Usability Analysis of Indian Institutes of Management Libraries Websites: An Evaluative Study

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Abstract

This paper evaluates the usability, efficiency, and effectiveness of Indian Institutes of Management (IIMs) libraries' websites. For conducting the study, online survey and observation methods were found appropriate. Two different approaches were selected for online survey i.e. checklist/parameters and online automated tools. Study reveals that selected IIMs' libraries had useful websites but ignored the basic usability features and thus seem to be in primitive stage of website development. Most of the selected IIMs' libraries websites were very simple and had very basic and common usability features in terms of general information related to library, content writings, searching features, Web 2.0 applications, page size, page loading time etc. Enormous scope for improvement has been observed in selected IIMs' libraries websites. Findings of the study will help to improve upon the usability features of IIMs' libraries websites that will finally benefit the library users who are using library facilities and services remotely. Study will also help the webmasters to check their websites on timely basis to increase usability scores based on online usability tools.

Keywords: Website usability, usability analysis, IIMs, library websites

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INTRODUCTION

The Internet is playing a crucial role in diverse application domains such as business, education, industry, and entertainment. Developing a website should be passed through several design guidelines to ensure that website can achieve the purposes and goals intended to be accomplished. Additionally, an academic organization's website is the first step to its information, products, and services and it should ideally be a reflection of the needs of the clients it serves. According to Yusuf, "university library website finds that the designing an educational website needs to be more focused on usability and shows that different perspectives derived from the area of specialization, age and gender, and category give a different evaluation" [1]. The library website serves as a vital gateway to library services. Usability analysis of libraries website is paramount because libraries' website is taking more attention to serving primary sources of information for their users; and for many services and sources, library users depend on the library websites.

Web Usability Analysis

The term usability was mostly used in between 1980's, and there are many approaches to making a product or services usable, and no accepted definition of the term "usability". "Usability is how easy an object is to use; website usability is a technique which refers to methods for improving ease-of-use during the design process" [2]. The International Organization for Standardization (ISO) defines usability of a product as "the extent to which the product can be used by specific users to achieve specified goals with 'effectiveness', 'efficiency' and 'satisfaction' in a specified context of use". The definitions which have been used derive from some views of what usability is. Aziz *et al.* indicate that "the usability can be used in to validate the website to see how it performs [3]. When analysing a website, typical factors to be considered are the way the information is organized and presented, and how to access and navigate the informative structure and proposed an extension of the QUIM model as a basic model for usability model for a website so that a set of guidelines to assist in determining design and usability".

LITERATURE REVIEW

Silva and Wijayaratne analysed University of Colombo library website through usability testing technique as well as post-test questionnaire, and finally found that the usefulness of library website was 86.69% while efficiency was 1.35 min/task with overall users' satisfaction [4]. Hasan studied University of Jordan website and found a lot of usability problems in ease of use, communication, navigation, content, and design of the website [5]. Khatri and Baheti conducted an evaluative study of university websites and their library webpages and found that very few of the university websites provide detailed information about the library and its resources, services, and library website [6]. They further suggested that library website needs to be evaluated periodically using well established criteria for web design, accessibility, arrangement, etc. In the web usability evaluation of Iran National Library website, Mohamadesmaeil and Koohbanani found that Iran National Library website has 594 points out of 663 overall assessment points and suggested that design of National Library website should be completely based on functions that support National Library's major aims, especially in information retrieving as well as rendering public information services [7]. Shrivastava *et al.* validated attributes, sub-attributes, and metrics for measuring quality of websites of academic domain and also measured quantifiable attributes of quality [8]. Further, they measured the external quality of websites in which they have emphasized on the web user needs, evaluation goals, and international guidelines for quality measurement. Ramesh Babu *et al.* analyzed a total of 43 universities in Tamil Nadu and found that library website needs to be evaluated periodically to improve their website according to the user's need [9]. Vasantha Raju and Harinarayana analyzed 30 top science universities around the world and found that 40% of the websites have provision for clear home link as well as through logos, persistent navigation features were observed only in 50% of the websites, and 8% of the websites used de-facto link colour coding [10]. Moreover, it was also found that library websites have not used multimedia (interactivity) features, and only 30% of the websites contain video content, whereas none of the websites contained audio files. Chiew and Salim focused on developing a web-based tool called "WEBUSE" that consists of 24 questions for evaluating the usability of websites [11]. Ivory and Hearst had an extensive survey of usability evaluation methods, analyzed existing techniques, identified different aspects of usability evaluation automation that are likely to be of use in future research, and suggested new ways expand existing approaches to support usability evaluation better [12]. Abdullah studied academic library websites of Malaysia and found that most of the libraries focus on their front page, few libraries do not update their broken links, and fewer libraries give the frequency of their website updates, and many libraries have poor responses due to server problems [13]. Nielsen conducted a heuristic evaluation on University of Maryland website and recommended that websites should know their usability for users. Further, he conducted user testing task and recommended for the future re-design of the website [14]. Smith *et al.* evaluated usability of University of Wisconsin-Stout via using qualitative testing criteria and found that website suffers from several problems including website specific jargon, un-organized link patterns, confusing search engines, and poorly emphasized information [15].

RESEARCH OBJECTIVES

The main objective of study is to evaluate the web usability analysis of IIMs libraries' website of India. The specific objectives of the study are:
a) To find out usability of selected IIMs libraries' websites.
b) To investigate the IIMs libraries' websites design and management usability features.
c) To rank the IIMs libraries' websites based on their usability score.

SCOPE OF THE STUDY

The study is confined to the Indian Institutes of Management (IIMs) libraries websites. There are 19 IIMs in India (http://mhrd.gov.in/print/iims), out of which, 14 IIMs have library websites or web pages. The 5 IIMs have not been included in the study due to lack of library websites/webpages. So far, there are 14 IIMs libraries' websites covered for study purposes.

Table 1: *List of Indian Institutes of Management (IIMs).*

S. No.	Name of IIM	Abbr. Name	URL
1	IIM Ahmadabad	IIMA	http://www.iimahd.ernet.in
2	IIM Amritsar*	IIMAM	http://iimamritsar.ac.in
3	IIM Bangalore	IIMB	http://www.iimb.ernet.in
4	IIM Bodh Gaya*	IIMBG	http://iimbg.ac.in
5	IIM Indore	IIMI	http://www.iimidr.ac.in
6	IIM Kashipur	IIMKS	http://www.iimkashipur.ac.in
7	IIM Kolkata	IIMK	http://www.iimcal.ac.in
8	IIM Kozhikode	IIMKZ	http://www.iimk.ac.in
9	IIM Lucknow	IIML	http://www.iiml.ac.in
10	IIM Nagpur*	IIMNP	http://iimnagpur.ac.in
11	IIM Raipur	IIMR	http://www.iimraipur.ac.in
12	IIM Ranchi	IIMRN	http://www.iimranchi.ac.in
13	IIM Rohtak	IIMRT	http://www.iimrohtak.ac.in
14	IIM Sambalpur	IIMSM	http://www.iimsambalpur.ac.in
15	IIM Shillong	IIMS	http://www.iimshillong.in
16	IIM Sirmaur*	IIMSMR	http://www.iiml.ac.in/iimsirmaur
17	IIM Tiruchirapalli	IIMT	http://www.iimtrichy.ac.in
18	IIM Udaipur	IIMU	http://www.iimu.ac.in
19	IIM Visakhapatnam*	IIMV	http://iimv.ac.in

* No page or information found regarding library as on February19, 2016.

METHODOLOGY

For conducting the usability analysis of IIMs libraries' websites, two different evaluation methods (checklist/parameters method and online tools) have been used. The checklist/parameters method was developed to assess the usability of IIMs libraries websites.

Checklist/Parameters Development

For the development of checklist/parameters, all the IIMs libraries' websites were observed carefully and from there, all possible usability criteria were collected and tabulated. Besides these, ideas and views from few library professionals have been collected as well as literature available in the form of journal articles, books, and different library websites were consulted also. The collected usability criteria have been grouped at one place and matched with similar criteria for removal of duplicates. After removal of duplicate usability criteria, entire tabulated usability criteria were categorized and sub-categorized and converted into the form of a questionnaire. For bias free and easy answering, the scores were structured into two variables i.e. Yes =1 and No =0.

Online Tools

In this part of usability evaluation, two automated assessment tools i.e. HTML Toolbox and Webpage Analyzer were used to assess the page size, page load time (sec), total number of HTML files, total objects, total images, total CSS, total scripts, HTML check error, browser capabilities problems etc. Mustafa and Al-Zoua'bi evaluated Jordan's universities' websites by using HTML Toolbox and Web Page Analyzer [16]. Chiew and Salim also focused on developing a web-based tool called "WEBUSE" for evaluating the usability of websites [11].

DATA ANALYSIS AND INTERPRETATION

General Usability Features of IIMs Libraries Websites

Library website acts as a gateway to access all the e-resources of library and tends to make a good mark on the user's accessibility and make it more usable. The Table 2 displays the general usability features of IIMs libraries websites.

The Table 2 displays web usability features of IIMs libraries' websites. From the observation of Table 2, it has been found that all the IIMs libraries' websites have separate website for itself whereas 71% libraries' websites provided email contacts of webmasters. Browser support and resolution information have been given by 57% libraries' websites while website update information have been shared by 14% libraries' websites only. Multi-lingual features and website map information have been equally given by 29% libraries' websites whereas only 7% libraries websites have utilized website visitor counter. Further,

out of 7 usability checklists/parameters, IIMA has obtained 6 points out of 7 whereas IIMB and IIMI have obtained 5 points. Three IIMs namely IIMT, IIMRN, and IIMS have fulfilled only one checklist/parameter out of seven. Except IIMA library website, no other library website has facility of website visitor counter.

Usability Features on Library Rules and Services
This section covers the general kind of information and services related to library for users and available through website/webpage.

Table 2: General Usability Features of IIMs Libraries Websites.

Checklist/Parameters	IIMA	IIMB	IIMI	IIMKS	IIMK	IIMKZ	IIML	IIMR	IIMRN	IIMRT	IIMSM	IIMS	IIMT	IIMU	Frequency (%)
Separate website/webpage	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14 (100%)
Webmaster e-mail	1	1	1	1	1	1	1	1	0	1	1	0	0	0	10 (71%)
Browser related information, e.g. browser support, resolution, etc.	1	1	1	1	1	1	0	1	0	1	0	0	0	0	8 (57%)
Multi-lingual options	0	1	1	0	0	0	0	1	0	1	0	0	0	0	4 (29%)
Website map	1	1	1	0	0	0	0	0	0	0	0	0	0	1	4 (29%)
Website update date	1	0	0	0	0	0	1	0	0	0	0	0	0	0	2 (14%)
Visitor counter	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1 (7%)
Total points	6	5	5	3	3	3	3	4	1	4	2	1	1	2	

Table 3: Usability Features on Library Rules and Services.

Checklist/Parameters	IIMA	IIMB	IIMI	IIMKS	IIMK	IIMKZ	IIML	IIMR	IIMRN	IIMRT	IIMSM	IIMS	IIMT	IIMU	Frequency (%)
"Contact us" link on library homepage	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14 (100%)
About library	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13 (93%)
Library services via website	1	1	1	1	1	1	1	0	0	0	0	1	1	1	10 (71%)
Opening hours	1	1	1	1	1	1	1	0	0	1	0	0	1	0	9 (64%)
Library rules and regulations	1	1	1	1	1	1	1	0	0	0	0	0	1	0	8 (57%)
Library membership and overdue charges	1	1	1	1	1	1	1	0	0	0	0	0	1	0	8 (57%)
ICT infrastructure	1	1	1	1	0	1	1	0	0	0	0	1	1	0	8 (57%)
Library news and updates	1	0	1	1	1	1	1	0	0	0	0	0	1	0	7 (50%)
Library collection	1	1	0	1	1	1	1	0	0	0	0	0	1	0	7 (50%)
Link to Web OPAC	1	1	0	0	1	1	1	0	1	0	0	0	1	0	7 (50%)
Library staff	1	1	1	0	1	1	1	0	0	0	0	0	0	0	6 (43%)
List of new arrivals	1	0	1	0	1	1	1	0	0	0	0	0	1	0	6 (43%)
Link to IR	1	1	0	1	0	1	1	0	0	0	0	0	0	1	6 (43%)
Library committee	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2 (14%)
Link to plagiarism	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1 (7%)
Total points	15	12	10	10	11	13	13	2	3	3	1	4	11	4	

Table 3 displays the usability features of library rules and regulations. On the observation of Table 3, it has been found that all the IIMs libraries' websites (100%) have "contact us" link on their website, whereas 93% libraries' websites have "about library" features which is missing in the library website of IIMSM (IIM Sambalpur). "Library services via website" feature is available in 71% libraries' websites, while 64% libraries' websites have mentioned the "opening hours" information on the websites. There are 57% libraries' websites which have the usability features of "library rules & regulations", "library membership & overdue charges", and "ICT infrastructure", whereas 50% libraries' websites have the usability features of "library news & updates", "library collection", and "link to Web OPAC". Further, there are 43% libraries' websites that have provided "library staff", "list of new arrivals", and "link to IR" usability features whereas 57% libraries' websites missed these. Only 14% libraries' websites have included "library committee" as usability point of view, whereas 86% do not. In case of "link to plagiarism", only 7% libraries' websites provided such kind of link to their users, whereas 93% do not feel it as important feature of library service. On the particular IIMs library point of view, it has been observed that IIMA library website has utilized all the usability features for their users and obtained 15 usability scores out of 15. IIMB has obtained 12 scores out of 15 by providing 12 usability features on the library website while IIMKZ and IIML libraries'

websites have 13 usability scores out of 15 by providing 13 usability features on their libraries' websites. Similarly IIMK and IIMT have 11 usability scores out of 15 by mentioning 11 usability features on their libraries' websites. IIMKS has 10 usability scores by having 10 usability features on the library website, whereas rest of the IIMs libraries' websites have very less usability scores by having fewer usability features on their libraries' websites. Surprisingly, IIMSM library website has only one usability feature and got the least score in this category of usability features.

Usability Features on Content Writing on IIMs Libraries Websites
This section covers the usability features related to content writing part of IIMs libraries' websites.

Table 4 displays the usability features of content writings and on the observation of Table 4, it has been found that all the IIMs libraries' websites (100%) have used "flash & add-ons" as well as "ads & pop-ups", whereas 93% libraries' websites have "user friendly language" excluding IIMSM. About 79% IIMs libraries' websites have "explanatory page titles" and 64% libraries' websites have "clear & descriptive major headings". There are 43% libraries' websites which have "ALT tags for images" and "spell out abbreviations and acronyms". There are only 36% libraries' websites which have "appropriate help functions for library websites".

Table 4: *Usability Features on Content Writings.*

Checklist/Parameters	IIMA	IIMB	IIMI	IIMKS	IIMK	IIMKZ	IIML	IIMR	IIMRN	IIMRT	IIMSM	IIMS	IIMT	IIMU	Frequency (%)
Flash and add-ons are used carefully	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14 (100%)
Ads and pop-ups are unobtrusive	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14 (100%)
User friendly language	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13 (93%)
Page titles are explanatory	1	1	1	1	1	1	1	0	0	0	1	1	1	1	11 (79%)
Major headings are clear and descriptive	1	1	1	1	0	1	1	0	0	1	0	0	1	1	9 (64%)
Images have appropriate ALT tags	1	1	0	0	1	1	0	1	0	0	0	0	1	0	6 (43%)
Spell out abbreviations and acronyms	1	1	1	0	0	0	1	0	0	1	0	0	1	0	6 (43%)
The library website has appropriate help functions	1	0	0	0	1	1	1	0	0	0	0	0	1	0	5 (36%)
Total points	8	7	6	5	6	7	7	4	3	5	3	4	8	5	

In case of individual IIMs libraries' websites point of view, it have been found that IIMA and IIMT libraries' websites has utilized all the usability features and obtained 8 usability scores out of 8. Further, IIMB, IIMKZ, and IIML libraries' websites have obtained 7 scores out of 8 by applying 7 usability features on their libraries' websites while IIMI and IIMK libraries' websites have 6 usability scores out of 8 by having 6 usability features. Similarly, IIMKS, IIMRT and IIMU libraries' websites have 5 usability scores out of 8 by mentioning 5 usability features on their libraries' websites. IIMR and IIMS have 4 usability scores by having 4 usability features, whereas IIMRN and IIMSM libraries' websites have 3 usability scores by having 3 usability features on their libraries' websites.

Usability Features on Searching of Websites
Searching features are paramount for any website/webpages, it helps users to stay longer on the website, find what they were looking for. Without site search, chances are there that most of the people will leave the website completely because they have to put more time to get what they want.

Table 5 represents the usability features of searching of websites. On the observation of Table 5, it has been inference that 79% IIMs libraries' websites have "search box" facility at their homepage, whereas 71% libraries' websites have "wide and clearly visible" search box at their websites. Only 36% libraries' websites have "easily accessible site search" facility in their websites, whereas rests of the websites do not have easily searchable site search. Moreover, in case of individual IIMs libraries' websites, IIMA, IIMB, IIMR and IIMRT libraries' websites have utilized all the usability features, while IIMKZ, IIMSM, and IIMS have not utilized any usability features on their libraries' websites. Rest of the IIMs libraries' websites (IIMI, IIMKS, IIMK, IIML, IIMRN, IIMT and IIMU) have 2 usability scores by having 2 usability features on their libraries' websites.

Usability Features on Web 2.0 Applications
By the use of Web 2.0 tools, users can access and share library information and resources through social networking sites, blogs, wikis, and at photo-sharing sites etc. Libraries get used to the Web 2.0 tools for reaching to its users and spreading its services to the remote users.

Table 5: Usability Features on Searching of Websites.

Checklist/Parameters	IIMA	IIMB	IIMI	IIMKS	IIMK	IIMKZ	IIML	IIMR	IIMRN	IIMRT	IIMSM	IIMS	IIMT	IIMU	Frequency (%)
Search box at homepage	1	1	1	1	1	0	1	1	1	1	0	0	1	1	11 (79%)
Search box should be wide and clearly visible	1	1	1	1	1	0	1	1	1	1	0	0	0	1	10 (71%)
Site search is easy to access	1	1	0	0	0	0	0	1	0	1	0	0	1	0	5 (36%)
Total points	3	3	2	2	2	0	2	3	2	3	0	0	2	2	

Table 6: Usability Features on Use of Web 2.0 Applications.

Checklist/Parameters	IIMA	IIMB	IIMI	IIMKS	IIMK	IIMKZ	IIML	IIMR	IIMRN	IIMRT	IIMSM	IIMS	IIMT	IIMU	Frequency (%)
Social networking sites	1	1	1	0	0	0	1	0	0	1	1	1	0	1	8 (57%)
LinkedIn	1	1	1	0	0	0	1	0	0	0	1	0	0	1	6 (43%)
YouTube	1	1	1	0	0	0	1	0	0	0	0	1	0	1	6 (43%)
Twitter	0	0	1	0	0	0	0	0	0	1	1	1	0	1	5 (36%)
Blogs	0	0	1	0	0	0	1	0	0	1	0	0	0	0	3 (21%)
Wikis	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1 (7%)
Instant messaging	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1 (7%)
Total points	3	3	5	0	0	0	4	0	0	5	3	3	0	4	

Table 6 represents the usability features on use of Web 2.0 applications to the libraries' websites of IIMs libraries. On the observation of Table 6, it has been found that 57% IIMs libraries' websites are using "social networking sites" for sharing information and resources to their users. There are 43% libraries' websites that use "LinkedIn" and "YouTube" for disseminating the information to their users, while 36% libraries' websites have used "Twitter" for information and feedback sharing. The "Blogs" have been used by 21% libraries' websites, while "Instant messaging" has been used only by 7% libraries' websites. IIMI and IIMRT libraries' websites have used four (4) Web 2.0 applications as usability features, while IIMKS, IIMK, IIMKZ, IIMR, IIMRN and IIMT have not used any Web 2.0 application tools. IIML and IIMU have utilized 3 Web 2.0 applications in their libraries' websites; and rests of the libraries' websites have used 2 Web 2.0 applications.

Website Design and Management Techniques as Usability Features
This section contains the website design and management technology. This is also a kind of usability feature which affects the use of library website, if website properly designed and managed. "HTML Toolbox" and "Webpage Analyzer" were used as a tool to assess the website design and management techniques which includes total page size, page load time (in seconds), total number of HTML files, total number of objects, total number of images, total images size, total number of CSS files, and total number of scripts running on the page.

Page Size
The page size of any website plays an imperative role in its loading; heavier page size will take more time in loading and less page size will take less time to load. By reducing total page size to less than 100 Kb to achieve 20 sec response time on 56 K connections. Amongst all IIMs libraries' websites, IIML website size is lowest and takes only 12.33 sec to load.

Page Load Time
The page load time depends on several factors such as: size of HTML file, frames, references, number and size of the images, use of height and width attributes, table tags, the number of servers that must be contacted to download files and images, and the speed of the user's modem.

***Table 7:** Website Design and Management Techniques.*

S. No.	IIMs	Total Page Size (Bytes)	Page load Time (sec)	Total HTML	Total Objects	Total Images	Total Image Size	Total CSS	Total Scripts
1	IIMA	887107	191.8	2	75	55	---	5	13
2	IIMB*	---	---	---	---	---	---	---	---
3	IIMI*	---	---	---	---	---	---	---	---
4	IIMKS*	---	---	---	---	---	---	---	---
5	IIMK	388900	78.91	1	7	4	328944	---	2
6	IIMKZ	2237881	471.81	1	129	114	2171160	6	8
7	IIML	52846	12.33	1	9	7	6619	---	1
8	IIMR	245710	51.37	1	12	6	184997	3	2
9	IIMRN*	---	---	---	---	---	---	---	---
10	IIMRT	441979	101.09	1	65	38	68578	8	18
11	IIMSM	1311157	276.11	1	74	58	737902	3	12
12	IIMS	357956	73.34	1	10	8	309743	---	1
13	IIMT	1315397	270.36	1	41	33	1229565	2	5
14	IIMU*	---	---	---	---	---	---	---	---

*Page was not assessed due to more webpage size and unavailability or non-accessibility of page at the time of study.

Table 8: *Ranking of IIMs Libraries Websites.*

S. No.	IIMs	Usability Score					Total Score (out of 40)	Rank
		Table 2 (out of 7)	Table 3 (out of 15)	Table 4 (out of 8)	Table 5 (out of 3)	Table 6 (out of 7)		
1	IIMA	6	15	8	3	3	35	1
2	IIMB	5	12	7	3	3	30	2
3	IIMI	5	10	6	2	5	28	4
4	IIMK	3	10	5	2	0	20	7
5	IIMKS	3	11	6	2	0	22	6
6	IIMKZ	3	13	7	0	0	23	5
7	IIML	3	13	7	2	4	29	3
8	IIMR	4	2	4	3	0	13	9
9	IIMRN	1	3	3	2	0	9	11
10	IIMRT	4	3	5	3	5	20	7
11	IIMS	2	1	3	0	3	9	11
12	IIMSM	1	4	4	0	3	12	10
13	IIMT	1	11	8	2	0	22	6
14	IIMU	2	4	5	2	4	17	8

Total HTML Files
The total number of HTML files on a page (including the main HTML file) is to be 1, which most browsers can multithread. IIMA library website has 2 HTML files.

Total Images and Its Size
More images can slow down the particular webpage. Try to replace graphic text and form controls with styled text to eliminate unnecessary HTTP requests. Ideally, each image should be less than 1160 bytes, to easily fit into one TCP-IP packet.

Total CSS Files
Reducing CSS to one or two external files; combine, refine and optimize external CSS files. Ideally, there should have one CSS file (or even embed CSS for high traffic pages) on the page but there is no library having single CSS file.

Total Scripts
Reducing the total number of scripts is reasonable thing. JavaScript files should be kept together on the server to minimize HTTP requests. The placement of external JavaScript files at the bottom of BODY, and CSS files in the HEAD enables progressive display in XHTML web pages.

Ranking of IIMs Libraries Websites based on Usability Features
After the usability assessment of libraries' websites, points were collected together and final ranking of all the IIMs were prepared, in which IIMA (IIM Ahmadabad) is on the top rank with 35 points, followed by IIMB, IIML, IIMI, IIMKZ etc. The Table 8 represents total usability scores of IIMs libraries websites after assessment.

FINDINGS OF THE STUDY
Following are the findings of the study:
a) All IIMs libraries' websites have separate website.
b) Multi-lingual options have been adopted by 29% IIMs libraries' websites.
c) All IIMs libraries' websites have "contact us" link on their websites.
d) About 57% IIMs libraries' websites have the usability features of "library rules & regulations" and "library membership & overdue charges".
e) About 50% IIMs libraries' websites have "Web OPAC" feature for users.
f) All IIMs libraries' websites have "flash & add-ons" and "ads & pop-ups" in their websites.
g) About 79% IIMs libraries' websites have "search box" facility at their homepage. Only 36% IIMs libraries' websites have "easily accessible site search" facility in their websites.
h) About 57% IIMs libraries' websites are using "social networking sites". Only 43% libraries' websites are using "YouTube" and 36% libraries' websites are using "Twitter" for information sharing.

i) Lower the page size reduces the page load time and thus websites download very fast. IIM Lucknow has the least page size and reduced page load time.

j) IIM Ahmadabad (IIMA) has the highest usability score and ranked first among all IIMs libraries' websites, followed by IIM Bangalore (IIMB), IIM Lucknow (IIML), IIM Indore (IIMI), and IIM Kozhikode (IIMKZ) etc.

CONCLUSIONS

The increasing use of Internet has changed the method of accessing and disseminating information about library activities, services, rules and regulations, various sections, and staff etc. The library websites/webpages of academic institutions not only serve as a great platform for publishing the library news, activities, programs, resources and services but also help to disseminate the information to all the remote users. The information furnished in the websites of IIMs libraries need to be evaluated and analyzed periodically using recognized criteria like web design, accessibility, and arrangement etc. This will help the academic institutions/universities to improve their websites' usability and accessibility as per their user's need. Usability is the key aspect of user-centred Internet sites. Usability is considered as a personal quality attribute of the system [17]. From the available literature, it is found that the usability depends upon the perceptions of the individual user and there are not any established criteria for its evaluation. To maintain the standard design and structure of Indian academic library websites, it is highly recommended for regular assessment of these library websites to increase their usability and accessibility.

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