

Webometric study of the Fisheries Institutions Websites of Indian council of Agricultural Research

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Abstract - *The present study examines Web Impact Factor (i.e. Simple Web Impact Factor), Internal Link Web Impact Factor and External Link Web Impact Factor of eight fisheries institutions of Indian Council of Agricultural Research (ICAR) and ranks the websites as per the WIF. To conduct the study eight (8) institutions of ICAR in fisheries were selected. The study used Open Site Explorer optimization tool and search engine for webometric analysis. The data were collected during 28 August to 08 September, 2017. The study revealed that, Central Inland Fisheries Research Institute (CIFRI) leads with highest Domain Authority 73(21.53%) and Page Authority 55(14.44%), the Central Institute of Fisheries Technology (CIFT) 7,712 (90.04%) got the highest Internal Equity-Passing Links and Total Equity Passing Link with 8,103 (48.60%), Central Institute of Freshwater Aquaculture (CIFA) 4,252(52.45%) has the highest External Equity-Passing Links. The Central Institute of Fisheries Technology (CIFT) has the highest Total Internal Links and Total Links, Central Institute of Freshwater Aquaculture (CIFA) has the highest Total External Links. The Central Institute of Freshwater Aquaculture (CIFA) obtained the highest WIF, followed by Directorate of Coldwater Fisheries Research (DCFR).*

Keywords: Webometric, Fisheries, ICAR, Web Impact Factor.

1. Introduction

In the age of information technology, the concept of Web pages analysis (Website/ Link analysis) are obtaining more popularity day by day to increase the suitability and attracting of website content. The concept of link structure analysis known as web impact factor (WIF) is developed by Peter Ingwersen in 1997. Note that prior to Ingwersen, Rodríguez Gairín (1997) had introduced the concept of information impact on the internet in a Spanish documentation journal, but his article was not as influential as Ingwersen's (Noruzi, 2006). Web impact factor is analysis of websites to know the authenticity or stability of website. Webometric is also a new terminology in LIS for quantifying and analyzing the web pages of website in different context. According to Bjerneborn and Ingwersen, the definition of webometrics is "the study of quantitative aspects of the construction and use of information resources, structures and technologies on the web, drawing on bibliometric and informetric approaches" (Kumar & Brahmab, 2017). The concept of webometric is differ from the bibliometric, bibliometric is study of citations for different purpose whereas webometric is

the study of different kind of links (Web pages/ Websites).Egghe (2000)in his study found that hyperlinks are very different from citations. They can be synchronic (web pages can link to each other regardless of their publication date) while citations are diachronic.ICAR has established so many research institutes, central agricultural universities (CAUs), state agricultural universities(SAUs). It has become a National Agricultural Research System (NARS) which is one of the largest system of its kind in the world. It comprises 68Research Institutes, 73 State Agricultural Universities (SAUs), 03 Central agricultural universities (CAUs),06 National bureaux, 14 Project directorates, 16 National research centres, 662 KrishiVigyan Kendra's (KVKs) (ICAR, 2017).The Present paper deals with webometric study of eight (8) Indian council of Agricultural Research (ICAR) in the field of fisheries. This paper examines the links analysis and calculates the web impact factor (WIF) of each institute. To conduct the study Open Site Explorer an online website evaluation tool is used to know the relevancy of website and other purpose. Central Institute of Fisheries Technology (CIFT) has highest web impact factor that indicate the relevancy of institute website.

2. Literature Review

(Elgohary, 2008) Present paper examines the Web Impact Factor of Arab universities. To conduct the study 99 universities of 20 Arab Countries were selected. The Alta-Vista search engine is used to collect data. The study distributes the data collection in two rounds. The study reveals Jordanian universities produce 40 percent of the top 10 universities with the revised web impact factor. Some universities websites were excluded due to unavailable of their websites. It is a first kind of study that examines the websites of Arab universities. (Jeysankar, Babu&Ramesh, 2009) The paper examines the website of 45 universities of Tamil Nadu which include 27 state and 18 private universities. The paper analysis the domain system of website which include link pages, Simple Web Impact Factor (SWIP), Self-link, external link. The study found some universities have largest number of web pages but as a result their link pages are very small in number (Vijayakumar, Kannappanavar, &KT, 2012) The study examines the web presence and their links of SARRC countries. Present paper found that India has largest web pages 14,10,00,000 with 58,20,2000 external link and 1,18,00,000 internal link. Sri Lanka received highest web impact factor. The study found except India no SAARC countries have all sub domains. The study reveals Pakistan has largest 3610 links to India in SAARC countries.(Goltaji&Shirazi,2012). The research paper examines the website of top research centers in Islamic world countries and performance and impact of top research centers of the Islamic World Countries. of. To conduct the study 57 (fifty-seven) Islamic countries were selected and AltaVista search engine were used. The paper result out that among the 57 countries 40 of them did not have any research centre who scored in webometric ranking.(Tafaraji, Tahamtan, Roudbari, & Sedghi 2014). Present paper deals with the webometric study of websites of medical universities in Iran. To done the study Majestic SEO, Google, Yahoo and others search engine were used. This paper examines the structure of different kind of link which is useful to ranking of websites. Finding of the study said that Tehran university Medical Science ranked first with 220453 web pages and Jiroft University of Medical Sciences had the lowest rank. The study revealed rich files give a better and reliable view of university ranking.

3. Objectives of the Study

- To know the websites of eight fisheries institutes of ICAR;
- To examine the domain extensions;
- To know the Domain Authority and Page Authority;

- To calculate Internal, external and Total Equity Passing Links;
- To know the Total Internal, Total External and Total Links;
- To analyse Web Impact factor i.e. Simple Web impact factor, Internal Web Impact factor and the External Web Impact Factor (WEF).

4. Methodology

To conduct the study eight (8) institutes of Indian Council of Agricultural Research (ICAR) in the field of fisheries science were selected. To Complete the study open site explorer (www.opensiteexplorer.org) an online website analysis tool is used. The tool is used to analysis websites and gives the output in different kind of link and others. The data was collected on 29th august.

5. Data Analysis

The table 1 show the different institutions of Indian Council of Agricultural Research (ICAR) in fisheries sciences and technology, their websites, year of establishment and location of institutions. The ICAR is working as leading organization in India for promoting the research and development in the field of agricultural and allied sciences. The table show the chronological establishment of eight institutions in fisheries sciences and technology working under Indian (Council of Agricultural Research) ICAR.

Table-1 List of Fisheries sciences and technology institutions

S.N	Name of the Institutions	Websites	Year of Estab.	Location
1	Central Inland Fisheries Research Institute	http://www.cifri.ernet.in/	1947	Barrackpore (Kolkata)
2	Central Marine Fisheries Research Institute	http://www.cmfri.org.in/	1947	Kochi (Kerala)
3	Central Institute of Freshwater Aquaculture	http://cifa.nic.in/	1949	Kausalyaganga (Orissa)
4	Central Institute of Fisheries Technology	http://www.cift.res.in/	1957	Cochin (Kerala)
5	Central Institute of Fisheries Education	http://www.cife.edu.in/CIFEN_EW/index.html	1961	Mumbi (Maharastra)
6	National Bureau of Fish Genetic Resources	http://www.nbfgr.res.in/	1983	Dilkusha (Lucknow)
7	Central Institute of Brackishwater Aquaculture	http://www.ciba.res.in/	1987	Chennai (Tamil Nadu)
8	Directorate of Coldwater Fisheries Research	http://www.dcfrr.res.in/	1987	Nainital (Uttarakhand)

Source: ICAR Website (<http://www.icar.org.in/>)

Table 2 reflects the classification of eight (8) ICAR institutes devoted in the fisheries sciences and technology by domain extensions. The eight institutions websites were classified under five domain extensions. The table point out that, four (4) Institutions have res.in (50%) extensions; rest four (4) institutions have one (1) i.e. 12.5%.

Table-2: Classification of Fisheries Institutions by Domain Extensions

S. No.	Domain	No. of Institutes	Percentage (%)
1	.ernet	1	12.5%
2	.org	1	12.5%
3	.nic	1	12.5%

4	.res	4	50.0%
5	.edu	1	12.5%
	Total	8	100%

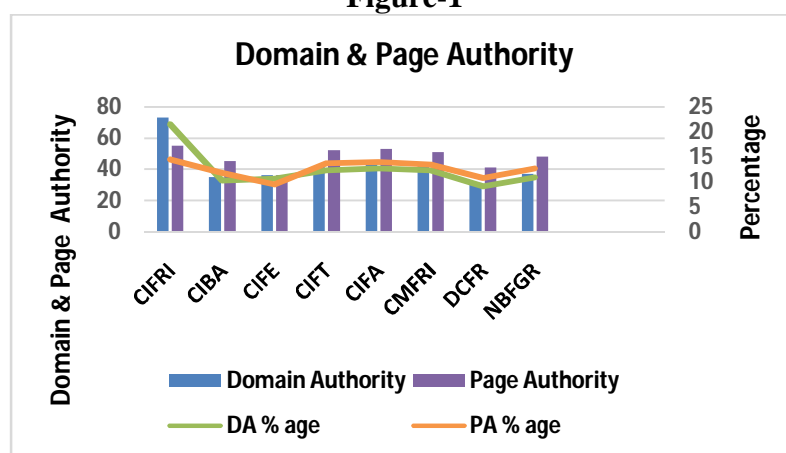
Table 3 and figure 1 show the Domain and Page Authority of eight (8) fisheries institutions of ICAR indexed in the table 1. Domain Authority is a search engine ranking score developed by Moz that predicts how well a website will rank on Search Engine Result Pages (SERPs). A Domain Authority score ranges from one to 100, with higher scores corresponding to a greater ability to rank. (<https://moz.com/learn/seo/domain-authority>). The domain authority indicates the ranking of entire domain or subdomain. Page Authority (PA) shows the stability of particular web page on a website. Page authority indicates the rank of specific page of website on search engine. The table 3 and figure 1 indicate that, Central Inland Fisheries Research Institute (CIFRI) have highest domain authority 73(21.53%) and page authority 55(14.44%), followed by Central Institute of Freshwater Aquaculture (CIFA)43(12.68%) and page authority 53(13.91%) Directorate of Coldwater Fisheries Research (DCFR) obtain the least domain authority 31(9.14%) and Central Institute of Fisheries Education (CIFE) received the lowest page authority 36(9.45%).

Table-3: Domain and Page Authority

S. No	Name of the Institution in Fisheries	Domain Authority	Page Authority
1	Central Inland Fisheries Research Institute	73 (21.53%)	55 (14.44%)
2	Central Institute of Brackishwater Aquaculture	35 (10.32%)	45 (11.81%)
3	Central Institute of Fisheries Education	36 (10.62%)	36 (9.45%)
4	Central Institute of Fisheries Technology	42 (12.39%)	52 (13.65%)
5	Central Institute of Freshwater Aquaculture	43 (12.68%)	53 (13.91%)
6	Central Marine Fisheries Research Institute	42 (12.39%)	51 (13.39%)
7	Directorate of Coldwater Fisheries Research	31 (9.14%)	41 (10.76%)
8	National Bureau of Fish Genetic Resources	37 (10.91%)	48 (12.60%)
	Total	339	381

Source: Open Site Explorer (www.opensiteexplorer.org)

Figure-1



The figure 1 shows the domain and page authority of fisheries institutions. The blue bar and grey lines are indicating the domain authority whereas yellow bar and green lines are showing the page authority.

Table 4 Illustrate the just discovered and established links. Just discovered links are those links which are linked a website in last 60 days. Established links are those which are not limited to the time period of last 60 days. Table 4 indicates the National Bureau of Fish Genetic Resources (NBFGR) received the (2) just discovered links, that means two links are

attached in last 60 days with NBFGR website. Followed by Central Marine Fisheries Research Institute (CMFRI) with (1) just discovered link. The Central Institute of Freshwater Aquaculture (CIFA) have highest established links (107) followed by Central Marine Fisheries Research Institute (CMFRI) with (59).

Table-4 Just Discovered and Established links

S. No.	Name of the Institution in Fisheries	Just-Discovered (in 60 days)	Estab. Links (Root domains out of Total links)
1	Central Inland Fisheries Research Institute	0	49 (180)
2	Central Institute of Brackishwater Aquaculture	0	49 (672)
3	Central Institute of Fisheries Education	0	5 (398)
4	Central Institute of Fisheries Technology	0	59(8,112)
5	Central Institute of Freshwater Aquaculture	0	107 (4281)
6	Central Marine Fisheries Research Institute	1	83 (850)
7	Directorate of Coldwater Fisheries Research	0	24 (2033)
8	National Bureau of Fish Genetic Resources	2	48 (556)

Source: Open Site Explorer (www.opensiteexplorer.org)

Table 5 deals with the equity passing links which include internal equity passing and external equity passing links. Equity passing means it pass the value from one web page another it may be internal or external. Internal equity passing value within website whereas external equity passing links from another website to cited website. The below mentioned table shows that, Central Institute of Fisheries Technology (CIFT) received the highest internal equity passing links 7,712(90.04%), followed by Central Marine Fisheries Research Institute(CMFRI) which have 360(4.20%). The table further point out that, Central Institute of Freshwater Aquaculture (CIFA) obtained the highest external equity passing links 4,252(52.45%), followed by Directorate of Coldwater Fisheries Research (DCFR) with 2,028(25.02%).

Total Equity Passing Links is combination of Internal and External Equity Passing Links. The Table revealed that, Central Institute of Fisheries Technology (CIFT) obtained highest equity passing links 8,103 i.e. (48.60%), followed by Central Institute of Freshwater Aquaculture (CIFA) 4,252(25.50%).

Table-5 Internal, External and Total Equity Passing Links

S. No.	Name of the Institution in Fisheries	Int. Equity-Passing Links	Ext. Equity-Passing Links	Total Equity-Passing Links
1	Central Inland Fisheries Research Institute	43 (0.50%)	129 (1.59%)	172 (1.03%)
2	Central Institute of Brackishwater Aquaculture	350 (4.09%)	308 (3.80%)	658 (3.95%)
3	Central Institute of Fisheries Education	80 (0.93%)	12 (0.15%)	92 (0.55%)
4	Central Institute of Fisheries Technology	7,712 (90.04%)	391 (4.82%)	8,103 (48.60%)
5	Central Institute of Freshwater Aquaculture	0	4,252 (52.45%)	4252 (25.50%)
6	Central Marine Fisheries Research Institute	360 (4.20%)	471 (5.81%)	831 (4.98%)
7	Directorate of Coldwater Fisheries Research	2 (0.02%)	2028 (25.02%)	2030 (12.18%)
8	National Bureau of Fish Genetic Resources	18 (0.21%)	516 (6.36%)	534 (3.20%)
	Total	8565	8107	16672

Source: Open Site Explorer (www.opensiteexplorer.org)

Table 6 present the total internal links, total external links and total links. Internal links are those links which are attached within particular website. External links are those links which are came another site to particular website. Internal links are working on the same domain whereas external linksmay be come from another domain to cited domain. The table found that Central Institute of Fisheries Technology (CIFT) has received the highest internal links

7,712(86.93%) which is followed by Central Institute of Fisheries Education(CIFE) with 386(4.35%). The study further revealed that, Central Institute of Freshwater Aquaculture (CIFA) got largest no of external links 4,281(52.14%), followed by Directorate of Coldwater Fisheries Research (DCFR) with 2,031(24.74%). In the study of total links Central Institute of Fisheries Technology (CIFT) got the first position 8,112(47.49%), followed by Central Institute of Freshwater Aquaculture (CIFA) 4,281(25.06%).

Table-6: Total Internal, External and Total Links

S. No.	Name of the Institution in Fisheries	Total Internal Link	Total External Link	Total Links
1	Central Inland Fisheries Research Institute	43 (0.48%)	137 (1.67%)	180 (1.05%)
2	Central Institute of Brackishwater Aquaculture	350 (3.95%)	322 (3.92%)	672 (3.93%)
3	Central Institute of Fisheries Education	386 (4.35%)	12 (0.15%)	398 (2.33%)
4	Central Institute of Fisheries Technology	7,712 (86.93%)	400 (4.87%)	8,112 (47.49%)
5	Central Institute of Freshwater Aquaculture	0	4,281 (52.14%)	4281 (25.06%)
6	Central Marine Fisheries Research Institute	360 (4.06)	490 (5.97%)	850 (4.98%)
7	Directorate of Coldwater Fisheries Research	2 (0.02)	2031 (24.74%)	2033 (11.90%)
8	National Bureau of Fish Genetic Resources	18 (0.20)	538 (6.55%)	556 (3.25%)
		8871	8211	17082

Source: Open Site Explorer (www.opensiteexplorer.org)

Table 7 presents the Followed Linking Root Domain, Total Linking Root Domain and Linking C Blocks of eight fisheries institutions of ICAR. Linking Root Domains indicates the statistic of domains that are linked to your domain. Followed Linking Root Domains show the websites that are links to you. Total Linking Root Domains are the number of web pages that links to you that include the followed linking root domains (Verma&Brahma, 2017). Linking C Blocks indicate the files are attached to each other on the same server. The table shows that Central Institute of Freshwater Aquaculture (CIFA) has highest Followed Linking Root Domains 94(24.93%), followed by Central Marine Fisheries Research Institute (CMFR)71(18.83%). Central Institute of Freshwater Aquaculture (CIFA) has got rank one in Total Linking Root Domain 107(25.24%), followed by Central Marine Fisheries Research Institute (CMFRI) with 83(19.58%). Central Institute of Freshwater Aquaculture (CIFA) has been awarded with highest in Linking C Blocks 82(25.08%), followed by Central Marine Fisheries Research Institute (CMFRI) with 59(18.04%).

Table-7: Followed Linking Root Domains, Total Linking Root Domains and Linking C Blocks

S. No.	Name of the Institution in Fisheries	Followed Linking Root Domains	Total Linking Root Domains	Linking C Blocks
1	Central Inland Fisheries Research Institute	45 (11.94%)	49 (11.56%)	38 (11.62%)
2	Central Institute of Brackishwater Aquaculture	44 (11.67%)	49 (11.56%)	39 (11.93%)
3	Central Institute of Fisheries Education	05 (1.33%)	05 (1.17%)	06 (1.83%)
4	Central Institute of Fisheries Technology	55 (14.59%)	59 (13.92%)	50 (15.29%)
5	Central Institute of Freshwater Aquaculture	94 (24.93%)	107 (25.24%)	82 (25.08)
6	Central Marine Fisheries Research Institute	71 (18.83%)	83 (19.58%)	59 (18.04%)
7	Directorate of Coldwater Fisheries Research	21 (5.57%)	24 (5.66%)	17 (5.20%)
8	National Bureau of Fish Genetic Resources	42 (11.14%)	48 (11.32%)	36 (11.01%)
	Total	377	424	327

Source: Open Site Explorer (www.opensiteexplorer.org)

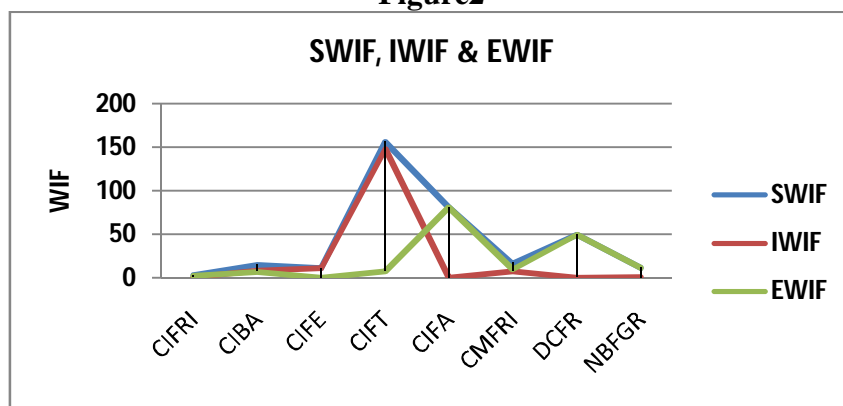
Table 8 Point out the three types web impact factor of eight fisheries institutes which include Simple Web Impact Factor (SWIF), Internal Web Impact (IWIF) factor and External Web Impact Factor (EWIF). Central Institute of Fisheries Technology (CIFT) has received the highest Web Impact Factor (156), followed by Central Institute of Freshwater Aquaculture (CIFA) (80.77). Central Institute of Fisheries Technology (CIFT) further been awarded with highest Internal Web Impact Factor (148.31), the second position occupied by Central

Institute of Fisheries Education (CIFE) with (10.72). On the basis of data received by the website of eight fisheries institute, Central Institute of Freshwater Aquaculture (CIFA) has received the maximum External Web Impact Factor (EWIF) (80.77), followed by Directorate of Coldwater Fisheries Research (DCFR) with (49.54).

Table -8 SWIF, IWIF and EWIF

S. No	Name of the Institute in Fisheries	SWIF	IWIF	EWIF
1	Central Inland Fisheries Research Institute	3.27	0.78	2.49
2	Central Institute of Brackishwater Aquaculture	14.93	7.78	7.16
3	Central Institute of Fisheries Education	11.06	10.72	0.33
4	Central Institute of Fisheries Technology	156.00	148.31	7.69
5	Central Institute of Freshwater Aquaculture	80.77	0.00	80.77
6	Central Marine Fisheries Research Institute	16.67	7.06	9.61
7	Directorate of Coldwater Fisheries Research	49.59	0.05	49.54
8	National Bureau of Fish Genetic Resources	11.58	0.38	11.21

Figure2



The above figure shows the various web impact factors. The blue line shows the internal Web Impact Factor (i.e. Simple Web Impact Factor) whereas orange and grey lines indicate the internal and external web impact factor, respectively.

Table 9 shows the ranking of institutions on the basis of Simple Web Impact Factor (SWIF). The table indicates Central Institute of Fisheries Technology (CIFT) has awarded with first rank in Simple Web Impact Factor (156.00) which is followed by Central Institute of Freshwater Aquaculture (CIFA) got the second rank with (80.77). The Central Inland Fisheries Research Institute (CIFRI) has received the eight rank (Last) with (3.27) Simple Web Impact Factor (SWIF).

Table-9 Ranking of Institutions

S. No	Name of the Institution in Fisheries	SWIF	Ranking
1	Central Institute of Fisheries Technology	156.00	1
2	Central Institute of Freshwater Aquaculture	80.77	2
3	Directorate of Coldwater Fisheries Research	49.59	3
4	Central Marine Fisheries Research Institute	16.67	4
5	Central Institute of Brackishwater Aquaculture	14.93	5
6	National Bureau of Fish Genetic Resources	11.58	6
7	Central Institute of Fisheries Education	11.06	7
8	Central Inland Fisheries Research Institute	3.27	8

Major Findings

1. Central Inland Fisheries Research Institute Barrackpore (Kolkata) received with the highest Domain 21.53% and Page Authority 14.44%, while Directorate of Coldwater

- Fisheries Research Nainital (Uttarakhand) received lowest Domain 9.14% and Page Authority 10.76%.
2. Central Institute of Fisheries Technology Cochin (Kerala) received with the highest Internal Equity-Passing Links 90.04% and Total Equity- Passing Links 48.60%, but in case of External Equity- Passing Links it received fifth rank 4.82% while Central Institute of Freshwater Aquaculture Kausalyaganga (Orissa) received with the lowest Internal Equity-Passing Links 0% but in case of External Equity- Passing Links and Total Equity- Passing Links it received highest rank respectively 52.14% and 25.06%.
 3. Central Institute of Fisheries Technology Cochin (Kerala) received with the highest Total Internal Link 86.93% and highest Total Links 47.49% but in case of Total External Links its received fifth (lowest) rank 4.87% whereas Central Institute of Freshwater Aquaculture Kausalyaganga (Orissa) received with the lowest Total Internal Link 0% but in case of Total External Links and Total Links it received highest rank respectively 52.14% and 25.06%.
 4. Central Institute of Freshwater Aquaculture Kausalyaganga (Orissa) received with the highest ranks in Followed Linking Root Domains, Total Linking Root Domains and Linking C Blocks respectively 24.93%, 25.24% and 25.08% while Central Institute of Fisheries Education Mumbai (Maharashtra) received with the lowest ranks in Followed Linking Root Domains, Total Linking Root Domains and Linking C Blocks respectively 1.33%, 1.17% and 1.83%.
 5. Central Institute of Fisheries Technology Cochin (Kerala) has awarded with first rank in Simple Web Impact Factor (156.00) while The Central Inland Fisheries Research Institute Barrackpore (Kolkata) has received the eight rank with (3.27) Simple Web Impact Factor (SWIF).

Conclusion

The study attempted to rank the ICAR's fisheries institutions websites by measuring their WIF or SWIF (Simple Web Impact Factor). The Study reveals that the Central Institute of Fisheries Technology (CIFT) obtains the first rank with Web Impact Factor (WIF) 156.00, followed by Central Institute of Freshwater Aquaculture (CIFA) 80.77. The Central Inland Fisheries Research Institute (CIFRI) obtained the last rank among all fisheries research institutes with WIF 3.27. The study concludes that the website of Central Institute of Fisheries Technology (CIFT), Cochin (Kerala) is most popular among the users of fisheries research institutions.

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