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CONTENT ANALYSIS OF UNIVERSITY LIBRARY WEB PAGES

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CONTENT ANALYSIS OF UNIVERSITY LIBRARY WEB PAGES

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ABSTRACT:

The main purpose of this research study is to explore the web-based content available on HEC recognized public and private sector university library websites. Furthermore, this study aimed to explore the comparison of the content of HEC recognized public and private sector university library websites. A comprehensive review of related literature was made to understand the research problem in the first phase. Contents of library websites and their related literature were reviewed to understand different aspects of the topic. A checklist was developed on different literature reviewed related to the topic. World-leading university library websites were visited to get new contents details and some new content was added to the checklist. A checklist of 138 contents was developed. The checklist was used as a tool for data collection from library websites. Data was gathered in 2016. Collected data was analyzed through frequencies and percentages. Findings of the study revealed that out of 103 public sector universities 36(34%) were providing access to Home links on every page of the website while 67(65%) were not providing access. Out of 74 private sector universities, 18(24%) were providing access to Home links on every page of the website while 56(75%) were not providing access. Out of 103 public sector universities, 31(30%) were providing access to Phone numbers and postal addresses while 72(69%) were not providing access. Out of 74 private sector university library websites, 16(21%) were providing access to Phone numbers and postal addresses while 58(78%) were not providing access. Out of 177 public and private university library websites, 75(42%) were not providing spelling grammatical, and typing mistakes while 102(57%) did not provide access. Out of 103 public sector universities, 48(46%) were not providing spelling grammatical, and typing mistakes while

55(53%) did not provide access to websites. Out of 74 private sector university library websites, 27(36%) were providing spelling grammatical, and typing mistakes while 47(63%) were not providing access to websites. There is no research conducted on HEC university library websites in detail, in some earlier studies, Qutab and Mahmood (2009) studied some university library websites with a checklist of 71 and 39 items respectively. This study is a complete case study of HEC recognized university library websites (both public and private) using a comprehensive checklist of 138 items.

Key Words: Content Analysis of Library Website, Pakistani Library Web Pages, Contents of University Library Sites

INTRODUCTION & BACKGROUND:

Creek, V., and Leanne (2005) conducted a usability assessment study of the library website of Northern Illinois University and the outcome of the study was that regular feedback of the users is important in terms of improving library websites focusing on user-centered services which often lead to help successful researchers in many ways. In a study conducted by Kim and Yong (2011) where their focus was that University libraries have utilized substantive resources in digitizing information to make it available for the web whereas University library website which acts as a launching pad for these digitized resources for the end-users still needs to improve. The study was based on three using university library websites, website design perspective, and library service quality perspective. These three perspectives were checked on undergraduate, postgraduate taught and research students and faculty members and conclude the study with two main outcomes: Firstly they identified usage patterns of the university library websites which includes preferred sources of information across user groups, and secondly that the responses to library usage factors vary across user groups (these variations may be derived from users' distinct academic tasks. Kim (2011) also explored commercial websites and printed materials in addition to the utilization of web resources of university libraries for providing a complete holistic view of the users. This study's findings show that users from arts and sciences disciplines are much more likely to utilize university library website resources and printed materials than business users who heavily rely on commercial websites.

Seadle and Madhusudhan, (2008) surveyed to evaluate the current state and use of the web services by university libraries in India. He examined that the web-based library services offered by some university libraries heavily rely on web-based library automation software. The results from this study showed that many of the surveyed university libraries are yet to exploit the full potential of the web. This can be achieved with the most successful web-based library websites with the best user services as a benchmark. Such successful user services provided by web-based libraries are instant messaging reference services, weblogs, and wikis, which are the new ultimate level of power for web-based library services. A survey was conducted by Mirza and Mahmood (2009) for assessing the users' satisfaction with electronic resources and services in Pakistani university libraries. The results showed that electronic resources and services are offered effectively to some extent in university libraries of Pakistan in metropolitan cities. The problems they identified are: the staff in a public sector university library is trained with traditional library procedure and they are less familiar with the web-based services of libraries and at some points due to financial constraints and also discouraging attitude of library staff in using IT services in libraries.

Traditional libraries are facing challenges for meeting the needs of users of the modern era and therefore getting less importance by community these days. To make their usability by the communities, they are now in the transformation stage to meet the need of users of this modern technological age. For this purpose, they need to rely on web-based services with more correctly managed services.

LITERATURE REVIEW:

Chua and Goh (2010) studied on web 2 applications of library websites, three categories of Web 2.0 applications, namely those that support information acquisition, dissemination, organization, and sharing, have been adopted in libraries. In examining six common Web 2.0 applications and 120 library websites, the study found that libraries in North America lead significantly in the adoption of Web 2.0 applications compared to their European and Asian counterparts. Across all libraries, the order of popularity of Web 2.0 applications implementation is as follows: blogs, RSS, instant messaging, social networking services, wikis, and social tagging

applications. The difference between public and academic libraries in implementing Web 2.0 applications is not statistically significant.

Similarly, Kehinde and Tella (2012) analyzed various university library websites in Nigeria and concludes that most of them are in the early stages of their services and with more advanced features they will help academics and researchers with more access to e-material they need for their research work. Similarly, another study was done by Madhusudhan and Nagabhushanam (2012) where they analyzed web-based library services in university libraries of India. They said that a few libraries offer innovative web-based library services in different sections and they presented ways in which the web helps university libraries to improve and develop innovative and creative web-based library services. Wickramanayake (2012) conducted a study on help services provided by academic libraries on their websites in Sri Lanka. Only 14 academic library websites were accessible out of 223 which give instructions and necessary help tools. The results of the study indicate the quality of academic library websites in Sri Lanka in providing online instruction and help services which were based on dependent variables. The development of online services is in its infancy. Most important help tools and instruction services have not been utilized by the majority of academic library websites.

Ahmed (2013) described the patterns of electronic information resources usage and their satisfaction with university-paid resources by the faculty members in eight public universities in Bangladesh. The result showed that faculty members are not generally satisfied with the current level of university subscribed e-resources. They identified the limited number of titles, limited access to old issues, difficulty in finding information, inability to access from home, limited access to computers, and slow download speed as major constraints. Mairaj and Naseer (2013) conducted a user-based survey of university library websites, for this purpose they selected 17 universities and 60 users from each university based on their academic role difference (faculty, researchers, graduates, and undergraduates). The results revealed that university library websites use was satisfactory. He further stated that for wider use of university library websites it is necessary to create dynamic websites with useful content and state of art services. Zain, Othman, Ripin, and Faizal (2015) conducted a study on research and non-research universities' difference based on web-based library services. It was found that the type of university within the country of Malaysia

correlates to significant differences in usage of e-journals and Web-based library services in general. He further suggests that orientation programs for users of web-based library services should be organized by both types of universities.

Duncan & Durrant (2015) studied usability evaluation of the University of the West Indies, Mona Campus, main library's website. They focused on library users and site visitors, to identify the major strengths and weaknesses of the site and to analyze the navigability, functionality, and general usability of the website. The study outlined the importance of user involvement in the redesign process of a library's website and how this aids in fostering more effective navigation, functionality, and overall design of the website. It provides user feedback so that academic libraries can identify, organize, and analyze issues relating to website design and redevelopment. ChanLin et al., 2016 evaluated the use of a library mobile website at the university library. A usability test was conducted to evaluate its effectiveness through the questionnaire. Results revealed that students using library mobile websites to finish search tasks more quickly than they were using pc websites. Sheikh (2017) evaluated the usability of the COMSATS Institute of Information Technology library website, for this purpose they use the case study method. He described that users are largely satisfied with the usefulness, convenience, design, and quality of the CIIT library website. He further stated that users are using the website for accessing research papers through the HEC digital library, using online open access journals, searching for e-books, and using library OPAC, and it shows that the library website is playing a vital role in educational activities of CIIT.

RESEARCH OBJECTIVE:

- To identify the difference in contents (services &resources) of public and private sector university library websites in Pakistan

METHODOLOGY:

The main purpose of this research study is to explore the web-based content available on HEC recognized public and private sector university library websites. Furthermore, this study aimed to explore the comparison of the content of HEC recognized public and private sector university library websites. A comprehensive review of related literature was made to understand

the research problem in the first phase. Contents of library websites and their related literature were reviewed to understand different aspects of the topic. To meet the scope of study different searching techniques of the study were used to search literature in published and unpublished forms. It helped in developing clarity of concepts and developing research instruments. From the literature review, it was come to know that comprehensive study is needed on university library websites to know their services and resources in form of content which they are offering in their university libraries. The checklist was developed in three stages.

1. The checklist was developed on different literature reviewed related to the topic.
2. World-leading university library websites were visited to get new contents details and some new content was added to the checklist.

Table 1
List of Universities

Sr. No	Universities Name	URL
1.	Massachusetts Institute of Technology (MIT)	https://libraries.mit.edu/
2.	University of Cambridge	http://www.lib.cam.ac.uk/
3.	Imperial College London	https://www.imperial.ac.uk/admin-services/library/
4.	Harvard University	http://library.harvard.edu/
5.	UCL (University College London)	https://www.ucl.ac.uk/library
6.	University of Oxford	https://www.ox.ac.uk/research/libraries?wssl=1
7.	Stanford University	http://library.stanford.edu/

8.	California Institute of Technology (Caltech)	https://library.caltech.edu/
9.	Princeton University	http://library.princeton.edu/
10.	Yale University	http://web.library.yale.edu/

3. Various related studies on the topic were comprehensively reviewed and their checklists were critically examined.
4. A checklist of 138 contents was developed.

A detailed and comprehensive checklist was designed to fulfill the need and relevancy of the topic. The checklist is comprised of fifteen sections; each section has its set of items. The checklist is used as a tool for data collection from library websites. The checklist was used as a tool for data collection from library websites. Data was gathered in 2016. Collected data was analyzed through frequencies and percentages. There is no research conducted on HEC university library websites in detail, in some earlier studies, Qutab and Mahmood (2013) studied some university library websites with a checklist of 71 and 39 items respectively. This study is a complete case study of HEC recognized university library websites (both public and private) using a comprehensive checklist of 138 items. During the observation process data was collected by the researcher without any bias, for reliability, each website was visited twice.

DATA ANALYSIS

The present study is a descriptive case study. The main aim of the research is to explore web-based content of HEC recognized public and private sector university library websites of Pakistan. For this purpose, a checklist containing 138 items was used to collect data from HEC recognized public and private sector university library websites. Collected data from HEC recognized public and private sector university library websites were calculated using the simple method of calculation and percentages are presented to analyze the results of the study.

Accessibility & Speed

Accessibility and page loading speed of any university library website is very important. Accessibility of university library websites within eight seconds and the websites working without any registration or application were checked on 177 HEC recognized public and private sector university library websites of Pakistan. The results showed that only 75(42%) were providing access to both services while 102(58%) were not providing access. Out of 103 public sector universities, only 48 (46%) were providing access to both services, while 55(53%) were not providing access. Out of 74 private sector universities, only 27 (36%) were providing access to both services, while 47(63%) were not providing access.

Library link on the homepage of university and library information with the name of library title on websites of public and private sector universities both were checked and out of 177 university library websites, 75(42%) were providing access while 102 (58%) were not providing access. In public sector universities out of 103, only 48(46%) were providing access to both contents while 55(53%)were not providing access. Out of 74 private university library websites, 27 (36%) were providing access to both contents while 47 (63%) were not providing access.

Number of clicks was checked to download the required information on library websites. From a total of 177 university library websites, only 65(36%) were providing access within three clicks while 112(64%) were not providing access within three clicks. In 103 public university library websites, 44(42%) were providing access and 59(57%) were not providing access within three clicks. In 74 private university library websites, 21(28%) were providing access while 53(71%) were not providing access within three clicks.

Dead links of university library websites were checked and it was found that among 177 university library websites 35(19%) universities have dead links while 142(80%) university libraries' dead links were not found. In 103 public university library websites, there were 30(29%) university library websites have dead links while 73(70%) websites dead links were not seen. In 74 private university library websites, dead links were 5(6%), and 69(93%) were found to have no dead links. There were 36(20%) having no page under construction while 141(79%) libraries

websites were found to have pages under construction. In 103 public sector universities, 30(29%) were found to have pages under construction while 73(70%) have no pages under construction. In private sector universities, 6(8%) were found to have pages under construction and 68(91%) did not have any page under construction.

Table 2

Accessibility & Speed of HEC Public and Private Sector University Library Websites

Accessibility & speed		Public total(103)		Private total(74)		Total (177)	
Rank	Items	Providing access	Not Providing access	Providing access	Not Providing access	Providing access	Not Providing access
1.	Users can see something within 8 seconds.	48(46%)	55(53%)	27(36%)	47(63%)	75(42%)	102(57%)
2.	The website can be accessed publicly (no fee registration or application is required to enter the site).	48(46%)	55(53%)	27(36%)	47(63%)	75(42%)	102(57%)
3.	Link on parent organization	48(46%)	55(53%)	27(36%)	47(63%)	75(42%)	102(57%)

	websites homepage.						
4.	Information about the library can be found from the link with "Library title".	48(46%)	55(53%)	27(36%)	47(63%)	75(42%)	102(57%)
5.	No more than three clicks from the homepage.	44(42%)	59(57%)	21(28%)	53(71%)	65(36%)	112(64%)
6.	Are there dead links?	30(29%)	73(70%)	5 (6%)	69(93%)	35(19%)	142(80%)
7.	Under construction (few pages).	30(29%)	73(70%)	6(8%)	68(91%)	36(20%)	141(79%)

Navigation

Navigation is an important element of website searching and it is the best way to guide its users in using the website. Home link, page title, use of graphics pictures charts are the key elements of website navigation. Home links on every page of the websites were explored and it was found that out of 177 public and private university library websites 54(30%) were providing access while 123(69%) were not providing access. Out of 103 public sector universities, 36(34%) were providing access to Home links on every page of the website while 67(65%) were not providing access. Out of 74 private sector universities, 18(24%) were providing access to Home links on every page of the website while 56(75%) were not providing access. Information about the page title contents location in site structure and appearing of the page title in top window bar

both were checked, the results showed that out of 177 public and private university library websites 61(34%) were providing access while 116(65%) were not providing access. Out of 103 public sector university library websites, 41(39%) were providing access to both contents while 62(60%) were not providing access. Out of 74 private sector university library websites, 20(27%) were providing access to both contents while 54(72%) were not providing access.

It was explored that pictures charts and graphics were used by the universities on their library websites, the results showed that out of 177 public and private university library websites 55(31%) were providing access while 122(68%) were not providing access. Out of 103 public sector university library websites, 36(34%) were providing use of pictures charts and graphics while 67(65%) were not providing use of pictures charts and graphics. Out of 74 private sector universities, 19(25%) were providing use of pictures charts and graphics while 55(74%) were not providing use of pictures charts and graphics.

Further, it was explored that websites are using text-only versions, the results showed that out of 177 public and private university library websites 20(11%) were providing access while 157(88%) were not providing access. Out of 103 public sector university library websites, 12(11%) were providing access to text-only versions while 91(88%) were not providing access to the text-only version. Out of 74 private sector universities, 8(10%) were providing access to text-only versions while 66(89%) were not providing access to the text-only version. Navigation back to the homepage was checked it was found that out of 177 public and private university library websites 53(29%) were providing access while 124(70%) were not providing access. Out of 103 public sector university library websites, 36(34%) were providing access to navigation back to the homepage while 67(65%) were not providing access. Out of 74 private sector universities, 17(22%) were providing access to navigation back to the homepage while 57(77%) were not providing access. It was evaluated that the main navigation menu is easily identifiable and the results showed that out of 177 public and private university library websites 58(32%) were providing access while 119(67%) were not providing access. Out of 103 public sector university library websites, 40(38%) were providing the feature of while 63(61%) were not providing access. Out of 74 private sector universities, 18(24%) were providing access while 56(75%) were not providing access. Working of the website with different browsers was explored and it was found

that out of 177 public and private university library websites 73(41%) were providing access while 104(58%) were not providing access. Out of 103 public sector university library websites, 46(44%) were providing access to working of the website with different browsers while 57(55%) were not providing access. Out of 74 private sector universities, 27(36%) were providing access to working of the website with different browsers while 47(63%) were not providing access.

Table 3:

Navigation of HEC Public and Private Sector University Library Websites

Navigation		Public total(103)		Private total(74)		Total (177)	
Rank	Items	Providing access	Not Providing access	Providing access	Not Providing access	Providing access	Not Providing access
1.	Home links on every page of the website.	36(34%)	67(65%)	18(24%)	56(75%)	54(30%)	123(69%)
2.	Page title describes content or location in the site structure.	41(39%)	62(60%)	20(27%)	54(72%)	61(34%)	116(65%)
3.	The page title appears in the top window bar.	41(39%)	62(60%)	20(27%)	54(72%)	61(34%)	116(65%)
4.	Use of graphics/ pictures and charts.	36(34%)	67(65%)	19(25%)	55(74%)	55(31%)	122(68%)
5.	Text-only version.	12(11%)	91(88%)	8(10%)	66(89%)	20(11%)	157(88%)

6.	Is there navigation back to the homepage?	36(34%)	67(65%)	17(22%)	57(77%)	53(29%)	124(70%)
7.	Is the main navigation menu easily identifiable?	40(38%)	63(61%)	18(24%)	56(75%)	58(32%)	119(67%)
8.	Does the site work with different browsers?	46(44%)	57(55%)	27(36%)	47(63%)	73(41%)	104(58%)

Authority & Accuracy

Nowadays website creation is not a difficult task, anyone can create a website. It is very important to find out who is the creator of the website to find the credibility and reliability of the information found on that website. Phone number and postal address to contact for further information was checked and it was found that out of 177 public and private university library websites 47(26%) were providing access while 130(70%) were not providing access. Out of 103 public sector universities, 31(30%) were providing access to Phone numbers and postal addresses while 72(69%) were not providing access. Out of 74 private sector university library websites, 16(21%) were providing access to Phone numbers and postal addresses while 58(78%) were not providing access.

Writing of the text, spelling grammatical, and typing mistakes were evaluated and the results showed that out of 177 public and private university library websites 75(42%) were not providing spelling grammatical and typing mistakes while 102(57%) did not provide access. Out of 103 public sector universities, 48(46%) were not providing spelling grammatical, and typing mistakes while 55(53%) did not provide access to websites. Out of 74 private sector university

library websites, 27(36%) were providing spelling grammatical, and typing mistakes while 47(63%) were not providing access to websites. University library website links with other credible websites were explored and it was found that out of 177 public and private sector university library websites 45(25%) were providing access while 132(74%) were not providing access. Out of 103 public sector universities, 28(27%) were providing access to library website links with other credible websites while 75(72%) were not providing access. Out of 74 private sector universities, 17(22%) were providing access to library website links with another credible website while 57(77%) were not providing access. Website is easy to use for the normal user was checked and results showed that out of 177 public and private university library websites 61(34%) were providing access while 116(65%) were not providing access. Out of 103 public sector universities website is easy to use for the normal user was checked and it was found that 43(41%) were providing access while 60(58%) were not providing access. Out of 74 private sector universities website is easy to use for the normal user was checked and it was found that 18(24%) were providing access while 56(75%) were not providing access.

Table 4:

Authority & Accuracy of HEC Public and Private Sector University Library Websites

Authority & Accuracy		Public total(103)		Private total(74)		Total (177)	
Rank	Items	Providing access	Not Providing access	Providing access	Not Providing access	Providing access	Not Providing access
1.	There is the phone number and postal address to contact for further information. (Just an email address is not sufficient)	31(30%)	72(69%)	16(21%)	58(78%)	47(26%)	130(73%)
2.	Is the text well written and understandable (no grammatical spelling or typing mistakes)	48(46%)	55(53%)	27(36%)	47(63%)	75(42%)	102(57%)
3.	Are there links to other credible websites?	28(27%)	75(72%)	17(22%)	57(77%)	45(25%)	132(74%)
4.	Is the website is easy to use for a normal user?	43(41%)	60(58%)	18(24%)	56(75%)	61(34%)	116(65%)

Website aid & Tool

Website aids or tools include links that can help in the use of the website in efficiently finding information. This section includes five items: site map; feedback link; index search and FAQs. Website searching was evaluated and it was found that out of 177 public and private university library websites 55(31%) were providing access while 122(68%) were not providing access. Out of 103 public sector universities, 36(34%) were providing access to website searching while 67(65%) were not providing access. Out of 74 private sector universities, 19(25%) were providing access to website searching while 55(74%) were not providing access. Site maps of the websites were examined and it was found that out of 177 public and private university library websites 42(23%) were providing access while 135(76%) were not providing access. Out of 103 public sector universities, 28(27%) were providing access to site maps while 75(72%) were not providing access. Out of 74 private sector universities, 14(18%) were providing access to site maps while 60(81%) were not providing access.

Website index was checked and it was found that out of 177 public and private university library websites 48(27%) were providing access while 129(72%) were not providing access. Out of 103 public sector universities, 31(30%) were providing access to the website index while 72(69%) were not providing access. Out of 74 private sector universities, 17(22%) were providing access website index while 57(77%) were not providing access. Library website feedback form or email link was checked and results showed that out of 177 public and private university library websites 4(2%) were providing access while 173(97%) were not providing access. Out of 103 public sector universities, 4(3%) were providing access to library website feedback form or email link while 99(96%) were not providing access. Out of 74 private sector universities, 0(0%) were providing access to library website feedback form or email link while 74(100%) were not providing access. Further, frequently asked questions (FAQ) were examined and results revealed that out of 177 public and private university library websites 11(6%) were providing access while 166(93%) were not providing access. Out of 103 public sector universities, 5(4%) were providing access to frequently asked questions (FAQ) while 98(95%) were not providing access. Out of 74 private sector universities, 6(8%) were providing access to frequently asked questions (FAQ) while 68(91%) were not providing access.

Table 5:

Website Aid & Tool of HEC Public and Private Sector University Library Websites

Website Aid & Tool		Public total(103)		Private total(74)		Total (177)	
Rank	Items	Providing access	Not Providing access	Providing access	Not Providing access	Providing access	Not Providing access
1.	Website search.	36(34%)	67(65%)	19(25%)	55(74%)	55(31%)	122(68%)
2.	Site map.	28(27%)	75(72%)	14(18%)	60(81%)	42(23%)	135(76%)
3.	Website index.	31(30%)	72(69%)	17(22%)	57(77%)	48(27%)	129(72%)
4.	Library website feedback form or an email link.	4(3%)	99(96%)	0(0%)	74(100%)	4(2%)	173(97%)
5.	Frequently asked questions (FAQ).	5(4%)	98(95%)	6(8%)	68(91%)	11(6%)	166(93%)

Languages

English is used as the official language and almost every library website in Pakistan is using English as a connecting language. The use of the English language was checked and it was found that out of 177 public and private university library websites 73(41%) were providing access while 104(58%) were not providing access. Out of 103 public sector universities, 47(45%) were providing access to the English language while 56(54%) were not providing access. Out of 74 private sector universities, 26(35%) were providing access to the English language while 48(64%) were not providing access. English /Urdu both languages were using the same time by how many library websites were evaluated and results showed that out of 177 public and private university library websites 2(1%) were providing access while 175(98%) were not providing access. Out of 103 public sector universities, 2(1%) were providing access to English /Urdu while 101(98%) were

not providing access. Out of 74 private sector universities, 0(0%) were providing access to English /Urdu while 74(100%) were not providing access

Table 6:

Languages of HEC Public and Private Sector University Library Websites

Languages		Public total(103)		Private total(74)		Total (177)	
Rank	Items	Providing access	Not Providing access	Providing access	Not Providing access	Providing access	Not Providing access
1.	English	47(45%)	56(54%)	26(35%)	48(64%)	73(41%)	104(58%)
2.	English/Urdu	2(1%)	101(98%)	0(0%)	74(100%)	2(1%)	175(98%)

Web 2.0 Tools

Web 2.0 is nowadays used by the libraries to provide information about the libraries and to increase users of the library. Blogs were checked and it was found that out of 177 public and private university library websites 4(2%) were providing access while 173(97%) were not providing access. Out of 103 public sector universities, 2(1%) were providing access to blogs while 101(98%) were not providing access. Out of 74 private sector universities, 2(2%) were providing access to blogs while 72(97%) were not providing access. The Facebook link was checked and results showed that out of 177 public and private university library websites 22(12%) were providing access while 155(87%) were not providing access. Out of 103 public sector universities, 11(10%) were providing access to Facebook links while 92(89%) were not providing access. Out of 74 private sector universities, 11(14%) were providing access to Facebook links while 63(85%) were not providing access.

RSS was evaluated and it was found that out of 177 public and private university library websites 6(3%) were providing access while 171(96%) were not providing access. Out of 103 public sector universities, 3(2%) were providing access to RSS while 100(97%) were not providing access. Out of 74 private sector universities, 3(4%) were providing access to RSS while 71(95%)

were not providing access. PODCAST was evaluated and it was found that out of 177 public and private university library websites 0(0%) were providing access while 177(100%) were not providing access. Out of 103 public sector universities, 0(0%) were providing access to PODCAST while 103(100%) were not providing access. Out of 74 private sector universities, 0(0%) were providing access to PODCAST while 74(100%) were not providing access.

The usage of Twitter was checked on HEC public and private university library websites and results showed that out of 177 public and private university library websites 17(9%) were providing access while 160(90%) were not providing access. Out of 103 public sector universities, 9(8%) were providing access to Twitter while 94(91%) were not providing access. Out of 74 private sector universities, 8(10%) were providing access to Twitter while 66(89%) were not providing access. LinkedIn use was evaluated and out of 177 public and private university library websites, 12(6%) were providing access while 165(93%) were not providing access. Out of 103 public sector universities, 4(3%) were providing access to LinkedIn 99(96%) while were not providing access. Out of 74 private sector universities, 8(10%) were providing access to LinkedIn while 66(89%) were not providing access.

It was checked that YouTube was using by how many library websites and out of 177 public and private university library websites 3(1%) were providing access while 174(98%) were not providing access. Out of 103 public sector universities, 1(0%) were providing access to YouTube while 102(99%) were not providing access. Out of 74 private sector universities, 2(2%) were providing access to YouTube while 72(97%) were not providing access. Flickr use was evaluated and it was found that out of 177 public and private university library websites 1(0%) were providing access while 176(99%) were not providing access. Out of 103 public sector universities, 1(0%) were providing access to YouTube while 102(99%) were not providing access. Out of 74 private sector universities, 0(0%) were providing access to YouTube while 74(100%) were not providing access.

It was checked that Instagram was used by how many library websites and out of 177 public and private university library websites 2(1%) were providing access while 175(98%) were not providing access. Out of 103 public sector universities, 0(0%) were providing access to Instagram

while 103(100%) were not providing access. Out of 74 private sector universities, 2(2%) were providing access to Instagram while 72(97%) were not providing access.

Table 7:

Web 2.0 Tools of HEC Public and Private Sector University Library Websites

Web 2.0 tools		Public total(103)		Private total(74)		Total (177)	
Rank	Items	Providing access	Not Providing access	Providing access	Not Providing access	Providing access	Not Providing access
1.	Blogs.	2(1%)	101(98%)	2(2%)	72(97%)	4(2%)	173(97%)
2.	Facebook.	11(10%)	92(89%)	11(14%)	63(85%)	22(12%)	155(87%)
3.	RSS.	3(2%)	100(97%)	3(4%)	71(95%)	6(3%)	171(96%)
4.	PODCAST.	0(0%)	103(100%)	0(0%)	74(100%)	0(0%)	177(100%)
5.	Twitter.	9(8%)	94(91%)	8(10%)	66(89%)	17(9%)	160(90%)
6.	Linkedin	4(3%)	99(96%)	8(10%)	66(89%)	12(6%)	165(93%)
7.	Youtube.	1(0%)	102(99%)	2(2%)	72(97%)	3(1%)	174(98%)
8.	Flicker.	1(0%)	102(99%)	0(0%)	74(100%)	1(0%)	176(99%)
9.	Instagram.	0(0%)	103(100%)	2(2%)	72(97%)	2(1%)	175(98%)

DISCUSSION

Usually for analyzing accessibility and speed of a website of university library a list of seven content factors are considered: visibility of university library website within eight seconds, accessibility of website without any registration or application fee, link on parent organization homepage, information about the library with the name of library title, not more than three clicks

from the homepage, dead links and under construction pages. Overall the first four factors have 41% access where the remaining three have a success rate of 36 %, 19 %, and 20 % respectively.

However, when considered separately for libraries of public sector universities we observed that the first four factors have an access rate of 45% whereas the remaining three factors have an access rate of 42% and 29%, respectively. Similarly when considered separately for libraries of private sector universities we observed that based on the first four factors the access rate was observed to be 36%.whereas for the remaining three factors we observed an access rate of 28%, 6%,8% respectively. Based on the data analysis, it is evident that public sector universities are providing higher access rates based on these factors than private sector universities. Our analysis has similarities with the earlier analysis conducted in Pakistan by Qutab (2009) as both studies have used similar content evaluation factors and therefore have a similar conclusion.

For evaluating websites of university libraries of Pakistan based on navigation, we used eight factors: home links on every page of website have (given 30% access rate), page title content location in site structure, and page title appears in top window bar (both have 34% access rate), graphics pictures charts have (31% access rate), text-only version has (36% access rate), navigation back to homepage have (29% access rate), main navigation menu easily identifiable have (32% access rate) and site work with different browsers have (41% access rate).

In public sector universities, home links on every page of website have a 34% access rate, page title on content location in site structure and page title appears in top window bar both have 39% access rate, graphics pictures charts have 34% access rate, text-only version has 39% access rate, navigation back to homepage has 34% access rate, main navigation menu easily identifiable have 38% access rate and site work with different browsers have 44% access rate. In private sector universities, home links on every page of website have a 24% access rate, page title on content location in site structure and page title appears in top window bar both have 27% access rate, graphics pictures charts have 27% access rate, text-only version has 31% access rate, navigation back to homepage have 22% access rate, main navigation menu easily identifiable have 24% access rate and site work with different browsers have 36% access rate.

Public sector universities are providing higher access rates based on these factors than private sector universities. As relating this study with previous studies which have been conducted in Pakistan Qutab (2009) studied these contents and results are somehow similar based on conclusion but relating with international studies Pareek (2013) and Mahalakshami (2015) studied these navigational elements and both study results are quite different. For evaluating university libraries websites contents based on authority and accuracy we used four factors: phone numbers and postal address (26% access rate), text well written understandable (41% access rate) links to other credible websites (25% access rate), and website is easy to use for the normal user (34% access rate). In public sector universities phone numbers and postal addresses for contact have found 30% access, text well written understandable have 44% access, links to other credible websites have 27% access and website is easy to use for normal users have 41% access. In private sector universities phone numbers and postal addresses for contact have 21% access, text well written understandable have 36% access, links to other credible websites have 22% access and website is easy to use for the normal user have 24% access.

Overall the conclusion is that the public sector university library websites are providing more content than private-sector university library websites. We have not found any study which would have considered these factors for analyzing the contents of university library websites in Pakistan. However in a study conducted by Pareek (2013) abroad only three such factors were used and also in another study conducted by Mahalakshami (2015) two such factors to perform analysis based on authority & accuracy were used.

For evaluation of HEC recognized university library websites, eighteen contents of value-added services are checked. These consisted of: job vacancies have (1% access rate), image gallery of the library have (4% access rate), user guidelines have (3% access rate), register for updates have (1% access rate), library account login has (5%), a chronology of librarians have (6% access rate), virtual help desk and events calendar both have (0% access rate), online tutorials have (1% access rate), library committee and new arrival section both have (3% access rate), library archive have (5% access rate), books vendors links have (0% access rate), union catalogs have (2% access rate), wireless access and purchase request both have (1% access rate), service for persons with disabilities and giving gifts donations to a library both have found (0% access rate).

Similarly when considering these contents separately in public sector universities contents are: job vacancies have (1% access rate), image gallery of the library has (5% access rate), user guidelines have (3% access rate), register for updates have (1% access rate), library account login has (5%), a chronology of librarians have (8% access rate), virtual help desk and events calendar both have (0% access rate), online tutorials have (1% access rate), library committee and new arrival section both have (3% access rate), library archive have (6% access rate), books vendors links have (0% access rate), union catalogs have (6% access rate), wireless access and purchase request both have (1% access rate), service for persons with disabilities and giving gifts donations to a library both have found (0% access rate).

Similarly when considering these contents separately in private sector universities contents are: job vacancies have (1% access rate), image gallery of the library has and user guidelines both have (2% access rate), register for updates have (0% access rate), library account login and chronology of librarians both have (4% access rate), virtual help desk and events calendar both have (0% access rate), online tutorials have (1% access rate), library committee and new arrival section both have (1% access rate), library archive have (2% access rate), books vendors links and union catalogs both have (2% access rate), wireless access have (1% access rate) purchase request, service for persons with disabilities and giving gifts donations to the library all have found (0% access rate). From the data analysis, it is clear that public sector university library websites are providing more contents access than private-sector university library websites. Previously conducted studies in Pakistan Qutab (2009) studied some of these contents but the results are different. Internationally Pareek (2013) and Mahalakshami (2015) also study some of the contents of this section and based on findings and conclusion results are different from our study.

Languages consist of two items, for evaluation of library websites the availability of these items were checked on HEC (public and private sector) university library websites these are: English have (41% access rate) and English/Urdu have (1% access rate). When considering these contents separately in private sector universities English has (45% access rate) and English/Urdu has (2% access rate). In the Private Sector University, library websites English has (35% access rate) and English/ Urdu has (0% access rate). It is clear from data analysis that public sector

university library websites are providing good access than private-sector university library websites. Previously conducted studies in Pakistan Qutab (2009) study these contents and based on conclusion results are somehow similar.

For analyzing contents of HEC recognized (public and private sector) university library websites nine content items of web 2.0 tools are used for evaluation are: blogs have (2% access rate), Facebook have (12% access rate), RSS have (3% access rate), PODCAST have (0% access rate), Twitter have (9% access rate), LinkedIn have (6% access rate), YouTube have (1% access rate), flicker have (0% access rate), Instagram has (1% access rate). Similarly in private sector universities, these contents are blogs have (1% access rate), Facebook have (10% access rate), RSS have (2% access rate), PODCAST have (0% access rate), Twitter have (8% access rate), LinkedIn has (3% access rate), YouTube, flicker, Instagram all have (0% access rate). In private sector universities, blogs have (2% access rate), Facebook has (14% access rate), RSS have (4% access rate), PODCAST has (0% access rate), Twitter has (10% access rate), LinkedIn has (10% access rate), YouTube has (2% access rate), flicker has (0% access rate), Instagram has (2% access rate). It is evident from data analysis that private sector university library websites are providing more content than public sector university library websites. Previously these contents factors are not evaluated in the study of contents of library websites at the national and international levels.

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APPENDICES

Appendix A:

Table 8:

Public Sector Universities Contents Score

Sr.no	University name	Contents score
1.	Air university Islamabad	54
2.	Allama Iqbal open university Islamabad AIOU	40
3.	Federal Urdu university of arts science and technology Islamabad	27
4.	Institute of space and technology Islamabad	46
5.	International Islamic university Islamabad	50
6.	National college of arts Lahore	14
7.	National Defense university Islamabad	31
8.	National textile university Faisalabad	32
9.	National University of Modern Languages, Islamabad (NUML)	38
10.	Pakistan Institute of Development Economics (PIDE), Islamabad	38
11.	University of FATA, Kohat	13
12	BahauddinZakariya University, Multan	8
13	Fatima Jinnah Women University, Rawalpindi	32
14	Government College for Women University, Sialkot	26
15	Islamia University Bahawalpur	106
16	Information Technology University of the Punjab, Lahore	42
17	Lahore College for Women University, Lahore	28

18	University of Engineering & Technology, Taxila	39
19	University of Health Sciences, Lahore	31
20	Mehran University of Engineering & Technology, Jamshoro	46
21	NED University of Engineering & Technology, Karachi	57
22.	Peoples University of Medical and Health Sciences for Women, Nawabshah (Shaheed Benazirabad)	37
23.	Quaid-e-Azam University of Engineering, Sciences & Technology, Nawabshah	28
24.	Shah Abdul Latif University, Khairpur	35
25.	Sukkur Institute of Business Administration, Sukkur	41
26.	Sindh Madresatul Islam University, Karachi	59
27.	Institute of Management Science, Peshawar (IMS)	33
28.	Islamia College University, Peshawar	24
29.	Kohat University of Science and Technology, Kohat	10
30.	University of Peshawar, Peshawar	27
31.	University of Swat, Swat	18
32.	University of Haripur, Haripur	54
33.	Balochistan University of Engineering & Technology, Khuzdar	25
34.	Lasbela University of Agriculture, Water and Marine Sciences	10
35.	Sardar Bahadur Khan Women University, Quetta	23
36.	University of Balochistan, Quetta	27
37.	Mirpur University of Science and Technology (MUST), AJ&K	13

38.	University of Karachi	37
39.	Government College University Faisalabad	38
40.	Quaid-e-azam University Islamabad	67
41.	Institute of Information Technology Islamabad (COMSATS)	88
42.	Abd-ul-wali khan university Mardan	53
43.	Punjab university Lahore	81
44.	Government College University Lahore	86
45.	University of Sargodha	62
46.	Bahria University Islamabad	106
47.	Government Sadiq College Women University, Bahawalpur	3
48.	University of Engineering & Technology, Lahore	37

Appendix B:

Table 9:

Sr.No.	<i>Private Sector Universities Contents Score</i> University name	Contents Score
1.	HITEC University Taxila	56
2.	Isra University Hyderabad	16
3.	University of Wah, Wah	25
4.	Sarhad University of Science and Information Technology, Peshawar	26
5.	Zia-ud-Din University, Karachi	8
6.	Textile Institute of Pakistan, Karachi	13

7.	KASB Institute of Technology, Karachi	10
8.	Jinnah University for Women, Karachi	16
9.	Indus University, Karachi	9
10.	Habib University, Karachi	47
11.	Greenwich University, Karachi	12
12.	Lahore School of Economics, Lahore	22
13.	Lahore Leads University, Lahore	7
14.	Global Institute, Lahore	14
15.	Forman Christian College, Lahore (university status)	91
16.	Beaconhouse National University, Lahore	27
17.	Ali Institute of Education	15
18.	Sarhad Institute of Science&IT Peshawar	43
19.	National University of Science and Technology Islamabad (NUST)	60
20.	Institute of Business Administration IBA Karachi	82
21.	Ghulam Ishaq Khan University Topi (KPK)	48
22.	Agha Khan University Karachi	55
23.	Iqra University Karachi	39
24.	Lahore University of Management Sciences (LUMS)	104
25.	Riphah International University Islamabad	76
26.	Hajvery University	46
27.	DHA Suffa University Karachi	49