Review of Literature

“With unwearied fingers drawing out the lines of life from living knowledge hid.

- Edmund Spencer"
2.1 Introduction:
For conducting any research study there is a need of conducting literature review, without literature review research study cannot be completed.

The literature review is an important consideration and activity for research studies because it helps to fix the concepts of research which is related to prior research in statistics, concepts, proves the originality and relevance of current research problem undertaken by the researcher. Literature review helps in identifying and stating the research statement based on previous studies conducted and visualized in literature published in different forums. The decision of fixing the research topic and research methodology for the study is also decided on the basis of literature review and plan of research is fixed based on the published literature. It also presents researchers preparedness to complete the research in proper and systematic manner. The literature review is nothing but a critical discussion and summary of literature published and is of 'general' and 'specialized' relevance to the particular topic or research problem. In literature search researcher discover the knowledge exists related to research topic, increase knowledge in research area, helps in identifying gaps in published research and based on this generates new original ideas and presents in the research work as well as avoid duplicating the results and justify the relevance of proposed research. Hence literature search and analysis is considered at the initial stage of research.

2.2 Why Literature Review:
The literature review performs number of important functions like: demonstrates the research activities to the researcher and has read a large amount of literature available on the topic and prove that the student is aware of the wide range of research in theory and methodology related to the proposed research topic. In the research proposal researcher can emphasizes or stress the originality of the dissertation. Without a good literature review, researcher cannot convince that the proposed research is original. Literature review is more than a summary of publications published and used by the researcher. It provides evidence that research conducted may be an original and relevant contribution to topic.
While conducting research number of academic requirements is to be fulfilled by the researcher and literature review helps in performing this important academic requirements. Thus literature review is backbone of the research study and it is to be performed before undertaking research to fix research plans and to decide the steps in approaching to the problem, to identify the newness with support of literature, and finally writing the research report in proper manner. It is now accepted fact that libraries have undergone transformation due to applications of ICT.

A vast amount of literature on various aspects of library websites is being generated and published in learned journals. A brief review of related literature is presented. A comprehensive resourceful library website needs to provide access to the following:

i. access to online databases and e-journals subscribed by the library;

ii. link to other open source databases and institutional repositories available in different subjects;

iii. access to a world of information from e-books, e-theses, e-dissertations, e-prints and web based reference sources, etc;

iv. Linking different web resources available to the webpage irrespective of priced and free.

2.3 Role of Web pages / Sites:

In this context of change, the libraries have brought in revolutionary changes in the concept of organization/institution, functioning and management of library and information systems throughout the world (Houghton, 2000). The convenience and availability of e-information sources from the Web have dramatically altered the information landscape and the functioning of libraries (Kuchi, 2006). Website serves as the primary tool in the delivery of services (Shropshire, 2003) and to market the library products (Balas, 1998). Fact which needs to assess the quality of academic libraries on the web (Chao, 2002). The library’s home page represents a new platform for the delivery of varieties of library services (Bao, 2000) and gives academic libraries the leverage and ammunition they need to outperform competitor websites and regain the loyalty of students, teachers, and researchers alike (Detlor and Lewis, 2006 ).
2.4 Evaluation of Web pages:

On the evaluation of the website it is said that, “Evaluation is basically a worthy judgment of its utility with several of the component elements of a website, that facilitate, browsing, navigation and search and locate the desired information”. In other words, it means an assessment of the website is worth or value to the users. It is a means of assessing of performance against users’ expectations. It can also be interpreted in the narrower sense whether or not the output (the expectation) is commensurate with the input. In this context website as of a system of organized information, is the degree of usefulness of the set-up in meeting various objectives of the system that has to be achieved.

By and large, evaluation means testing the service or system for the effectiveness and efficiency. As the Web becomes increasingly prevalent as an information source and finding tool, evaluation of the content continues to be crucial (Notes, 2006). The evaluation criteria, namely the validity of information, coverage, currency, appropriateness, links and structure of the web site, and variations and so on, exist among the websites in terms of their structure and content (Sapa, 2005). Accessibility and usability are the yardsticks to examine the inhibitors and methods of evaluating the sites (Yates, 2005). The design, usability, and functionality of the websites are critical if the libraries are to continue for providing essential services to the patrons in a timely and efficient manner (George, 2005). This also facilitates user access (Li, 1999).

The most popular suggestion made by Macmillan and Toms (2001) based on usability study for improving the site was to reduce the amount of text and make links more significant since users do not want to spend the time in reading. According to Callicott (2002) the basic hierarchy of the library website is to bring about certain links closer to the homepage as well as rename and reorganize certain tags that make sense to all users, not just libraries. The descriptive account in short shows a set of parameters that for basis for the evaluation of websites in general and libraries in particular.
The first criteria is of appearance and layout of the web page, when a user entering a website its general appearance and layout impresses the users. It is important in capturing the users’ first impression while refereeing to the website and the organization as a whole (Norlin and Winters 2002). The following figure presented by Norlin and Winters (2002) highlight the indicators for quality measure in developing web site.

![Figure 2.1: Website Evaluation Criteria](image)

The researcher has analyzed every criteria:

2.4.1 Aesthetic Appeal: (colour, layout, multimedia, images, text)

Head (1999) explains that aesthetics, such as the presence of images, multimedia and the use of colour and their layout on the screen, develop impact on the users to interact with an information interface. Author also noted that aesthetic factor affects attention on “comprehension and ability to read content on screen clearly”.

Users are not impressed when confronted with cluttered web pages and dense blocks of text, as it creates the impression that website have to work hard to find the information they want, and they may decide that it’s not worth effective (Nielsen and Loranger 2006). Williams and Tollettt (2000) recommend the use of graphical
elements such as photographs to break large blocks of text. However, moderation should be employed. Too many graphics can be distracting and becomes slow to download. Nielsen and Tahir (2002) recommend, web pages have images covering space in between 5% and 15% on display images over the web pages. Allowing more space for ‘white space’ i.e. areas on the page with no text or graphics is also recommended to reduce visual crowding. This helps people to process the information and reduce eyestrain (Nielsen and Loranger 2006) while consulting the page.

The judicious use of colour can be an effective method for attracting the user’s attention and highlighting certain content and segmenting the screen into different sections (Head 1999; Preece 1993). However, many experts in this area urge developers to take caution about usage of colours to be used, e.g. Preece (1993) who discouraged the use of red on blue while developing web page. Norlin and Winters (2002) also warned not to use too much red colour, due to which user feel inconvenience and becomes angry and agitated. Colour-blindness is also an issue that web designers has to be considered, as 8% of men and 0.5% of women experience difficulties differentiating between colours, with red/green deficiency the most common (Nielsen and Loranger 2006). The number of different colours used in websites are also important in presenting an aesthetic appeal and useable website as too many colors distract and create a cluttered effect.

The researcher noticed form this literature review that “Use only three or four matching colors while designing website to make it more aesthetic, pleasing and prevent from circus-like appearance. By using complementary colors and few graphics, a library website can enhance its appeal to users”

2.4.2 Layout:
Nicholas et al (2002) pointed out that consumers of digital information have short attention spans and tend to ‘flick’ away if they don’t immediately find what they are looking for. They found that 80% of website visitors refer to a single page if layout design is not proper. Therefore it is important that the content of the page is logically organized to facilitate users quickly finding the information they need. Krug (2006) suggests that users typically just “glance at each new page, scan some of the text, and
click on the first link that catches their interest or vaguely resembles the thing they’re looking for. There are usually large parts of the page that they don’t even look at”.

He recommends that pages should have a clear visual hierarchy, with the most important information at the top of the page. This is important as it ensures priority content seen on the initial screen, as many users are reluctant to scroll beyond the ‘fold’ and may miss important content (Nielsen and Tahir 2002).

Most of the experts recommends not to design web pages that require a lot of scrolling. The need for horizontal scrolling is especially frowned upon. This contradicts conventional web behavior, whereas vertical scrolling is predominant and therefore goes against expectations and creates confusion among users. Sites that require both vertical and horizontal scrolling are especially difficult for users, as they need to move in two dimensions (Williams and Tollett 2000). Research has shown that users are very reluctant to scroll through very long pages. Nielsen and Loranger’s study, involving 69 users who visited 3,992 pages that were more than one screen in length, found that more than half didn’t scroll at all, and only 14% viewed more than two screens. Therefore it was concluded that “any page longer than 2.3 screens risks being overlooked, even by those few users who care enough about the page to scroll to it” (Nielsen and Loranger 2006).

Researcher indicate solution to this problem is to divide the material into multiple pages or construct strong single page with proper layout this reduces the problem of clicking through several pages. Williams and Tollett (2000) also warn designers to ensure pages are worth linking to, i.e. pages contain relevant content and not whole pages with one or two lines or a picture.

2.4.3 Readability:
This is an important aspect of website usability. Many studies have shown that reliability is an issue of concern to users while consulting the web page. Nielsen and Loranger’s study indicated that poor readability ranked third in a misery scale of website problems encountered by users (Nielsen and Loranger 2006: 133). It is observed that reading from computer screen affect readability by 25% slower than reading from a paper. Users feel unpleasant when they read online text or even view
pages. Efforts to improve readability concentrate on limiting the amount of text on screen, ensuring it is scan able and presented in an accessible format. Experts agree that the amount of text on a page should be limited. Nielsen recommended that websites to use 50% less text to convey a message than would be used in a hardcopy (Nielsen 1997).

Splitting up text by using short paragraphs, headlines, bullet points, bold text etc. facilitates scan ability, allowing users to skim through the content (Krug 2006). The form text is presented in also affects readability, e.g. uppercase text takes 13% more time to read than conventional upper and lower case text (Preece 1993). Nielsen and Loranger (2006) recommend using font size of 12-14 for websites that include senior citizens and people with visual impairments and/or young children or others with low literacy skills among their user ship. The use of strong contrasting colours also improves legibility and readability, with black text on white yielding the best results. San serif fonts are better for legibility, with Verdana the most readable online font (Williams and Tollett 2000; Nielsen and Loranger 2006). Evenly spaced text with adequate spacing between lines is also necessary (Preece 1993). The language used may be considered as websites, especially library websites, target a wide spectrum of the population including people with different reading levels and people whose first language may not be English. Language might be kept simple, using short sentences (Nielsen and Loranger 2006). Jacek (2007) points out that many library users “do not understand simple library terms like catalog, resources, online databases, citation, reserves, reference or special collection”. He advised that terms either be avoided or explained.

2.4.4 Navigation:
Good navigation aids to website structure, and are essential for good usability as, “if you go to a site and can’t find what you’re looking for or figure out how the site is organized, you’re not likely to stay long – or come back” (Krug 2006). Good navigation helps users to orientate themselves within the site, by letting them know where else they can go and where they have already been. Common forms of navigation aids include navigation bars, a group of buttons providing access to other pages within the website. These are usually located on the left-hand side of the screen, and remain consistent across multiple pages. Sitemaps, diagrams that depict the
position of different pages within the website are also frequently used. Recently many websites have adopted the use of ‘breadcrumbs’, a line of hyperlinks usually located at the top of the screen, which show the path from the homepage to the user’s current location (Krug 2006). Other navigational aids often encountered include the use of tabs, drop-down menus and ‘you are here’ indicators.

Nielsen and Loranger (2006) explained that one of the essential aspects of a good navigation design is to ensure users know where they’ve already been. “A good grasp of past navigation helps to understand current location, since it’s the culmination of journey. Knowing your past and present locations in turn makes it easier to decide where to go next. … Most important when users know which sites they’ve already visited, they are less likely to unintentionally revisit them”.

This is generally achieved by ensuring that visited links change colour when visited. This is especially useful for users who have memory functioning problems. This is feature of the aging process and many older web users experience difficulties remembering which pages they have already visited. The changing colour of hyperlinks can act as a ‘memory jogger’ to aid recognition. However, it is not a complete solution as Mead et al (1999) observed the behaviour of eleven older adults and fifteen younger adults asked to navigate through a site and found that “only older adults were observed to follow a hypertext link, use the back button on the Netscape web browser to return to the previous page, then select the same link again. Older adults made this error despite the change in hypertext colour (from blue to violet) that occurs when a link is followed”

Nielsen, Krug (2006), Head (1999) and others agree that the consistency of navigation design across all pages is vital to the success of the user. It is also important that it follows general web conventions, as users spend more time on other sites, and have already formed expectations about how things should operate (Nielsen 2000). For example Nielsen and Loranger (2006) suggest that all hyperlinks be presented in blue font and underlined, and change to violet when accessed, as this is the convention commonly in use across the Web. However, others disagree, claiming that as long as links are clearly identifiable by the use of different colour of text and are clearly labeled they should not present users with problems. Using familiar conventions saves
the time of the user and reduces frustration as they then won’t have to learn how to use a new interface every time they enter a new website.

The methods discussed above relate to ways of browsing through web sites, however some users prefer to go directly to the content they require and therefore desire a search facility. This accounts for just over half of all users (Nielsen 2000). This is normally provided for in the form of a search box on the top of the page. Nielsen recommends that this appear on all pages. He recommends against scoped searching, i.e. the facility to search sub-sites, as users are often confused by the structure of the site and may not be searching the correct area to retrieve the results they are looking for. Scoped searching should only be used if “special areas of a site are sufficiently coherent and distinct from the rest of the site” (Nielsen 2000).

If scoped searching is provided it should be clearly indicated which subsection of the website is being searched, and this information should be clearly displayed on the results page.

2.4.5 Accessibility:
Guidelines for accessibility are produced by the World Wide Web Consortium (W3C). They have produced long checklists of aspects that designers should consider. These are ranked into three priority levels, and consider issues such as the provision of text alternatives for media, and the use of colour (W3C 1999). There are several conditions that can affect how users perceive and interact with content on the World Wide Web. These include visual impairment, auditory disabilities, motor disabilities and cognitive and learning disabilities (Loomis and Flatley 2003).

Visual impairment affects 10% of Internet users. Websites need to be accessible to assistive technologies such as screen readers, touch screens and head pointers (Owen 2003). All text therefore needs to be accompanied by alternative text labels that can be read by screen readers. Navigation is also affected by the use of screen readers as they tend to interpret content in a linear manner, and may require the user to backtrack in order to reach the desired point (Craven 2003). Users also need to use the keyboard rather than a mouse to navigate (Loomis and Flatley 2003). Visual impairment affects 10% of Internet users, therefore every effort should be made to make the website
accessible to partially sighted users. This can be assisted by the use of large text, employing strong colour contrast and minimizing unnecessary background ‘noise’. This also improves readability for people who have dyslexia. Any media using sound should be accompanied by a text alternative for those with auditory difficulties, or those with no access to sound equipment. Nielsen (2000) suggests that this may also benefit non-native speakers.

2.4.6 Consistency:
Consistency of design elements such as the position of navigation aids, general layout etc. is important in reducing the learning curve of users. Users need only learn once what facilities are available where, e.g. the position of the search box, home button, print etc. This enables users to concentrate on completing their task (Head 1999). Similarly conforming to general web conventions, such as the position of the search box on the top right of the screen, further reduces user frustration (Nielsen 2000). Maxymuk puts it “The less one has to master to search the resources effectively is a plus that is highly valued by users”. Nielsen and Loranger (2006) classify inconsistency within a website as a medium impact usability problem.

2.4.7 Currency, Maintenance and Authority:
Cooke (2001) and Wilkinson et al (1997) recommend that users critically assess the quality of the information they find online. This includes assessing aspects such as how current the information is, the author of the content and the authority of its author. The currency of the website can be assessed by the inclusion of a date stamp on each web page. This can include information about when the page was last modified or when the content was added. Hallam (2003) surveyed 49 library authorities and found that currency was the second most important criteria they used to assess websites. This is important as “outdated information can become useless as well as inaccurate or misleading” (Cooke 2001). Nielsen and Loranger (2006) classify outdated content as a medium impact usability problem that increases as the information becomes older but continues to be presented to the user as new. Similarly poor maintenance of a website, e.g. the presence of broken links creates a poor impression of the organization, and may lead users to question other elements of the website and the services provided by its parent library authority. As the webmaster of
Cleveland Heights-University Heights Public Library explains library websites as “need to let our visitors know that we are paying attention to our web facilities just like we do our physical ones, especially nowadays where are customers are more likely to see the web one first”.

Cooke (2001) suggests that the inclusion of contact information for site maintainers also gives the impression that site maintenance is important. Prasad (1999) has stressed on the objectives of library websites and the information which is to be included in any library website. It also presents general considerations for designing websites, tools available for designing websites, web servers, HTML, web promotional tools and website evaluation.

Ganesan and Reddy (1999) described the available tools and techniques to create home pages on WWW. These include editing programmes to create and modify HTML files, knowledge of HTML and common web techniques, sources of pictures and other images and graphic programme to manipulate those images. It discusses some of the important considerations while creating home pages. Manna (1999) discusses the criteria for success of a library website in terms of aims and objectives of the library; web site design and additional features to make the website more compelling to visit.

Whalen (n.d.) suggested that the Library website should include information like opening timings, instructions on how to travel to the library in person, library rules, information on the different sites, staff contacts, news, facilities for feedback, welcome messages, mission policy statements, collection details, links to OPAC and links to other useful websites. Clyde (1996) analyzed library home pages based on a survey of Nordic libraries and a content analysis of fifty public and fifty school libraries in thirteen countries.

One has to evaluate, expand and adopt existing criteria for evaluating the contents of web resources points like contents, source, date and structure, which should be considered while evaluating web resources.
Joe Landsberger (n.d.) has described basic types of website purposes and characteristics of five types of websites viz. personal, promotional, current, informational and persuasive. According to him authority, currency, coverage, objectivity and accuracy are the evaluation criteria. According to Catella C (n.d.), navigation, presentation, contents, appropriateness and scope are the main evaluation criteria for web pages.

**Summary:**
This chapter reviewed literature and presented analytical part from the different sources especially describing role of websites and criteria used by different scholars for web pages. It is observed that many authors pointed out while evaluating websites or web pages the criteria generally used are authority, purpose, coverage, currency, objectivity, and accuracy etc. It is necessary to evaluate web pages of existing institutes and based on review few more changes can be possibly amended in the web pages to be developed for an institution. From the literature review it is also observed that many authors have analyzed web pages of similar institutes and developed a template for their own institute. This gives qualitative approach while consulting the web page. The researcher working in management sector and a librarian of management institute reviewed web sites of organization and it is found that web pages for management institutes have been developed but web sites for the libraries are remotely analyzed. Hence, researcher plan to review literature and find out standard evaluation criteria to be followed while developing web page as well as survey of websites of management institutes helping identifying weakness or missing link in the web sites which can be corrected by developing a template for management libraries.
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