ANALYSIS OF CENTRAL UNIVERSITIES' LIBRARY WEBSITES IN INDIA: A STUDY

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A website is considered as an important promotional /informational tool for all kinds of organisations and attractive way of disseminating information and services. There is a need to critically assess the quality of the web sites, determine the extent of its user friendliness and its ability to meet the user requirements. Evaluating the performance and quality of the content of library websites of central universities in India is the principle objective of the present study. The tool used for analysing the library websites under study is Gtmetrix. The tool Gtmetrix helpes in assessing the accomplishments like time consumption for fully loaded web page, total page size and further statistics of content and facility coverage has been gathered through scrutinizing from the library websites under study. This study was restricted to evaluate the contents and performance grade of 33 out of 47 central universities. The outcomes of the study reveal that there were disparity in content coverage and performance grade; most of the library websites have the service of offering information pertaining to their collection, photography and e-resources; and inadequate information was found for FAQ's/ feedback /ask a librarian and search option facilities.

KEYWORDS: Central Universities, websites, evaluation of library websites, library websites

INTRODUCTION

The Internet has emerged as a *de facto* global distribution medium for electronic information, in particular for academic information. The World Wide Web has become the most important communication tool for accessing and sharing information on the internet. Nielsen (2000) argues that the homepage is the gateway to the web site and therefore sets the tone of the entire web site for the user. A website is considered as an important promotional /informational tool for all kinds of organisations and attractive way of disseminating information and services. It informs the visitors about the organization, its vision / mission, resources available, services provided by them, activities conducted and so on. The role of library website in the delivery of information services has never been more prominent as it is now. Library Websites have grown from static to

comprehensive gateways to electronic sources and services in the present day (Margam, 2012). Website offers unique openings for libraries to promote their image. However, designing and maintaining a website in a way to meet the different information needs of a wide-spectrum of user groups is an enormous challenge for today's librarians (Wijayaratne and Singh, 2015).

Academic library websites provide information about libraries and library services as well as access to online catalogues, electronic databases, digital collections and different library tutorials. This has become a challenging task for the librarians to keep the library website updated and provide all the information related to the library through the website. Hence, the necessity of the currency of the library website is required. There is a need to critically assess the quality of Web sites and determine the extent of its user friendliness and its ability to meet the user requirements. Further, evaluation of these websites is also important before their use. Many websites, today, are being published without verification of their accuracy and reliability. Therefore, the need of the hour is to evaluate them at once. This present study aims to analyse the various aspects of the performance of central university websites in India.

CENTRAL UNIVERSITIES IN INDIA

Through 1956 UGC Act, the University Grants Commission of India (UGC India) established a statutory body set up by the Indian Government under MHRD, and is charged with coordination, determination and maintenance of standards of higher education and it gives recognition to universities and disbursements of funds to such recognized universities.

There are 47 central universities in India, falls under the Department of Higher Education in the Ministry of Human Resource Development (MHRD). The UGC has made certain rules and regulations through which UGC obtains grants from the central government to establish central universities of national importance in the country. These central universities are recognized by the UGC and there are councils to supervise the formulation of the regulations of these universities.

REVIEW OF LITERATURE

Ongus et al. (2006) investigate the University websites in English language. This study proves that even though the quality of university website design seems to be firmly associated universally, it does not have any impact on web content standard. The users were recommended to diligently make use of the website and in case of any help seek suggestion from the adequately trained librarians and other cognizant information experts. Ramesh Babu et al. (2009) offered some strategies of the web designing. Although not directly interrelated to website grading, adopting those strategies will help to improve a library website. The offered strategies were given explanation of intelligent use of graphic elements and website design which can give more attractiveness for a web page.

Jeyshankar and Ramesh Babu (2009) assessed the websites of 45 universities in Tamil Nadu comprising 27 State universities and 18 private universities. The study reported the domain systems of the websites. The authors examined the number of link pages and analysed the simple Web Impact Factor (WIF), self link WIF, external link WIF and revised WIF. The websites were ranked based on the results.

Ramesh Babu et al. (2010) evaluated the websites of 41 Central universities of different States and Union territories in India. The study documented the domain systems of the websites, scrutinized the number of link pages and analyzed the simple WIF (Web Impact Factor), self link WIF, external link WIF and revised WIF. The websites were ranked based on the WIF found in the study.

A study conducted by Erfanmanesh (2010) aims to assess the Malaysian Public Universities' websites using the correspondence analysis method. The study was based on six criteria: traffic rank, average number of pages viewed, time spent on the site per user, number of links received from other websites, and percentage of Malaysian and foreign visitors. The findings of the study reveal that although all universities have not performed well in all criteria. The website administrators should pay more attention to the services provided in order to increase user satisfaction. One way to do this is to introduce their websites to other sites on the web in order to gain more links. Connectivity plays an important role in recognizing websites in extended virtual environments. Another way to enhance website ranking is to provide services that attract international visitors.

Kothainayaki and Gopalakrishnan (2011) conducted a study on the websites of Agricultural universities in India. The authors stated that university websites are increasingly used for a wide variety of purposes, such as uploading the prospectus, library catalogue; promote achievement of individuals, research groups, new publications, etc. The authors evaluated the Agricultural Universities in India through webometrics method. A total of 54 Agricultural Universities were considered, which includes 44 State Agricultural Universities (SAUs), 1 Central University, 5 Deemed to be Universities, and 4 Central Universities. Various concepts like Google Page Rank, Alexa Traffic Rank, and rich files were considered for evaluation. It also presents the network diagrams showing the link structures between the web nodes in webometric analysis. On the similar lines Sami and Basavaraj (2014) focused on evaluating how library websites of Agriculture research institutions are structured to ensure their usability and usefulness. General information about library, effectiveness of the homepage, content presentation, type of navigation used, type of user assistance made available, search facility provided and value additions included on the websites are the parameters on which evaluation is carried out. Use of graphics and multimedia for effective content presentation, virtual help to users, facility to search within the website and WWW, provision for OPAC on library websites are some of the areas which need to be improved.

Zaphiris and Ellis (2011) assess the websites of the top USA Universities which are categorized high with reference to usability and accessibility. Two automatic assessment tools namely Bobby and LIFT were used to evaluate the accessibility and usability of the topmost 50 USA Universities. The study revealed that the website content accessibility guide had a low compliance (30%) and a less usability rating for most of the university websites. The dynamic wavering takes place both for usability and accessibility in case of the size (in KB) of the website. Yazdi and Deshpande (2013) conducted an evaluative study of selected library association's websites. The study reported in this paper evaluates 71 library associations' websites using 15 selected Webometric criteria. The study uses Webometric

analysis and ranking based on a scaling method and comparative means analysis (One Way ANOVA), and homogeneous subsets using criteria from SPSS13 and Excel 2007. The findings of the study show that majority of Library Associations' websites have 'Contact Us' links, but few have Frequently Answered Questions (FAQ) links. A combination of criteria scores and classified groups shows that among the 15 criteria, only four criteria have no significant difference between the three groups and the classified groups are heterogeneous based on 11 criteria.

Joicy and Varghese (2011) evaluate how the R & D Institutions in India present their content on the websites. Out of the 246 Research and Development institutions identified from the website (http://www.indiaedu.com/research-institutes/research-institutes-india.html), 77 (31.30 per cent) properly functioning websites were analyzed. The study revealed that majority of the Research and Development institutions in India provide informative links to contacts, copyright, news and events, RTI and history. A few websites provide opportunity for user interaction in the form of feedback. It is also found that majority of the R & D institutions' websites are good to navigate and find information. Another study conducted by Sami and Basavaraj (2013) explore library websites of R&D institutions located in Bangalore for their design features. Web evaluation guidelines suggested by Keevil have been used for evaluation. The results of the study show that websites are keen on providing their basic details. Overall content organization of the websites is not up to the mark. Use of multimedia has been neglected by majority of the libraries.

Mummadi (2015) conducted a study to evaluate the readability of patient education materials related to diabetic diet from the Indian Diabetic Association website www.diabetes india.com and to compare the similar topics from five most popular health information providing sites. Tools used for Readability of selected website data are: Gunning Fog Index (GFI), Coleman–Liau Index (CLI), The Flesch-Kincaid Grade Level (FKGL), Automated Readability Index (ARI), Simple Measure of Gobbledygook Index (SMOG) and The Flesch Reading Ease (FRE). The study found that Indian websites are good at readability when compared to other popular health information providing websites. Manjunatha (2016) analyses the contents of 8 special library websites of Karnataka. The suggestions given by the author were based on the enhancement of the quality of library websites, which would assist the web designer and to design an appealing, comprehensive and an interactional website. This would be a great service to the users of library websites.

Verma and Shukla (2018) assess the serviceability, productivity and capability of Indian Institute of Management (IIMs) library websites. The methods employed were online surveys and observation. The study resulted in exhibiting the pros and cons of these libraries. Some of these libraries though had fine websites, ignored the fundamental serviceability characteristics and appears to be in prime phase of development. Majority of the IIM libraries had easy to use, manageable websites with efficient, serviceable qualities. Seshaiah and Rekha (2019) explore in their study on facilities, services and other information available on the library web pages of 246 engineering colleges in Andhra Pradesh. The outcome of the study reveals that most of the

libraries of college websites provide information on their collection, hours, and electronic resources but consistency has to be ensured to achieve user satisfaction. Other features such as FAQs, web 2.0 applications, digital library and feedback facility have been used unwisely.

OBJECTIVES OF THE STUDY

Evaluating the performance and quality of the content of library websites of central university in India is the principle objective of the present study. Focusing on this concept some of the objectives are framed to:

1. study the primary data presented on the central university library websites in India;

2. identify the relevancy of the central university websites in content description;

3. identify the adequacy of external and internal links, website performance grade in central university library websites;

4. identify the condition and standard of the content readability, such as use of graphics and multimedia in library page;

5. identify the availability of the facilities like FAQs / ask a librarian on library web pages;

6. identify the links to online sources in the library web page.

METHODOLOGY

The tool used for analysing the library websites under study is Gtmetrix. The evaluation process was executed from 9.11.2018 to 4.12.2018. The tool Gtmetrix helps in assessing the accomplishments like time consumption for fully loaded web page, total page size and further statistics of content and facility coverage has been gathered through scrutinizing from the library websites under study. Considering the previous evaluations of websites conducted by Suresh Jange (2014), Shalini Wasan and Rupak Chakravarthy (2018) a checklist was designed to gather information and evaluate the web contents of the library websites for the present study. This study was restricted to evaluate the contents and performance grade of 33 out of 47 central universities, as they have their own library website or library link in university home page and the remaining 14 have been ignored as there is no library webpage or web link of library on home site. The websites underwent frequent analysis and the data was presented in the tabular form. Microsoft excel was used for the presentation of the data analysis.

GT METRIX TOOL

GTmetrix tool helps to develop a faster, efficient and all-around improved website for the users. It uses Google Page Speed and Yahoo! YSlow to grade the site's performance and provide actionable recommendations to fix the issues. The GTmetrix tool report covers basic to technical analysis on selected web pages. It is categorized under many headings like overall score information and priority issues, graphed history of past performance, graph of website's loading timeline and in-depth page speed information.

RESULTS AND DISCUSSIONS

There are 47 Central Universities in India. The Central Universities' library websites were examined under the present study' are only 33 out of 47.

Fundamental Data of the Library Web Pages

The details of the fundamental data of the library which was observed is presented in table 1. The data from the table 1 displays that most of the Central University library web pages have communicative data. Out of 33 library websites, 32 (96.96%) libraries included about the library information. Library services facility is provided by 72.72% of the library web pages. Majority of the Central Universities (87.87%) provided contact address on their library web pages.

Table 1: Basic Information of Library

Sl. No.	Basic library Information	No. of University websites	Percentage (%)
1	About the library	32	96.96
2	Library Services	24	72.72
3	Contacts	29	87.87

Authority or GOI Identifiers

The Authority or GOI (Government of India) identity on Central University library websites is given in table 2. The table 2 clearly presents that the clear name of the website sponsor is given by almost all the websites. Over 96.96% libraries consist of clear name of websites sponsor, along with which 78.78% libraries include copyright details. 90.90% of the Central University library web pages have academic domain name as 'URL' extension.

Table 2: Authority or GOI Identifiers

Sl. No.	Authority or GOI Identifiers	No. of University websites	Perce-ntage (%)
1	Clear Name of Website Sponsor	32	96.96
2	Copy Right details on website	26	78.78
3	Website Registered under Academic Domain Name	30	90.90

Building Confidence (links)

There are separate links in the Central University library websites which cover all the internal and external resources rendered. The details are displayed in table 3. The data indicates that 84.84% library web pages provided internal links. 96.96% of the library websites have offered external links.

Table 3: Building Confidence (Links)

Sl. No.	Building Confidence (Links)	No. of University websites	Percentage (%)
1	Internal Links	28	84.84
2	External Links	32	96.96

Excellence and Stimulus aspects

The study focused on the entire aspect of the library web pages. The details of search option and other services provided on web pages were analysed. The information gathered during the study is presented in table 4. It is noticed that only 63.63% library web pages rendered search provision. 93.93% render open access to e-resources that can be accessed in their web pages and majority of the libraries, i.e. 96.96% rendered fee based e-resources on their websites. About 28 (84.84%) libraries provided Web OPAC facility and only 22 (66.66%) libraries provided service called 'Text alternatives' namely image/video/animation and even most of the central university library web pages do not render facilities like FAQs/Feedback/Ask a librarian services. It is clear from the study that only 8 (24.24%) library web pages out of 33 library websites provided the above mentioned facilities. 42.42% have visitor's count record.

Table 4: Excellence and Stimulus aspects

Sl. No.	Name of the Service	No. of University websites	Percentage (%)
1	Search option	21	63.63
2	Open Access E Resource	31	93.93
3	Fee Based E Resource	32	96.96
4	Web OPAC	28	84.84
5	Image/Video/Animation	22	66.66
6	FAQs/Feedback/Ask Librarian	8	24.24
7	Visitor's Counts	14	42.42

Performance Grade

Performance Grade system is an evaluation of site with Google metrics for how to best develop a site for optimized speed. The grades you see stand for how well the scanned URL adheres to those policies.

Page Speed Score

The details of Page Speed Scores were analyzed and explained in A to D grading system and the observations are reported in table 5. It shows that there are 4 steps used in grading i.e. A,B,C,D. Considering all the 33 websites under study, it is clear from the table that only 9.09% of the libraries are categorised under A grade, 15.15% are categorised under B grade, 30.30% are categorised into C grade and 45.45% categorised into D grade. Lower grades (C or lower) mean that the page can stand to be faster using better practices and optimizing the settings.

Table 5: Page Speed Score

Sl. No.	Performance Grade	No. of Central Universities (NCU) Percentage (%) Performance Grade (A to D and Below)							
		NCU A	%	NCU B	%	NCU C	%	NCU D	%
1	Page Speed Score	3	9.09	5	15.15	10	30.30	15	45.45

Fully Loaded Time of Website

The details of Fully Loaded Time of Pages were analyzed and explained in 0-12 minute performance grading system; the data is presented in table 6. It represents that four steps were involved in grading the loading speed i.e. 0-3, 3.1- 6, 6.1-9 and 9.1-12 and above. Only 21.21% of the library websites of the 33 loaded within 0-3 minute, 45.45% loaded in 3.1-6 minute, 06.06% under 6.1-9 minute and 27.27% under 9.1-12 and above minute. Studies show that users leave a site if it has not loaded in few seconds; keep your users

Table 6: Fully Loaded Time of Website

Sl. No	Performance Grade	No of Central Universities (NCU) Percentage (%) Performance Grade in (0 to12 minute and above)							
		NCU 0-3	%	NCU 3.1-6	%	NCU 6.1-9	%	NCU 9.1-12	%
1	Fully Loaded Time of Website (in Minute)	7	21.21	15	45.45	2	6.06	9	27.27

happy and engaged by providing a fast performing website. This is the time spent redirecting URLs before the final HTML page is loaded. Common redirects include:

Redirect from a non-www to www
  (eg. example.com to www.example.com)

Redirect to set cookies

Redirect to a mobile version of the site

During this time, the browser screen is blank; ensure that this duration is kept to short by minimizing your redirects.

Total Page Size of Website

The criteria used to evaluate the total page size of the Central University library websites were in kilobytes (KB) and megabytes (MB). The categorization of the websites depending on the criteria is displayed in table 7. Considering the size either in KB or MB, the library web pages were categorized. Most of the web pages 18 (54.54%) out of 33 were categorized under the grading system in KB and 45.45% web pages under MB grading system. Studies show that users leave a site if it has not loaded in few seconds; so that time taken to load of web pages should be lessened, for which web page size has to be reduced to a smaller size (in KB).

The Grades were allocated for central universities in India based on their Page Speed Score (PSS), Fully Loaded Time (FLT) and Total Page Size (TPS) as shown in the Table 5, 6 and 7.

Table 7: Total Page Size of Website

Sl. No.	Performance Grade	No of Central Universities (NCU) Percentage (%) Performance Grade in KB and MB			
		NCU KB	%	NCU MB	%
1	Total Page Size of the Websites	18	54.54	15	45.45

The Central University of North Eastern Hill occupies the 1st position with A Grade in PSS, 3.1 FLT and 96 KB TPS. The Central university of Nagaland ranked second with A Grade PSS, 2.6 - FLT and 168 KB TPS, followed by the Central university of Nalanda ranked third with A Grade PSS, 2.8 - FLT and 319 KB TPS.

CONCLUSION AND SUGGESTION

The present study shows about the prominence of central university websites with regard to content coverage, adequacy of external and internal links, website performance grade and value additions rendered by the websites. A few studies conducted previously were compared with the present study which reveals that there are couple of central universities have updated their individual library home pages. Among the total 47 central university websites only 33 central university websites provide link to libraries. Library links should be provided by all the libraries and should also facilitate a separate library home page. It is also revealed from the study that most of the library websites have the service of offering information pertaining to their collection, photography and e-resources. Inadequate

information was found for FAQ's / feedback / ask a librarian and search option facilities. To cope up with the modern technology, the websites should be timely updated and FAQ's, feedback and search facility should be included which will result in improving the accessibility in a large scale. The most neglected factor perceived in this study is that some of the libraries do not provide links to their Open Public Access Catalogue (OPAC) in their library web pages. Therefore, it is necessary to create Web OPAC and made available to the users.

It is also revealed from the study that there were disparity in content coverage and performance grade. Hence the libraries have to focus on the drawbacks in their websites and take necessary steps for enhancing the performance grade like time taken to load web pages should be lessened, for which web page size has to be reduced to a smaller size (in KB). Attention should also be given to enhance the contents of the library websites; especially library service considering the one's which lack in containing necessary criteria on their library websites. The central university websites and their library web pages should be elaborated as per NAAC and NIRF Ranking also modernized by setting some criteria for framing the websites. The web masters would be benefitted by the study to improvise the performance grade, content and status of their library websites.

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Appendix-A

	List of Central Universities considered for the study		
Sl. No.	Name of Universities	Year of Establishment	URL of Library Web Page
1	University of Allahabad	1887	http://allduniv.ac.in/home/pages/638
2	Jamia Millia Islamia	1920	https://www.jmi.ac.in/studyatjamia/library/zhl/introduction
3	Aligarh Muslim University	1920	https://www.amu.ac.in/malibrary/
4	University of Delhi	1922	http://www.du.ac.in/du/index.php?page=libraries
5	Dr. Harisingh Gour Vishwavidyalaya	1946	http://dhsgsu.ac.in/departmentdetails/110
6	English and Foreign Languages University	1958	http://www.efluniversity.ac.in/ramesh_library.php
7	North Eastern Hill University	1973	https://www.nehu.ac.in/library/index.html
8	University of Hyderabad	1974	http://igmlnet.uohyd.ac.in:8000/
9	Manipur University	1980	http://www.manipuruniv.ac.in/p/library-3
10	Rajiv Gandhi University	1984	https://www.rgu.ac.in/Facilities/FacilityDetails/Library
11	Pondicherry University	1985	http://lib.pondiuni.edu.in/
12	Nagaland University,	1987	http://library.nagalanduniversity.ac.in/
13	Tripura University	1987	http://www.tripurauniv.in/index.php/general-information
14	Assam University	1994	http://www.aus.ac.in/rabindra-library-assam-university-silchar/
15	Tezpur University	1994	http://www.tezu.ernet.in/Library/
16	Maulana Azad National Urdu University	1998	http://www.manuu.ac.in/Eng-Php/central_library.php
17	Babasaheb Bhimrao Ambedkar University	1998	http://14.139.228.238/
18	Mizoram University	2001	https://library.mzu.edu.in/
19	Sikkim University	2006	http://library.cus.ac.in/
20	Indira Gandhi National Tribal University	2008	http://www.igntu.ac.in/clib.aspx
21	Central University of Tamil Nadu	2009	http://cutn.ac.in/central-library/
22	Central University of Punjab	2009	http://cup.edu.in/library.php
23	Central University of Orissa	2009	http://cuo.ac.in/Facilities_Library.asp?pgid=6&subid=1
24	Central University of Karnataka	2009	http://cuklibrary.ac.in/index.html
25	Central University of Kashmir	2009	https://www.cukashmir.ac.in/displaydepartment.aspx?sid=74&did=36&pag=494
26	Central University of Haryana	2009	http://14.139.13.69/cuh/
27	Guru Ghasidas Vishwavidyalaya	2009	http://www.ggu.ac.in/central_library.html
28	Central University of Bihar	2009	https://www.cusb.ac.in/index.php/2016-07-01-04-53-58/2016-03-09-15-31-33/central-library
29	Central University of Gujarat	2009	http://library.cug.ac.in/
30	South Asian University	2010	http://library.sau.ac.in/
31	Central University of Himachal Pradesh	2010	http://www.cuhimachal.ac.in/library.aspx
32	Nalanda University	2010	https://www.nalandauniv.edu.in/library/
33	Central University of Jammu	2011	http://www.cujammu.ac.in//Default.aspx?option=article&type=single&id=35&mnuid=738&prvtyp=site

CHECK LIST USED FOR THE PRESENT STUDY

Name of the Central University :

URL of the University   :

Criteria		Yes	No
Basic Library Information	About the Library		
	Library Services		
	Contacts		
Authority or GOI Identifiers	Clear Name of website Sponsor		
	Copy right details on Website		
	Website registered under Academic Domain Name		
Building confidence: (Links)	Internal links		
	External links		
Excellence and Stimulus aspects	Search option		
	Open Access e-resource		
	Fee based e-resource		
	Web OPAC		
	Image/Video/Animation		
	FAQs/Feedback Form/ Ask Librarian		
	Visitor's Counts		
Performance Grade	Page Speed Score	**Performance Grade (A to D and Below)**	
	Fully Loaded Time of websites	**Performance Grade in (0 to12 minute and above)**	
	Total Page Size	**Performance Grade in KB and MB**	

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