

ORIGINAL PAPER

The Webometric Status of Isfahan University of Medical Sciences, Iran

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ABSTRACT

Background: Webometrics refers to the quantitative study of science production, application, structure and technology in the cyber environment. Impact analysis, website collaboration, and recognition of core websites are regarded as the most practical advantages of webometrics. Furthermore, webometrics is applied in ranking studies for universities and academic institutes. This serves as an internationally approved means of academic ranking worldwide. Our study aimed to evaluate the webometric status of Isfahan University of Medical Sciences (IUMS) and its place in the Webometric Ranking of World Universities. We also tried to comment on how to improve the university's webometric rank at national, regional, and international levels. **Material and Methods:** This was a descriptive cross-sectional study including all websites of Iranian universities. Census sampling was applied to cover all Iranian university websites. Then the websites were evaluated according to the latest criteria for the international webometric ranking methodology (Cyberometric Lab, July 2012) and their webometric rank at the international level as well as the changes in the rank between July 2012 and January 2013 were analyzed. The webometric rank of IUMS was compared with other medical universities at different levels as well. **Findings:** According to the findings, from July 2012 to January 2013, IUMS webometric rank improved by 707, 5 and 2 at international, national and ministerial levels, respectively. Moreover, the rank of IUMS for openness rose from 4477 to 193 during the mentioned period (Δ 4284). In excellence, the university rank did not change sensibly (1537 /1538). In the same period, the rank in presence shifted from 1137 to 1091. Meanwhile, growth in website impact was negative as the university impact rank declined from 3369 to 3393.

Conclusion: It seems that impact as the most influential ranking indicator fails to grow proportionately as other factors of IUMS website. This is potentially due to the content language (Farsi) which is an important barrier to easy retrieval of information by non-Farsi speakers. However, the scientific content and SEO (Search Engine Optimization) standards of the website need serious improvement.

Keywords: webometrics ranking system, Isfahan University of medical sciences

1. BACKGROUND

Bibliometrics, informetrics, scientometrics, as well as webometrics are the four means of technical measurement and assessment in information science. Of course, each discipline has its own features and applications. With the advent of new technologies and the appearance of new horizons in the field of information science, the need for new methods of measurement was seriously felt. Webometry came into being for the evaluation of production and application of information resources, structures, and technologies on the web using the basic principles of bibliometrics and informetrics (1). Among the various applications of webometrics, assessment of impact, recognition of core websites, evaluation of data retrieval behavior and ranking of world universities are of special significance (2, 3).

One of the most outstanding academic ranking systems of the world, is the Shanghai educational ranking. This ranking system was first launched in Shanghai, China in 2004. Another well-known system is Times higher education ranking which is a Times newspaper appendix and was first issued in

2004. QS is a ranking system based on citations. It was also first released in 2004 by Quacquarelli. In 2007, Taiwan association for evaluation and accreditation of higher education introduced HEEACT (Higher Education Evaluation and Accreditation Council of Taiwan), a new system of ranking based on the rate, impact, and excellence of research works in academic bodies of the world. ESI-ISI (Essential Science Indicators-Information Science Institute) presents a list of universities with high rate science production; according to the number of their web of science indexed papers and the citations they received (3). In this ranking system, a wide range of variables such as science production, quality of education, number of foreign students and number of Noble laureates are put into account (4).

All these ranking systems, basically try to present a clear picture of the educational, scientific and research status of academic institutes and provide a competitive atmosphere leading to more success and progress for all. Moreover, they introduce higher education excellence values and help less developed universities identify their weak points (5).

Cyberometric Lab, a research group affiliated to the National Research Council of Spain (Consejo Superior de Investigaciones Científicas) has launched a webometric program since 2004. They regularly publish their reports twice a year in January and July. The purpose of this ranking was to motivate both scholars and institutes to increase their web presence, to better reflect their activities on the web and to promote global access to academic knowledge and web-based publications. The criteria for ranking are therefore continuously upgraded. The latest edition was released in July 2012 (6).

This research group has successfully managed to evaluate web content as well as academic communications of more than 20,000 institutions worldwide. Their reports presented on "<http://www.webometrics.info>", are based on the analysis of the four indicators namely presence, openness, impact and excellence. Presence represents the global volume of contents published on the university web domains as indexed by Google; the most popular commercial search engine. It contributes as much as 20% to the webometric rank of an academic body. Impact refers to the number of external links that a website receives and is the most influential factor on the rank (50%). External or backlinks demonstrated the practicality and usefulness of the content presented on a web domain. Magestic SEO and Ahrefs are the two source references for counting such links.

This is their indicators, openness represents the number of rich files available on the web domain. These include doc, docx, .pdf, .ppt, etc file formats. This factor constitutes 15% of the final score. All rich files indexed by Google scholar between 2007 and 2011 are counted. The last index is excellence and refers to the number of university affiliated papers published in the most cited journals. This factor weighs as much as 15% in total score calculation. Scimago ranking serves as a reference for the calculation of this factor (5). Compared to webometrics, other ranking systems of universities simply put one or few factors into account and therefore cannot illustrate a brighter picture of the academic activities than webometrics. Webometrics provides comprehensive information about the knowledge content on the site, easy irretrievability, openness and the scientific excellence of the website (4).

Aminpour and Otraj in a study titled "*webometrics ranking of top Iranian medical universities*" concluded that the studied universities did not show a significant presence on the web. This probably was due to the limited English language content on their websites or the freshness of sites (6). Mesgarpour et al in their study compared the national, regional and international rank of Iranian universities and research centers between 2007 and 2009. They proposed that policy makers and authorities in research and education sectors should seriously consider developing mechanisms for continuous improvement and monitoring of academic websites (2). Aminpour et al in their webometric analysis of Iranian medical universities in 2009 showed that the content of these websites did not contribute much on the internet and were not much recognized internationally perhaps due to language barriers or technical problems of the websites (7).

Sugak in his study "*Rankings of a university's websites on the internet*" sought the causes of low ranks of Russian universities' websites. He concluded that educational and academic

authorities had to be blamed for their negligence to the improvement of their websites (8).

Osunde and Ogundele has been surveyed Ibadan website ranking based on rich files, Google scholars and presence. The results of this study showed that situation of Ibadan university website were poor. Thus some strategies such as Digitization of scientific articles, creating weblog for faculty and Put university link on it for improving index of this university(9).

In another study by Aminpour et al titled "*How to improve webometrics ranks of Iranian medical universities*" discussed the importance of university websites in introducing their faculties, departments, courses, etc on the internet. She suggested that structural and content improvements of the websites are inevitable for the rise in their ranks (10).

Goltaji and Didgah carried out a survey on the websites of leading universities in Muslim countries. They found that there was a significant association between web impact factor and global rank, presence and rich files. However, they could not show a significant link between visibility and web impact factor. Also, they showed that a strong relation existed between Gross Domestic Product (GDP) and the webometric rank of the outstanding universities in Islamic countries (11).

This study aimed to evaluate the status of Isfahan University of Medical Sciences' website with respect to its webometric rank and to put forward a set of proposals to improve this rank on national and international scales.

2. METHODS

This was a cross-sectional descriptive study assessed the websites of Iranian universities. We applied census method as our sampling method. At first, we retrieved the presented data for 100 top Iranian universities' websites on the International Ranking Website of Universities (<http://www.webometrics.info/en/asia/iran>). Following medical universities, (i.e. universities under the Iranian ministry of health, and medical education) were selected and sorted according to their global rank.

Then websites' contents were evaluated based on the latest version of ranking criteria issued on "[webometrics.info](http://www.webometrics.info)" in July 2012. Also, changes in their ranks during the study period (from July 2012 to January 2013) were carefully assessed. The rank of IUMS website and its indicators in the study period were compared with other universities at national and international levels.

3. FINDINGS

The following data were extracted from the webometrics website ranking systems for Isfahan University of Medical Sciences' website (Table 1).

Time Point / Rank	July 2012	January 2013	Rank Change
World rank	1892	1185	707 ↑
National rank	12	7	5 ↑
Ministerial rank	4	2	2 ↑

Table 1. IUMS website rank according to webometrics website

According to data on Table 1, between the 2 time points of our study namely July 2012 and January 2013, the rank of IUMS website rose by 707 at international level. Meanwhile, the IUMS website improved by 5 and 2 ranks at national and ministerial levels. In July 2012 the IUMS website ranked the

4th among medical universities of the country while it rose to the 2nd in January 2013.

Figure 1 shows the shift in IUMS website rank compared to other medical universities of the country.

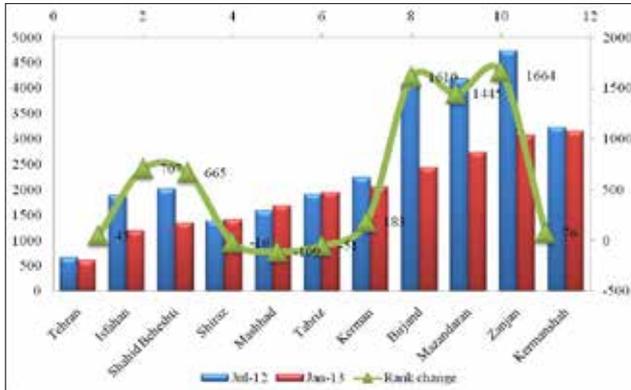


Figure 1. The rank of Iranian universities of medical sciences based on webometrics ranking in July 2012 and January 2013 and their changes during the period

In order to identify the performance of IUMS in any affecting indices of university’s websites ranking, IUMS rank as well as its promotion and demotion has illustrated in Table 2.

Time Point / Indicators	July 2012	January 2013	Rank Change
Openness	4477	193	4284
Excellence	1537	1538	1
Presence	1137	1091	46
Impact	3369	3393	24

Table 2. Comparison of webometrics indices on IUMS websites

Based on the findings in Table 2, the point of IUMS openness indicator in July 2012 and January 2013 changed from 4477 to 193 that demonstrate 4284 level of improvement in this indicator. Excellence indicator has remained almost unchanged during this period (1 score). In addition, in July 2012 and January 2013, the presence index rose from 1137 to 1091 (46 rank upgrade). Changes of impact index were negative

and in two periods have decreased from 3369 to 3393 (24 rank degradation).

The findings resulted from the comparison of website ranking of IUMS in contrast to other Iranian medical universities and the variability of indicators in these universities is presented in Table 3 and Figures 2 to 5.

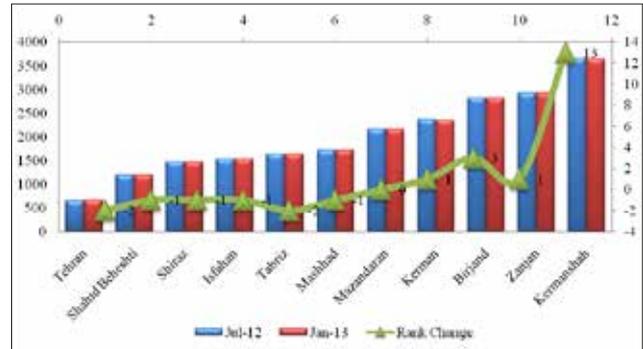


Figure 2. Iranian Universities of Medical Sciences ranking based on openness indicator according to Webometrics Ranking System July 2012 and January 2013, and their changes during the period

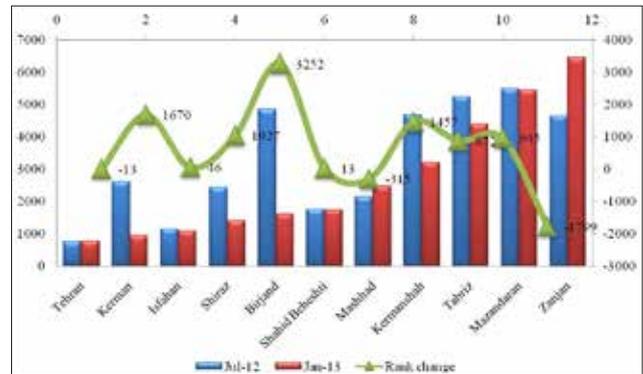


Figure 3. Iranian Universities of Medical Sciences ranking based on excellence indicator regarding to Webometrics Ranking System between July 2012 and January 2013, and the rate of changes during the period

		Medical Science Universities										
Indicators		Isfahan	Tehran	Shahid Beheshti	Shiraz	Mashhad	Tabriz	Kerman	Birjand	Mazandaran	Zanjan	Kerman-shah
Openness	July 2012	4477	449	3896	1641	1604	1230	1188	5861	5408	6220	1826
	January 2013	193	62	355	1208	1423	1128	557	1728	1038	1619	1329
	Rank Change	4284+	387+	3541+	433+	181+	102+	631+	4135+	4370+	4601+	497+
Excellence	July 2012	1537	658	1190	1474	1724	1637	2263	2830	2171	2933	3656
	January 2013	1538	660	1191	1475	1725	1639	2262	2827	2171	2922	3643
	Rank Change	1-	2-	1-	1-	1-	2-	1+	3+	0	1+	13+
Presence	July 2012	1137	746	1745	2429	2155	5256	2609	4856	5488	4648	4662
	January 2013	1091	759	1732	1402	2470	4384	939	1604	4543	6447	3205
	Rank Change	46+	13-	13+	1027+	315-	872+	1670+	3252+	945+	1799-	1457+
Impact	July 2012	2269	1695	4601	2444	3196	4590	6139	6046	7897	7346	6371
	January 2013	2393	1857	4380	3101	3494	4741	6991	5615	8024	5904	6832
	Rank Change	24-	162-	221+	657-	298-	151-	853-	431+	127-	1442+	462-

Table 3. Comparison of Iranian Medical Sciences website based on webometrics indicators

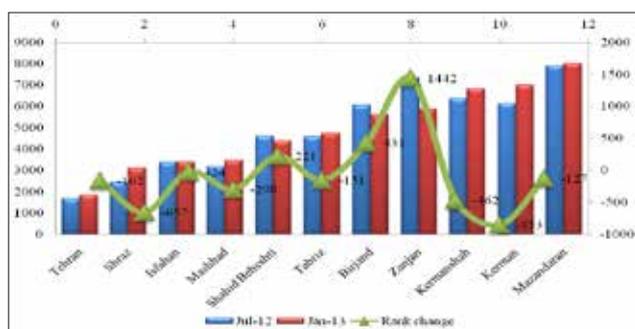


Figure 4. Iranian universities of medical sciences ranking based on presence index regarding to Webometrics Ranking System in the period from July 2012 and January 2013, and the variation between the two periods

Figure 5. Iranian universities of medical sciences based on impact index regarding to Webometrics Ranking System between July 2012 and January 2013, and the rate of changes between the period

4. DISCUSSION

One of the fundamental goals of webometric ranking is to encourage scientific-research institutes and universities to present and reflect their research and academic activities precisely on the web. If the web performance of a academic institute is lower than the expected level, the university web policies should definitely be reevaluated. On the other hand, quality and the quantity of electronic publications on the web need to be increased (6).

Therefore, periodical assessments seem to be necessary for the maintenance of higher web presence. With respect to the above fact, this study is focused on evaluating the webometrics status of IUMS. Comparing webometrics ranking in July 2012 and January 2013 shows a rise of 707 in the global rank for IUMS, this is especially important because after Birjand, Mazandaran and Zanjan universities of medical sciences, IUMS gained the highest rise among the 12 high ranking medical universities of Iran. The fact that the 3 mentioned universities have much lower ranks than IUMS proves that the rise in IUMS webometrics ranks in the study period has marvelous significance.

Moreover, in the same period, the rise in the rank of IUMS was almost 12 times greater than the rise in the rank of Tehran University of Medical Sciences (TUMS). Mesgarpour et al's study had similar findings for the period of time from July 2007 to January 2009 (2).

Analytical comparison of the webometrics status of IUMS with other medical universities of Iran revealed that IUMS web openness improved by 4284 ranks. This is the highest rise for openness after Zanjan and Mazandaran universities. As mentioned earlier, compared to the 12 highest ranking universities of Iran, this rise is of special significance since the higher the rank grows. Furthermore, the IUMS web openness improvement is almost 11 times more than that for TUMS. In contrast, Mesgarpour in his study on 4 rounds of webometrics ranking from July 2007 to January 2009 reported an 1188 decrease in the rank of web openness for IUMS. Of course in that period, premium medical universities namely Shiraz, Tabriz, Mashhad and Shahid Beheshti Medical Universities improved while TUMS and IUMS' ranks decreased and this

demotion was more significant for IUMS (2). With respect to decline in previous rankings, the rise in present ranking of IUMS makes it much more profoundly significant.

Excellence in webometrics represents the quantity of scientific papers published in high impact factor journals according to *Scimago.com*². Despite the negative growth in the last 2 rankings, it currently ranks the 4th among medical universities of the country. It is interesting to know that except IUMS, Kerman (*km.ac.ir*), Birjand (*bums.ac.ir*), Zanjan (*zums.ac.ir*) and Kermanshah (*kums.ac.ir*) medical universities, all other medical universities of the country declined in their rank for excellence. This is contrary to the findings of the study by Mesgarpour et al (2). A cause for this contradiction is probably the changes in the criteria for the calculation of excellence indicator between the two studies. In the former study this indexed was regarded as Scholar and was measured according to the findings of Scimago and google scholar both. Abolghasemi Fakhri et al in their study showed the rising trend of papers in Scopus from 2000 to 2007 has turned steady in recent years (13).

Although Presence of IUMS rose by 46 steps in the studied ranking, yet standing below TUMS and KUMS. Presence indicator shows the number of web pages on the sub domains of university crawled and indexed by Google robots. Comparing the rise and fall in the ranks of all university presence indexes in the study period, it is clear that IUMS has an intermediate position in this regard. This is in full accordance with the findings of Aminpour et al. They also found IUMS as the 3rd medical university in the standpoint of web presence (7).

The most important index in webometrics is known as Impact. This index impresses the webometric rank by 50%. Needless to say, changes in impact largely affect universities webometric ranks. In the study period, IUMS negative grew -24 in this field, however with respect to general degradation of medical universities in impact; IUMS position in this ranking remained unchanged. Similarly Aminpour et al showed a 3rd place for IUMS compared to other premium medical universities of the country on the basis of the external links of the university domain. As a whole with respect to the webometric status of other medical universities in Iran, a 707 rise in the rank of IUMS between July 2012 and January 2013 is literally remarkable (7).

Knowing the fact that openness contributes to the overall rank by 15%, it is clear that the webometrics rank of IUMS owes much to its openness rank in the study period. Meanwhile, the rise in the rank of IUMS web presence was not so remarkable, alarming the need for more attention to developing web pages on all IUMS sub-domains. It seems that a closer observation of SEO standards especially correct tagging of every single web page on the sub-domains may significantly help Google robots find and index them. The fall in the ranks of impact and excellence as the strongest and most influential indices in the study period is critically important and implies a lack of comprehensive planning for necessary interventions in this regard. This seriously requires policy makers' attention and determination to provide grounds for a tangible increase of backlinks to university sub-domains in future. Improvement of excellence especially needs development of both quantity and quality of research publications that can find access to high impact journals in their fields.

Adding pages in English language and making an attempt to provide an English copy of every single item on the domains may prove an effective intervention to boost external links and thus increase the rank of impact for IUMS website. Noroozi pointed out that presentation of website content in a language like Persian or other languages in the Middle East may sharply reduce its visibility which finally leads to their lower backlinks and web impact factor (14).

5. CONCLUSION

It is quite clear that content language not only affects the efficiency of search robots for a better search result but also makes the content comprehensible to a much larger population. Moreover, application of SEO principles in design and content management of the university website is highly recommended.

CONFLICT OF INTEREST: NONE DECLARED.

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