



“INCREASING ROLE OF WEB TECHNOLOGIES IN THE LIBRARIES AFTER GLOBALISATION”

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1.1 INTRODUCTION

Libraries and information centres are increasingly converting themselves to provide information services over the internet, with improved access to remote library resources, facilities, and services. In the networked era of information, Indian higher education institutions have recognised the paradigm shift in library and information services and are providing improved web-based library and information services to their current techno-savvy consumers. In the creation, marketing, diffusion, and storage of information, the growth of web technology has brought new opportunities and problems for libraries and information centres. They are improving as a result of technical advancements. This, in turn, leads to the creation of new services, as well as the modification and spread of current library and information services.

1.2 BRIEF HISTORY OF THE INTERNET

The ARPANET was established in 1969 by the Advanced Research Project Agency of the Department of Defense, and it was the beginning of the current Internet. Despite the fact that earlier network and computer technologies were critical to the Internet's growth, most people see the ARPANET as a watershed moment in its history. The ARPANET program resulted in the first packet switching computer network, which connected a UCLA computer with a Stanford University computer to form a two-node network. The Internet as we know it today arose from this humble beginning. ARPANET was created in part in response to national security concerns and a need to create a decentralized communication network capable of surviving the loss of a major hub as well as the electromagnetic disturbance caused by a nuclear attack. Interface Message Processors were dedicated processors used in ARPANET connectivity (Leiner et al., 1997).



Zakon (2011) used Hobbes Internet Chronology to create a complete timeline; here is a truncated summary of major events since TCP/IP was defined:

- **1980** -TCP/IP specifications are defined
- **1983**-TCP/IP protocols are implemented by ARPANET. MILNET is distinct from ARPANET.
- **1986** – The National Science Foundation (NSF) creates the NSFNET, a network that connects five new supercomputer centers.
- **1989** – At CERN, Tim Berners Lee proposes a new information management system (an acronym derived from Conseil Europeen pour la Recherche Nucleaire). His idea will eventually turn into the World Wide Web.
- **1990** - Due to the NSFNET and ARPANET's overlapping infrastructure and uses, the ARPANET ceases to exist as a separate entity and is replaced by the NSFNET.
- **1991**-Congress passes the High Performance Computing Act . Senator Al Gore of Tennessee presented this bill, which establishes the National Research and Education Network (NREN).
- **1991** – Tim Berners-World Lee's Wide Web (WWW, sometimes known as the Web) goes live at CERN.
- **1993** - A group of programmers from the University of Illinois, Urbana-National Champaign's Centre for Supercomputing Applications (NCSA) creates and releases the MOSAIC browser. Marc Andreessen, who would later found and run Netscape Corporation, was a member of the team. The creation of this user-friendly, graphical browser makes the Internet and the growing Web more accessible to the general public.
- **1995** - Because the original NSFNET has evolved into a more commercialized Internet, NSFNET returns to its research beginnings and transforms into an extremely high-speed network dedicated to education and research. The Internet2 initiative will be born as a result of it.
- **1997**: Internet2 is founded as a non-profit partnership of over 170 universities and institutes in the United States. Its goal is to aid research and serve as a testing ground for future networking technologies.
- **1998**: Google is founded and its search engine is launched.
- **2000**:IPv6 is deployed on the Internet2 backbone network in the year 2000. New Top-Level



Domains (TLDs) are available from ICANN, including .aero, .biz, .coop, .info, .museum, .name, and .pro. The size of the internet is estimated to be 1 billion pages that can be found.

- **2003** - Tim O'Reilly and John Battelle coin the term "Web 2.0" to characterize the interactive, next generation Web, which was first used in a book title by Dermot A. McCormack in the context of ecommerce. Blogs and social networking sites are getting increasingly popular.
- **2004** - ICANN approves the .asia, .cat, .jobs, .mobi, .tel, and .travel generic Top-Level Domains (gTLDs). With social networking and Web mashups, Web 2.0 is gaining traction.
- **2008**- IPv6 addresses were added to six root zone servers. The crawler of Google has reached 1 trillion pages.
- **2010** - Apple releases the first iPad, and smartphone shipments surpass PC shipments. "The Web Is Dead," declares the cover of Wired magazine.
- **2013** - Global device shipments (PCs, tablets, and mobile phones) are expected to reach 2.4 billion units, up 9% from 2012; PC shipments are expected to fall 7.6%, although this will be offset by substantial gains in the mobile sector (Gartner says, 2013).

1.3 STATIC WEBSITE

A static website is one in which the web pages are stored on the server in the format that is sent to the client web browser. It is mostly written in HTML, with Cascading Style Sheets (CSS) being used to alter the appearance beyond HTML. Images are frequently utilized to provide a specific look and as part of the main material. If audio or video plays automatically or is otherwise non-interactive, it may be deemed "static" material. The information displayed on this type of website is usually the same for all visitors. A static website, like sending out a printed brochure to buyers or clients, will normally supply stable, standard information for a long time. Although the website owner may make updates on a regular basis, editing the text, photographs, and other content is a laborious procedure that may necessitate basic website design skills and tools. Static websites are frequently simple forms or marketing examples of websites, such as a classic website, a five-page website, or a brochure website, because they present the user with pre-defined, static material. Text, photographs, animations, audio/video, and navigation menus can all be used to convey information about a firm and its products and services.



Static websites can be modified with one of four types of software:

- Text editors, such as Notepad or TextEdit, which allow you to change content and HTML markup directly within the editing program;
- WYSIWYG offline editors, such as Microsoft FrontPage and Adobe Dreamweaver (previously Macromedia Dreamweaver), in which the site is edited using a GUI and the final HTML markup is generated automatically by the editor software;
- WYSIWYG online editors that create media rich online presentations such as web pages, widgets, intros, blogs, and other documents;
- and Template-based editors, such as iWeb, which allow users to create and upload web pages a web server without detailed HTML knowledge, as they pick a suitable template from a palette and add pictures and text to it in a desktop publishing fashion without direct manipulation of HTML code.

1.4 DYNAMIC WEBSITE

A dynamic website is one that changes or customizes itself on a regular basis and without human intervention. Computer code that generates HTML generates server-side dynamic pages "on the fly" (CSS are responsible for appearance and thus, are static files). To create dynamic web systems and dynamic sites, a variety of software solutions are available, including CGI, Java Servlets and Java Server Pages (JSP), Active Server Pages, and ColdFusion (CFML). To make it faster and easier to construct sophisticated dynamic websites, various web application frameworks and web template systems are available for general-purpose programming languages such as Perl, PHP, Python, and Ruby.

A website can show the present state of a user interaction, keep track of a changing scenario, or provide information that is tailored to the needs of the individual user. When a news site's front page is requested, for example, the web server's code may mix cached HTML fragments with news pieces acquired from a database or another website through RSS to create a page that contains the most up-to-date information.



1.5 APPLICATIONS OF WEB TECHNOLOGIES IN THE LIBRARIES

Web-based technologies in libraries are becoming more prevalent, and libraries all over the world are incorporating them into their daily operations, such as library websites, web-based library and information services, and web 2.0 and 3.0 tools and technologies. These applications have given libraries numerous chances to improve and expand their services. They have altered the way librarians and users communicate with one another, as well as the way the library distributes information and receives feedback.

A library website provides basic information to the public about the library, library and information services, and facilities.

It also delivers detailed information about a library, including information about the library collection, library timing, library working hours, list of subscribed online journals, CAS / SDI / Reference services, popular documents based on circulations, reservations, user feedback, and other services offered by the library. A library webpage can be regarded as a search engine for library information. A library's homepage allows it to quickly communicate its services and facilities to the academic community throughout the world.

The following are some of the most prevalent aspects of a library website:

- Facilitates and promotes library use;
- keeps users up to date on library activities and new services;
- saves the user's time;
- allows for easy distance bridging; and
- serves as a gateway to networked information services.

1.6 LIBRARY WEBSITE SERVICES

Interaction with the library catalogue: An Online Public Access Catalogue (OPAC) allows you to renew or request items by logging into your library account.

Gateway to electronic resources: Libraries can organize the many periodical indexes, electronic reference collections, and other databases they subscribe to through a portal to electronic resources. These materials can be sorted alphabetically, by subject, or by medium.

Library tutorials: Users can use interactive tutorials to learn how to pick and use electronic resources, renew a book, and do other library tasks.

Virtual reference: Virtual reference allows remote patrons to communicate with library employees and get answers to their inquiries, including through email and texting.

Library blogs: Blogs can be used to advertise new library resources or services, as well as providing patrons with another way to contact with staff and provide feedback.



FIGURE 1.1: LIBRARY WEBSITE FUTURES



1.7 DESIGN

Libraries have been increasingly reliant on their websites as the primary portal to their resources and services in recent years. The need of building websites that are more appealing and interesting to visitors has been acknowledged by web designers both inside and outside the library. The aesthetics, structure, and user friendliness of a website are all evaluated using these criteria.

Solid information architecture, clear navigation systems, high aesthetic appeal, intelligible terminology, and user-centered design are the major characteristics in building library websites, according to Becker and Yannotta (2013). Furthermore, Hasan (2014) stated that website design is linked to the website's visual appeal. Website design, according to the author, is divided into six subcategories: aesthetic design, consistency, proper use of pictures and fonts, appropriate color selection, and appropriate page design.

1.8 NAVIGATION TOOLS

Users should be able to rapidly obtain the information they require; navigation is one of the most important factors for a site's functionality, accessibility, and usability.

Hasan (2014) claims that navigation is one of the design components that has a significant impact on website usability. The author also mentioned that website navigation was divided into numerous subcategories, including navigation support, an internal search tool, working links, and no orphan pages. "Navigation gives clues and aid in guiding the users to the information they require," Brower (2004, p. 413) explained.

Easy navigation allows the user to get to the information they need in less time. To help users, a variety of navigational tools were deployed. Users can jump to the institution's primary Web site by clicking on a link to the parent organization's homepage.



1.9 DISCOVERY TOOLS

As previously stated, many of the library's information sources are housed in different silos that must be accessed separately due to catalogues' lack of effective metasearch (also known as federated search) features. This lack of integration adds to the consumer's effort and may cause them to be unaware of what is even available through their library. "These statistics also reveal that a lot of individuals have no understanding what the library offers," Price said in response to the findings of the Pew Research Library Series study (as cited in Chant, 2014). This could be a PR issue in part, but inadequate discovery tools worsen the situation. Users who are less patient with the many alternatives offered by libraries and prefer Google's simple "one box" search interface have risen as a result of the "Googlization" of searching. The cliché "only librarians want to "search," while everyone else wants to "find" has a grain of truth to it. Libraries must continue to develop discovery tools that allow users to search across a wide number of different databases in a unified manner. However, accomplishing this goal might be a more difficult and time-consuming process than merely building better search tools and streamlining the user interface. Effective metasearch involves the collaboration of rival content owners and aggregators who have distinct objectives and interests to defend, just as it does with eBooks, where publishers control much of the process.

1.10 WEB CONTENT

Web content, according to Cohen and Still (1999), should fulfill four purposes: general information, library collections, sources, services, hours of operation, tutorials, referencing, research, and instructional tools. Almost every library website evaluation study evaluates and investigates web content (Aharony, 2012; Wilson, 2015).

The major objective of a library website's content, according to Ebenezer (2003), is to support the library's goal. The mission statement is highlighted on the library website to answer the needs of the academic community and to promote stakeholder knowledge. As a result, the mission statement should be prominently displayed on library websites.



1.11 INSTRUCTIONAL TOOLS

Online information literacy (IL) sessions, search suggestions for OPACs, Institutional Repository/Digital Library, web-based tutorials, and various types of instructional guides, research guides, Citation guidelines, and plagiarism guides are all available on the websites.

1.12 WEB-BASED LIBRARY SERVICES

Web-based library services are those offered through a website that is accessible over the internet and enables integrated access to different databases. "Web based Library Services" is defined by Madhusudhan (2012) as "library services offered using the internet as a medium and the library website as a gateway with the support of an integrated library management system." Web-based services, according to White (2001), are "information services in which consumers ask inquiries using electronic methods, such as email or web forms." Web-based library services offer consumers the ease of accessing material at their leisure, saving them money and time in the process, as well as innovative ways to answer reference inquiries. The availability of these services is not limited by regular business hours, but can be provided 24 hours a day, seven days a week, referred to as 24/7.

1.13 WEB-BASED LIBRARY SERVICES OF VARIOUS TYPES

Users now have access to a wide range of textual information sources. OPAC, Gateways, Portals, Subject Portals, Electronic Journals, Online Databases, Subject Directories, and Search Engines are examples of web-based reference resources and services for accessing information from libraries. The types of information covered by these resources overlap significantly, making it difficult to discern between some of them. For better service to their users, a library should have a good collection of various resources, such as chosen Web links, subscription resources, and library materials, organized on well-organized pages.

1.13.1 The Integrated Library System (ILS)

For decades, the Integrated Library System (ILS) has been a staple of library technology, and it was available in libraries before the Internet was widely used. With the advent of the internet, the ILS has



evolved into a popular online resource that influences every aspect of library operations, from material acquisition and cataloging to patron information and circulation. Many of the services that can be given on the library's website via the OPAC are determined by it.

1.13.2 OPAC on the web

A web OPAC is a web-based library catalog. Users can connect to the Web OPAC's Uniform Resource Locator (URL) at any time and from anywhere in the world to search for the information they need. It allows users to quickly obtain bibliographic information about holdings in a library's collection. The library books and other reading materials are arranged in this system according to the subject content, which is assigned a call number. Web OPAC offers a variety of services, including a library catalogue, a search function for the full database, and group-based restricted access for users and visitors.

1.14 CONCLUSION

A variety of social picture and video sharing services are accessible on the Internet, and the majority of them provide free platforms for uploading, hosting, managing, and sharing photographs and videos online, either publicly or privately. The photographs and movies can be seen, commented on, shared, and downloaded by other users. Instagram, Pinterest, Snapchat, Flickr, Picasa, Onedrive, YouTube, Vimeo, and Dailymotion are some of the most popular photo and video sharing services. The following social photo and video sharing sites are examined in this study.

Although Facebook has become the de facto photo-sharing site for many of its users, more specialized photo-sharing services like Flickr have advantages (www.flickr.com). Flickr accounts come with a full terabyte of storage and are free with a Yahoo email account. It includes tools for uploading, editing, tagging, finding, and sharing images with a private or public audience, based on user preferences. Flickr accounts can be used as a promotional tool or to get library patrons involved in a group project. According to an Educause article, students in an architecture class went on a digital-photo scavenger hunt through a city to collect photographs of architectural types; the images were then uploaded, categorized, and included into the course (EDUCAUSE, 2008). According to Stephens



(2007), some best practices for Flickr and libraries include customizing the profile for the intended use, tagging and categorizing photographs, engaging the user community, and displaying images on the website via RSS feeds. Flickr APIs are accessible for use in creating Web mashups and mobile apps.

YouTube (www.youtube.com), now owned by Google, is similar to Flickr in that it allows users to upload videos rather than photos. It has grown in popularity, and librarians have utilized it to promote themselves and communicate with their communities. Educators frequently use YouTube, creating their own channels or embedding other videos of interest into course materials. Copyright concerns and challenges have arisen as a result of YouTube's ability to allow users to broadcast commercial television and movies alongside personal films.

The platform is being used by libraries all over the world to boost their visibility and presence within the internet user population. Libraries can also use the tool to show off their collection to users by photographing new arrivals and popular books, share library news, events, and information services, show off behind-the-scenes library activities, share library expertise, share library space, photograph library posters, ads, flyers, and other marketing materials, and link Instagram to other library social media accounts like Facebook. Mollett and McDonnell (2014) wrote a blog post about five ways libraries around the world were using Instagram. Libraries were reportedly utilizing the platform to ask people about their favorite authors, to show off their surrounds and collections, to publicize events, to explain what goes on behind the scenes, and to illustrate their history, according to the writers.

Regardless of the name or number given to it, social media and the mobile web provide new prospects for the web. When did Web 1.0 transition to Web 2.0? Clearly, this was not a one-time event; there was no announcement that Web 1.0 would be phased out at 12 a.m. one day. Web 1.0, in this sense, coexists with Web 2.0, Web 3.0, and, most likely, Web 4.0, however that term is defined. The problem is to recognize and differentiate between the trends and technologies that will constitute the next framework for library services and those that are just fleeting fads. Each stage of technological development is frequently referred to as a revolution. Some will be true game changers, while others will fade away, and others will more properly reflect ongoing technology growth rather than a



dramatic break with the past. Despite the fact that this nomenclature has lost some of its utility, everyone is familiar with these distinctions, and they will be utilized to arrange parts of the current discussion. The concept of 2.0 has a strong brand identity, with a meme that represents something current, new, and enhanced. Web 2.0 supports or leads to business 2.0 or library 2.0, albeit with the same drawbacks that such a naming pattern entails.

Any name given to such a diverse and complicated collection of technologies and people would be limited. Regardless of whether the 2.0 designation is appropriate for the Web or libraries, the participation element connected with it is critical to its success and future versions, no matter how they are called.

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