Digital Libraries: Prospects and Challenges in this Modern Era

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ABSTRACT

Digital libraries promote several new societal benefits, especially for e-learning in this digital or mobile era, by eliminating the time and space restrictions of conventional libraries. Unlike the traditional libraries which need buildings and are accessible to only those who walk through their doors, digital libraries work with inter-networked data storage and computing systems that can be accessed by people from any corner of the world. At their full potential digital libraries will enable any citizen to access a considerable proportion of all human knowledge from any location. This paper highlights the impact of information technology on the traditional library and provides an overview of digital library principles, functions, objectives, characteristics, advantages, and disadvantages.

Key words: Digital libraries, e-learning, time and space constraints, characteristics, advantages, disadvantages.

INTRODUCTION

A library is generally considered as an infrastructure of a school, college, university, or any other educational institution. Libraries support the teaching learning process both directly and indirectly. Library is defined as a place where the activity of collecting, processing and dissemination (service) of all kinds of information takes place, both printed and recorded in various media such as books, magazines, newsletters, films, tapes, tape recorders, videos, computers and others. All these information sources are arranged according to a particular system and are used by people who need them.

Over time, libraries began to adjust, and develop in accordance to the rapid changes in the society. Digital Library is the result of technological developments in the educational field. Digital library system is now widely being used in various university libraries across the world. Digital library is an ICT based library management system where users of library services can find information related to books or other documents in electronic form. The transformation of conventional library into digital library is not just the impact of information technology, but also a result of demand for a change in the paradigm of higher education, which includes a paradigm shift in learning with e-learning, changes in scientific communication that lead to e-research, and urgent needs to create information literacy in higher education.

The advent of Digital library system certainly offers more advantages for each user, especially users from the education sector such as students for whom library is a must, to support their learning process. In addition, the digital library practice certainly has its own challenges which the managers of educational institutions should be ready to face. This paper in-depth explores the advantages and challenges of Digital Library system which in turn helps us to understand and estimate the position of Digital library in the present educational scenario.

METHOD

Literature related to earlier research on this topic published in the form of journal articles, newspaper articles, conference papers, thesis has been used as sources of information. The collected data is then studied and analysed to draw conclusions on the advantages, challenges, and the position of digital library practice in modern times.

DISCUSSION

Digital libraries are the same as traditional libraries, the only difference is that the material provided here is digital. Terms such as 'electronic library' and 'virtual library' are used synonymously. Digital library is a library that stores information in digital form or fulfilment of information needs in digital form from external information sources to be distributed to users both registered as certain customers and the community in general.

Digital libraries are those that encode journals, books and information in digital format. The data in the form of text, images, etc., is encoded so that they are stored, retrieved, and read by using a computer or an android phone. A digital library is a digital collection representation of information content, along with hardware, software, and staff to support library functions. It comprises a series of integrated services to capture, catalogue, store, search, protect and retrieve information. It is a large collection of digital objects, consisting of all types of materials and media, which are stored in distributed information repositories and accessed through national computer networks. Digital libraries can include documents, images, sound, and information collected from ongoing events (eg: Photos from weather satellites). It can include reference material or resources that are accessible through the World Wide Web. Digital parts of library collections or original material produced for the web can also be included in a digital library.

Some of the noteworthy digital libraries are the Project Gutenberg, the World Digital Library and the Europeana Library. The World Digital Library was created by the U.S. Library of Congress and inaugurated on 21 April 2009; the Europeana digital library, inaugurated on 20 November 2008, is an open access library that serves Europe. National Digital Library of India (NDLI) is a virtual repository of learning resources which is not just a repository with search/browse facilities but provides a host of services for the learner community. It is sponsored and mentored by Ministry of Education, Government of India, through its National Mission on Education through Information and Communication Technology (NMEICT). It is developed, operated and maintained from Indian Institute of Technology Kharagpur. The Library was launched in pilot form in May 2016 and it was dedicated to the nation on June 19, 2018.

PRINCIPLES OF DIGITAL LIBRARY

In the view of Sun and Yuan, building a digital library is expensive and resource-intensive. Before taking up the initiative, it is important to consider some basic principles underlying the design, implementation, and maintenance of any digital library. These principles apply not only to conversion projects in which analogy objects are converted to digital form, but to digital libraries in which the objects have always been in digital form ("born digitally") and to "mixed" digital libraries in which the objects may be of both types. The principles are, in some sense, self-evident, yet it is easy to overlook them under pressure to build a system, despite limited resources and time. The purpose of a digital library is to provide coherent organization and convenient access to typically large amounts of digital information. The following 10 principles help in designing and developing a digital library system. They are: (1) Expect change. (2) Know your content. (3) Involve the right people. (4) Design usable systems. (5) Ensure open access. (6) Be aware of data rights. (7) Automate whenever possible. (8) Adopt and adhere to standards. (9) Ensure quality. (10) Be concerned about persistence.

DIGITAL LIBRARY: FIVE LAWS

In most cases Digital library is an electronic or digital face of a traditional library and its activities will be embedded within current and evolving service structures. S. R. Ranganathan (1999), the father of Library Science in India stated five laws to classify and manage the printed information. The same five laws of library science may be rephrased as given below to guide us in architecting and managing digital information systems of the 21st century:

(1) Digital resources are for use.

(2) Every user seeks digital resource.

(3) Every digital resource needs its user.

(4) Save the time of the user.

(5) Digital library is a growing organism worldwide.

FUNCTIONS OF DIGITAL LIBRARY

As mentioned by Patra & Nahak (2014), the major functions of digital libraries are:

● Providing accessibility to wide-range of content to its users independent of location and time

● Providing accessibility to main information resources

● Supporting the multimedia information besides the text

● Providing access to network over Intranet as well as Internet

● Providing user-friendly interface

● Providing hypertext links for better navigation

● Provision of Client-server design

● Highly developed search and consequent recovery

● Amalgamation with other digital libraries

Brangier et al. (2009) stated the core functions of digital libraries as:

● To store resources for giving a competent right to use relevant data

● To authorize the data provided for improving the reliability of the digital library

● To substantiate knowledge for updating the learning

● To evaluate the data for helping the consumer to understand the records

● To insist an individuality for expressing a high-quality, optimistic and significant image

● To connect by helping the users to bond with dedicated social networks

● To provide animation functionality for increasing user interest through creation of digital experiences

The other functions mentioned are:

● To offer responsive interfaces to its users

● To reward with further network functionalities

● To assist the conventional library functions

● To improve the advanced searching, accessing and recovery of data

● To make the library operations better

● To facilitate users to perform those searches which are not manually possible

● To protect the user information

● To protect exclusive compilation by means of digitization

OBJECTIVES OF DIGITAL LIBRARY

Trivedi (2010) specified the objectives of the digital library as:

● Accelerate the methodical creation of methods to gather, stock, and systematize content in the digital format

● Encourage competent deliverance of data in an economic way to every user

● Promote supportive endeavours in study resources, computing, and communication networks

● Reinforce communication along with alliance amid educational organizations

● Initiate leadership function within the creation and distribution of knowledge

Deshpande (2018) explains the purpose of digital libraries as:

● The digitization of libraries is aimed at making libraries for keeping rapidity with the current advancements

● The digital libraries are aimed at providing accuracy, flexible options and trustworthiness within the library as well as the information centre.

● The digital libraries have the objective to reduce the continuous workload and to save time for bringing accuracy and pace to keep the resources protected.

● Digital library is there to enhance the competence in technological processing of library resources and transform the effectiveness of library management and supervision.

Pavani (2007) describes the objectives of digital library as:

● The handling of the records of all forms in a united manner irrespective of the form of data, providing it is possible to store them within digital documents.

● The information is allocated diverse kinds of access as per the types of users, which are permitted to them.

● The sharing of information is to be provided so that authors are able to make data accessible to further faculties to combine within their courseware. This is to be done with no duplication and just by 'pointing' to the contents through an appropriate set of metadata constituents.

● The information, which is handled by digital libraries to be made interactive and on the basis of multimedia.

● To provide customization as per the users that might need special features of the information and the system. This can be the case with users having special needs.

● To provide re-usage of the materials by developing things in the finest form so that there is a flexibility to combine and support multiple syllabus.

● To provide cross-institution cooperation, as these libraries are normally associated with the Internet, that facilitates the information to be utilized from diverse establishments in an appropriate way.

FEATURES OF DIGITAL LIBRARY

Vasupongayya et al. (2011) explains the features of digital library as:

● A collection of digital computation, storage space and communications machines collectively through the information and software required to replicate, follow and expand the services offered by traditional libraries

● It comprises a browser interface along with a virtual room and society

● It needs a smaller amount space and the information could be made accessible by means of communication networks to everyone at every location, at the same time as making simple searches with pace

● It is not a solo unit and is usually connected with multiple resources of various further groups

Sun & Yuan (2012) defined the features of digital library as:

● A library that served a defined community or set of communities.
● A corporation of numerous units

● Library which includes education and right to use

● Library which offers quick and proficient access through numerous accessible approaches

● A library having a compilation that is huge and continues more over time, structured and handled, enclose lots of formats and include objects that might be else not obtainable.

Rathee & Kaushik (2010) has explained the diverse features of digital library as:

● The digital library compilations comprise set and lasting records. The current libraries possess further dynamic collections as the digital settings further enables the fast management of transient information.

● The digital libraries are developed on the basis of digitally oriented technologies. The fundamental supposition that these libraries include just digital resources might not be true. It is possible that digital as well as non-digital data resources material have the feasibility to coexist.

● The digital libraries have been utilized by people working single-handedly. There is a focused work outlook concentrating on a set of information analysts, completing the work along with the documents and technologies which are supported.

● It eliminates the substantial boundaries of transferring the data internal and external to countries. It is observed that the supporting communications as well as collaboration is very significant, similar to data seeking activities.

ADVANTAGES

Compared to conventional libraries, digital libraries provide more benefits for each user. Traditional libraries are limited by storage space; digital libraries have the potential to store much more information, simply because digital information requires very little physical space to contain it. As such, the cost of maintaining a digital library is much lower than that of a traditional library. A traditional library must spend large sums of money paying for staff, book maintenance, rent, and additional books. Digital libraries do away with these fees. Digital library has certain characteristics, which make them different from traditional library. It has expansive and accurate system of searching with large volumes of text, image and audio-video resources. Digital libraries do not need physical space to build collection and it can be accessed from anywhere, any time. The user can get his/ her information on his own computer or phone screen by using the Internet. Actually, Digital library is a network of multimedia system, which provides fingertip access.

The following are some of the major advantages of digital libraries:

Diversity of content

Conventional libraries lack the flexibility to include a wide range of content due to physical space constraints. Digital libraries, on the other hand, store plethora of content in a virtual environment, including eBooks, magazines, articles, blogs, papers, videos, podcasts, and audiobooks. Modern digital libraries store their resources in the cloud so that it is accessible to their users at any time and from any location.

Easy access

When readers visit a traditional library, they devote both time and effort to find the right book. Furthermore, locating relevant information in a physical book takes time. But Digital libraries, are designed with built-in search capabilities. Many digital libraries use popular search engines like Google, Bing, and Yahoo to speed up content searches. With this technology the readers find their needed information quickly and easily. They can also make use of the search feature to find and locate digital resources.

Round the clock availability

Traditional libraries have their working hours, limiting users to use library resources at their leisure. Digital libraries, on the other hand, permit readers to read eBooks, listen to audiobooks, and watch videos 24/7 irrespective of place and time. All that one needs is an Internet-powered device to access and read digital library materials. This is the main reason why more and more readers turn to e-libraries these days.

Unlimited Access to Multiple Resources

In a normal library, multiple readers cannot read the same book at the same time. They must wait for the other reader to return the book. But in the case of a digital library, multiple readers can have simultaneous access to the same book, video, and audiobook. Many educational institutions are turning to digital libraries as it allows a large number of students from various locations to access the same book at the same time.

Real-Time Interactions

The latest library management software includes features that make it convenient for readers and administrators to interact. Additionally, by establishing online communities, many software solutions encourage reader interaction. Readers can quickly collect additional or specific information about a book or article using these real-time interaction options.

Reduce Resource Depletion

Ordinary libraries must take necessary steps for the preservation and conservation of their library resources. As readers regularly access and reuse physical library resources, librarians face challenges in preventing the deterioration of books, vinyl records, cassette tapes, and other resources. Physical storage devices, such as CDs, DVDs, and cassette tapes, are prone to damage and loss. Due to this, traditional libraries have frequently failed to preserve valuable research, studies, and content. Digital libraries now store their resources in the cloud. Furthermore, sophisticated security measures are used to ensure that only authentic readers have access to the content. As a result, digital libraries save important research and studies for future generations.

Easily Updated

Small libraries, in contrast to large university libraries, frequently lack adequate funding to purchase new books, magazines, and other content resources. But it is easier and economical to keep the digital library up to date on a regular basis. Many publishers now allow digital libraries to make current editions and magazines available to readers on a pay-per-read basis. As a result, by giving readers access to the most recent publications, digital library grabs their interest.

DISADVANTAGES

While digitalisation of libraries has its advantages, unlimited access could sometimes lead to aimless searching, and limited learning. Some of the drawbacks of digital libraries are listed below:

Facilities

Digital library establishment requires physical equipment and non-physical equipment. Physical equipment means building, hardware (computer, LAN, WAN, etc.), electricity supply, etc. Non-physical equipment means software, digital collections, internet network, etc. It will be difficult to introduce digital library system at all levels of educational institutions, especially in a developing country like India. There are many places in our country that still do not have internet access and continuous power supply. These conditions will be the biggest challenge for any head of the educational institute who wants to establish a digital library.

Human Resources

It is important to consider the human resource ability. Human resources entrusted to manage or operate digital libraries must understand the use of technology in the system. To find a technically able person to operate the digital library maybe a bit difficult.

Copyrights

Most of the authors don't sell their books in digital form due to copyrights issue. Digital library materials are more vulnerable to copyright infringement problems. If there is no proper security system that protects the digital collection, it leads to copyright infringement. In addition, data in digital form has greater chance to get plagiarised, if not protected.

Digitalization

The core of a digital library is the collection in digital form. The addition of a digital collection must be complete and the quality must be good. Quality here means the level of readability of a digital collection; it should be clear. The digitization of old books is much more difficult than new books because some of them in long run become almost unreadable. This is another challenge in digitalisation.

Cost Issue

The cost issue is another basic problem in every organisation going for digitalisation. Digital libraries are more economical in operation than conventional libraries, but the establishment of new digital libraries requires more investment in terms of building infrastructure to procuring computer equipment.

The problems of digital library, as briefly stated by Harilal (2018) are as follows:

- Shortage of funds

- Incapability to take in frequent costs

- Shortage of skilled staff or staff of suitable expertise

- Shortage of technical knowledge

- Shortage of developmental policies

- Insufficient infrastructure

- Lacking management help

- Lacking professional identification

- Non interest among library staff for commencing digital initiatives

- Lacking team efforts

- Lacking sufficient training of staff

- Legal concerns such as IPR Issue

- Network issues

- Vulnerability of media

- Technical obsolescence

- Issues of security such as hacking, virus impact, HD format

- Protection concerns

CONCLUSION

Information technology has changed the world and it has become an important tool for retrieving information now a days. The basic function of any academic library is to provide quality information to its users quickly and easily. This objective is accomplished effectively by the digital library. It stands first in fulfilling the requirements of its users. Digital libraries are mainly stocked with sources of information that are available on the Internet in open access format, and they are notable for the ease of access to collections, the networking possibilities they offer, and the universal availability of their collections. In addition to storing content, digital libraries provide means for organizing, searching, and retrieving the content contained in the collection. They offer many search options to the library users and save their valuable time. Though there are some challenges in establishing and using digital library, we need to find a way to overcome them as digital libraries are the future of a nation as they promote scientific research and development, facilitate distant-learning environment, and bring significant influence on the national economy.

REFERENCES

1. Abbasi, F., & Zardary, S. (2012). Digital Libraries and its role on supporting E-learning. Global Journal on Technology, 1.

2. Brangier, E., Dinet, J., & Eilrich, L. (2009, July). The 7 basic functions of a digital library-Analysis of focus groups about the usefulness of a thematic digital library on the history of European integration. In Symposium on Human Interface (pp. 345-354). Springer, Berlin, Heidelberg.

3. Deshpande, J. (2018). Digital Libraries: An overview of Standards, Protocols and Formats. International Journal of Library and Information Studies, 8 (1).

4. Harilal, L. Problems and Prospects of Digital Libraries of select Libraries in Telangana: A study.

5. Lynch, C. (2011, September). The futures of digital libraries: The evolution of an idea. In International Conference on Theory and Practice of Digital Libraries (pp. 2-2). Springer, Berlin, Heidelberg.

6. Patra, P. S., & Nahak, B. (2014). Planning, Designing and Developing of Digital Libraries and Digital Preservation.

7. Pavani, A. M. (2007, September). The role of digital libraries in higher education. In International Conference on Engineering Education, Rio de Janeiro, Brazil. http://www. ineer. org/Events/ICEE2007/papers/637. pdf.

8. Rathee, S & Kaushik, S. (2010). Digital Library: Today's Need.

9. Shem, M. (2015). Digital Library Education: Global Trends and Issues. Journal of Education and Practice, 6(17), 66-70.

10. Sun, J., & Yuan, B. Z. (2012). Development and characteristic of digital library as a library branch. IERI Procedia, 2, 12-17.

11. Trivedi, M. (2010). Digital libraries: functionality, usability, and accessibility. Library Philosophy and Practice, 381, 2010.

12. Vasupongayya, S., Keawneam, K., Sengloilaun, K., & Emmawat, P. (2011). Open source library management system software: a review. World Academy of Science, Engineering and Technology, 77(1), 973-978.

13. Xie, I., & Matusiak, K. (2016). Discover digital libraries: Theory and practice. Elsevier.