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Full Length Research Paper

Web Pages of ICMR Institutes Websites: A Webometric Analysis

R. Jeyshankar[1], I. Maria Sujitha[2] and A. Valarmathi[3]

[1]Department of Library and Information Science, Alagappa UniversityKaraikudi – 630 003, [2]Department of Library and Information Science, Alagappa University, Karaikudi – 630 003, Tamil Nadu.,[3]Department of Library and Information Science, Alagappa University, Karaikudi – 630 003, Tamil Nadu.

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The website of an institution can be used for many purposes, enable the users to get more information and idea of the particular institution or company. Webometrics is the research of network-based communication using informetrics or other quantitative measures. As a study, the ICMR institutes in India have been taken and their link structure has been analyzed. Moreover this study concentrates on the Classification of Websites by webpage size, WAVE Web AIM Accessibility Error, Various Search Engine performances, the difference between pages in various time intervals and Number of rich files has been calculated. It also presents the Link – network diagram of ICMR institutes using Pajek Software.

Keywords: Webometrics, ICMR institutions, Classification of Websites by webpage size, WAVE Web AIM Accessibility Error, Number of rich files was calculated, Link – network diagram.

INTRODUCTION

A website is a set of related webpages be made up of text, images, video, audio etc. and is hosted on at least one web server, accessible through the network with the help of Uniform Resource Locator. The websites collectively constitute the World Wide Web, in which the people around the world look for their information regardless of the time and place. A Web page is combined with formatting instructions of Hypertext Markup Language and Extensible Hypertext Markup Language used to write on the www. The request of the user extracts the page content according to its HTML instructions onto the users' terminal.

Usually these pages consist of, but are not limited to, HTML files, ASP files, PHP files, graphic files and others. To view a site, it is required to have a World Wide Web browser. There are different types of web sites. Many people have personal sites that give information about them, sometimes including resumes for potential employers. Also, most businesses have sites on the WWW in which they can promote their products. Other companies have stores online using shopping cart software to sell products on their site. No matter what the intent, using websites is a good way to promote oneself or one's business.

Concept of Webometrics

Quantitative Studies of the web have been named as webometrics by Almind and Ingwersen, although the basic issue has been identified simultaneously by Larson (1996) who is also a pioneer with his early exploratory link structure analysis with the first pure Informetrics analysis of

*Corresponding Author E-mail: jeyshankar@alagappauniversity.ac.in

the Web. Webometrics covers research of all network-based communications using metric and other quantitative measures.

The science of webometrics (also cybermetrics) tries to measure the World Wide Web to get knowledge about the number and types of hyperlinks, structure of the World Wide Web and usage patterns. According to Björneborn and Ingwersen (2004), the definition of webometrics is "the study of the quantitative aspects of the construction and use of information resources, structures and technologies on the Web drawing on bibliometric and informetric approaches."

The term webometrics was first coined by Almind and Ingwersen (1997). A second definition of webometrics has also been introduced, "the study of web-based content with primarily quantitative methods for social science research goals using techniques that are not specific to one field of study" Thelwall (2009) emphasizes the development of applied methods for use in the wider social sciences. The purpose of this alternative definition was to help publicize appropriate methods outside of the information science discipline rather than to replace the original definition within information science.

In the webometric analysis of web sites of Indian Council of Medical Research Institutes, 22 institutions were taken out of the total 29 Indian council of medical research institutions in India. The study aimed at to establish a kind of ranking of websites of Indian Council for medical research institutions in India by measuring their number of webpages and its link pages.

LITERATURE REVIEW

Alireza (2005) explored that Google Scholar has the feature to provide the interconnections among Authors Citing Articles on the same topic and to determine the frequency with which others cite a specific article. Chu (2005) studies about the hyperlinks and found which are somehow similar to bibliographical citations. But it differs in dimension, complexity and also hyperlinks have little negative implications. Jose et al. (2006) studies longitudinal approach of website and confirms that in different periods of time the website contents have a phenomenal growth in elements and also point out the web's strong dynamism and instability.

Huntington and Paul (2006) applied micro analytical procedures to analyze the log files based on extracted sub-network information and present that the degree of correlation between department name and subject journal use. Ortega and Aguillo (2007) presents in their research that Danish network has less visibility than other Nordic countries. Kretschmer et al. (2007) Web hyperlinks and Web visibility indicators are examined to establish their usefulness as indicators of collaboration. They conclude that web visibility indicators of collaboration are different from hyperlinks and the web visibility can be used as web indicators of collaboration.

Aguillo et al. (2008) the web ranking can be calculated according to the Web pages, Rich files, Google Scholar Database and the total number of external inlinks. Payne and Thelwall (2008) inlink counts can vary significantly from year to year for individual universities, for reasons unrelated to research which challenges their use in webometric studies. Jeyshankar, Ramesh Babu and Gopalakrishnan (2009) explained basic frame work and development of webometrics from librametrics, informetrics, bibliometrics, scientometrics and Cybermetrics.

Jeyshankar and Ramesh Babu (2009) examined websites of 45 universities in Tamil Nadu comprising 27 State and 18 private universities.8 Their study identified the domain systems of the websites analysed the number of webpages, link pages and WIF,self link WIF of the university websites in Tamil Nadu, and ranked the websites as per the WIF. Ramesh Babu et al. (2009) produce a novel network diagram notation to fully appreciate and investigate link structures between web nodes in webometric analysis. Jalal et al. (2009) studies about the web presence using popular search engines like Altavista, Google, Yahoo and MSN. They ranked the countries position on the basis of the number of internet users engaged. Rathimala and Marthandan (2010) examined hyperlink in web structure mining extracts hidden information from hyperlink data. This study suggests that webometrics data could be used as an indicator for evaluating business performance of the company as well as the visibility of its website to a target audience.

Ramesh Babu, Jeyshankar and Nageswara Rao (2010) were examined 40 central universities websites in India. Investigates domain systems of the websites, analyses the number of webpages and link pages and calculates the simple web impact factor, self link web impact factor, external link web impact factor and revised web impact factor for Central universities in India and ranks the websites as per the WIF. It also develops a novel network diagram showing link structures between web nodes in webometric analysis. This study warns against taking the analogy between citation analysis and link analysis too far.

Aguillo et al. (2010) Ranking of World Repositories reflects the presence in US, German and British as strong and became leaders of the large number of subject repositories. Kothainayaki S and Gopalakrishnan (2011) necessitate the webmasters to harmonize the availability of resources in universities web space. They expressed that the Page Rank of a particular page is based on inlinks and on other relevance search words of the page.

OBJECTIVES

1. To trace and classify the domain of ICMR research institutes' websites in India.
2. To calculate the Number of Webpages, Number of link pages, Number of self link pages external link pages and Inlink pages of ICMR research institutes' websites in India.
3. To investigate the relevance between webpages (different period of search) for judging web performance of the ICMR institutes' websites in India.
4. To calculate the rich files of ICMR research institutes" websites in India and rank them as per the rich files.
5. To assess and analyze the link network of the ICMR *institutes'* websites in India.

Scope of the Study

This study examined and explored into the webometric study of Indian Council for Medical Research institutions Websites of India. The Indian Council of Medical Research (ICMR), New Delhi, the apex body in India for the formulation, coordination and promotion of biomedical research, is one of the oldest medical research bodies in the world. The ICMR is funded by the Government of India through the Ministry of Health and Family Welfare. There are 29 ICMR research institutions in India, but only 22 ICMR institutes have websites. Therefore this study examined the websites of 22 ICMR research institutions in India.

METHODOLOGY

This study used Alta Vista (www.altavista.com) search engine for collecting data. AltaVista advanced web search queries was used to find the approximate number of pages in each website that link to one another. The AltaVista query is based upon the lexicon of the domain names of webpage URLs. The AltaVista has been used to search and collect data. The data collection method extensively makes use of four special key words like **domain, linkdomain, linkdomain AND, linkdomain AND NOT and linkdomain NOT:** from AltaVista Search engines as surveyed by Thelwall (2002). The four Boolean search statement methods used to collect data for each ICMR research institutes' websites are as follows:

- **domain: icmr.org:** Extract the number of Web Pages at the website under www.icmr.res.in.
- **linkdomain: icmr.org**: Reveals the number of link Webpages linking to the website under www.icmr. **org** . It is called hyperlink pages.
- **linkdomain: icmr. org AND domain:icmr. org :** It provides a complete report of number of Webpages under www.icmr **org**__; which provides hyperlinks to this www.icmr. **org** ; it is called self –link pages (link from the same website).
- **linkdomain: icmr. org AND NOT domain:icmr. org:** – It provides the report of number of pages not under www.icmr.res.in. It is called external –link pages.
- **linkdomain: icmr. org NOT domain:icmr. org:** Reveals the number of links incoming from other websites. It is called inlink pages.

Google Page Rank

Page Rank is a link analysis algorithm used by Google search engine that assigns a numerical weighting to each element of a hyperlinked set of documents in the World Wide Web, with the purpose of "measuring" its relative importance within the set (Thelwall, 2002). The PageRank of a particular page is roughly based upon the quantity of inbound links as well as the PageRank of the pages providing the links.

Alexa Traffic Ranks

The site which is visited by the internet users can be taken into consideration while calculating the rank. The more visited website score least rank assigned. This rank is calculated on account of the amount of traffic recorded from users, over a period of three months. Alexa.com will enable the user to get rank by analyzing the parameters Reach and Page views.

Webpage Size and Download Speed

Web optimization observed by the Web page Speed Report that has the connection rate starting from 1.44Mbps to 14.4K. For this study, we have taken 56K connection rate as the sample to represent the other connection rates.

WAVE Web AIM Accessibility Error

WAVE WebAIM is a free web accessibility evaluation tool, has been developed to evaluate the accessibility of millions of webpages. This tool has been helpful to determine the error accessibility of evaluating web content. There is no warranty of the reliability, quality or merchantability of this service or its fitness of any particular purpose. The URLs submitted to the WAVE server are stored and then Cookies are used to track distinct user session, maintain user history and generally improve the WAVE experience.

Table 1. Classifications of Indian Council Medical Research Websites of India by Year of Establishment

Sl. No	Year of Establishment	No. of ICMR Institutes (n=29)	Percentage
1.	Before Republic 1950	2	6.90
2.	Between 1951 - 1960	4	13.79
3.	Between 1961-1970	3	10.34
4.	Between 1971-1980	6	20.69
5.	Between 1981-1990	11	37.93
6.	Between 1991-2000	1	3.45
7.	Between 2001-2010	2	6.90
Total		**29**	**100.00**

Table 2. Distribution of ICMR Institutes' State – Wise

Sl. No	Name of the State	No. of Institutions	%
1.	Maharashtra	6	20.69
2.	Andhra Pradesh	3	10.34
3.	New Delhi	3	10.34
4.	Tamil Nadu	3	10.34
5.	Uttar Pradesh	3	10.34
6.	Madhya Pradesh	2	6.90
7.	West Bengal	2	6.90
8.	Andaman & Nicobar Islands	1	3.45
9.	Assam	1	3.45
10.	Bihar	1	3.45
11.	Karnataka	1	3.45
12.	Orissa	1	3.45
13.	Puducherry	1	3.45
14.	Rajasthan	1	3.45
	Total	29	100.00

DATA ANALYSIS

For the purpose of analysis, MS EXCEL spread sheet has been used to classify and quantify the pages and link pages. In addition to the search engine distribution and percentage analysis, the following web indicators have been in the process of analysis and interpretation of data.

The data collected from the websites of the Indian Council for Medical Research Institutes in India have been analysed and interpreted. Out of 29 Indian Council for Medical Research Institutes in India as on March 2012, 22 have websites. This study covers those 22 Indian Council for Medical Research Institutes' websites to identify the website link network.

Table 1 depicts the year of establishment of 29 ICMR institutes in India. There was a phenomenal growth in the year 1981-1990; nearly 11 (37.93%) ICMR institutes were established during this period. National Institute of Nutrition, Hyderabad was the first ICMR institute established in 1918 and National Centre of Laboratory Sciences, Hyderabad was the second ICMR institute in India, which reflects growth of different medicines to cure the several diseases of publics.

The Table 2 presents the distribution of ICMR Institutes in India. Almost 14 Indian states have established ICMR research institutes. Maharashtra has the maximum of 6 (20.69%) ICMR research institutes, Andhra Pradesh, Delhi, Tamil Nadu and Uttar Pradesh have 3 (10.34%) ICMR

Table 3. Distribution of ICMR Institutes' Websites Domain - Wise

Sl. No	Domain Name	No. of Domain	%
1.	.org	7	31.82
2.	.org.in	5	22.73
3.	.res.in	4	18.18
4.	.gov.in	3	13.64
5.	.co.in	2	9.09
6.	.nic.in	1	4.55
Total		**22**	**100.00**

Table 4. Status of Web Pages of ICMR Institutes in India

Sl. No.	Name of Institute	NWP	LWP	SLWP	ELWP	ILWP
1	Tuberculosis Research Centre	825	1040	737	271	35
2	National Institute of Malaria Research	771	1390	221	55	57
3	National Jalma Institute of Leprosy and other Mycobacterial Diseases	280	426	132	0	0
4	National Institute of Cholera and Enteric Diseases	278	401	151	30	30
5	Desert Medicine Research Centre Jodhpur	227	101	28	17	15
6	National Institute for Research in Reproductive Health	211	682	162	14	15
7	Genetic Research Centre Mumbai	201	662	143	14	11
8	National Institute of Occupational Health	165	567	108	12	12
9	Regional Medical Research Centre Jabalpur	158	60	37	07	02
10	Vector Control Research Centre	146	320	111	01	25
11	National Institute of Virology	122	396	122	0	0
12	National Centre of Laboratory Sciences Hyderabad	119	557	58	19	19
13	National Institute of Nutrition	109	517	51	26	17
14	National Institute of Epidemiology	95	217	45	06	07
15	National Institute of Immunohaematology	95	239	73	05	05
16	Institute of Cytology and Preventive Oncology	84	455	178	12	12
17	Regional Medical Research Centre Dibrugarh	48	66	24	05	05
18	Institute of Pathology	45	31	11	01	01
19	Regional Medical Research Centre Belgaum	40	1500	09	04	0
20	Regional Medical Research Centre Port Blair	24	35	02	0	0
21	Microbial Containment Complex Pune	15	249	20	0	0
22	Rajendra Memorial Research Institute of Medical Sciences	12	45	19	0	0

Source: AltaVista; Date: 24th March 2012.

institutes, followed by Madhya Pradesh and West Bengal with two ICMR research institutes.

Table 3 reveals that, six types of 'domain extensions' were observed in this study. Almost one third of the ICMR research institutes' websites have '.org' (31.82%) extension, followed by '.org.in' (22.73%) '.res.in' (18.18%) and '.gov.in' (13.64%) extensions in three ICMR research institutes. This can be explained with the following Pie-chart.

The Table 4 explains about the Number of Web pages, number of Link Web pages, number of Selflink Web pages, number of External link web pages and the number of Inlink web pages of ICMR Institutes in India.

Table 5. Distribution of ICMR Institutes' Websites and their Google Page Ranks

Sl. No	Name of ICMR Institutes	Google Page Rank (out of 10)	Rank
1.	National Institute of Epidemiology	7	1
2.	Tuberculosis Research Centre		
3.	National Institute of Cholera and Enteric Diseases	6	2
4.	National Centre of Laboratory Sciences, Hyderabad		
5.	Microbial Containment Complex		
6.	National Institute of Malaria Research		
7.	National Institute of Nutrition		
8.	National Institute of Occupational Health		
9.	National Institute of Virology		
10.	Institute of Pathology	5	3
11.	Regional Medical Research Centre Dibrugarh		
12.	Institute of Cytology and Preventive Oncology		
13.	National Jalma Institute of Leprosy and other Mycobacterial Diseases		
14.	National Institute for Research in Reproductive Health		
15.	Genetic Research Centre, Mumbai		
16.	Regional Medical Research Centre Port Blair		
17.	Vector Control Research Centre		
18.	Regional Medical Research Centre Belgaum	4	4
19.	National Institute of Immunohaematology		
20.	Regional Medical Research Centre Jabalpur		
21.	Rajendra Memorial Research Institute of Medical Sciences		
22.	Desert Medicine Research Centre		

NWP is the number of web pages of each institutes of ICMR in India. The column shows that Tuberculosis Research Centre is ranked with maximum number of web pages i.e., 825 and the least number of pages for Rajendra Memorial Research Institute of Medical Sciences with 12 web pages.

LWP is the distribution of link webpages in ICMR institutes' websites in India. The maximum number of link web pages is 1500 and the least is 31. The Regional Medical Research Centre Belgaum placed first with 1500 link webpages. The second and the third place are occupied by National Institute of Malaria Research and Tuberculosis Research Centre respectively. Institute of Pathology ranked 20th place with the least number of web pages 31.

SLWP is the distribution of Self - Link webpages in ICMR institutes' websites in India. The maximum number of self link web pages is 737and the least is 12. The Tuberculosis Research Centre ranked first with 737 self link web pages, the National Institute of Malaria Research and Institute of Cytology and Preventive Oncology ranked second and third respectively. Regional Medical Research Centre Port Blair with the least number of web pages which is 2.

ELWP is the distribution of External Link webpages in ICMR institutes websites in India. The maximum number of External link web pages is 271 and the least is 1. The Tuberculosis Research Centre occupied first position with 271 External link webpages. National Institute of Malaria Research and National Institute of Cholera and Enteric Diseases ranked second and third respectively based on their ELWP. Vector Control Research Centre ranked with 12 and the least number of web pages is 1.

ILWP is the distribution of Inlink Webpages in ICMR institutes websites in India. The maximum number of web pages is 57 and the least is 0. The National Institute of Malaria Research ranked first, Tuberculosis Research Centre ranked second and the National Institute of Cholera and Enteric Diseases with third in ILWP. Institute of Pathology ranked 10th with one number of web page(s) where as 6 institutes got 0 as their rank.

Table 5 shows the rank distribution of Indian Council Medical Research Institutes' websites according to their

Table 6. Distribution of ICMR Institutes' Websites and their Alexa Traffic Rank

Sl. No	Name	Alexa Traffic Rank	Rank
1.	Desert Medicine Research Centre	1651	1
2.	Regional Medical Research Centre Belgaum	260647	2
3.	National Institute of Nutrition	911087	3
4.	National Centre of Laboratory Sciences	942608	4
5.	National Institute of Malaria Research	1470724	5
6.	National Institute for Research in Reproductive Health	1592458	6
7.	Genetic Research Centre		
8.	National Institute of Epidemiology	2593680	7
9.	National Institute of Cholera and Enteric Diseases	3698451	8
10.	Microbial Containment Complex	3745186	9
11.	National Institute of Virology	3754889	10
12.	National Institute of Occupational Health	6531293	11
13.	Regional Medical Research Centre Dibrugarh	8273767	12
14.	Tuberculosis Research Centre	9326072	13
15.	Vector Control Research Centre	11880628	14
16.	National Institute of Immunohaematology	15746951	15
17.	National Jalma Institute of Leprosy and other Mycobacterial Diseases	18097476	16
18.	Rajendra Memorial Research Institute of Medical Sciences	18550485	17
19.	Regional Medical Research Centre Jabalpur	18555315	18
20.	Regional Medical Research Centre Port Blair	18665351	19
21.	Institute of Cytology and Preventive Oncology	19173802	20
22.	Institute of Pathology	27816521	21

Google Page Rank. The page rank is calculated out of 10. The National Institute of Epidemiology stands first with7 pages. National Institute of Cholera and Enteric Diseases, National Institute for Research in Reproductive Health, Desert Medical Research Centre occupy 2nd, 3rd, and 4th ranks respectively.

The Alexa Traffic Ranks calculated for the Indian Council Medical Research Institutes' websites is given in the table 6. Accordingly, the institutes' websites are ranked based on their traffic rank. This traffic is based on parameters such as reach and page views. Desert Medical Research Centre Jodhpur, Belgaum Regional Medical Research Centre and Hyderabad National Institute of Nutrition occupy 1st, 2nd and 3rd positions respectively.

The table 7 depicts the distribution of Web optimization and the Web page Speed Report that has the connection rate starting from 1.44Mbps to 14.4K. For this study, we have taken 56K connection rate as the sample to represent the other connection rates. It also shows that there is a correlation between the web site sizes and download time taken, typically 4-5Kb is downloaded within a second. The Regional Medical Research Centre which is near to <10 second category and National Institute of Nutrition , National Institute of Occupational Health and National Institute of Virology fall under >10 second and <15 second category. Remaining all falls under> 15 second category. By reducing the picture size a significant size reduction can be achieved.

The table 8 shows the result of WAVE Web AIM free web accessibility evaluation tool report. This tool provides the accessibility error of the particular websites. Rajendra Memorial Research Institute of Medical Sciences ranked 1st with no accessibility error. Regional Medical Research stands 2nd with a single accessibility error and both Regional Medical Research Dibrugarh and National Institute of Malaria Research ranked 3rd with 2 accessibility error. National Jalma Institute of Leprosy and other Mycobacterial Diseases have the highest accessibility error (69).

The comparison of two search engines namely AltaVista, Yahoo performances with regard to the retrieval of Web pages has been discussed in Table 9. It is observed that a large difference is found in "Regional Medical Research Centre Dibrugarh" (14%) and very least difference is found in National Jalma Institute of Leprosy and other Mycobacterial Diseases (-45%). It is also noticed that there

Table 7. Classification of Websites by webpage Size and Download time

Sl. No	Name	Total size of the website in bytes	Total size of the images in bytes	Download time at 56K connection /sec
1.	Regional Medical Research Centre Jabalpur	352761	335750	68.11
2.	National Institute of Nutrition	364036	244526	50.13
3.	National Institute of Occupational Health	164715	161415	35.37
4.	Microbial Containment Complex	220735	111612	28.84
5.	National Institute of Virology			
6.	National Institute of Cholera and Enteric Diseases	167491	122158	27.95
7.	National Jalma Institute of Leprosy and other Mycobacterial Diseases	166203	84080	20.56
8.	National Institute of Epidemiology	106539	72842	18.72
9.	Desert Medicine Research Centre	79374	67707	17.09
10.	Vector Control Research Centre	82225	68142	15.38
11.	Institute of Pathology	464086	39450	13.47
12.	National Institute for Research in Reproductive Health	113558	54347	12.43
13.	Genetic Research Centre			
14.	Regional Medical Research Centre Dibrugarh	682920	45053	12.18
15.	National Institute of Malaria Research	14986	1232	12.1
16.	Regional Medical Research Centre Port Blair	2188	0	
17.	Rajendra Memorial Research Institute of Medical Sciences	12445	45575	8.2
18.	National Centre of Laboratory Sciences	144072	34004	7.98
19.	Tuberculosis Research Centre	4654	4543	6.12
20.	National Institute of Immunohaematology	98771	19987	5.18
21.	Institute of Cytology and Preventive Oncology	24152	18931	4.97
22.	Regional Medical Research Centre Belgaum	11939	1289	1.06

Table 8. Distribution of WAVE Web AIM Accessibility Error

Sl. No	Name	WAVE Web AIM Accessibility Error	Ranked by Accessibility Error
1.	Rajendra Memorial Research Institute of Medical Sciences	0	1
2.	Regional Medical Research Centre Port Blair	1	2
3.	Regional Medical Research Centre Dibrugarh	2	3
4.	National Institute of Malaria Research		
5.	National Institute of Immunohaematology		
6.	Regional Medical Research Centre Belgaum	3	4
7.	Desert Medicine Research Centre		
8.	National Institute for Research in Reproductive Health	9	5
9.	Genetic Research Centre		
10.	Regional Medical Research Centre Jabalpur		
11.	Institute of Cytology and Preventive Oncology	13	6
12.	National Institute of Cholera and Enteric Diseases	15	7

Table 8. Continue

13.	National Centre of Laboratory Sciences	17	8
14.	National Institute of Nutrition		
15.	National Institute of Occupational Health		
16.	Vector Control Research Centre	19	9
17.	Tuberculosis Research Centre	21	10
18.	National Institute of Epidemiology	33	11
19.	Institute of Pathology	34	12
20.	Microbial Containment Complex	42	13
21.	National Institute of Virology		
22.	National Jalma Institute of Leprosy and other Mycobacterial Diseases	69	14

Table 9. Distribution of Search Engine Performances

Sl. No	Name	No. of Pages in Yahoo	No. of Pages AltaVista	%
1.	Regional Medical Research Centre Dibrugarh	58	44	14
2.	Genetic Research Centre, Mumbai	210	206	4
3.	Microbial Containment Complex	35	32	3
4.	National Institute of Virology	15	12	
5.	Institute of Pathology	43	42	1
6.	Institute of Cytology and Preventive Oncology	180	179	
7.	National Institute for Research in Reproductive Health	210	209	
8.	National Institute of Cholera and Enteric Diseases	287	287	0
9.	National Centre of Laboratory Sciences, Hyderabad	120	120	
10.	National Institute of Nutrition	120	120	
11.	Regional Medical Research Centre Port Blair	25	25	
12.	Regional Medical Research Centre Jabalpur	163	163	
13.	National Institute of Epidemiology	95	96	-1
14.	National Institute of Immunohaematology	93	95	-2
15.	National Institute of Occupational Health	161	163	
16.	Rajendra Memorial Research Institute of Medical Sciences	12	14	
17.	Tuberculosis Research Centre	821	825	-4
18.	Desert Medicine Research Centre	221	233	-12
19.	National Institute of Malaria Research	757	773	-16
20.	Vector Control Research Centre	130	147	-17
21.	Regional Medical Research Centre Belgaum	12	40	-28
22.	National Jalma Institute of Leprosy and other Mycobacterial Diseases	238	283	-45

Table 10. Difference between the numbers of pages at different period of search

Sl. No	Name	No. of Pages in Altavista (10.01.2012)	No. of Pages in Altavista (10.04.2012)	Difference
1	National Institute of Cholera and Enteric Diseases	287	276	11
2	Institute of Pathology	42	50	-8

Table 10. Continue

3	Regional Medical Research Centre Dibrugarh	44	48	-4
4	Regional Medical Research Centre Belgaum	40	41	-1
5	National Centre of Laboratory Sciences, Hyderabad	120	135	-15
6	Microbial Containment Complex	32	1	31
7	Desert Medicine Research Centre Jodhpur	233	218	15
8	Institute of Cytology and Preventive Oncology	179	175	4
9	National Jalma Institute of Leprosy and other Mycobacterial Diseases	283	86	197
10	National Institute of Malaria Research	773	749	24
11	National Institute of Epidemiology	96	99	-3
12	National Institute of Immunohaematology	95	95	0
13	National Institute of Nutrition	120	135	-15
14	National Institute of Occupational Health	163	154	9
15	National Institute for Research in Reproductive Health	209	218	-9
16	Genetic Research Centre, Mumbai	206	218	-12
17	National Institute of Virology	12	1	11
18	Regional Medical Research Centre Port Blair	25	24	1
19	Regional Medical Research Centre Jabalpur	163	158	5
20	Rajendra Memorial Research Institute of Medical Sciences	14	0	14
21	Tuberculosis Research Centre	825	822	3
22	Vector Control Research Centre	147	39	108

is no difference between the search engines in many of the ICMR Institutes.

Table 10 depicts the difference in no of pages by AltaVista at different period of search. It is observed that a maximum number of pages difference is found in "National Jalma Institute of Leprosy and other Mycobacterial Diseases" (197), and very least difference in no of pages is found in National Centre of Laboratory Sciences, Hyderabad and National Institute of Nutrition (-15%).

Number of Rich Files

Rich files are categorized into 4 types. They are .doc (Document files), .pdf (Portable Document Format files), .ppt (Power Point presentation Files) and .ps (Post Script files). For this study, only .pdf, .ppt and .doc files are searched and tabulated. The total number of rich files for each of the ICMR institutes in India is shown in Table 11.

Regional Medical Research Centre leads with 174 rich files. National Institute of Malaria Research stands 2nd with 22 rich files and Regional Medical Research Centre and National Institute of Epidemiology came 3rd with 6 files followed by Institute of Pathology in the 4th place with 5 rich files. Tuberculosis Research Centre and National Institute of Cholera and Enteric Diseases hold 5th and 6th places with 4 and 1 rich file respectively.

Link-Network Diagram of ICMR Websites

The link-network diagram of the Indian council of Medical Research Institutes Websites is given in Figures 2 (Only site links were mapped). It is developed using Pajek Social Network Analysis [Pajek Wiki, 2008] and it shows the link structures between web nodes. This program runs under Windows NT/9x and provides some analysis tools for large networks and graph-drawing capabilities.

Table 11. Number of rich files of ICMR Institutes' Websites

Sl. No	Name	.pdf	.ppt	.doc	Total
1.	Regional Medical Research Centre Belgaum	139	24	11	174
2.	National Institute of Malaria Research	15	3	4	22
3.	Regional Medical Research Centre Dibrugarh	2	2	2	6
4.	National Institute of Epidemiology	3	1	2	6
5.	Institute of Pathology	5	0	0	5
6.	Tuberculosis Research Centre	3	1	0	4
7.	National Institute of Cholera and Enteric Diseases	1	0	0	1
8.	Institute of Cytology and Preventive Oncology	0	0	1	1
9.	National Centre of Laboratory Sciences,	0	0	0	0
10.	Microbial Containment Complex,	0	0	0	0
11.	Desert Medicine Research Centre	0	0	0	0
12.	National Jalma Institute of Leprosy and other Mycobacterial Diseases	0	0	0	0
13.	National Institute of Immunohaematology	0	0	0	0
14.	National Institute of Nutrition	0	0	0	0
15.	National Institute of Occupational Health	0	0	0	0
16.	National Institute for Research in Reproductive Health	0	0	0	0
17.	Genetic Research Centre	0	0	0	0
18.	National Institute of Virology	0	0	0	0
19.	Regional Medical Research Centre PortBlair	0	0	0	0
20.	Regional Medical Research Centre Jabalpur	0	0	0	0
21.	Rajendra Memorial Research Institute of Medical sciences	0	0	0	0
22.	Vector Control Research Centre	0	0	0	0

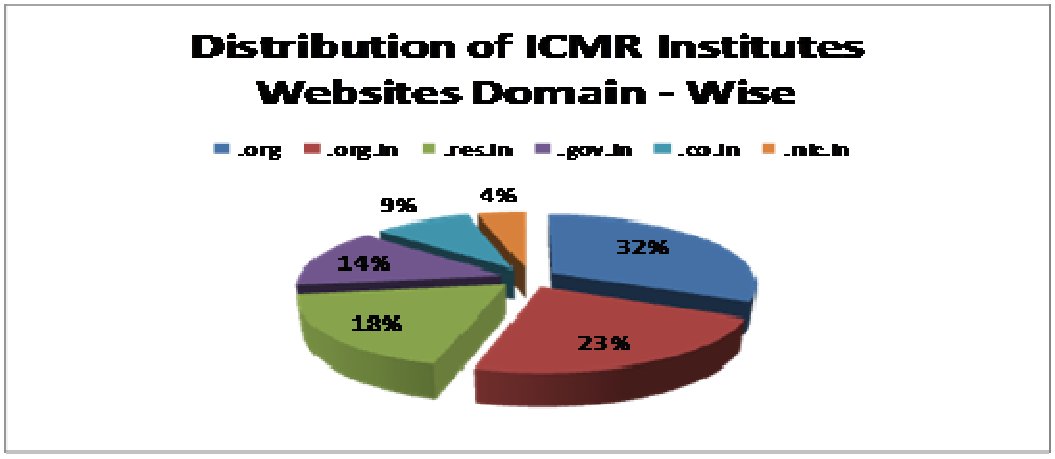

Figure 1. ICMR Institutes' Websites Domain - Wise

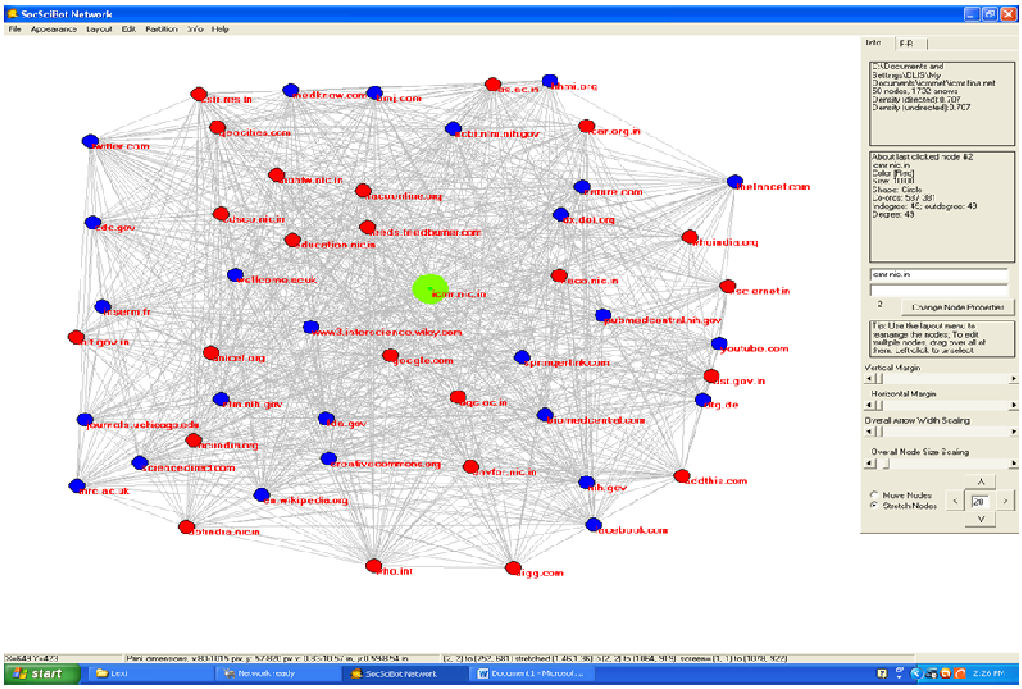

Figure 2. Link-network diagram using Pajek Software

CONCLUSION

The study of ICMR institutes in India is an exploratory research area which intends to specify the institutions' position on comparing with one another under one roof as ICMR institutions. The study has been disturbed by various means like temporariness of web as other such similar studies faced. This would be a severe risk to webometric study of websites analysis. It gives pleasures by knowing the various focuses of websites by Alexa Traffic Rank, Classification of websites by webpage size and download, distribution of Wave Web Aim Accessibility error, distribution of Search Engine Performance, calculation of difference of pages in different periods of search, number of rich files, and obtaining the link diagram using software cannot be denied. The problem still we have is which website stand first among all when comparing all such similar websites. So it is the necessity of the hour to have global level scaling of all the tools which are used for website evaluation with some condition of satisfying level which will enable the website to capture some points. It ensures the website designer to design accordingly.

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