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Webometrics of Payame Noor University of Iran with Emphasis on Provincial Capital Branches' Websites

Meisam Dastani^{1,2}, Mohammad Mohsen Sadr³

Abstract

The science of webometrics is the study of the quantitative aspects of the construction and use of information resources, structures and technologies on the Web. One of the most important applications of this field is university websites' and scientific centers' rankings which is considered as one of the most famous university ranking systems in the world. The purpose of this study is to evaluate and rank websites of Payame Noor Universities of Iran and provincial capitals. This research had employed a surveying and descriptive method, which was performed on 31 websites of provincial capitals' Payame Noor Universities and Payame Noor's main website. This study was performed and evaluated during March 1st to March 10th 2018, using Webometrics. The results of this study show that among Payame Noor University branches', Fars, East Azarbaijan and Isfahan websites had the highest search engine index in Google. Tehran, Yazd and Ardebil branches had the highest external link views. Fars, Khuzestan and Hamedan branches' websites had the highest number of rich files in Google's search engine. None of the websites in the study had any referencing index in Google Scholar's search engine. In general, the results of this research indicates that Payame Noor Universities in provincial capitals do not have a decent webometrics ranking and indexing and their contribution to the webometrics of the main Payame Noor University's website is not befitting.

Keywords: Webometrics, Website, Payame Noor University, Provincial Capital.

Introduction

Easy and fast access to the required information and reduced response time, are features of the information era. In the transition from the physical world to the virtual world, universities are also affected by the modern information and communications technologies and by employing these technologies, they have taken the first steps regarding the availability and the ease of use of their services. The earliest proceedings in this field, were designing a website for introduction and presentation of their activities and services and especially, valuable and useful notifications

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in the web environment. These days, websites have gained a lot of importance for the notifications of all scientific fields and hence, each of the governmental or private organizations have designed and provided their own unique websites. Connections of the websites are improved with the links that are made between them and therefore, the websites which are linked more often will have more views and in order to provide the users' needed information and their ability to reach the useful information, the websites will connect to each other effectively. Given that there are many available information resources on the web, differentiation between more and less reliable resources and also recovering these resources is a big problem. Not only the use of techniques and methods of webometrics help the users overcome this problem, but also clarifies the usage pattern and connection of producers and suppliers of the information on the web. Therefore, in order to understand the virtual throughways and internal connections, webometrics analysis will present website contents' character, structure and features as well as link structures (Bjorneborn & Ingwersen, 2001). Webometrics was the main cause of this realization that web is a huge storage for documents, of which many are from universities (Almind & Ingwersen, 1997). The main purpose of such researches is to evaluate the web coverage level and results' reliability and correctness. The main purpose of the most webometrics studies on university websites is discovering a kind of connection between considered indexes and web links and validating these links as an important information resource in scientific communications. The study of the established links between web pages is often conducted by new computational techniques in order to count the linked page on the web and the scientific usage pattern of the web and identifies the effectiveness of web-based information resources (Vaughan & Thelwall, 2005). With these in mind, it can be said that webometrics are majorly examined on universities' websites and with the importance of the extracted and obtained result, they will be used as a new kind of information in the evaluation of scientific connections in academic environments (Wilkinson et.al, 2003). University websites are very important and improving the quality of these websites will increase the relocating and viewing chance of the universities in the virtual world. This research evaluates Payame Noor University's website based on webometrics indexes with emphasis on provincial capital's branches in order to improve its different world rankings and it will clarify the success level of Payame Noor university in the world wide web as well as the success level of the provincial capital's universities' websites for improving the central websites' indexes.

Literature review:

Noruzi (2005) used the Altavista search engine in order to evaluate the linking rates for university websites in Iran. He showed that there were very limited links to the websites of these

Iranian universities. The research concludes by stating these websites require better designs, higher quality information and an English language support in order to have higher linking rates.

The study of Aminpour et.al (2009) on Iran's medical sciences universities showed that while Tehran medical sciences university had the highest ranking in terms of internal links numbers with 49300 pages and 9860 internal links, its web influence ratio was ranked 38th. The results of this research indicated that Rafsanjan's medical sciences university had been ranked 1st according to the web influence ratio with 15 pages and 211 links.

Shukla and Poluru (2012) in a study titled, webometrics and indexes evaluation and analysis of India's top universities, showed that scientific resources banks, improvement of availability, scientific researches, collaborations with other universities and online societies in the university's website will increase the number of views for the university on the web.

Arif and Ismail (2013) studied the web influence factors in governmental universities in Malaysia. Data extraction of this research was done using Majestic Seo 1 and Google engines. Their results showed that UMS, UMK and UPNM had the highest influence ratios with 13.13, 2.67 and 1.289, respectively.

Fan (2015) in a research titled, contribution of China's academy of sciences in organizational scientific resources banks according to webometrics indexes, showed that organizational scientific recourses banks had a positive influence on Google and Google Scholar pages as well as number of rich PDF files and open access resources had higher influence[16].

Jalal, Sutradhar and Mukhopadhyay (2016) studied the webometrics of top ten Asia and India's websites. They showed that there are considerable differences between number of web pages, links, rich files, scientific resources, Google scholar and research publications between these ten Asian and Indian universities.

Verma and Brahma (2017) evaluated the webometrics of the central universities' websites of north and eastern India. This research calculated the web pages link, number of pages and website influencing factors of India's north eastern central universities and showed that Mizoram University (MZU) had the highest influence ratio among these north eastern Indian universities.

Parmar and Mandalia (2018) evaluated the Gachrat universities' websites contents with the webometrics method. 21 governmental universities were considered in this study. The results showed the webometrics indexes of universities related to examination of the web pages, some parts of the web pages, words in web pages, website's traffic rankings, web rankings and other different contents.

Methodology:

This research is a survey study and in this method, a list of all the websites of the 31 provincial capital's Payame Noor universities and the central website were extracted. After that, the webometrics tools were applied to these websites from 5th to 15th of March 2018. In order to collect the data, the MOZ search engine (www.opensiteexplorer.org) was used by entering the university's web address and the received links were extracted and calculated. After that, the indexed web pages in the Google's search engine were counted and evaluated by the webometrics formula "*site:sitename.domain*". For the extraction of the number of rich files in Google's search engine the following formula was employed: *Site: sitename.domain filetype:pdf*. For extracting the number of relocated scientific resources in Google's search engine *Site: sitename.domain*. The website's address was studied in a webometrics formula and then, the website was searched in Google and Google Scholar's engines in order to extract rich files (including pdf, doc, ppt, ps files) as well as extracting the number of relocated papers. Finally, the collected data were analyzed and evaluated in SPSS and Excel software with descriptive and analytical statistics.

Results:

The results of this research indicate the webometrics indexes score in the central website of Payame Noor's university and its provincial capital's branches. These results are shown in the following tables and graphs:

Table 1) Name and Website URL Considered

University	Website URL	University	Website URL
Alborz	alborz.pnu.ac.ir	Kurdistan	kurdistan.pnu.ac.ir
Ardebil	ardebil.pnu.ac.ir	Lorestan	lorestan.pnu.ac.ir
Bushehr	bushehr.pnu.ac.ir	Markazi	markazi.pnu.ac.ir
Charmahal and Bakhtiari	chb.pnu.ac.ir	Mazandaran	mz.pnu.ac.ir
Eastern Azarbaijan	eaz.pnu.ac.ir	North Khorasan	nkh.pnu.ac.ir
Fars	fars.pnu.ac.ir	Qazvin	qazvin.pnu.ac.ir

Gilan	gilan.pnu.ac.ir	Qom	qom.pnu.ac.ir
Golestan	golestan.pnu.ac.ir	Razavi Khorasan	razavi.pnu.ac.ir
Hamedan	hp.pnu.ac.ir	Semnan	se.pnu.ac.ir
Hormozgan	hormozgan.pnu.ac.ir	Sistan and Baloochestan	sb.pnu.ac.ir
Ilam	ilam.pnu.ac.ir	Southern Khorasan	skh.pnu.ac.ir
Isfahan	isfahan.pnu.ac.ir	Tehran	tehran.pnu.ac.ir
Kerman	kerman.pnu.ac.ir	Western Azerbaijan	az.pnu.ac.ir
Kermanshah	kermanshah.pnu.ac.ir	Yazd	yazd-setad.pnu.ac.ir
Khouzestan	khz.pnu.ac.ir	Zanjan	zanjan.pnu.ac.ir
Kohgiluyeh and Boyerahmad	kb.pnu.ac.ir	Main Payame Noor Website	pnu.ac.ir

Table 2) Webometrics Indexes Score of the Considered Websites

University	Website URL	Size	External Links (Visibility)	Google Scholar	Rich Files
Alborz	alborz.pnu.ac.ir	4,560	53	0	662
Ardebil	ardebil.pnu.ac.ir	2,950	259	0	223
Bushehr	bushehr.pnu.ac.ir	689	72	0	26
Charmahal and Bakhtiari	chb.pnu.ac.ir	2,830	113	0	306
East Azarbaijan	eaz.pnu.ac.ir	7,600	44	0	511
Fars	fars.pnu.ac.ir	11,700	13	0	1014

Gilan	gilan.pnu.ac.ir	2,520	20	0	82
Golestan	golestan.pnu.ac.ir	2,160	6	0	115
Hamedan	hp.pnu.ac.ir	4,890	29	0	889
Hormozgan	hormozgan.pnu.ac.ir	217	3	0	1
Ilam	ilam.pnu.ac.ir	765	4	0	8
Isfahan	isfahan.pnu.ac.ir	6,630	44	0	688
Kerman	kerman.pnu.ac.ir	2,970	9	0	162
Kermanshah	kermanshah.pnu.ac.ir	541	15	0	2
Khuzestan	khz.pnu.ac.ir	4,770	25	0	916
Kohgiluyeh and Boyerahmad	kb.pnu.ac.ir	2,400	7	0	116
Kurdistan	kurdistan.pnu.ac.ir	887	1	0	44
Lorestan	lorestan.pnu.ac.ir	2,900	10	0	49
Markazi	markazi.pnu.ac.ir	6,370	5	0	407
Mazandaran	mz.pnu.ac.ir	1,600	36	0	70
North Khorasan	nkh.pnu.ac.ir	1,030	91	0	79
Qazvin	qazvin.pnu.ac.ir	2,300	15	0	690
Qom	qom.pnu.ac.ir	914	12	0	0
Razavi Khorasan	razavi.pnu.ac.ir	2,840	14	0	176
Semnan	se.pnu.ac.ir	1,750	53	0	82
Sistan and Baloochestan	sb.pnu.ac.ir	2,390	26	0	15

Southern Khorasan	skh.pnu.ac.ir	2,750	177	0	223
Tehran	tehran.pnu.ac.ir	1,930	638	0	87
Western Azerbaijan	az.pnu.ac.ir	2,670	11	0	249
Yazd	yazd-setad.pnu.ac.ir	508	412	0	61
Zanjan	zanjan.pnu.ac.ir	3,540	8	0	151
Main Payame Noor Website	pnu.ac.ir	245,000	142000	3,950	33319

Table 2 shows the number of indexed pages of the website in Google's search engine, number of external links, scientific resources indexed in Google Scholar and rich files indexed in Google's search engine for each considered universities in this study. In the number of pages index, Fars, Eastern Azerbaijan and Isfahan universities' websites had the highest number of indexed pages in Google's search engine. In terms of number of external links (number of views) index, Tehran, Yazd and Ardebil websites had the highest number of external links. For the number of rich files index, Fars, Khuzestan and Hamedan ranked the highest in Google's search engine and for number of scientific resources index, none of the considered websites had any indexed resource in Google Scholar.

Table 3) Ratio of number pages, external links, rich files, scientific resources of the provincial websites in the central website

University	Website URL	Size	External Links (Visibility)	Rich Files	Google Scholar
Alborz	alborz.pnu.ac.ir	1.86122449	0.037323944	19.9457668	0
Ardebil	ardebil.pnu.ac.ir	1.204081633	0.182394366	6.718891232	0
Bushehr	bushehr.pnu.ac.ir	0.28122449	0.050704225	0.783368484	0
Charmahal	chb.pnu.ac.ir	1.155102041	0.079577465	9.219644471	0

and Bakhtiari					
Eastern Azarbaijan	eaz.pnu.ac.ir	3.102040816	0.030985915	15.39620368	0
Fars	fars.pnu.ac.ir	4.775510204	0.00915493	30.55137089	0
Gilan	gilan.pnu.ac.ir	1.028571429	0.014084507	2.470623682	0
Golestan	golestan.pnu.ac.ir	0.881632653	0.004225352	3.464899066	0
Hamedan	hp.pnu.ac.ir	1.995918367	0.020422535	26.78517626	0
Hormozgan	hormozgan.pnu.ac.ir	0.088571429	0.002112676	0.030129557	0
Ilam	ilam.pnu.ac.ir	0.312244898	0.002816901	0.241036457	0
Isfahan	isfahan.pnu.ac.ir	2.706122449	0.030985915	20.72913528	0
Kerman	kerman.pnu.ac.ir	1.212244898	0.006338028	4.880988249	0
Kermanshah	kermanshah.pnu.ac.ir	0.220816327	0.01056338	0.060259114	0
Khuzestan	khz.pnu.ac.ir	1.946938776	0.017605634	27.5986743	0
Kohgiluyeh and Boyerahmad	kb.pnu.ac.ir	0.979591837	0.004929577	3.495028623	0
Kurdistan	kurdistan.pnu.ac.ir	0.362040816	0.000704225	1.325700512	0
Lorestan	lorestan.pnu.ac.ir	1.183673469	0.007042254	1.476348298	0
Markazi	markazi.pnu.ac.ir	2.6	0.003521127	12.26272974	0
Mazandaran	mz.pnu.ac.ir	0.653061224	0.025352113	2.109068997	0
North Khorasan	nkh.pnu.ac.ir	0.420408163	0.064084507	2.380235011	0
Qazvin	qazvin.pnu.ac.ir	0.93877551	0.01056338	20.7893944	0
Qom	qom.pnu.ac.ir	0.373061224	0.008450704	0	0

Razavi Khorasan	razavi.pnu.ac.ir	1.159183673	0.009859155	5.302802049	0
Semnan	se.pnu.ac.ir	0.714285714	0.037323944	2.470623682	0
Sistan and Baloochestan	sb.pnu.ac.ir	0.975510204	0.018309859	0.451943356	0
southern Khorasan	skh.pnu.ac.ir	1.12244898	0.124647887	6.718891232	0
Tehran	tehran.pnu.ac.ir	0.787755102	0.449295775	2.621271467	0
Western Azerbaijan	az.pnu.ac.ir	1.089795918	0.007746479	7.502259717	0
yazd	yazd-setad.pnu.ac.ir	0.207346939	0.290140845	1.837902983	0
Zanjan	zanjan.pnu.ac.ir	1.444897959	0.005633803	4.549563121	0

Table 3 shows that in terms of number of indexed pages, 4.77%, 3.1% and 2.7% of the main Payame Noor's website is related to the Fars, Eastern Azerbaijan, and Isfahan branches' websites, respectively, which are higher compared to other provincial branches' websites.

In terms of number of external links, Table 3 shows that the Tehran, Yazd and Ardebil branches with 0.44%, 0.29% and 0.18% had the highest number of external links of the central website among the provincial capital's websites, respectively.

As for the number of indexed rich files, Table 3 shows that 30.55% of the number of rich files of the central Payame Noor's university is related to Fars' website. 27.59% and 26.78% are the share of Khuzestan and Hamedan websites, respectively, which ranked higher than other provincial capital's websites.

Discussion and Conclusion

University websites are one of the most important tools for communications and advancements of organizational goals of universities in the technology era. Development and evolution of digital technologies has caused the continuous evaluation of its current applications. Therefore, given the worldwide access and cheapness of the websites, continuous evaluations of them are quite important. Although websites' evaluations and rankings do not necessarily indicate the

educational qualities of university or institute, but it can result in improvements for the website and connections. These days, one of the success factors of any university is their web presence or the ability to view the website and its related pages through the search engines. Number of links from other pages to a document or a page in a university website can be an indicator of the influence of the document and its author and is considered as one of the criteria for the website to be seen among other web resources.

In general, the results of this research show that the provincial capital's websites of Payame Noor do not have a decent webometric indexes and the contributions of these websites on the overall webometrics ranking of the central website is not befitting.

Shukla and Poluru (2012) and Fan (2015) researches on this field showed that institutional repository, improvements of open access, scientific researches, collaborations with other universities and online societies in universities' websites will increase the number of links to the universities over the web. Orduña and López (2013) also showed that storing the results of the research in websites or institutional repository affect the webometrics indexes. Institutional website's structure and special researching universities are complicated, so analysis and evaluation of the website's performance can be related to units, departments or platforms such as institutional repository system and its different ranges of departments and units. Institutional repository are online archiving systems and are used by universities and research institute in order to store, publish and archive different scientific research results of researches, faculty and students (Zukala, 2008).

recommendations

- Given that none of the provincial capitals' Payame Noor universities had any indexed scientific resources in Google Scholar, it is recommended for the provincial capitals' universities consider establishing a institutional repository of provincial capital's universities. For example, use the Eprints repository in order to store the published papers by faculty, students and researches. In order to increase the content and magnitude of the website, the number of published pages in the provincial capitals' websites of Payame Noor University should be increased in Farsi and English with an international perspective.
- Most websites are using DOC and PDF files, so in order to increase the rich files of the website, PPT and PPTX files of the faculty's slides and content can be uploaded to the website.

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