

Evaluation of Effective Indicators on Promotion of Webometric Rank of Golestan University of Medical Sciences Website

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Abstract

Presence on the Web and the realization of webometric indicators are one of the most important indicators of reflecting the international presence of universities. This study evaluates the content and technical characteristics that influence webometric rankings on Golestan University of Medical Sciences websites. This research is a descriptive practical survey that describes the status of the website based on the content and technical features that influence the promotion of webometric rankings. A total of 53 Golestan University of Medical Sciences websites were included, consisted of 7 college websites, 8 Deputies websites, and 16 websites for hospitals and 22 websites for research centers. Data were collected using checklist. Result shows that 49.46 percent of the expected indicators were met by the units. Colleges with the overall average of 57.64 percent had the highest compliance and the hospitals with 36.72 percent had the lowest compliance with the webometric indexes. The results show that 54.72 percent of the Deputies and 47.73 percent of the research centers have met the indicators. According to the findings, notice to the indicators that less-considered, is necessary for webometric managers and researchers. Also, given that Golestan University of Medical Sciences is the weakest in the Impact Index, considering the number of backlinks identified by search engines is one of the priorities of web infrastructure enhancement programs.

Keywords

Webometric; Content indicators; Technical indicators; Golestan University of Medical Sciences

Introduction

Nowadays, websites are very important in information dissemination in all fields of knowledge. University websites are used as a communication tool for a variety of purposes, including university or college introduction, student recruitment, providing educational resources, access to electronic journals, and more (Abu Baka & Leyni, 2015; Ramezanghorbani, Hajiabedin Rangraz, & Noot Heidari, 2019).

Webometrics is a method that has been used to evaluate the impact of scientific websites on audiences. Webometrics is a scientific field that provides a quantitative analysis of the properties of the Web by using information measurement methods. In this method, the analysis of web pages is done by calculating and analyzing their internal and external links. Webometrics knowledge and the study of links created between web pages try to determine the model for the scientific use of the Web as well as the information sources with the highest impact on the web, using new computational methods to measure web page entries. Webometrics is a science-based informatics method that examines the nature and characteristics of websites (Aminpour, Kabiri, Otraj, & Keshtkar, 2009; Verma & Brahma, 2017).

Webometrics is also a way of ranking the Web in universities and science centers provided by the Cyberometric Lab. Webometrics analyzes 8,000 universities around the world twice a year in January and September and has been created to reflect the attention of institutions to cyber publishing. The purpose of this ranking is to motivate institutions and researchers to participate in the Web for promoting web content, disseminating web pages, electronic access to scientific publications and so on, and ultimately, enhancing scientific and educational goals in the current competitive environment. (Fan, 2015; Khoram, Jamshidnezhad, & Tamoradi, 2017). Webometrics can be used at many levels (or types) of web information systems including institutional, departmental, and so on. Webometric indicators mainly include page count, link count, citation count and other types of counts. Page count, which can be counted by the number of files and documents (e.g., PDF, Doc, Xls), is mainly measured by Google Search and Google Scholar (Elgohary, 2008; Fan, 2015).

Research has shown that in the design of many Iranian academic websites, the basic principles of information design and organization have been overlooked and effective elements such as Applicability have not been considered (Okhovati, Karami, & Khajouei, 2015). According to a ranking published by the World Webometrics System in July 2014, out of 577 Iranian universities and research institutes that are included in this ranking, only 9 universities are among the top 1000 universities in the world. In addition to their educational and research missions, universities of medical sciences also play a vital role in community health and well-being. The websites of these universities are important for the definition of their rankings and as public health information tools. Therefore, Universities of Medical Sciences officials should pay particular attention to evaluating their university websites and identifying their strengths and weaknesses to improve the status of these websites (Okhovati et al., 2015).

It should be noted that just having a website with rich information content cannot accomplish all the goals of the university in this context. Because of some reason, such as technical deficiencies in website design, the university may have low visibility in the Web environment. One of the major reasons for this is the lack of proper website optimization for search engines (Brumshteyn & Vas'kovskii, 2017; Nwohiri, 2012). Given that the tools used by the webometrics ranking system to evaluate academic websites and measure their visibility and impact on the Web environment are search engines. Improving the status of websites in search engines and optimizing them based on the factors considered by these search engines can play a decisive role in increasing the visibility of the website and thus improving the rankings of universities and education centers in the ranking of webometrics (Shabankareh, Tahmasebi, & Hamidi, 2016). Therefore, considering the importance of webometrics ranking as an important aspect of quantitative researches in the use of information resources, web structures and technologies, and in informatics and bibliographic approaches, the aim of the present study is evaluation of content and technical properties affecting the promotion of webometric rank in Golestan University of Medical Sciences website.

Materials and Methods

This research is a descriptive practical survey that describes the status of the website based on the content and technical characteristics affecting the promotion of webometric rankings. This is a practical study because it is expected that its results will be used to identify the strengths and weaknesses of the studied websites and ultimately improve their status.

The study population in this research is Golestan University of Medical Sciences websites affiliated to Iran Ministry of Health and Medical Education. A total of 53 websites were included, consisted of 7 college websites, 8 Deputies websites, and 16 websites for hospitals and 22 websites for research centers. Data were collected using a checklist designed by Shabankareh et al. (Shabankareh et al., 2016). The Intended checklist was set in two sections. The first section was the content criteria affecting webometric rankings, comprising 42 components in two categories of services and information elements. The second section was technical Criteria for Search Engine Optimization and contains 49 components, which were set in two categories of factors related to website internal optimization and factors related to off-site optimization. This checklist is designed using criteria derived from Research literature based on the webometric ranking promotion methods outlined in related Texts and resources, as well as based on four indicators of the global webometric system and ISC webometric ranking criteria that its validity and reliability was confirmed by Shabankareh et al. (Shabankareh et al., 2016)

The Yes (Score 1) and No (No score) options were the basis of the calculation to evaluate each component of the checklist. It means that, for existing each component in the studied website, a score of 1 is assigned to the website and a score of zero is assigned for the absence of that component on the website.

Findings

According to the findings of this study, the global ranking of Golestan University of Medical Sciences in January 2019 in terms of Webometrics indexes is 3997 and is ranked 34th out of 60 Iranian Medical Sciences Universities and in comparison to universities at the same level (type 2) in Iran is ranked 17th. At the time of this research (November 2019), the global rank of Golestan University of Medical Sciences has been increased to 3656. The findings showed that during the period 2014-2016, webometric rankings of Golestan University of Medical Sciences has improved compared to other same level universities globally and nationally and then placed in the world rankings with a relatively steady trend. Compared to Iranian universities of medical sciences, Golestan University of Medical Sciences has been declining with webometric rankings (Table 1).

Table 1. International and National Webometrics Rankings of Golestan University of Medical Sciences in January 2014 to 2019¹

	2014	2015	2016	2017	2018	2019
World Rand	5081	3472	3218	3937	4042	3997
Iran Rank	18	25	29	28	36	38

Table 2 presents the status of Iranian medical universities in terms of webometrics indices and national and international ranking. According to the findings, Golestan University of Medical Sciences had the lowest ranking in the index of the number of backlinks identified by search engines Majestic SEO and IMPACT (8773) and it had the best rating (1450) in the index of the number of articles that had the highest citations according to Scimago between the years 2012 and 2016.

Table 2. Status of Iranian Medical Sciences Universities in terms of Webometrics Indicators and National and International Ranking

University	Iran Rank	World Rank	Presence Rank*	Impact Rank*	Openness Rank*	Excellence Rank*
Tehran University of Medical Sciences	1	550	295	1331	441	406
Shahid Beheshti University of Medical Sciences	2	819	342	2151	635	701
Isfahan University of Technology	3	946	951	3487	808	574
Mashhad University of Medical Sciences	4	1171	640	3512	906	904
Tabriz University of Medical Sciences and Health Services	5	1174	832	3892	888	823
Isfahan University of Medical Sciences	6	1323	459	4217	839	1034
Iran University of Medical Sciences	7	1394	236	4623	1001	1078
Ahvaz Jundishapur University of Medical Sciences	8	2172	1062	8382	1309	1448
University of Mazandaran Babolsar	9	2192	1730	7701	1737	1475
Kermanshah University of Medical Sciences	10	2229	1384	7397	1561	1643
Mazandaran University of Medical Sciences Sari	11	2253	1456	7869	1678	1544
Kerman University of Medical Sciences	12	2293	1784	7658	1478	1689
Shiraz University of Medical Sciences	13	2302	897	3323	8602	1197
Hamedan University of Medical Sciences	14	2339	906	6950	1394	1999
Baqiyatallah Medical Sciences University	15	2413	2532	8773	2181	1450
Shahid Sadoughi University of Medical Sciences	16	2436	1449	6133	1886	2204
Zanjan University of Medical Sciences	17	2583	1602	6499	1889	2371
Shahrekord University of Medical Sciences	18	2708	1570	9117	2775	1801
Kashan University of Medical Sciences	19	2807	1853	7960	2692	2280
Kurdistan University of Medical Sciences Sanandaj	20	2817	2615	8412	2286	2228

¹ The difference between the rankings of Golestan University of Medical Sciences in Tables 1 and 2 was because Table 1 data was extracted from the official reports of the Ministry of Health and Medical Education of January of each year and Table 2 data was extracted by researchers and from the Webometrics ranking system website on November 3, 2019.

Urmia University of Medical Sciences	21	2891	1439	8075	2403	2502
Guilan University of Medical Sciences Rasht	22	2938	1590	7570	1841	2818
Arak University of Medical Sciences	23	2956	2262	8163	2744	2484
Lorestan University of Medical Sciences Khorramabad	24	2986	2561	9179	3023	2213
Bushehr University of Medical Sciences	25	3009	1373	8367	2632	2637
Ilam University of Medical Sciences	26	3097	2146	9145	2563	2540
Birjand University of Medical Sciences	27	3153	859	8740	2817	2788
Hormozgan University of Medical Sciences Bandar Abbas	28	3315	2525	8728	2508	3031
Babol University of Medical Sciences	29	3352	2691	9739	2339	2832
Zahedan University of Medical Sciences	30	3362	2226	11777	2085	2409
Ardabil University of Medical Sciences	31	3454	2590	9064	2363	3252
Yasuj University of Medical Sciences	32	3459	1984	9700	2651	3055
Qazvin University of Medical Sciences	33	3463	1226	9412	2873	3157
Golestan University of Medical Sciences	34	3656	1377	9486	2529	3541
Rafsanjan University of Medical Sciences	35	3696	2718	10004	2367	3428
Shahrood Medical Science University	36	3782	4041	11675	3040	2951
Zabol University of Medical Sciences	37	3794	4849	12240	3823	2666
Aja (Army) University of Medical Sciences	38	3899	3572	10527	3127	3488
Sabzevar University of Medical Sciences	39	3899	1853	10085	4105	3488
University of Social Welfare and Rehabilitation Sciences Tehran	40	3953	1644	7764	8602	2734
Fasa Faculty of Medical Sciences	41	4010	2779	10078	3451	3733
Qom University of Medical Sciences	42	4195	2641	9541	8602	2623
North Khorasan College of Medical Sciences	43	4242	1459	11874	3665	3704
Jahrom University of Medical Sciences	44	4539	3075	10756	3676	4348
Alborz University of Medical Sciences	45	4705	2244	12074	3211	4408
Maragheh University of Medical Sciences	46	6837	5935	20216	7054	3541
Gonabad University of Medical Sciences	47	7236	3064	10593	3403	6115
Semnan University of Medical Sciences	48	8072	2648	12703	2723	6115
Neyshabur University of Medical Sciences	49	10448	4054	14296	4683	6115
Dezful University of Medical Sciences	50	11116	3741	15114	4929	6115
Torbat Heydarie University of Medical Science	51	11378	5008	15360	4845	6115
Jiroft University of Medical Sciences	52	13300	5975	16705	6144	6115
Abadan University of Medical Sciences	53	13904	4445	17707	6211	6115
Larestan University of Medical Sciences	54	14996	9118	16300	7847	6115
Bam University of Medical Sciences	55	16705	6520	19347	7437	6115
Iranshahr University of Medical Sciences and Health Services	56	16941	6545	21563	5840	6115
Esfarayen Faculty of Medical Sciences	57	21653	6930	23420	8251	6115
Faculty of Medical Sciences and Health Services of Behbahan	58	21993	13111	22376	8602	6115
Torbat Jam Faculty of Medical Sciences	59	22859	15438	23181	8602	6115

Table 3 shows the content characteristics analysis of Golestan University of Medical Sciences websites in terms of services provided. According to the findings, colleges had the highest compliance (41.34%) and medical educational centers had the lowest compliance (11.56 %). “Communication with university officials via e-mail” (93%) and “the existence of an internal search engine” (92.5%) were the indicators that had the highest compliance. The indicators of “Creating personal pages for university professors under the main domain name of the university”, “Creating personal pages for postgraduate students and PhD students under the main domain name of the university”, “Existence of RSS”, “Ability to track requests”, “Providing selective information services SDI (Selective Dissemination of information)” and “Access to public search engines” were not considered in any of the studied units.

Table 3. Compliance of content characteristics indicators (services) by studied units

Content characteristics (services)	Colleges		Deputies		Hospitals		Research centers		Average compliance percentage
	Abundance	Percentage	Abundance	Percentage	Abundance	Percentage	Abundance	Percentage	
Creating personal pages for university professors under the main domain name of the university	0	0	0	0	0	0	0	0	0
Creating personal pages for postgraduate students and PhD students under the main domain name of the university	0	0	0	0	0	0	0	0	0
Locating website under the main domain name of the university	6	85	8	100	16	100	22	100	-
Site map	0	0	0	0	0	0	8	36	18
Site index	1	14	0	0	0	0	0	0	7
Existence of RSS	0	0	0	0	0	0	0	0	0
Feedback	3	42	2	25	0	0	1	4	23
Forum	1	14	0	0	0	0	0	0	7
Frequently Asked Questions (FAQ)	1	14	3	37	9	56	1	4	9
E-mail system	7	100	8	100	0	0	0	0	50
E-mail system for graduates	1	14	0	0	9	56	0	0	7
Contacting with university officials by email or by completing and submitting a questionnaire	7	100	8	100	9	56	19	86	93
Contacting with Webmasters through “Contact Us” or “Webmaster” options	6	85	8	100	0	0	19	86	85.5
Ability to track requests	0	0	8	100	0	0	0	0	0
Student Registration and course selecting system	7	100	8	100	0	0	0	0	50
Possibility of financial transaction (nutrition automation)	7	100	8	100	0	0	0	0	50

²The lower number indicates better status and a higher rank of the university in each index.

Presenting of e-learning programs on the university website (virtual education)	6	85	1	12	0	0	0	0	42.5
Providing selective information services SDI	0	0	1	12	0	0	0	0	0
Providing Current Awareness Services (CAS)	1	14	1	12	0	0	0	0	7
Providing a map of the university, its location in the city, ways to access the university and ...	6	85	7	12	0	0	0	0	42.5
existence of an internal search engine	6	85	1	12	0	0	22	100	92.5
Access to public search engines	0	0	1	12	0	0	0	0	0
existence of the English version of the website	1	14	1	12	0	0	11	50	32
Average compliance percentage	41,34		40,04		11,56		20,26		28,32

Analysis of the content characteristics indicators of the websites in terms of information elements showed that colleges were in the best situation with 73.63 percent and hospitals with 14 percent had the weakest situation. The findings also indicate that in terms of compliance among the studied units "Regulations, forms" was in the best situation with 79.5 percent and "Content archive" with 25 percent had the weakest situation. The education Vice-Chancellor's specific indicators in the content characteristics section were as follow: "Information related to the academic majors that are available at the university" and "Theoretical lessons files and professors' booklets" are indicators that were taken into account. But the indices of "Student conference slide files" and "Lesson plans for different educational groups" were ignored. Overall the results showed that the content characteristics of the studied websites in terms of information elements 54 percent adhered (Table 4).

Table 4. Compliance of content characteristics indicators (information elements) by studied units

Content characteristics Indicators (information elements)	Colleges		Deputies		Hospitals		Research centers		Average compliance percentage
	Abundance	percentage	Abundance	percentage	Abundance	percentage	Abundance	percentage	
Logo and name of the University on all pages of the website with the ability to link to the homepage	7	100	0	0	16	100	0	0	50
Content archive	7	100	0	0	0	0	0	0	25
Copyright information for the website	7	100	8	100	3	18	19	86	76
Link to the library on the website homepage	4	57	3	37	0	0	20	81	43.75
library Online Public Access Lists (OPEC) via the website	0	0	4	50	0	0	20	81	32.75
Link to medical databases (Latin)	4	57	3	37	3	18	15	68	45
Access to the Database of Iranian Medical Sciences Articles on Website	4	57	3	37	3	18	15	68	45
Link to Open Source Electronic Resources	0	0	8	100	0	0	22	100	50
Access to digital library resources through the website	4	57	8	100	0	0	19	86	60.75
Faculty Members Database and the possibility of	7	100	8	100	0	0	20	90	72.5

Searching their names, articles, and publications									
Access to abstracts of articles published in journals by faculty members and university researchers	7	100	8	100	0	0	20	90	72.5
Access to bibliographic information or abstracts of thesis and research papers	7	100	8	100	0	0	21	95	73.75
Link to important national websites	7	100	8		0	0	20	90	47.5
Link to relevant important international websites	2	28	8	100	0	0	7	31	39.75
The address link of other medical universities in the country on the homepage	7	100	0	0	0	0	20	90	47.5
Information about the events calendar, news, meetings, events, exhibitions, conferences, workshops, etc.	7	100	8	100	0	0	0	0	50
Resume (CV) of faculty members in Farsi and English languages In one of the PDF, DOC, HTML formats	7	100	8	100	0	0	0	0	50
Educational guides	7	100	7	87	2	12	0	0	49.75
Regulations, forms	7	100	7	87	16	100	7	31	79.5
Average compliance percentage		73.63		68.61		14		57.21	54

The technical characteristics of the websites were evaluated in terms of internal search engine optimization. Results showed that hospitals with 78.47 percent had the highest compliance and Deputies with 67.4 percent had the lowest compliance (Table 5).

Table 5. Compliance of technical characteristics indicators (internal search engine optimization) by the studied units

Technical characteristics indicators (internal search engine optimization)	Colleges		Deputies		Hospitals		Research centers		Average compliance percentage
	Abundance	percentage	Abundance	percentage	Abundance	Abundance	percentage	Abundance	
Existence of title tag	7	100	0	0	16	100	22	100	75
Related title	7	100	0	0	16	100	0	0	50
Existence of meta description tag)	0	0	8	100	16	100	22	100	75
Related description	0	0	3	37	2	16	21	95	37
Existence of meta keyword Tag	7	100	4	50	16	100	22	100	87.5
Related keyword	0	0	3	37	3	18	0	0	13.75
Using headers (H1 to H6 tags)	7	100	3	37	16	100	19	86	80.75
Use the "Strong" tag to specify keywords	7	100	8	100	16	100	22	100	100
Use the "Nofollow" rel = tag to identify unreliable links	0	0	8	100	0	0	0	0	25
Using the Dublin Core Standard	7	100	8	100	16	100	22	100	100
Using Alt Tag	7	100	8	100	16	100	22	100	100
image size less than 40k	6	85	8	100	16	100	10	45	82.5
Website Address Stability (Domain Name Age)	7	100	8	100	16	100	22	100	100

IP.Canonicalization	7	100	8	100	16	100	22	100	100
Access to the site with and without WWW at the beginning of the URL	7	100	8	100	16	100	22	100	100
Using simple URL (without additional components at address)	7	100	0	0	16	100	0	0	50
URL less than 100 characters long	7	100	8	100	16	100	22	100	100
No Underscores in URL of web pages	0	0	8	100	0	0	0	0	25
Paragraphing of site texts	7	100	8	100	16	100	22	100	100
Text/Html	7	100	8	100	16	100	22	100	100
No duplicate Content	7	100	0	0	0	0	22	100	50
No HTML error	0	0	0	0	16	100	0	0	25
No CSS error	7	100	7	87	16	100	22	100	96.75
No Error 302 (Redirects)	7	100	7	87	0	0	22	100	71.75
Existence of Error 404 for invalid website URLs	7	100	0	0	16	100	22	100	75
Appropriate 404 Page (including logo and important website links)	0	0	0	0	16	100	0	0	25
No Frame	7	100	8	100	0	0	22	100	75
No Flashing Symptoms (Flash Technique)	0	0	3	37	10	62	22	100	49.75
No cookie mechanism	0	0	4	50	16	100	0	0	37.5
No pages under construction	5	71	3	37	16	100	9	40	62
Existence of Robots text file (Robots.txt)	7	100	3	37	0	0	22	100	59.25
the validity of the Robots.txt file	7	100	8	100	16	100	22	100	100
Existence of Site Map XML File	0	0	8	100	16	100	0	0	50
the validity of the Site Map XML File	7	100	8	100	16	100	0	0	75
RSS Feed Validation	7	100	8	100	16	100	22	100	100
Compatibility with different browsers (IE, Firefox, Safari, Opera, Chrome)	7	100	8	100	16	100	22	100	100
Optimized for Mobile Phone version	7	100	8	100	0	0	22	100	75
Appropriate loading speed	7	100	8		16	100	22	100	100
Updated (Last Updated)	0	0	8	100	16	100	0	0	50
organizing the given links hierarchically between pages	7	100	0	0	16	100	22	100	75
Using anchor text to describe linked pages	7	100	8	100	16	100	22	100	100
No dead, blind or broken links	7	100	8	100	16	100	22	100	100
Average compliance percentage		72.76		67.4		78.47		70.61	72.70

In terms of technical characteristics (external search engine optimization), the results showed that all of the studied units have equally adhered to the indicators (37.5%). So that “Website indexing in reputable search engines”, “Website registration in directories (Dmoz, Yahoo directory, BOTW, Looksmart Directory)” and “Not being in the blacklist of spammer directories” were 100 percent adhered by all units and “Traffic rating better than 100,000”, “Ranking of the page on Google”, “Having a page in Wikipedia”, “Presence on social media” and “Having a blog under the main domain name of the university” were not considered by any of the studied units. Generally, in the Golestan University of Medical Sciences websites, the compliance percentage of external search engine optimization indexes was 42.85 percent (Table 6).

Table 6. Compliance of technical characteristics indicators (external search engine optimization) by the studied units

Technical characteristics indicators (external search engine optimization)	Colleges		Deputies		Hospitals		Research centers		Average compliance percentage
	Abundance	percentage	Abundance	percentage	Abundance	Abundance	percentage	Abundance	
Traffic rating better than 100,000	0	0	0	0	0	0	0	0	0
Website indexing in reputable search engines (Google, Yahoo, Live Search, Exalead)	7	100	8	100	16	100	22	100	100
Website registration in directories (Dmoz, Yahoo directory, BOTW, Looksmart Directory)	7	100	8	100	16	100	22	100	100
Not being in the blacklist of spammer directories	7	100	8	100	16	100	22	100	100
Having a page in Wikipedia	0	0	0	0	0	0	0	0	0
Presence on social media	0	0	0	0	0	0	0	0	0
Having a blog under the main domain name of the university	0	0	0	0	0	0	0	0	0
Average compliance percentage	42.85		42.85		42.85		42.85		42.85

Overall, according to the findings of this study, only 49.46 percent of the expected indicators were met by the studied units. Colleges with the overall average of 57.64 percent had the highest compliance and the hospitals with 36.72 percent had the lowest compliance with the webometric indexes (Table 7).

Table 7. Compliance of the studied units with the webometric indexes

	Colleges	Deputies	Hospitals	Research centers	Average
Content characteristics Indicators(Services)	41.34	40.04	11.56	20.26	28.32
Content characteristics Indicators(information elements)	73.63	68.61	14	57.21	54
Technical characteristics indicators (internal search engine optimization)	72.76	67.4	78.47	70.61	72.7
Technical characteristics indicators (external search engine optimization)	42.85	42.85	42.85	42.85	42.85
Average	57.64	54.72	36.72	47.73	49.46

Discussion

The findings showed that during the period 2014-2016, webometric rankings of Golestan University of Medical Sciences has improved compared to other same level universities globally and nationally and then placed in the world rankings with a relatively steady trend. These results are consistent with the results of the study by Yaminfirooz, Riahi, and Babaei (2015). In their research, they were identified that the worldwide ranking of Golestan University of Medical Sciences in 2013 with a growth rate of + 2532, was 5900 (Yaminfirooz et al., 2015). Also Compared to Iranian universities of medical sciences, Golestan University of Medical Sciences has been declining with webometric rankings. According to the findings, Golestan University of Medical Sciences has the lowest score in the IMPACT index (8773) and the highest score in the EXCELLENCE index (1450). Compared to the status of these indices in 2015 in the same study, the results show the Presence index has promoted from 3203 to 3203 with 1832 rating up (Yaminfirooz et al., 2015). The Impact Index was promoted from 9486 to 1377 with 904 rating up. The openness Index was promoted from 2529 to 1234 with 1295 rating up and The Excellence Index was promoted from 3541 to 3095 with 446 rating up.

Generally, in Golestan University of Medical Sciences websites, 3 indicators including, impact, Openness, and Excellence have been promoted. Content analysis of the Golestan University of Medical Sciences Web sites for services revealed that “Communication with university officials via e-mail” (93%) and “the existence of an internal search engine” (92.5%) were the indicators that had the highest compliance. The indicators of “Creating personal pages for university professors under the main domain name of the university”, “Creating personal pages for postgraduate students and PhD students under the main domain name of the university”, “Existence of RSS”, “Ability to track requests”, “Providing selective information services SDI (Selective Dissemination of information)” and “Access to public search engines” were not considered in any of the studied units. These results are very similar to the results of other research on Iranian medical university websites. In a survey on the status of Iranian medical universities websites among the service-related components, it was found that only the "Student Registration and course selecting system" indicator was present in all the studied websites. After the "Student Registration and course selecting system", the highest frequency (97.9%) was related to the "E-mail system" and "Nutrition Automation System", that the 46 websites out of the 47 surveyed sites, had these facilities (Shabankareh et al., 2016).

Also, In another Research on the Iranian University of Medical Sciences (Type 3) Websites, it was found that among the services related indicators, “Student Registration and course selecting system” and “Internal Search Engine” indicators were present in all the studied websites. After the "Student Registration and course selecting system" and "Internal Search Engine", the highest

frequency (94.4%) was related to the "E-mail system" and " Possibility of financial transaction (nutrition automation)". None of the Type III medical universities specifically provided a "selective dissemination of information" service through their website. "Providing Current Awareness Services (CAS)", "Creating personal pages for postgraduate students and Ph.D. students under the main domain name of the university", "E-mail system for graduates" and "Site index" were not found in any of the studied websites (Shabankareh et al., 2016).

Analysis of the content characteristics indicators of the websites in terms of information elements showed that "Regulations, forms" was in the best situation with 79.5 percent and "Content archive" with 25 percent had the weakest situation "Regulations, forms" was in the best situation (with 79.5% compliance) and "Content archive" (with 25 % compliance) had the weakest situation. Overall the results showed that the content characteristics of the studied websites in terms of information elements 54 percent adhered. In this regard, the results of Shabankareh et al.'s research showed that in terms of information elements of Iranian medical university websites, the most frequent component was "Presenting news and announcements, information about conferences and workshops through the university website" and then the three most prevalent indicators were "Links to Persian Medical Databases", "Links to Important National Websites" and "presenting Forms, Regulations and such things on the website" (Shabankareh et al., 2016).

Another Research on the Iranian University of Medical Sciences (Type 3) websites, shows that None of the indicators in this group were considered 100 percent on the studied websites (Shabankareh et al., 2016). In terms of technical characteristics (external search engine optimization), the results showed that all of the studied units have equally adhered to the indicators (37.5%). So that "Website indexing in reputable search engines", "Website registration in directories (Dmoz, Yahoo directory, BOTW, Looksmart Directory)" and "Not being in the blacklist of spammer directories" were 100 percent adhered by all units and "Traffic rating better than 100,000", Ranking of the page on Google", "Having a page in Wikipedia", "Presence on social media" and "Having a blog under the main domain name of the university" were not considered by any of the studied units. Generally, in the Golestan University of Medical Sciences websites, the compliance percentage of external search engine optimization indexes was 42.85 percent. Similar research results show that all websites of Iranian universities of medical sciences had a title tag. Also, the email addresses of all these websites were of standard length. And in all of them, error 404 was defined for invalid URLs. No use of frames on the studied websites also caused all of them to get a full score for this component.

Conclusion

Based on the findings and approximately 50 percent compliance of the surveyed websites with the considered indexes, As well as the descending status of Golestan University of Medical

Sciences website among Iranian medical universities websites, paying attention to indicators that have not been addressed at all or have been neglected, is one of the requirements of webometrics managers and researchers. Also, given that Golestan University of Medical Sciences is the weakest in the Impact Index, considering the number of backlinks identified by search engines is one of the priorities of web infrastructure enhancement programs. Based on the findings of this study, the Excellence Index, one of the main indicators of webometrics, is in better condition. But compared to the status of other medical sciences universities, solutions for increasing citations to the university scientific outputs should be taken into consideration.

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