Advanced Features of the Developed Digital Library to Supplement Conventional Information Access: A Perceptive View

Saikumari N[1*], Krishnamoorthy P[2], Sudhakar K S[3]
[1*]R.M.K. College of Engineering and Technology
Chennai, India
[2] R.M.K. College of Engineering and Technology
Chennai, India
[3] St. Joseph's College of Engineering
Chennai, India

ABSTRACT: *Beginning with removing time and space constraints imposed by traditional physical libraries, digital libraries promise significant societal benefits, especially for e-learning in the digital or mobile age. Since libraries are one of the service sectors most affected by information technology, library and information professionals must acquire this knowledge and skills. This article summarizes recent developments in digital libraries, including their characteristics, strengths, and weaknesses, which come from our perception. The views in this work reflect the influence of information technology on traditional information search.*

1. Introduction

Digital libraries filter the available unstructured digital information and present it in the most usable form to the end-users. Most of the digital information hosted by them is accessible via web platforms. They have recently enabled us to form new digital communities by fundamentally altering how we communicate, collaborate, learn, teach, transfer and share knowledge. In this sense, a digital library is classified as a resource environment that may be accessed in digital mode[1].

The term "digital library" has replaced the older term "electronic library", which has been used for the past 20 years to refer to non-book libraries that use computers and communications.

According to Wilensky, "the digital library" is supposed to consist of several available information services that producers will make available and users can access via automated agents. Traditional libraries have a limited role to play a part in this paradigm. Initially, dial-up access to online public access catalogues was the prime scope of creating digital libraries (OPAC). However, the phrase raises diverse associations for certain people. It can simply refer to the computerized and networked library system to the broader user community.

2. Description of "Digital Library"

When the term "digital library" was searched for on the web platform through Google, the most popular commercial search engine, many retrievals occurred. One such significant page is Wikipedia which defined it as a "library in which collections are stored in digital formats (as opposed to print, microform, or other media) and accessible by computers." A "digital library" might be defined in many different ways. The terms "virtual library" and "electronic library" are frequently used interchangeably. The following components have been noted as being present in all of these definitions: A "Collection of digital objects (text, video, and audio), as well as methods for access and retrieval, is referred to as a digital library as far as users are concerned, as well as for choice, arrangement, and upkeep.[1] According to this definition, a library is a structure that houses collections, which are groups of digital items that have been organized for access. An informal collection of material saved in digital formats and made available across a network along with supporting services is what a "digital library is."

The digital library is more than just a collection of digitized materials with information management software. In addition, it refers to a set of actions that support the development, dissemination, use, and presentation of data, information, and knowledge over their life cycle. In the middle of the 1990s, with the advent of the Internet and the need to make information open and easily accessible, research on digital libraries flourished. The concept of digital libraries (DLs) as a branch of libraries was made possible by the rapid development of the Internet in the 1990s and the library and information community's adoption of it. Whether it is physical or virtual, it is a branch and needs to have specific characteristics.[2] A digital branch is a library branch that offers services digitally exploiting Internet access. Because a digital unit has a group of real people, an actual building, a whole collection, and a genuine community existing on and around it, it offers considerably more than a standard library system in many aspects. [3]

Libraries and information centres offer numerous different sorts of information resources and services. Services and informational material are evolving. The worldwide network internet has given the digital world's libraries a new dimension. Libraries should be equipped with the most advanced technology available to stay up with cyberspace, according to librarians. A global platform for strategy development, interaction, communication, collaboration, and information search is provided by the digital networking and communication infrastructure in this new library. This platform offers a wide range of digitalized products, such as databases, news and information, books, magazines, TV and radio shows, movies, video games, music CDs, and software, all of which can be downloaded anytime, anywhere.[4]

3. Features of Electronic (Digital) Library

Collecting, organizing and sharing information resources are the primary responsibilities of all traditional libraries. Libraries have traditionally been considered places where books, manuscripts, musical scores, and other literary and artistic works are available for use, not for sale. It is a facility where individuals can access resources and focus on collection and safekeeping. A digital library, on the other hand, is the collection of digital computing, storage and communication devices, as well as the content and software required to reproduce, reproduce and extend the services provided by traditional libraries. Otherwise, a digital library is a computer-based system for collecting, organizing, searching and distributing digital content to end users. It is more than a collection of digital content; It consists of a web interface and, in some cases, a virtual world and civilization. It takes up less space, data is accessible anywhere and everywhere through communication networks, and it speeds up searching. Many such collection sources are linked to digital because it is not separate entity. [5, 6]

The characteristics of a digital library are reflected in the below passages.

(1) Libraries that cater to specific groups of people.

(2) A group of systems contribute to the functioning.

(3) Libraries that combine accessibility and education.

(4) Barrier-free library with various access methods, fast and effective.

(5) A rich, durable, well-managed, well-organized library in various formats containing material otherwise unavailable.

In addition to serving specific communities or constituencies as traditional libraries currently do, digital libraries will include digital materials beyond their physical and administrative boundaries, even if those communities are widely distributed across the web. They will need the skills of librarians and computer scientists to succeed. Three essential elements that form the theoretical basis of digital libraries are included in the definition of the digital library. [7]

1) People

2) Sources of information; and

3) Technology

4. Laws governing Digital Library

The institutional, political and economic processes required to access and preserve digital content create digital libraries. A digital library may sometimes be an entirely new system. Still, it is an electronic or digital representation of a traditional library with functions integrated with existing and evolving service structures.

Ranganathan [8] organized and categorized written material according to his five laws. He established the traditional five laws of library science as the driving force for designing and supervising libraries. Let's develop valuable structures and frameworks for creating new digital information systems. To help us to design and manage digital information systems in the 21st century, the five laws of library science are tailored as per the current needs as follows:

(1) Digital materials are for use
(2) Digital resources ensure each resource for every user
(3) Digital resources save users'' time.
(4) Every user gets their digital resources
(5) Digital libraries are growing every day.

5. Principles of digital library

Creating a digital library requires a lot of money and resources. These concepts are self-evident, but it's easy to overlook them when forced to make a system with little time or money. Before embarking on such a project, it is essential to consider some basic concepts of creating, using and maintaining any digital library. These guidelines apply to digital libraries where objects are always in digital form ("born digital"), conversion projects that convert natural objects into digital format, and "hybrid" digital libraries of both types.

The primary function of a digital library is to organize conveniently and generally provide access to a wide range of digital information. You can use the following ten guidelines to design and build any digital library system: [9, 10]

(1) Prepare for expected change.

(2) Know the subject matter.

(3) Appropriate parties are involved.

(4) Create an operating system.

(5) Make sure there is no obstruction.

(6) Consider data rights.

(7) Automate as much as possible.

(8) Accept and follow directions.

(9) Ensure excellence.

(10) Pay attention to persistence.

6. Significant Roles of digital library

The concept of digital libraries (DLs) can be defined as the systematic collection, storage, and processing of large amounts of information and knowledge while providing practical and efficient retrieval and query services through digitization and the Internet. Over time, the advent of DL has taken library modernization to a new level. This was due to the rapid growth of the Internet in the 1990s and its adoption by the library and information community. To this end, a digital library system must provide at least the following essential services: Repository services for managing and storing digital materials, A search service to help you find information and a user interface through which end users can interact with digital objects.

Digital libraries promise additional societal benefits, starting with removing time and space constraints imposed by traditional physical libraries. Digital libraries exist in interconnected data storage and computing systems accessible to anyone; unlike physical libraries, they are kept in places accessible only to those who enter them. When digital libraries reach their full potential, citizens can access vast amounts of human knowledge from anywhere. The Internet offers a glimpse of the possibilities from one access point.

The primary responsibility of the digital library is to collect, manage, preserve and provide digital materials.

Some features of the digital library include:

(1) Provide users with a friendly user interface.

(2) Use of network resources to ensure ease of access.

(3) Help library function of accessing and ensuring full access.

(4) Improve information retrieval, access, and advanced search.

(5) Improve library efficiency.

(6) Make it possible to do impractical manual searches in the digital environment.

(7) Protection of Information Owners.

(8) Digitize special collections to preserve them.

7. Significance of Digital Library

7.1. Incremental Features of Digital Library
Digital libraries can hold more information than traditional libraries because they require less physical space to store data than conventional libraries. Therefore, the cost of maintaining a digital library is significantly lower than that of a traditional library. Traditional libraries must spend much money on staff, book maintenance, rent and new books. Digital libraries eliminate these costs.

Traditional libraries differ from digital libraries in several ways. With a comprehensive and accurate search engine, you can access many text, pictures, audio and video resources. Digital library can be accessed anytime, anywhere and does not require a physical location to build a collection. By accessing the Internet, users can access information on their computer screens. It is a network of multimedia systems accessible at the touch of a finger.

Special features of digital libraries making them more advantageous are listed below: [6]

There are no physical limitations: As long as there is an Internet connection, people worldwide can access the same knowledge through digital libraries without visiting in person.

Uninterrupted Accessibility: Information is accessible at all hours of the day or night.

Multiple gateways: Allow multiple users to use the same resource simultaneously. For example, it's easy to jump from a list to a specific book, then to a particular chapter, and so on.

Collect message: Users can search the entire collection using any search term (word, phrase, title, name or subject). A user-friendly interface of the digital library will facilitate access to its resources.

Protecting and preserving digital information so that it is always accessible is an important topic. The main problem with digital content preservation is technological obsolescence. Similar to the degradation of paper in the papermaking age, technology is becoming obsolete in the digital age. The protection of digital knowledge will require the constant development of new technological solutions, unlike pre-digital libraries, which had to worry about climate control and the de-acidification of books.

Space: Digital libraries can hold more information than traditional libraries simply because digital information takes up very little physical space, whereas conventional libraries are limited by storage space. When libraries cannot scale, digitization is the only option.

Seamless integration of network resource sharing is possible because one digital library can easily link to any other resource in other digital libraries.

Cost: In theory, the maintenance cost of a digital library is lower than that of a traditional library. Traditional libraries must spend money on staff, maintenance, rent and new books. Although digital libraries have eliminated these fees, it has recently been found that operating a digital library is not necessarily cheaper. Prices for converting print resources to digital format, the technical expertise of employees who maintain those resources, and for maintaining Internet access, Digital libraries can incur significant costs (i.e. servers, bandwidth, etc.). Every few years, digital library content must often be "migrated" to the latest digital media. The hardware and trained workforce for this process can be costly.

Additionally, Chore and Salwe (2010) [11] list the following benefits of digital libraries:

(1) To preserve the priceless records, unique collections, and special collections of libraries, archives, and museums.

(2) Protected Sources of Information.

(3) Download and print tool.

(4) Provide faster access to resources held by libraries around the world through the use of better-automated catalogues.

(5) Promote using a single interface to find scholarly books and articles in print and digital formats.

(6) Search engine optimization to conduct multiple simultaneous Internet searches and prepare commercial databases and library collections.

(7) Users can browse instantly.

(8) Cross-references to other documents.

(9) Shorten the link between authors and users.

(10) Save on preparation/preservation costs and money and space.

(11) Unlike material preserved in any other form, digital technology allows for many concurrent users from a single source.

(12) Full-text access

7.2. Negative aspects of Digital Library
Thanks to new technologies, digital libraries now have many benefits, but also some tend to lead to produce many disadvantages [4], such as:

(1) Expensive investment when we resort to newer digital resources.

(2) Technology (hardware and software) is updated, and hence investment is required

(3) Storage media needs a good network connection.

(4) Advantages are offered for data publishers rather than for creators.

(5) Skilled digital library professionals are required to handle digital resources.

(6) Guidance and training for users are periodically required to update their knowledge of new digital library developments.

(7) Prevention of hacking of digital library websites is a significant challenge.

Thus the virtual library promotes the commercial interests of the learners, less cost, easy accessibility, data collection and storage, physical limit, 24/7 availability and preservation of data digitally [12]. Out of the above discussions and various studies, digital libraries must be preferred in the current scenario to match with advanced information technology the producers use and the ultimate utilization of the same by the users, especially the learners [13].

8. Conclusion

Information technology has changed the world and has become an essential resource for modern information retrieval. The development of digital libraries is crucial, as library collections not only include printed books but also increase as users use electronic resources. Additionally, speed and efficiency are among the most apparent advantages of digital in-field data collection over manual sources. Regardless of their previous perceptions of digital libraries, understanding their importance was given attention. Digital libraries will facilitate distance learning environments and support scientific research and development. This may enable new information collection and knowledge expansion, storage, processing, and transmission measures that will significantly impact the national economy.

Conflict of Interest

The authors do not have any conflict of interest.

References

[1] Shen X X., Zheng Z., Han S G. (2008) A review of the major projects constituting the China Academic Digital Library. The Electronic Library, 26, 39-54.

[2] Whitten., Ian H., David Bainbridge., Stefan J., Boddie. Greenstone.(2001). Open-Source digital library Software. D-Lib Magazine, 7, (10).

[3] David Lee King. (2009) Guidelines for Transforming your Library Website. Library Technology Reports. 45(6), 5-9.

[4] Kavita Ajay Jadhav. (2011) Digital library: today's need- a review. International Multidisciplinary Research Journal. 1(11), 17-19

[5] Sangsuree Vasupongayya, Kittisak Keawneam, Kittipong Sengloilaun, Patt Emmawat (2011) Open Source Library Management System Software: A Review. World Academy of Science, Engineering and Technology, 77, 973-978.

[6] Hanadashisha Warr, P. Hangsing. (2009) Open source digital library software: a literature review. Proceedings of the National Seminar on "Preservation and Conservation of Information Resources in Knowledge Society: Issues, Challenges and Trends. 238-258.

[7] Ali Shiri. (2003) Digital library research: current developments and trends. Library Review. 52 (5), 198-202.

[8] Ranganathan, S. R.. (1931) Five Laws of Library Science.

[9] Vishwanthan K.R., (2001) Digital Libraries: development and principles, Library Review. 50 (1), 10-16.

[10] Alexa T., McCray Marie, Gallagher E., (2001) Principles For Digital Library Development. Communication of the ACM. 44(5), 49-54.

[11] Chore, N.V., Salwe S.M., (2010) Library Sources and Service In Digital Environment. Proceeding of state level seminar on role of information technology in library. 8-9.

[12] Rakeshkumar M., (2016) digital libraries: definitions, issues, and challenges, Innovare Journal of Education, 4 (3), 1-3.

[13] https://egyankosh.ac.in/bitstream/123456789/35931/5/Unit-5.pdf