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Do Index Pages Attract Higher Backlinks? : An Analytical Study of Library Websites

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ABSTRACT

The study examines the number of backlinks to the websites of libraries belonging to Central Universities of India. The study has presented seven categories of library webpages based on their features. The study was conducted in five rounds to get the primary data through four selected search engines. Analysis is presented for each search engine separately. Study concludes that index page/home page of library websites attracts more number of backlinks than any other webpages of library websites. Search engine Yahoo Site Explorer retrieved highest number of backlinks for library websites.

KEYWORDS: Webometrics; Backlinks; Inlinks; Websites; Webpage Categories

INTRODUCTION

World Wide Web (WWW) or Web has accessibility to every nook & corner of the world. Since the evolution of Web, websites are an ideal medium to disseminate information, create awareness and advertise and for these almost every governmental, business, academic & research, non-governmental organisations, and general purpose institutions/organisations have their own websites. Academic & research institutions have their websites to attract students for running their research and academic programs. In case of academic & research institutions, these websites become the sources of information for available courses of studies, education centers, scholarships, job positions, library resources and other facilities. Library website, contains the information regarding library resources, services, facilities, user registration, rules & regulations, databases etc. available for users of the institute, is a part of the website of an institute. Hence, institution's library uses their websites for disseminating information about collection & services. Many times libraries websites point to resources (on Web), similarly many times external resources point to libraries websites using hyperlinks for additional references. In web environment, this pointing phenomenon is termed as 'linking behaviour'. The linking behavior largely depends upon the content richness of websites depending upon library's collection, services, facilities etc. This linking behaviour among websites is referred as 'backlinks pointing behaviour' or 'pattern of pointing of page' (POP). Backlinks are as similar as "citation" to any document also known as "sitation" (McKiernan, 1996). The term "citation" is used basically in bibliometrics for documents while term "sitation" is used in webometrics by scholars for denoting hyperlinks pointing behaviour among websites.

The basic concepts behind the study have been discussed further to make the sense clear. In the Web, medium which connects two or more hypertext is known as links (or hyperlinks). According to Web Design Glossary of Terms, a hyperlink more commonly called a link, is an electronic connection between one webpage to either (1) other webpages on the same website, or (2) webpages located on another website. More specifically, a hyperlink is a

connection between a page of a hypertext document to another page of hypertext document. Links are of three types – *outgoing links*, *self links* & *incoming links (inlinks)*. Links going to outside from the website is *outgoing* (or *outlinks*) *links*, links coming into a website is known as *inlinks* (or *backlinks*) and links within the website is known as *self links* (Noruzi, 2006). *Outlinks* are used to pointing external web sources and also known as *outbound links*. *Self links* are used within the website for navigational purposes of the same website. The *outlink* from a website will be *inlink* for another website. i.e. *outlinks* and *inlinks (backlinks)* are reciprocal. The *outlinks* from a website is pointing to external web resources of related things and in return website is linked (pointed) by some other web resources of related things. So the links from external web resources are coming back to the website are known as *backlinks*. More the *backlinks* to a website reveals the impact of the website in that field. Every hyperlink pointing at a website is a potential source of new visitors (Thelwall, 2001e). One website is linked with other websites having some common relationship with each other. The websites which have given *backlinks* to the target websites uses homepages as pointing pages for *backlinks*. Sometimes internal pages are also used for pointing of pages. If the pointing of pages goes to home pages of a target websites, it represents either the whole website has useful information or the whole website can be seen besides home pages while in case of internal pages, it represents that the particular target page only has specific information. For analyzing the link type relationship among websites, Thelwall (2001e) has conducted a survey to examine the links between commercial organizations and found that most of the commercial organizations use two way link (also referred as *reciprocal link*) relationship between each other to promote their business products, marketing of products, promotion of products etc. When we talk about linking of hypertext documents (Web pages), a general concept of linking appears in mind that webpages are linked among each other. In another words, website ‘A’ is linked by website ‘B’ or both the websites ‘A’ & ‘B’ have linked with each other. When website ‘A’ is linked by website ‘B’, it is known as one way of linking and when both the websites ‘A’ & ‘B’ have linked each other, it is known as reciprocal way of linking. It is not always possible that every websites have reciprocal links. Most likely, only one way mode of linking found between websites. From the survey results, it has been inference that reciprocal links are prevalent between business organizations websites.

India has a very large higher education system in the world. There are about 370 higher academic & research institutes at national level which includes Universities, Deemed Universities, Indian Institute of Technologies (IITs), Indian Institute of Managements (IIMs), National Institute of Technologies (NITs) & research institutes. More than six thousands colleges are registered under Section 2(f)/12(B) of UGC Act 1956 for imparting education in India. In the Web environment, it is necessary for every academic institution to check the impact of their web presence amongst other academic & research institutes and websites play a great role in this. Academic & research institutions have strong relationship with each other in education, research, training and expertise. Moreover, other commercial organizations, governmental departments, business houses, NGOs etc. also have relationship with the academic institutions. The linking of websites to each other between academic institutions and organizations reveals the relatedness or similarity with each other. The linking of websites show the relationship or impact in particular field. So, here need arises to study the impact and linking pattern of websites of academic and research institutes of India based on *backlinks* study.

REVIEW OF LITERATURE

Countrywide universities’ network has been the focus for *backlink* analysis to analyze the interlinking pattern among all of the universities and institutes of a single country domain.

The first attempt in this direction was made by Ingwersen (1998) who analyzed the online impact of six (6) university websites. Later on Noruzi (2005) calculated the WIF for Iranian universities by using AltaVista and found that Iranian universities have low *inlink WIFs* and there is significant correlation between English language pages and *backlinks* counts. In a study, Thelwall (2002a) explored inter relationship between UK university websites by link analysis and found that there are no techniques available to extract all the links. For studying structure of web links of university websites, in a study, Thelwall (2002c) analyzed the *backlink* structure of the top 100 linked-to pages on UK university websites, and characterized the page types of these 100 pages. In a similar kind of study of Israeli universities, Bar-Ilan (2004), explored the nature of links of academic institutes to characterize the links and the sources and the target pages. Academic institutes and universities are centre for education and research. The scholarly productivity of universities is centered with its research activities and this has much influence on the Web. Thelwall (2001a) made an attempt to assess the correlation between research productivity of twenty five (25) UK universities and link counts, and found significant correlation. This study had given the first concrete evidence of a real association between research and links. Further, similar study was repeated for Australia (Smith & Thelwall, 2002) and Taiwan (Thelwall & Tang, 2003). It was found in all the studies that the quantity of research produced by academicians played significant role for attracting links (Thelwall & Harries, 2004). Geographic factors for interlinking of academic web spaces have also been investigated by Thelwall (2002b) and concluded that as distance increases hyperlinking patterns of websites decreases. There have been few noteworthy efforts made by researchers to reveal the motive of linking of websites. The first exhaustive approach made by Kim (2000) for finding the motive of hyperlinking pattern in scholarly electronic articles. Nineteen (19) hyperlinking motives have been identified and categorized into three classes: scholarly, social, and technological. In another study, Wilkinson et al. (2003) investigated the motivation for academic website interlinking and found that scholarly activities conducted by academic institutions has significant reason for interlinking.

Search engines are widely adopted tools for Webometric research. AltaVista allows advanced Boolean queries to combine information requests about pages, links and domains (Almind & Ingwersen, 1997). However, commercial search engines never return complete results and as per Lawrence & Giles (1999) search engines cover only 16 percent of the whole web that may not be true today due to technological changes and advances in search engines' techniques and changed search strategy. Till now no other research has been conducted and found to get the updated data regarding search engines coverage. The results returned by search engines are also unreliable and fluctuate (Ingwersen, 1998; Rousseau, 1999; Snyder & Rosenbaum, 1999; Bar-Ilan, 1999; Mettrop & Nieuwenhuysen, 2001, Shukla, 2009a). It has been also found that results returned by search engines are problematic because their coverage is variable and they provide different results over a short period of time (Thelwall, 2001c, Shukla, 2009a). In a study AltaVista has been found to be more reliable than any other search engines (Thelwall, 2001d; Vaughan & Thelwall, 2003) and have good coverage of academic websites (Thelwall, 2001b). The reliability and coverage of AltaVista may not be true now because many other popular search engines declare themselves more reliable in search results and wide coverage of websites, though there is lack of latest research on this aspect. Bar-Ilan (1999) examined the performance of search engines over time and found search engines loose the information content and relevant URLs (Uniform Resource Locators). In another study, Bar-Ilan (2000) examined search performance of two search engines "HotBot" and "Snap" over a period of ten days and found Snap's results were rather stable than "HotBot". In a similar study on various search engines over a period of seven

months, Thelwall (2001d) found that only Google is able to respond quickly to changes and capable of finding new websites whereas AltaVista's results were very stable over time. Shukla (2009b) carried a research to extract number of *backlinks* against the type of academic institutions and concluded that type or category of academic institutions did not support higher *backlinks*. The study also established that Indian academic websites attracted more citations from commercial Web domains. In another study, Shukla and Tripathi (2009) examined the extent of *backlinks* given by different domains to Institutes of National Importance.

SCOPE

The study is a Webometric study. The scope of work is limited to library websites of Central Universities of India. India has forty three Central Universities according to University Grants Commission (UGC), New Delhi. There are twenty three newly formed Central Universities and they are still in formation stage. These twenty three universities are ignored and only twenty old Central Universities are considered for the study. Hence, the sample considered for study is given in the Table 1. Code name for each university is created for making references during the study.

Table 1: List of Central Universities of India (with code name)

SN	CENTRAL UNIVERSITIES (CODE NAME)
1.	Aligarh Muslim University, Aligarh (AMU)
2.	Assam University, Silchar (ASU)
3.	Babasaheb Bhimrao Ambedkar University, Lucknow (BBAU)
4.	Banaras Hindu University, Varanasi (BHU)
5.	Central Agricultural University, Imphal (CAUI)
6.	Indira Gandhi National Open University, New Delhi (IGNOU)
7.	Jamia Millia Islamia, New Delhi (JMI)
8.	Jawaharlal Nehru University, New Delhi (JNU)
9.	Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Wardha (MGAHV)
10.	Manipur University, Imphal (MANI)
11.	Maulana Azad National Urdu University, Hyderabad (MANUU)
12.	Mizoram University, Aizwal (MIZUNI)
13.	Nagaland University, Kohima (NAGUNI)
14.	North Eastern Hill University, Shillong (NEHU)
15.	Pondicherry University, Pondicherry (PONDI)
16.	Tezpur University, Tezpur (TEZU)
17.	University of Allahabad, Allahabad (UOA)
18.	University of Delhi, Delhi (UOD)
19.	University of Hyderabad, Hyderabad (UOH)
20.	Visva-Bharati University, Santiniketan (VBU)

OBJECTIVES OF THE STUDY

1. To find out the number of *backlinks* for the selected central universities' library websites;
2. To ascertain the pointing behaviour of *backlinks* to central universities' library websites; and
3. To ascertain the search engine that retrieves higher *backlinks* for central universities' library websites.

RESEARCH METHODOLOGY

The data were collected for library websites of twenty (20) central universities of India. For collection of data, web browser (Internet Explorer) and four search engines (Google, AlltheWeb, AltaVista and Yahoo Site Explorer) were used as tool. Initially each central university library website was examined to find out number of active web pages in the website and URL (with directory structure) of each web page was recorded. This exercise was done for all twenty (20) central universities' library websites. Numbers of *backlinks* were recorded for each active web page of individual library website using search engine Google. Following search strings were used for getting the *backlinks* data from search engines:

Search Engine	Query	Example
Google	link:	link: http://www.bhu.ac.in/lib.html
AlltheWeb	link:	link: http://www.bhu.ac.in/lib.html
AltaVista	link:	link: http://www.bhu.ac.in/lib.html
Yahoo Site Explorer	link:	link: http://www.bhu.ac.in/lib.html

All the *backlinks* for all the active web pages in the individual library website were added together and recorded during the study. Same exercise was done with search engines AlltheWeb, AltaVista and Yahoo Site Explorer. The data were collected in five rounds at the interval of one year (between the time periods of October/November, 2009 – October/November, 2013).

Time duration of data collection:

The time duration of five rounds for the longitudinal study is as follows:

- R1 = Round 1 (October/November, 2009)
- R2 = Round 2 (October/November, 2010)
- R3 = Round 3 (October/November, 2011)
- R4 = Round 4 (October/November, 2012)
- R5 = Round 5 (October/November, 2013)

Table 2: Data of *Backlinks* for the Central Universities' Library Websites in Different Search Engines

SEARCH ENGINES →	GOOGLE					ALLTHEWEB					ALTAVISTA					YAHOO SITE EXPLORER						
Universities (in Code) ↓	R1	R2	R3	R4	R5	R1	R2	R3	R4	R5	R1	R2	R3	R4	R5	R1	R2	R3	R4	R5		
AMU	0	0	0	0	0	---	0	---	---	---	---	0	---	---	---	---	0	0	0	---		
ASU	---	0	0	0	---	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0		
BBAU	No webpage exist for library				0	0	No webpage exist for library				0	0	No webpage exist for library				0	0	No webpage exist for library			
BHU	0	0	3	4	2	8	10	13	15	16	10	12	15	15	16	12	16	22	23	21		
CAUI	No webpage exist for library					No webpage exist for library					No webpage exist for library					No webpage exist for library						
IGNOU	0	0	0	0	---	0	0	0	0	1	0	0	0	0	1	7	2	2	2	1		
JMI	0	1	1	2	0	1	1	2	3	3	1	1	2	3	3	2	2	3	5	4		
JNU	0	0	1	1	0	7	7	7	9	11	6	7	7	9	11	17	18	20	20	22		
MGAHV	No webpage exist for library				0	No webpage exist for library				0	No webpage exist for library				0	No webpage exist for library				0		
MANI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MANUU	0	0	3	2	0	0	1	3	4	1	0	1	3	4	1	1	2	4	4	3		
MIZUNI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
NAGUNI	No webpage exist for library				0	0	No webpage exist for library				0	0	No webpage exist for library				0	0	No webpage exist for library			
NEHU	---	0	0	0	---	---	2	1	1	---	---	2	1	1	---	---	1	1	1	---		
PONDI	---	---	---	---	0	---	---	---	---	1	---	---	---	---	1	---	---	---	---	1		
TEZU	No webpage exist for library		0	0	0	No webpage exist for library		0	0	1	No webpage exist for library		0	0	1	No webpage exist for library		0	0	2		
UOA	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
UOD	1	4	7	2	2	3	4	6	3	15	5	5	7	3	24	6	9	11	4	17		
UOH	1	3	1	4	1	2	5	1	5	1	2	5	1	5	1	1	6	1	4	1		
VBU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Total	2	8	16	15	5	21	30	33	40	50	24	33	36	40	59	46	56	65	64	72		
Grand Total	46					174					192					303						

Legends: R1 = Round 1, R2 = Round 2, R3 = Round 3, R4 = Round 4, R5 = Round 5.

RESEARCH ANALYSIS & DISCUSSION

Categorization of Backlinks Pointing to Library Websites

In order to study the pointing behaviour of *backlinks* to a library website, seven categories of library web pages have been identified which are given in Table 3.

Table 3: Categories of Library Web pages

SN	LIBRARY WEB PAGES CATEGORIES	CODE
1	Index page / homepage	IP
2	Library databases / e-journals / journals web pages	JP
3	Institutional repository / digital library web pages	DL
4	E-resources (including e-books, e-reference sources, e-standards, etc.)	ER
5	Library Web OPAC / OPAC	OP
6	Theses / e-theses / dissertations	ET
7	Other web pages*	OL

Note: The websites which are without any backlink are indicated by symbol “N” and websites which are not indexed by search engines are indicated by symbol “W” wherever applicable.

*Category of “Other web pages” includes web pages of library collection, library services, library sections, library facilities, library rules, library history / introduction etc.

Further, all web pages available within an individual library website are categorized based on these seven categories of library web pages. The *backlinks* received by library websites of central universities are assessed on the basis of seven categories of library web pages. This is important to study the pointing behaviour of *backlinks* on library web pages including the categories to which it is pointing. Pointing behaviour of *backlinks* indicate usefulness of that library web pages.

On the basis of seven categories of library web pages, numbers of *backlinks* obtained by four search engines have been recorded for all twenty central universities’ library websites. The following tables (Table 4, 5, 6, & 7) represent the numbers of *backlinks* pointing to different categories of library web pages in respect of each search engine.

Google distribution of backlinks:

Table 4: Distribution of *Backlinks* over Library Web Pages
(Retrieved by Google)

Central Universities	Search Engine – Google					
	GR1	GR2	GR3	GR4	GR5	TOTAL
AMU	N	N	N	N	N	--
ASU	W	N	N	N	W	--
BBAU	Not included due to lack of library webpage during three rounds					
BHU	N	N	2 IP, 1 OL	2 IP, 1 OL, 1 JP	2 IP	6 IP, 2 OL, 1 JP
CAUI	Not included due to lack of library webpage during five rounds					
IGNOU	N	N	N	N	N	--

JMI	N	1 IP	1 IP	1 IP, 1 JP	N	3 IP, 1 JP
JNU	N	N	1 IP	1 IP	N	2 IP
MGAHV	Not included due to lack of library webpage during four rounds					
MANI	N	N	N	N	N	--
MANUU	N	N	3 IP	2 IP	N	5 IP
MIZUNI	N	N	N	N	N	--
NAGUNI	Not included due to lack of library webpage during three rounds					
NEHU	W	N	N	N	W	--
PONDI	W	W	W	W	N	--
TEZU	Not included due to lack of library webpage during two rounds					
UOA	W	W	W	N	N	--
UOD	1 IP	3 IP, 1 ER	5 IP, 1 ER, 1 OP	2 IP	1 IP, 1 OP	12 IP, 2 ER, 2 OP
UOH	1 IP	2 IP, 1 JP	1 IP	4 IP	1 IP	9 IP, 1 JP
VBU	N	N	N	N	N	--

Legends: GR = Google Round; IP/JP/DL/ER/OP/ET/OL = Library web page categories; N = No backlinks; W = Website not indexed.

On the analysis of *backlinks* data found in Table 4, it is observed that only six (6) central universities' library websites had *backlinks* during the study period. There are five (5) central universities that were not included in the calculation for all four search engines due to absence of library websites during the complete research period or partial absence. Moreover, nine (9) central universities' library websites doesn't had any *backlinks* either due to lack of *backlinks* to library websites or lack of indexing of library websites in particular search engine's database. On the analysis of *backlinks* count to the six central universities in all five rounds, it is evident that *backlinks* were not permanent in nature i.e. *backlinks* alive today for website may not be alive tomorrow for the same website.

AlltheWeb distribution of backlinks:

Table 5: Distribution of *Backlinks* over Library Web Pages
(Retrieved by AlltheWeb)

Central Universities	Search Engine – AlltheWeb					
	AWR1	AWR2	AWR3	AWR4	AWR5	TOTAL
AMU	W	N	W	W	W	--
ASU	N	N	N	N	N	--
BBAU	Not included due to lack of library webpage during three rounds					
BHU	5 IP, 1 OL, 2 JP	6 IP, 1 OL, 3 JP	7 IP, 2 OL, 4 JP	8 IP, 2 OL, 5 JP	9 IP, 4 OL, 3 JP	35 IP, 10 OL, 17 JP
CAUI	Not included due to lack of library webpage during five rounds					
IGNOU	N	N	N	N	1 IP	1 IP
JMI	1 IP	1 IP	2 IP	2 IP, 1 JP	2 IP, 1 JP	8 IP, 2 JP
JNU	7 IP	7 IP	7 IP	9 IP	11 IP	41 IP
MGAHV	Not included due to lack of library webpage during four rounds					
MANI	N	N	N	N	N	--
MANUU	N	1 IP	3 IP	4 IP	1 IP	9 IP

MIZUNI	N	N	N	N	N	--
NAGUNI	Not included due to lack of library webpage during three rounds					
NEHU	W	1 IP, 1 OL	1 IP	1 IP	W	3 IP, 1 OL
PONDI	W	W	W	W	1 IP	1 IP
TEZU	Not included due to lack of library webpage during two rounds					
UOA	W	W	W	N	N	--
UOD	3 IP	4 IP	5 IP, 1 OP	3 IP	13 IP, 2 OL	28 IP, 1 OP, 2 OL
UOH	1 IP, 1 JP	2 IP, 1 OL, 1 JP, 1 DL	1 IP	5 IP	1 IP	10 IP, 1 OL, 1 JP, 1 DL
VBU	N	N	N	N	N	--

Legends: AWR = AlltheWeb Round; IP/JP/DL/ER/OP/ET/OL=Library web page categories; N = No *backlinks*; W = Website not indexed.

In Table 5, nine (9) central universities' library websites had *backlinks*. Besides this, six (6) central universities' library websites doesn't had any *backlinks* either due to lack of *backlinks* to library websites or lack of indexing of library websites in particular search engine's database. On analyzing the *backlinks* count to the nine central universities, again it is evident that *backlinks* were not permanent in nature.

AltaVista distribution of backlinks:

Table 6: Distribution of *Backlinks* over Library Web Pages
(Retrieved by AltaVista)

Central Universities	Search Engine – AltaVista					
	AVR1	AVR2	AVR3	AVR4	AVR5	TOTAL
AMU	W	N	W	W	W	--
ASU	N	N	N	N	N	--
BBAU	Not included due to lack of library webpage during three rounds					
BHU	6 IP, 1 OL, 3 JP	7 IP, 1 OL, 4 JP	8 IP, 2 OL, 5 JP	8 IP, 2 OL, 5 JP	9 IP, 4 OL, 3 JP	38 IP, 10 OL, 20 JP
CAUI	Not included due to lack of library webpage during five rounds					
IGNOU	N	N	N	N	1 IP	1 IP
JMI	1 IP	1 IP	2 IP	2 IP, 1 JP	2 IP, 1 JP	8 IP, 2 JP
JNU	6 IP	7 IP	7 IP	9 IP	11 IP	40 IP
MGAHV	Not included due to lack of library webpage during four rounds					
MANI	N	N	N	N	N	--
MANUU	N	1 IP	3 IP	4 IP	1 IP	9 IP
MIZUNI	N	N	N	N	N	--
NAGUNI	Not included due to lack of library webpage during three rounds					
NEHU	W	1 IP, 1 OL	1 IP	1 IP	W	3 IP, 1 OL
PONDI	W	W	W	W	1 IP	1 IP
TEZU	Not included due to lack of library webpage during two rounds					
UOA	W	W	W	N	N	--

UOD	5 IP	5 IP	6 IP, 1 OP	3 IP	18 IP, 2 ER, 4 OL	37 IP, 1 OP, 2 ER, 4 OL
UOH	1 IP, 1 JP	2 IP, 1 OL, 1 JP, 1 DL	1 IP	5 IP	1 IP	10 IP, 2 JP, 1 OL, 1 DL
VBU	N	N	N	N	N	--

Legends: AVR = AltaVista Round; IP/JP/DL/ER/OP/ET/OL=Library web page categories; N = No *backlinks*; W = Website not indexed.

On analyzing the *backlinks* data found in Table 6, it is found that result is same as result with AlltheWeb search engine in Table 5, except number of *backlinks*.

Yahoo Site Explorer distribution of backlinks:

Table 7: Distribution of *Backlinks* over Library Web Pages
(Retrieved by Yahoo Site Explorer)

Central Universities	Search Engine – Yahoo Site Explorer					
	YSER1	YSER2	YSER3	YSER4	YSER5	TOTAL
AMU	W	N	N	N	W	--
ASU	N	N	1 IP	1 IP	N	2 IP
BBAU	Not included due to lack of library webpage during three rounds					
BHU	5 IP, 4 OL, 3 JP	6 IP, 5 OL, 5 JP	8 IP, 7 OL, 7 JP	8 IP, 7 OL, 8 JP	10 IP, 8 OL, 3 JP	37 IP, 31 OL, 26 JP
CAUI	Not included due to lack of library webpage during five rounds					
IGNOU	7 IP	2 IP	2 IP	2 IP	1 ER	13 IP, 1 ER
JMI	2 IP	2 IP	3 IP	4 IP, 1 JP	2 IP, 2 JP	13 IP, 3 JP
JNU	17 IP	18 IP	20 IP	20 IP	22 IP	97 IP
MGAHV	Not included due to lack of library webpage during four rounds					
MANI	N	N	N	N	N	--
MANUU	1 IP	2 IP	4 IP	4 IP	2 IP, 1 OL	13 IP, 1 OL
MIZUNI	N	N	N	N	N	--
NAGUNI	Not included due to lack of library webpage during three rounds					
NEHU	W	1 IP	1 IP	1 IP	W	3 IP
PONDI	W	W	W	W	1 IP	1 IP
TEZU	Not included due to lack of library webpage during two rounds					
UOA	W	W	W	N	N	--
UOD	5 IP, 1 OL	7 IP, 1 OL, 1 ER	9 IP, 1 OL, 1 ER	4 IP	13 IP, 1 ER, 3 OL	38 IP, 6 OL, 3 ER
UOH	1 IP	3 IP, 1 OL, 1 JP, 1 DL	1 IP	4 IP	1 IP	10 IP, 1 OL, 1 JP, 1 DL
VBU	N	N	N	N	N	--

Legends: YSER = Yahoo Site Explorer Round; IP/JP/DL/ER/OP/ET/OL=Library web page categories; N = No *backlinks*; W = Website not indexed.

In Table 7, ten (10) central universities' library websites had *backlinks*. Besides this, five (5) central universities' library websites doesn't had any *backlinks* either due to lack of *backlinks* or lack of indexing of library websites. Further on the analysis of *backlinks* count, again Yahoo Site Explorer had shown also that *backlinks* were not permanent for any library website and they were changing over time for the same website.

Summary of Categorization of Backlinks Pointing to Library Websites

The *backlinks* for library websites were summarized individually. *Backlinks* received through all four search engines by each library websites were separated as per seven categories of web pages. The table 8 represents the summary of distribution of overall *backlinks*. On analyzing the *backlinks* categorically, it was found that majority of *backlinks* (76.93%) pointed towards index page/homepage (IP category) whereas about 11% pointed towards electronic journals/online databases (JP category); about 1% pointed towards E-resources (ER category); 0.56% pointed towards Web OPAC (OP category); and 0.42% pointed towards institutional repository/digital library (DL category). There were no *backlinks* pointed towards theses/e-theses (ET category) while about 10% of *backlinks* pointed towards Other web pages (OL category) that includes rest of the library web pages.

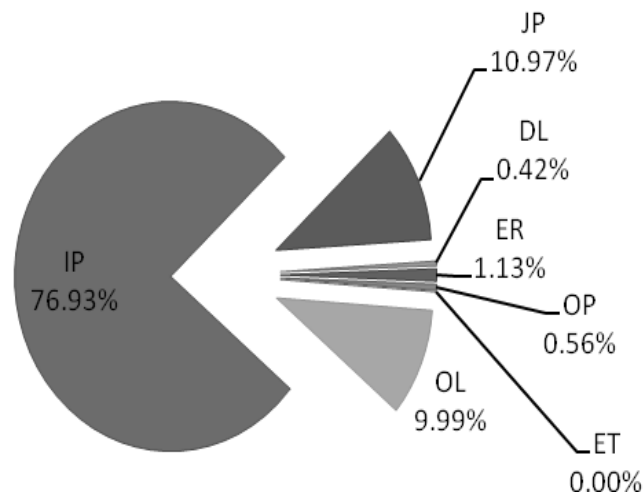
Table 8: Distribution of *Backlinks* over Web pages of Library Websites

Central Universities	Library Web pages Categories							TOTAL
	IP	JP	DL	ER	OP	ET	OL	
AMU	--	--	--	--	--	--	--	--
ASU	2	--	--	--	--	--	--	2
BBAU	Not included due to lack of library webpage during three rounds							--
BHU	116	64	--	--	--	--	53	233
CAUI	Not included due to lack of library webpage during five rounds							--
IGNOU	15	--	--	1	--	--	--	16
JMI	32	8	--	--	--	--	--	40
JNU	180	--	--	--	--	--	--	180
MGAHV	Not included due to lack of library webpage during four rounds							--
MANI	--	--	--	--	--	--	--	--
MANUU	36	--	--	--	--	--	1	37
MIZUNI	--	--	--	--	--	--	--	--
NAGUNI	Not included due to lack of library webpage during three rounds							--
NEHU	9	--	--	--	--	--	2	11
PONDI	3	--	--	--	--	--	--	3
TEZU	Not included due to lack of library webpage during two rounds							--
UOA	--	--	--	--	--	--	--	--
UOD	115	--	--	7	4	--	12	138
UOH	39	6	3	--	--	--	3	51
VBU	--	--	--	--	--	--	--	--
Total	547	78	3	8	4	0	71	711
Percentage	76.93	10.97	0.42	1.13	0.56	0	9.99	100

Legends: IP = Index page/homepage, JP = Library databases e-journal/journals web pages, DL = Institutional repository/digital library web pages, ER = E-resources (including e-books, e-reference sources, e-standards, etc.), OP = Library OPAC, ET = Theses/e-theses, OL = Other web pages.

Fig. 1: Overall distribution of *Backlinks* on Library Web Pages

Distribution of *Backlinks* - CU Library Websites



CONCLUSION

The *backlinks* retrieved by search engines Google, AlltheWeb, AltaVista and Yahoo Site Explorer for central universities' library websites were analyzed and observed that index pages/homepages of library websites have attracted the highest number of *backlinks* than any other web pages of library websites. The index page/homepage is a web page that is connected with each internal web page available in the website and functions as a gateway for the whole website. There may be two reasons for the highest number of *backlinks* attraction to index pages/home pages are; one the index page itself may attract other websites to link and; second the information content available on the index page is very rich. Few of the *backlinks* were attracted at journals, e-resources and web OPAC pages of library websites. The *backlinks* to "Other web pages" were also witnessed. It is found that Journals, e-resources and web OPAC pages were less important than index pages/home pages of library websites in terms of pointing behavior of links. This analysis indicates, if, library websites would have provided useful information on web pages, then it would have attracted more *backlinks*. Further among all four search engines, on analyzing Table 2, it was found that Yahoo Site Explorer had retrieved maximum number of *backlinks* than other search engines that indicates Yahoo Site Explorer is more reliable and has wider coverage for academic & research library websites than Google, AlltheWeb and AltaVista in terms of *backlinks* study.

OBSERVATIONS FROM THE STUDY

From the study, it was observed that majority of central universities library websites were not indexed properly in the search engines databases either due to longer or unstructured URL for each web page. Search engines (especially Google) have manual indexing facility for websites and web pages that can be used for depth indexing of library websites. But due to

lack of such technical know how? librarians and webmasters fail to do so and resulting in least indexing of library websites on search engines' databases. Besides this, another aspect for less *backlinks* is linking behaviour amongst related websites. Naturally, one website links to other website when importance of other website comes across the webmasters/ librarians/ web administrators. In case of business organisations websites, business owner has policy to disseminate their business with others and policy to show relations with other business organisations through websites leads to more *backlinks*. In case of academic & research institutions websites, this kind of relations found rarely between departments who are sharing some research and libraries of such institutions have no mutual relation physically as well as virtually. So library websites of academic institutions are not having mutual web relations/linking. Some cases, it has been found that libraries websites are linked by websites of electronic database providers or some educational websites those wants to display some related information to their website visitors. Such websites links to only index pages/home pages of library websites and not trying to link any particular web page. Very specific web pages of library websites found linked by some database vendors or some sites that wanted to give the emphasis on particular web page rather than index page. From the study, it is evident that *backlinks* were not permanent in nature i.e. *backlinks* alive today for website may not be alive tomorrow for the same website. The links are breaking or not alive over time due to some reasons: one the linking websites keep changing/updating their information timely and after certain point of time they don't find linked website is important for them; second linked websites may keep changing/updating information of web pages that may not suit to linking website over time or change in URL of linked web page or removal of linked web page due to some reasons; third change in search engines' strategy over time for indexing of websites and page ranking; four moving of whole website from one domain/sub-domain to another new domain/sub-domain; fifth changing of old web server to host website in new web server leads the breakage of websites information in search engines' databases. Due to these reasons *backlinks* are not permanent in nature in web phenomenon. Except some specific cases it is very much difficult for webmasters, during design or updating of website, to point out (*outlink*) some particular web page of another website from their own website for general purpose linking for their website users; and this may be the one big reason that index pages/home pages of websites attracts more *backlinks* (*inlinks*) than any other web pages of the website.

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