

## Linkage Analysis on the Websites of Iranian Research Institutes

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**ABSTRACT:** *In this study, the websites of Iranian Research Institutes were examined. The link analysis method was used as one of the webometric methods. The present study population included 18 research websites of the Ministry of Science, Research and Technology of Iran. In order to assessment the status of the studied websites in terms of ranking in the world and in Iran, as well as the links received from Alexa and Webometrics.info were used. Webometric Analyst software was used to plot linkages and diagrams of co linking networks of studied websites. The results showed that the status of the studied websites is not favorable in terms of ranking in Webometrics.info. At the same time, in terms of interconnection, these websites are very weak, and in fact, there is very little interconnection between them. These websites should have a cohesive and expert editorial board and try to make their website more visible by creating a link between them.*

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### 1. Introduction

Website quality is so important that many organizations and individuals evaluate and rank it. The websites of research institutes and centers actually reflect their status in cyberspace. The higher the scientific level of these research centers, the more the users expect that the website of that scientific center will be more efficient and provide better quality information. Due to the dynamic nature of the web and the rapid change in technology, it is better to pay special attention to updating the website. Thus, the present study intends to evaluate the status of the websites of Iranian research institutes and institutes in terms of their interconnectedness and their position in Alexa and Webometrics.info databases.

### 2. Research Purposes

The objectives of the present study are:

- Identify the status of the studied websites in Alexa website
- Identify the status of the studied websites Webometrics.info website
- Identify the status of the studied websites based on their co link

#### 2.1. Research Questions

1. What is the status of the studied websites based on of their ranking in the world, Iran and the links received in the Alexa -

website?

2. What is the status of the studied websites based on webometrics.info indicators?

3. What is the status of the studied websites based on their co links?

### 3. Literature Review

Ortega and Augillo (2009) selected the world's top 1,000 universities ranked based on Webometrics and mapped the world's most important universities using network analysis. According to their findings, the two regions had the highest number of pages and internal and external links compared to other regions: North America and Canada, and the second EU. The United States is the country with the largest number of academic websites. As a result, almost half of all academic websites are owned by American universities. After the United States, Germany and the United Kingdom have the most academic websites in Europe.

Hiteand Railsback (2010) analyzed the content and features of the home page of the best US universities.

More than 90% of the websites surveyed had these features:

1. Use the same font on all pages
2. Use the same text and background color on all pages
3. The average page load speed was 10 seconds
4. The menus were located at the top or left of the screen.

They eventually suggested that these four design principles be used by website designers.

Sugak (2011) in a study examined the reasons for the low ranking of Russian university websites. He concluded that the low ranking of Russian university websites is due to the lack of attention of university officials to the promotion of websites, and suggested that university officials should provide the necessary planning and policies to promote the content of websites.

Goltaji and Didegah (2011) studied on top universities of the Islamic countries were ranked with some indexes such as number of links, web impact factor, world rank, size, visibility, rich files and scholar. Results showed that there was a significant relation between web impact factor with some indicators such as world rank, size, rich files and scholar, but there was not any significant relation between web impact factor and visibility of the website. Strong significant correlation between top universities of the Islamic world countries websites' world rank and their ranks based on GDP was another result that we can mention in this study. Noroozi Z, Hashemzadeh (2013) in their research investigates the link and networks of Iranian research institute websites using webometrics and the link analysis method. The population includes the websites of 23 research institutes and centers in Iran. The data were collected using the Webometric Analyst software. The network diagram shows the mutual link strength among the set of research institute websites in Iran, and depicts the pattern of internal relationships among these websites. Iranian research institute websites are not in good conditions in link exchange and the cooperation with each other. In addition, the colink diagrams illustrated the covert relationships among Iranian research institutes suggesting that the common topics and contents have been the most important elements of colink creation among Iranian research institute websites. It was found that the websites of Scientific Information Database (SID), Iranian Research Institute for Information Science and Technology (IRANDOC), and National Library and Archives of I.R of Iran (NLAI) were in a better condition than those of other websites as regards the total in-links and out-links. Also, the first to the third ranks were dedicated to IRANDOC, SID, and NLAI websites respectively in in-link numbers and visibility. The analysis of Uniform Resource Locators (URLs) of in-links and out-links of Iranian research institute websites showed that the maximum number of in-link to these websites was reserved for the domains .ir and .com. The websites of Iranian research institutes and centers dedicated most of their out-links to scientific, religious, and fun websites, followed by the ones for universities and the institutes of higher education. Gharibeniazi, M, Karbala Aghaei Kamran, M & Ghaebi, A (2015) in their study found that Benefiting from quantitative methods to evaluate the quality of websites is important, because it reduce confounding variables and human errors and then can save time and gain accurate results in the evaluation of websites.

### 3. Research Methods

In the present study, the link analysis method was used as one of the webometric methods. The present study population includes 18 research websites of the Ministry of Science, Research and Technology. In order to study the status of the studied websites in terms of ranking in the world and in Iran, as well as the links received from Alexa and Webometrics.info were used.

In order to draw the links and diagrams of the linkage networks of the research websites, Webometric Analyst software has been used, which is available through the <http://lexiurl.wlv.ac.uk/>. The research period was in December 2019.

#### 4. Findings

Table 1 shows the status of the websites of research institutes affiliated with the Ministry of Science, Research and Technology in Alexa. Alexa ranks various websites in the country of origin as well as among all websites in the world. Table 1 shows the websites of the Iranian Institute of Information Science and Technology (Irandoc), the Institute of Law Enforcement Sciences and Social Studies, and the Institute of Humanities and Social Studies in terms of world rankings, rankings in Iran, and links received in the first to third ranks. The findings showed that the difference in the ranking of these websites and the links they receive is very large, which indicates their weak activity in cyberspace and attracting their audience through efficient websites with valuable information.

Table 1. Website ranking of Iranian research institutes in Alexa

Name of Center	Total links	Rank in Iran the World	Rank in
Irandoc	4535	439	14231
Institute of Law Enforcement and Social Studies	2270	533	19778
Institute of Humanities and Social Studies	1298	3384	107530
IROST	1207	3726	115579
Howzah and University Research Institute	370	9633	297759
Institute of Research and Higher Education	131	9145	301785
Basic Knowledge Research Institute	931	13760	368244
International Institute of Seismology and Earthquake Engineering	1078	17531	401173
International Institute of Seismology and Earthquake Engineering	325	25056	476860
Institute of Physical Education and Sports Sciences	381	22475	511486
Material and Energy Research Center	263	20230	538706
Aerospace Research Institute	349	18090	575611
National Institute of Genetic Engineering and Biotechnology	246	22356	711721
Iranian Institute of Wisdom and Philosophy Research Institute	459	23867	715643
Iranian Institute of Chemistry and Chemical Engineering	234	52824	1017359
Institute of Paint and Coating Technology	274	40614	1186670
National Institute of Oceanography and Atmospheric Sciences of Iran	258	80829	1408925
Institute of Comprehensive Studies and Management of the Country	20	-	4790893

Table 2 presents the ranking of the websites of the research institutes of the country affiliated to the Ministry of Education in the Webometrics.info database. Webometrics.info ranks the websites of universities and research centers in the world by continent and country. Findings showed that from 18 websites of the studied research institutes, 6 websites were indexed in

Webometrics.info. Table 2 shows that the website of the Iranian Polymer and Petrochemical Research Institute is ranked 83rd among university websites and research centers in Iran in the Webometrics.info and is the most visible website in Iran.

Table 2. Ranking of the website of Iranian research institutes in Webometrics.info

Name of Center	Excellence indicator	Accessibility indicator	Impact indicator	Presence indicator	World	Iran
Iran Polymer and Petrochemical Research Institute	2287	1813	11286	5815	3259	83
Material and Energy Research Center	1989	2654	13308	9391	3503	96
International Institute of Seismology and Earthquake Engineering	3900	2700	7795	6247	3743	107
Basic Knowledge Research Institute	6115	8602	6187	4616	8439	188
Howzah and University Research Institute	6115	8602	13102	4745	13756	259
Iranian Institute of Wisdom and Philosophy Research Institute	6115	8602	13580	14175	14724	272

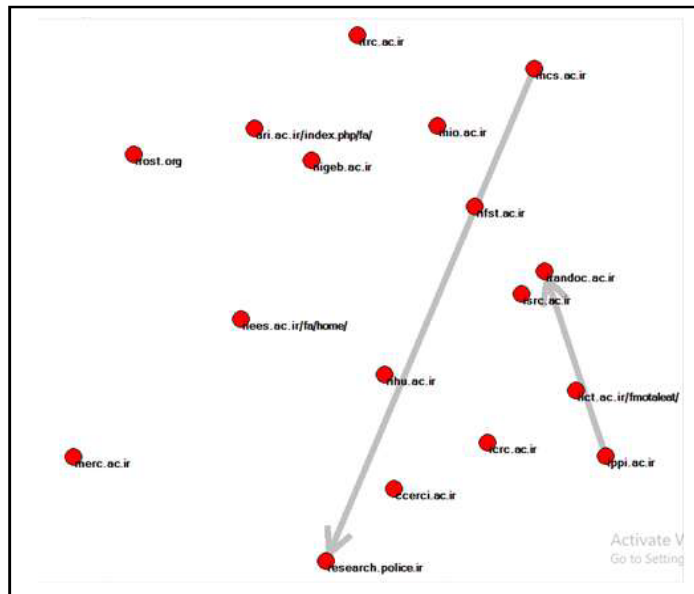


Figure 1. Network of links between the websites of research institutes affiliated with the Ministry of Science, Research and Technology in Iran

Figure 1 shows Network of links between the websites of research institutes affiliated with the Ministry of Science, Research and Technology in Iran. This image shows that the interaction and connection between these websites is very weak. Iran Polymer and Petrochemical Research Institute has established direct relations with Irandoc and the Institute of Islamic Culture and Thought. While the content and mission of these research institutes are not related. Figure 1 shows that the websites of

the Institute of Humanities and Social Studies, the Food Science and Industry Research Institute, and the Institute of Law Enforcement and Social Studies also interact with each other. This interaction seems to be based solely on linking in the useful links section, while they are not thematically related to each other. This interaction can only exist between the Institute of Humanities and the Institute of Law Enforcement Sciences.

## 5. Conclusion

In various organizations, many investments are made to use information and communication technologies, which is to facilitate the provision of services and prevent wastage of users' time.

This is especially true of research institutes websites. Because many users interact with these research institutes on a daily basis.

Noruzi (2006) states that attention to factors such as quality, volume, language, age, inclusion and other factors affect the success of websites. The richer the content, the more links will be attracted and the traffic to the website will increase. Danesh et al. (2010) state that the limitations and technical problems of websites, poor content and management of the website, change of its address, etc. can be effective in preventing cross-links between websites. It should be noted that the websites studied in this paper had not a proper and active interaction with each other. Their ranking in Alexa and Webometrics.info was not favorable. Paying attention to points such as the international content of the site, reducing the size of the site, providing valuable content, up-to-date, and user-friendliness are some of the factors that make a website attractive that should be used in the websites under study. These websites should have a cohesive and expert editorial board and try to make their website more visible by creating a link between them.

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