustainability of information society through digital resources.

Copyright in the digital environment

Copyright means that an author's right to an original work of literature, music, and art is legally protected. The biggest obstacles to building digital libraries are legal and institutional (they should provide support). Higher education institutions have a long history of independence in the way they provide services over decades, copyright law has forged a delicate balance between the interests of publishers and consumers, with libraries in the middle. Therefore Shigwan, (2015) cautioned that while selecting materials for digitization librarians should have a clear understanding of copyright law and rights of ownership. First sale doctrine permits libraries to lend books without requiring libraries or readers to further compensate publishers and authors. Similarly, over time, libraries have negotiated extensions of fair use laws that allow students and faculty to copy materials without violating copyright. Current copyright law is not particularly generous to consumers, and the direct application of it to digital documents. Further, Cleveland (1998) suggested there should be some instrument that will assist librarians in managing copyrighted material, and provide them measures to lend information without a copyright violation, creative commons licensing and awareness about rights management might be the solution to deal with copyright issues.

Preservation of digital content

Preservation of books has been an important concern of librarians for decades, but the preservation of digital resources raises important and urgent issues. Books and manuscripts may be discovered decades after their publication and are still readable, even if the paper is fragile. Digital information, however, cannot be read in even a few years if the creator did not have the foresight to include information about the hardware and software used to create the content. For the first time, the decision to preserve must be made at the point of creation. This requirement could create new barriers for libraries and require more research to resolve it. Shigwan, (2015) emphasized the fact that digitization itself is the method of conservation and preservation of resources, the whole purpose of digitization is to ensure protection of information and enduring value for access by present and future generations. At the same time, Cleveland (1998) argued that "In the preservation of digital materials, the real issue is technical obsolescence, it means constantly upgrading with new technical solutions", to achieve optimum utilization and sustainability of digital resources. Therefore it is recommended that libraries, archivists, and other public institutions should take care of the intellectual property rights issues when preserving resources in digital form. Digitization policy should be integrated with existing preservation and conservation services to ensure the physical preservation of documents is not overlooked in their treatment before scanning.

CONCLUSION

The COVID-19 pandemic amplified the need and importance of digital resources in education and research. Originating in the nineties, digital library research continued to resolve issues related to the usage of technology, selection of resources, intellectual property rights, and creation of space for community discussion. Digital libraries transform the media of information into a more accessible form for future users of information (Mani, 2017). Due to exceptional technological innovation evolving user expectations and digital information-seeking behavior, digital libraries are posing new challenges for information scientists. Academic libraries are a central point of access for students in higher education, providing extensive digital resources, online services, and information literacy instruction (Frank...et al 2021). To provide

an equitable and accessible digital environment academic libraries should rework their policies and procedures. The correct selection of technology to surrogate the non-digital resources into the digital, sustainable preservation and conservation techniques for digital resources is significant. Along with this development of indexing tools, instructions for digital literacy, and, delivery of digital objects instantly and globally, interoperability within and across digital libraries and providing the right interface for community discussions are essential for the creation of an inclusive information society.

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