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Value of Digital libraries in education

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Abstract

The idea of digital libraries, the largest online knowledge base that can be stored and retrieved via computer networks, has seen enormous progress in recent years. When it comes to digital document preservation, distributed database administration, hypertext, filtering, information retrieval, and selective information dissemination, digital libraries are thought to be the most sophisticated type of data systems. By providing a vast array of scholarly, research, and cultural materials with multimedia effects that are accessible globally via dispersed networks, this has truly broken down geographical barriers. Information about national digital library initiatives was also addressed in the study. The literature pertaining to the studies relating to how digital libraries emerged is discussed in this article. The audience is informed about the topic in terms of what has already been discovered and explored on the importance of digital libraries and what can all be further explored. The goal is to give readers a brief overview of the idea of library resources being moved into digital libraries with the aid of technology and its expansion based on previously published works. This article also discusses current trends that show how the library has changed over time and how it is now doing.

KEYWORDS: Electronic resources, digital libraries, and digital resources.

Introduction

Digital libraries have been around since the 20th century. Building these digital libraries as robust and comprehensive collections of records that have been visualized regarding them for a long time in the past is still a long way off in the 21st century (Okerson, 2009). The wealth of knowledge has changed the ways in which all parties involved can obtain key information and valuable learning. Over the past few years, digital libraries have undergone substantial change. They are now a part of networking systems in addition to being the digital equivalent of traditional (physical) libraries. They now have the ability to coordinate communication and cooperation between various, far dispersed user groups and communities (Tramboo et al. 2012). Traditional libraries and digital libraries offer nearly identical services. As we progress into the digital format, the only essential difference is that digital libraries are used to preserve the collection. More specifically, these services are technologically oriented, require minimal storage space, and are easily accessible to users in digital format. With the basic requirements of energy and network connectivity for the Internet, digital library resources are available from any location in the world. In contrast to traditional physical libraries, which require human participation for regular operations, computers are now the means of providing digital services to its patrons (Shem, 2015). Various studies have been conducted to understand how users perceive utilizing digital libraries, and they have also identified some obstacles to their widespread adoption. Teachers, research scholars, and university-level students are among the primary consumers for digital records, which contributes to the growth of academic libraries with digital documents (Matusiak, 2012). Academic libraries work toward the theoretical goal of giving users access to a variety of education-based resources and additional services. They also offer guidance on how to locate, use, evaluate, and choose items for each user. By removing physical barriers and

providing classes and academic programs online, modern higher education institutions are improving the learning experiences of their students. The online learning environment offers a unique stage in delivering and accessing the academic information compiled for educational teaching to everyone, at any time, and from any location. Higher education institutions are seeing an increased push in the shift from traditional in-person instruction to online and distance learning due to the development of the Internet and the emergence of online communications capabilities (Sasso, 2016).

This combination of data and user requirements is being transformed through the creation of novel models and architectures, which will improve informed decision-making and enhance the client experience. The enormous amount of data in communicative networks presents significant difficulties for ensuring fundamental security in a distributed environment. Blockchain, which Satoshi Nakamoto first introduced as the Bitcoin cryptocurrency, has progressed beyond that. By providing new elements to system security and efficacy, it is revolutionizing the current digital financial system by facilitating a dependable platform for trading services and transactions across a dispersed network (Srivastava et al. 2018). According to Kolvenbach et al. (2018), blockchain has emerged as a better solution for a number of issues facing the academic community and might be used for a number of activities. Block chains can be used as an additional digital rights management method, according to Hoy (2017). San Jose State University's blockchain project finds the technology needed to host digital peer-to-peer distribution, secure digital first sale rights, and provide an enhanced metadata system for libraries. Instead of copying, digital data may now be shared thanks to blockchain technology. The current generation of users, who require data for research and knowledge acquisition, consistently demands that conventional libraries be established and furnished with the same level of interconnectivity as digital libraries. Academic libraries' services are not easily accessible to distance learners with traditional educational backgrounds, and they are not conducive to meeting their information needs. By concentrating specifically on how academic libraries and librarians offer distance learning library services to teachers and students, this study aims to contribute to the corpus of educational research in the context of remote learning environments. The study's conclusions may be useful in educating academic librarians and administrators about current trends and practices, as well as suggestions for future advancements related to assisting users of remote learning. Initiatives to create library services for distance learning may also benefit greatly from this study.

Through a review of earlier research, this chapter gives a general overview of digital libraries, including information on their resources, development over time, and contemporary advancements. The conceptual view and actual meaning of a digital library are presented in this chapter along with a variety of definitions provided by different research academics. Along with the difficulties associated with this type of learning, it also emphasizes the value of digital libraries for distance learning. Finally, it outlines the features, advantages, main goals, and creation of digital libraries.

Review of literature.

According to Owusu-Ansah et al. (2019), digital libraries have the ability to raise people's standards of life and give underdeveloped countries amazing chances to engage in global politics. It serves as a location for learning, a platform for learning, and an essential teaching tool. From this angle, digital libraries play an important role in remote learning and education. According to Indiramma & Sugunavathi (2019), society is progressing to a point where a vast amount of knowledge derived from printed and published sources can supplant digital information. In order to help shape the future, the library's projects must be connected to both the past and the present. This will be achieved through the acquisition, preservation, and display of materials pertaining to human civilization. It is occasionally necessary to integrate developing technology into the design of these resources. The future library must be digital and have the following features: all recorded knowledge must be available online, these records must be distributed and maintained globally, and they must be available to anyone, anywhere, at any time, using the internet, in any language. The idea of a digital library is essential, and recent efforts to digitize libraries are concentrated on building standalone libraries that can take the place of

the current physical libraries, which are overcrowded because of both budgetary and spatial constraints. However, the policy created for contemporary digital libraries should be able to reach every home where the data is accessible through the internet in electronic libraries and museums worldwide.

Xie & Matusiak (2016) confirmed that the development and building of digital libraries with remote access to scholarly information resources was a result of the popularity of computing networks and the improvements in digital computing. Access to a wide range of resources, from books to three-dimensional artifacts, has resulted from it. The advantages of switching from a traditional setup to a digital version are enormous. According to Rane (2015), digitizing documents takes a significant amount of time, money, and effort. Before making the switch to digitization, a number of considerations and causes must be taken into account. Consideration must be given to whether digitizing the papers is worthwhile or not. The documents are valuable enough to warrant the investment of finances for digitalization because they contain a lot of information. Digitalizing documents that are already out-of-date and large is not a good idea. Furthermore, because they are prone to deterioration, old and unique papers that are heavy yet valuable should be digitized. They can be used by anyone without having to deal with the original format.

When digitizing the papers, the audience must be determined. Printed copies can be used in place of a digital setup if the library has very few patrons or even if there are many potential patrons but they lack the computer access necessary to access digital libraries. The chosen documents ought to constitute a collection. In order for the papers to be shown as a collection in digital format, it is important that they are validated and have certain characteristics. Additionally, the ease and convenience of digitizing the papers should be taken into account. This is an important factor that must be taken into consideration. It's likely that some printed items are difficult to convert to electronic format. Therefore, in order to ascertain whether digitizing the papers is simple, it is necessary to verify their physical characteristics.

According to Bandietal (2015), there are little restrictions on the procedures and their upkeep, even if libraries worldwide are moving toward a digital setup. The following are the problems with digitization:

Data Size: Once illegible, a large portion of the stored media that has been praised by people worldwide may lose much of its value. As a result, information or documents that are translated to digital format and stored in those formats typically become obsolete over time, and because of the magnitude of the data, sustaining these formats is much more challenging than with printed media.

Type of Documents: In this day and age, when information is being dispersed everywhere and crowding out the market, librarians are unsure of what records should be digital and which ones shouldn't be. This is because, as the printing and publishing industries and the subject matter undergo rapid advancements, even documents that are in high demand today may become outdated tomorrow.

Multilingual Text Support: As part of the library's many purposes, it is anticipated that the digital library system would support multilingual information. This is necessary to support tasks like gathering, organizing, storing, and gaining access to the digital collection. Another problem is keeping such records and papers digitally.

Technology Obsolescence: The innovations in technology that are enabling digitalization have continuously changed drastically. Data formats, storage medium, software, and computer system hardware are all undergoing massive revolutions. When the backend's supporting equipment become outdated over time, the digital resources become unreadable, resulting in the loss of the digital data.

Copyright Issues: As libraries undergo digitization, copyright issues become more important issues for them to manage. Typically, researchers use graphical items and facts from books and journals without the authorized person's prior approval. Customers of

digital libraries frequently request those journal issues and the infrequently available historical archives that do not comply with the library's copyright. Customers become extremely dissatisfied with digitization as a result of this worry.

Objectives

Explaining the function of a digital library in a student's educational journey is the aim of this study. The concept, generations, background, definitions, need, goals, and functions of a digital library will all be covered in this research.

Background: Development and Advancement

Wells first proposed the idea of a digital library in 1737. Wells (1737) supported the "world brain" theory. He noted that it is currently highly pointless to collect and disseminate knowledge around the world. Bush (1945) requested that the researchers consider a futuristic setup that includes an individual compilation of his whole collection of books, records, and communications, and that is automated for consultation with greater speed and flexibility. Bush used the same concept as the digital library. Licklider (1960) also envisioned a network of "thinking centers" that would integrate the function of modern libraries with anticipated advancements in information recovery and storage, so strengthening the bond between human intelligence and computing systems. In his novel "The Library of Babel," Borges (1964) also spoke of a magnificent endless library that had a record of all possible collections. Thus, Licklider, Bush, and Borges promoted a system that primarily relied on the analogous idea of a digital library.

Due to the Internet's growth and the extraordinary opportunities it presented for finding and disseminating human knowledge, research and development efforts on digital libraries began in the early 1990s. The first digital library established by an American university was the Mercury Electronic Library at Carnegie Mellon University (Mercury, 1992). The Digital Library Initiative (DLI) in the US was the program that started the process of bringing such systems online, which can be referred to as important digital libraries. Other national programs that were started included eLIB in the UK and EU-funded projects that included a dedicated Network of Excellence, DELOS for forming the European context (Griffin et al., 2005). A number of significant initiatives were carried out under the Digital Library Initiative (DLI). Even though none of these configurations are in use now, technological advancements have led to increasingly sophisticated digital libraries. In Europe, the establishment was brought about by DELOS, which emerged as a working group in the 1990s and established a DELOS thematic network under the Fifth Framework program (200-2003). Google was built as the successor to similar initiatives. The DELOS DL Reference model was the main achievement of the DELOS Network of Excellence (2004-2007). The European DL research community was eventually established as a result of DELOS's advantages. Since its inception, the digital library system has seen substantial development. These days, they have developed into complex networked setups that may help dispersed, diverse worldwide communities communicate and work together. They can also manage a range of digital things, including images, videos, multimedia, and programs (Candela et al., 2012). Ghana's lack of digital libraries has demonstrated a barrier to distance learning due to a lack of clear funding, dependable policies, and strategic assistance for digital library design (Peters et al., 2015). Nowadays, people all around the world are becoming more interested in digital libraries. The Library of the Inscription Cultural Heritage Africa, which provides information about collections inscription about the cultural heritage, has been recognized in a variety of research studies on digital libraries (Audunson & Shuva, 2016). Digital libraries in India were also built by the Ministry of Communications and Information Technology. Various projects were started under various categories in establishments like Delhi University, CDAC centers, State Central Library & Government Press, and many more (Sudhahar, 2016).

Chinese university libraries are getting recommendations based on both objective and subjective metrics to improve the quality of digital library services in order to guarantee the satisfaction and loyalty of their readers (Ilahi et al., 2019).

The definition and concept of a digital library

The process of converting written and printed documents to an electronic format is known as digitization. Text, images, audio, or a combination of these multimedia formats can all be used to convey the information. The outcome of this digitalization Progress is an electronic document that can be stored on the Intranet or the Internet. This electronic document may be in either the Tagged Image File Format (TIFF) or the Portable Document Format (PDF). The PDF format is typically used to store content on the Internet when the file is relatively small and easily downloadable and transferable. Additionally, PDF offers a remarkable display or printable format that works on all platforms and can be read with Acrobat Reader. Records of preservation value are primarily stored in TIF format (Islam, 2011).

The digital age has brought about a significant change in the ways that information is stored and made accessible. This change has resulted in changes to the way libraries, compilations, and associated services are conceptually organized. New terms like "digital libraries,""wallless libraries," and "virtual libraries" have been coined to describe libraries in the modern period. A digital library is defined as an electronic version of a library that offers direct contact along with digital storage. This library combines data sources and technology to enable remote access while removing physical barriers between resources. Along with information recovery and delivery for added comfort, digital libraries also support conservation (Kanjilal, 2017).

The digital library is more than just a single thing. This library requires the technology to link resources from various collections. Customers of digital libraries and resources can clearly see the links between them. Digital library compilations include authentic digital objects like images, transcripts, and many more, in addition to document replacements like bibliographic records. There are several ways in which a digital library differs from a traditional one. A digital library places a strong emphasis on having access to digital materials from anywhere, as digitization eliminates the need to own or accumulate physical items. Labeling down to personal words or glyphs and browsing based on hyperlinks, keywords, or any other specific characteristic of association are made easier by digital setup. Using broadcast technology, digital libraries remove the necessity for physical proximity and enable access through electronic means (Bamgbade et al., 2015). It has been noted that the digital library plays a significant role in promoting information use. Digital libraries offer a solution to the main storage issue that traditional libraries face. Digital information is needed in every field, hence efforts are being made to increase the quantity of digital libraries (Kaur, 2018).

Digital Library Definitions

The term "digital library" was first used in print in a study submitted to the Corporation for National Research Initiatives in 1988. The NSF/DARPA/NASA Digital Libraries Initiative was largely responsible for the widespread use of this term in 1994. Bush (1945) developed an experience-based concept known as the "Digital library." According to the definition provided by The Digital Library Federation, digital libraries are organizations that have the resources, including specialized personnel, to choose, organize, provide intellectual access to, interpret, disseminate, maintain the integrity of, and guarantee the longevity of collections of digital works so that a specific community or group of communities can easily access them (Shiri 2003).

Digital libraries can be explained as follows, per Calhoun (2013):

the field of study and practice with users from various fields and professions, primarily the fields of publishing, education, cultural heritage, and computer, information, and library sciences. These systems and services, which are often publicly available, (a) contribute to the advancement of knowledge and culture; (b) comprise structured collections of digital content (items or links to items, annotations, and metadata) intended to support the needs of particular communities; and (c) tend to make use of an

architecture that originated mainly in the field of computer and information science/library and typically consists of a repository, mechanisms for search and other services, resource identifiers, and user interfaces (both human and machine).

Additional meanings for digital libraries:

According to Fox and others (1995, 24), the phrase "digital library" evokes a variety of feelings in all readers.

According to Lesk, Fox, and McGill (1993, 12, 19–24), the anticipated future library will be based on the electronic data. be widely available through computer networks and contain both text and graphics. Distribution is anticipated.

A service, an architecture, a variety of informational sources, databases of figures, images, sound, video, and much more are described in Borgman 1993, 122. There are also a variety of tools and capabilities available to both consumers and suppliers.

The following is explained by Lynch and Garcia-Molina (1995): Systems that give a population of users the logical right to access a large, organized repository of information and knowledge, enhanced by digital technology's capabilities to extend printed and digital resources, provide a logical view of an incredibly large collection of data combining resources in digitized forms featured through permanence with conventional library roles and mission, and along with various digitized records emerging as a solo digital library setup.

According to Zhao and Ramsden (1995), a comprehensive collection of all the information about frequently used resources, including books, research papers, educational materials, and multimedia learning tools, that are immediately available to staff and students via personal computers.

Structured collections of digital materials are defined by Lesk (1997). Through the digital display of data, which is made possible by computer systems, the configurations and data compilations are combined, which is always accomplished by libraries.

A description of the digital library would require an understanding of the role and nature of public institutions in a postindustrial society, according to Lyman (1996).

According to Waters (1998), institutions are businesses that provide the means, including skilled personnel, to select, organize, present intellectual access to, deduce, distribute, ensure the durability over time, and ensure the dependability of collections of digital works so that a particular society or group of societies can use them voluntarily and affordably.

Digital libraries can be defined as a collection of electronic resources and associated technological skills for the production, search, and use of information (Borgman 2000, 42:1). 2 A team of users creates, compiles, and organizes digital libraries, and their collective skills support the data needs and applications of the team. Sociotechnical systems, networks of technology, information, documents, people, and practices (Bishop, VanHouse, & Buttenfield, 2003).

According to Candela et al. (2007), it is the primary tool for intellectual functioning that is free from individual, sequential, physical, theoretical, or rational barriers to information. widely accepted concepts that moved away from a data-focused setup that only supports the institution and provides access to particular compilations of

informational sources, to an individual-centered setup that offers users special, evolving, and specially designed facilities. The concepts of how digital libraries operate have evolved from static data storage and recovery to facilitating communication, association, and other dynamic interface types. Digital libraries' capabilities have expanded from coordinating distributed

multimedia record compilations, sensor data, mobile data, and pervasive computing functionalities to managing frequently centrally located text.

The need for a library

Libraries and other information centers are changing from physical spaces that house a large number of books and other printed materials to electronic access to a growing collection of digital information. As information and content became available online, libraries also started to change how they provide information to their patrons. Digital libraries open up new avenues for students. By using digital library resources, students can access the most pertinent information sources in a second by simply pressing a button. Globally, the number of students is increasing, and different service kinds are being designed to meet the needs of both local and external consumers. Digital libraries are necessary for education for a number of reasons.

- Having professional access to pertinent information
- No matter the time or place, learners must always have access to vast amounts of information.
- Materials that are original, appropriately classified, and methodically organized for convenient access, along with the appropriate requirements and usage permissions, should be archived.
- To obtain up-to-date information,

- Having reliable information to use
- For trustworthy data for additional research evaluation
- For easy access, use hypertext links to navigate to the appropriate sources.
- For establishing a connection with social network experts
- for sharing their knowledge and promoting the research they have produced
- Being able to store data for anytime access
- To save time when visiting a library and looking for pertinent materials

Generation of Digital Library

Before 1990, libraries and computers were at the forefront of using technology, including microfilm and typewriters. Although computers and related technology have been used extensively in libraries since the 1960s, standard computers, such as the IBM 360 series, were still lagging far behind in terms of meeting library needs. Carnegie Mellon University's Mercury Electronic Library has established itself as the preeminent digital library in the United States (Mercury, 1992). Before the development of web-based systems, Mercury's architecture was unique in distributed computing. Digital libraries were recognized as a field of study in computer science by the early 1990s. According to Griffin (1998), NASA, DARPA, and the National Science Foundation (NSF) collaborated on the first digital libraries initiative in 1994. The original web version was approved by the National Science Foundation as well, substituting the phrases "electroniclibrary" and "virtuallibrary" with the plural "digital libraries" for the domain name.

Seemed to have a lot of mistakes for applications in digital libraries. With the exception of its fundamental protocol, HTTP, which is insufficient, it does have a few key features, including an easy-to-use version of HTML, access to URLs for finding data, and MIME types to designate formats. Later, HTTPS emerged as the most secure communication protocol. Plug-ins provided a practical way to connect the newest types of data. JavaScript was first introduced by Netscape, and Sun created Java apps to download code to a browser. With all the advancements in the latter part of the 1990s, digital libraries were no longer considered innovative. One notable example of a library setup from that era was the DSpace software for managing institutional repositories. According to Seadle & Arms (2012), digital libraries have evolved from being unusual to commonplace during the past 30 years. It was

discovered that the 1990s were the pivotal and important decade. Before 1990, metadata was the main emphasis of computing in libraries. Computing reached a point in the early 1990s when it was economically possible to compile large collections of works online and access them via networks.

Alguliyev and Ismayilova (2017) noted that the system of configuration of the current generation of e-libraries is eagerly growing due to the rapid improvement of the latest information and communication technologies as well as the broader dispersion of computer fields within the library studies and information sciences. The process of improving the quality of service provided to e-library users has been continuously evolving as a result of the increasing capability of web-based technologies and the growth of cooperative intelligence. The emergence of Web-based technologies like Web1.0, Web2.0, and Web3.0 within libraries creates new opportunities for both librarians and patrons. The interfaces offered to customers have improved as a result of the evolution. People with a wide range of psychosomatic states, knowledge, and competence are the ones who use e-libraries. Therefore, the goal is to provide every consumer with an appropriate, useful, and interactive interface. Due to web technology, user interfaces have significantly improved, increasing user comfort. As digital libraries continue to evolve, numerous innovations have been made. The tool that gives customers a forum to express their ideas and knowledge is a blog or wiki. In e-libraries, wiki technologies and blogs have proven useful for organizing activities like collaborative work, creating courses or teaching corps, and involving a wide range of interested parties, including students, lecturers, and dynamic teaching platforms.

The technology known as RSS (Really Simple Syndication) guarantees that consumers will receive information and content about current events without requiring access to specific websites. Web technology serves as the platform for the distribution and availability of various multimedia files, which provide a variety of ways to display multimedia resources. Better, consistent, and higher quality working standards pertaining to information resources and human resources have been offered by social networks and the e-library information system. These libraries have been using the social network architecture to create vital components like user groups, profiles, e-library finances, and much more by user intervention. Supplying a comprehensive search engine through the use of bookmarks and tags.

Functional Digital Library

- According to Patra and Nahak (2014), the primary purposes of digital libraries are:
- granting its users access to vast amounts of content regardless of their location or convenience
- Making the primary information resources accessible
- In addition to the text, supporting the multimedia information
- granting access to the Internet and intranet
- Having an interface that is easy to use
- Including hypertext links to improve source navigation
- Client-server design provision
- Advanced research and the recovery that follows
- Integration with additional digital libraries
- According to Brangie et al. (2009), the primary purposes of digital libraries are:
- Keeping resources forgiving and having the ability to use pertinent data
- To approve the information supplied in order to increase the digital library's dependability
- To validate knowledge in order to update the learning
- To assess the data in order to assist the customer in comprehending their records
- To encourage an individual to convey a significant, positive, and high-quality image
- To connect by assisting users in forming bonds with specific social networks

In order to increase user engagement through the production of digital experiences, the following additional features are provided:

- To provide its users with responsive interfaces
- To look forward to additional network features
- To support the standard library operations
- To enhance advanced data access, retrieval, and searching
- To improve the way the library operates
- To assist users in stopping searches that are not feasible by hand
- To safeguard user data
- To safeguard exclusive compilations through digitization

Objectives of digital library

According to Trivedi (2010), the objective of the digital library is:

- Quicken the process of developing systematic ways to collect, store, and organize content in digital format.
- Encourage skilled data delivery to all users in a cost-effective manner.
- Encourage helpful initiatives in the areas of computers, communication networks, and study resources.
- Boost cooperation and communication within educational institutions.
- Establish a leadership role in the production and dissemination of information Deshpande (2018) defines the goal of digital libraries as follows:
- The goal of digitizing libraries is to enable them to keep up with the latest developments.
- Accuracy, adaptability, and reliability are the goals of digital libraries, both inside the library and the information center.
- The goal of digital libraries is to lessen the constant workload and to save time for providing accuracy and pace to the preservation of materials.
- The purpose of digital libraries is to improve technological proficiency in processing library resources and to revolutionize the efficiency of library administration and oversight.

Pavani (2007) outlines the goals or purposes of digital libraries as follows:

- managing all records in a consistent way, regardless of the type of data, as long as digital documents can be used to store them.
- Different types of access are granted to the various types of users in order to access the information.
- The purpose of information sharing is to enable authors to make data available for other faculty members to use into their course materials. This should only be accomplished by "pointing" to the contents using the proper set of metadata constituents, without any repetition.
- Digital libraries are used to make the information interactive and based on multimedia.

- to offer customization to users who might require specific information and system features. When users have particular needs, this may be the case.
- to give re-use of the contents by creating things in the most elegant ways possible, allowing for flexibility in combining and supporting various syllabuses.

- In order to enable cross-institution cooperation, these libraries are typically connected to the Internet, which makes it easier to use information from various establishments in a suitable manner.

Aspects of Digital Library

Vasupongayya et al. (2011) describe the characteristics of digital libraries as follows:

- Together, these digital computers, storage devices, and communications devices provide the data and software needed to duplicate, monitor, and grow the services provided by conventional libraries.
- It includes a browser interface, a virtual room, and a society.
- It requires less room, and the data might be made available to everyone everywhere via communication networks while also enabling quick and easy searches.
- It is not a standalone entity and is typically linked to numerous resources from different additional groups.

Sun & Yuan (2012) outlined the characteristics of a digital library as follows:

- A library that provides a specific group of people or a collection of groups of people
- Including a lot of units
- A library that offers instruction and the ability to use
- A library that provides rapid and effective access through a variety of accessible methods
- A library that has a vast collection that keeps growing over time, is organized and managed, has a variety of forms, and contains items that could not otherwise be available.

In 2010, Rathee and Kaushik described the various characteristics of digital libraries as follows:

- Compilations of digital libraries include permanent records. Since digital environments further facilitate the quick handling of ephemeral information, libraries today have more dynamic collections.
- Digitally oriented technologies serve as the foundation for the development of digital libraries. It may not be accurate to assume that these libraries only include digital materials. The possibility of coexistence of digital and non-digital data resources material exists.
- Individuals working alone have made use of the digital libraries. There is a targeted workout that focuses on a group of information analysts, finishing the work and supporting the documents and technology.

- It removes the significant restrictions on data transfers between nations, both internal and foreign. Similar to data-seeking operations, it is noted that supportive communications and collaboration are extremely important.

Types of ditital library

According to Kumar Mishra (2016), a digital library is categorized according to the digital collection it has, the technology it uses, and the particular services or work it offers its patrons. Digital libraries can be divided into three main categories: Stand-alone, Federated, and Harvested. Stand-alone libraries are typical libraries with self-contained resources that are located on a local area network and contain one or more collections. A federated library consists of multiple independent libraries with diverse collections that combine to create a virtual library with an open user interface. Although it lacks the full functionality of a digital library, a harvested digital library is one that gathers digital entities into metadata.

According to Deshpande (2018), digital libraries can be grouped according to their format and standards. Digital library standards distinguish amongst the following types: 1) bibliographic; 2) record structure; 3) encoding; 4) communication; 5) protocol; and 6) formats. Data sourced descriptions that adhere to established criteria are referred to as bibliographic. Record structures provide a logical and physical explanation of the data record. The process of converting data from one format to another is called encoding. The level at which data or messages are exchanged over a connection is known as communication. According to Rangier et al. (2009), digital libraries serve three main purposes and can be categorized based on archived knowledge in accordance with formats, reliable information, and updated actualized knowledge. The protocols are rules that are set up to control the data exchange between two things set up for connection.

Digital libraries can be categorized into groupings in a variety of ways, according to Kanjilal (2017). The digital libraries are grouped according to where they came from. For example, the digital libraries that were developed in the United States as a result of DLI 1 and DLI 2 (the Digital Library Initiatives) or the eLib (Electronic Libraries) initiative that was started in the United Kingdom are classed. Additional categories of digital libraries include:

- Early digital libraries like Gutenberg and Elinor
- Institutional publications' digital libraries, including ACM and IEL
- National libraries like the British Library, the Library of Congress (THOMAS), and the Digital Library of Canada have developed digital libraries.
- Digital libraries at colleges such the California Digital Library, SunSITE Bodleian Library, Berkeley Digital Library, DIGILIB, iGEMS, and SETIS
- Digital repositories of specialized materials, including the Grainger Engineering Library, Informedia, and Alexandria
- Digital libraries for research initiatives like GDL, NCSTRL, and NDL

- Digital libraries have hybrid library initiatives like HeadLine.

Advantages of Digital Libraries:

- The advantages of digital libraries in the areas of Chore and Salwe (2010)
- preservation of priceless documents and unique and outstanding library, archive, and museum collections.
- Information sources that are protected
- The ability to download and print
- Providing quick access to the universally located library's resources through automated improved catalogs
- assisting with the search for both digital and print copies of academic books and publications using a single interface
- Search optimization, the potential for concurrent online investigations, the creation of commercial databases, and library-collected works
- Users' instant pursuit
- supplying cross-references for additional records
- Cutting the chain of command down to the end user
- Preparation, space, and money savings
- Digital technology management allows access to several users at once from a single location, which is completely impractical when using resources and data stored in traditional formats.
- Fulltext search
- Warr and Hangsing (2009) outlined a few of the primary advantages of digital libraries, including:
- Eliminating physical boundaries: Users of digital libraries can obtain comparable information without physically visiting the library, as long as they have a reliable Internet connection.
- Accessibility at all times: Users can obtain data accessibility at any time of day or night.

- Many accesses at once: There is no possibility of knowledge gaps because the same data or sources are available to numerous users simultaneously.
- An organized approach: One advantage of digital libraries is that they make more comprehensive information accessible, and in a much better structured style. This makes it easy to navigate from the record to a particular book, then to a particular chapter, and so on.
- Information Recovery: When using digital libraries, users can search the entire collection using any term (word, phrase, title, name, or subject). With clickable content accessibility, digital libraries can provide incredibly helpful user-friendly interfaces.
- Preservation and upkeep of:
- Space: Because digital data requires a lot less physical storage space to store, digital libraries have the advantage of being able to store a lot more material than traditional libraries, which were limited in their ability to do so.
- Networking: Because a particular digital library can easily connect to all other digital library resources, flawless resource sharing is made possible by digital libraries.
- Cost: In theory, maintaining a digital library is less expensive than maintaining a traditional library.

The Challenges and Ordinary Library

According to Harilal (2018), the issues the digital library faces are:

- Lack of funds
- Unable to absorb frequent expenses
- Lack of personnel with the necessary skills or expertise
- Lack of technical expertise
- Lack of development-related policies
- Not enough infrastructure
- Absence of management assistance
- Not having a professional identity
- Library employees' lack of interest in starting digital initiatives
- Absence of teamwork
- inadequate staff training
- Legal issues like IPRIssue
- Problems with the network
- Media Vulnerability
- Technical obsolescence
- Security concerns like hacking, virus impact, and HDformat
- Concerns about protection

Conclusion:

Any academic library's main goal is to satisfy its patrons by offering high-quality information services that allow them to get the appropriate information at the appropriate moment. The development of the digital library is very beneficial in meeting user needs. Users of the digital library have numerous options for completing tasks as quickly as possible. By using the digital library, the library may save space and users' time. Despite this, consumers have certain difficulties when use the digital library. The role of librarians should be crucial in addressing these issues. The library should have well-trained staff members who can assist patrons

and instruct them in the usage of digital resources. The most crucial thing a librarian can do is try to raise user awareness of digital resources.

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