ATU PRESS

Times Ranking versus ResearchGate's Indicators:iAn Analysis of Political Sciences Field and its Activities

Maryam Tavosi (iD)* | PhD Student, Department of Knowledge and Information Science, Kharazmi University, Tehran, Iran

Abstract

Purpose: This study analyzes the activities of top Times researchers in the field of political sciences with an emphasis on examining the ResearchGate network. Methods: The study opted for altmetric approach. Two research communities have been surveyed. The number of 145 faculty members affiliated to the top 10 universities of the Times 2021 in the field of political science was stratified sampling randomly. Their Participation in the ResearchGate network was examined. For the attendees, the indicators of citations, RG-score, and reading indicators were extracted and compared. For the top 15 best Times scientific institutes, the RG scores per member and publication per member were calculated and compared. Correlation between Times Ranking and ResearchGate's indicators was carried out too. For data analysis, LibreOfficeCalc, and SPSS22 were exploited. Findings: Only 39% of all faculty members belongs to the best Times centers in the field of political sciences, and have been seen by registration in the ResearchGate network. For 57 registered individuals, there was a significant correlation between ResearchGate's indicators with each other. But there was no significant relationship between the Times rankings and the mentioned indicators, except for the reads (P-value = 0.018) with a weak reverse correlation (Spearman coefficient= -0.314). Furthermore, comparative analysis for the top 15 Times institutes had been done from standpoint of RG-Score, too.

Originality: The Correlation relationship between Times rank and ResearchGate's indicators in the field of political sciences. In addition, the participation of faculty members of the best scientific centers in this field has not been studied yet.

Keywords: Altmetric, RG Score, Reading Indicator, Citations, Political Sciences.

Introduction

It has been predicted that ResearchGate, Mendeley, and Academia will be used by researchers in the field of librarianship and information, as well as quantitative studies in the next 10 years (Mansourkiaie, 2019). The traditional scientometric indicators (such as ResearchGate, Google Scholar, and Academia) are consistent with altmetrics indicators. But at the same time, more research is needed (Patti et al, 2017). Altimetric indices cannot completely replace scientific measurement and having a high altmetric rank for an article means that the article is attractive to more readers, but this does not mean that it is of special scientific importance (Memisevic et al, 2019). Lora, and Nel-Lo Andreu (2020) while reviewing articles in the field of tourism, have stated that scientific social networks (such as ResearchGate) reflect the impact of research, but the metric indices of these networks cannot replace the scientific metrics of researchers such as "citations of articles". According to Bardus et al (2020), there seems to be a positive correlation between traditional scientometric indicators and social network altmetric indices (such as ResearchGate), but more detailed studies are needed to make a definite statement in this regard. Therefore, how researchers' academic analysis with the help of online academic social networks such as ResearchGate works, is ambiguous. This article will help reduce this ambiguity.

Problem recognition

1. To what extent is the influence of researchers from the top Times universities on the ResearchGate network in the field of politics and international studies?

2. What is the status of the three indicators of "reading indicators", "citations", and "RG Score" among the faculty members of the field of political sciences affiliated with the top scientific centers (Times Ranking) who have registered on the ResearchGate network?

3. What is the comparative analysis of the RG score for all disciplines (in general) with the RG score in the field of political sciences at the top scientific centers (Times ranking)?

4. What is the comparative analysis of the top scientific institutes of the Times, in terms of RG score per member with a profile in the ResearchGate network, and also from the standpoint of the number of research items (publications) per member?

5. How is the significant correlation relationship between the Times rankings and the Research Gate network indices (including reading indicators, citation, and RG Score) for faculty members in the field of political sciences and international studies affiliated with the Times' top centers?

6. How is the Correlation Analysis between ResearchGate Indicators (reading indicators, citations, and RG score) with each other in the field of political sciences and international studies?

Literature Review

Copiello and Bonifaci (2018) have expressed that the ResearchGate score is largely dependent on social activity and there is less scientific evaluation of research items.

There is a positive correlation between the number of citations to articles in the ResearchGate media and the faculty members of the Sharif University of Technology have been seen due to the high rate of citation in the Web of Science and Scopus, therefore, the RG score is a suitable tool for scientific assessment (Naderbeigi and Isfandyari-Moghaddam, 2018).

Lepori et al (2018), while studying the presence and activity of more than 2000 European higher education institutions and more than 4000 American scientific centers, in the ResearchGate network, found that the RG score is more correlated with the "research item" indicator (compared to "Citation" indicator).

A survey study published by Yan and Zhang (2018) on researchers with organizational affiliation with 61 scientific research centers in the United States, showed that the ResearchGate scores the level of activity of scientific and research institutes in a realistic way. It can then be considered a tool of scientific measurement. Also, the higher the academic level of the institute, the higher the number of research copies and the number of citations and the reading rate of the ResearchGate media profile, and the number of followers in the profile of the affiliated people, but "reading indicators" and "followers" are less and fluctuating.

Meier and Dirk (2018) have stated that social interactions in ResearchGate media have a great impact on increase of the RG score. In addition, the two researchers have experimentally uploaded several articles with a name that does not belong to the author of the article in

the media, which has led to an improvement in the score of Research Gate (lack of scientific validity of ResearchGate).

The ResearchGate Score has an ambiguous measurement. Also, there is the ability to manipulate data and information in this media, so it is not reliable (Costas and Franssen, 2018).

Johnson et al (2018) have stated that the rating that the ResearchGate network gives to researchers is not desirable in terms of scientific evaluation, and sometimes invalid data is uploaded to the network.

Tavosi and Naghshineh (2021) have declared that there was a significant relationship between the "reading" indicator and "Times ranking" in the form of mean inverse correlation (P-value = 0.04, Spearman correlation coefficient= -0.6) among the researchers with the degrees of associate professors and higher affiliations with best Times ranking in the field of computer sciences.

Methodology

This research is a kind of application and has been done using the altmetric method (social web-based metrics). Two research communities have been surveyed. One of them was 145 faculty members affiliated with the top 10 universities (Times Ranking 2021) in the field of political sciences who were stratified by means of random sampling. In this way, from each of the top 10 universities in the Times, 15 faculty members in the field of political science were selected. Except for the MIT University (5th Times Ranking 2021) from which 10 members were selected (because there were no more).Their Participation in the Research Gate network was examined. For the attendees, citations, RG-score, and reading indicators were extracted and compared. Correlation analysis between Times Ranking and ResearchGate's indicators was also done for the registered faculty members in the ResearchGate network. The second research population, was the top 15 best Times centers, that the RG scores per member and publication per member were calculated and compared.

It is to be noted, that due to the dynamics of the Research Gate network, data was collected in a limited time. Data related to the activities of 145 faculty members was extracted in 4 days from 10th of October to 14th, 2021. Data from the top 15 Times Centers was collected on October 28, 2021.

Correlation analysis was done by SPSS22. LibreOfficeCalc software has been used for drawing figures and representing numerical processing.

Also, the names of the top Times institutions are listed in order of priority in the appendix of this present article (https://www.timeshighereducation.com/world-university-rankings).

Findings

For the first research community, i.e., 145 faculty members affiliated with the top 10 universities of the Times 2021 in the field of political sciences, figure 1, figure 2, table 1, table 2, table 3, table 4, table 5, table 6, table 7 were obtained. Figure 3 compares the RG score in general (for all disciplines) with the RG score for the top 10 centers (Times rankings) and was drawn in general for second research population, i.e., the top 15 best Times scientific institutes, figure 4 was obtained. In all Bar charts (figures) of this article, the number of each column indicates the Times ranking (See also Appendix of this paper).

It's to be noted that figure 4 was drawn for the 15 top scientific centers (Times Ranking). But others of the figures and tables were drawn based on the faculty members affiliated with the Times Top 10 Centers in Political Sciences (57 out of 145 that registered in ResearchGate).

Answer to the first research question

In figure 1, the presence or registration of the political sciences researchers affiliated with the Times' top centers on the ResearchGate has been measured.
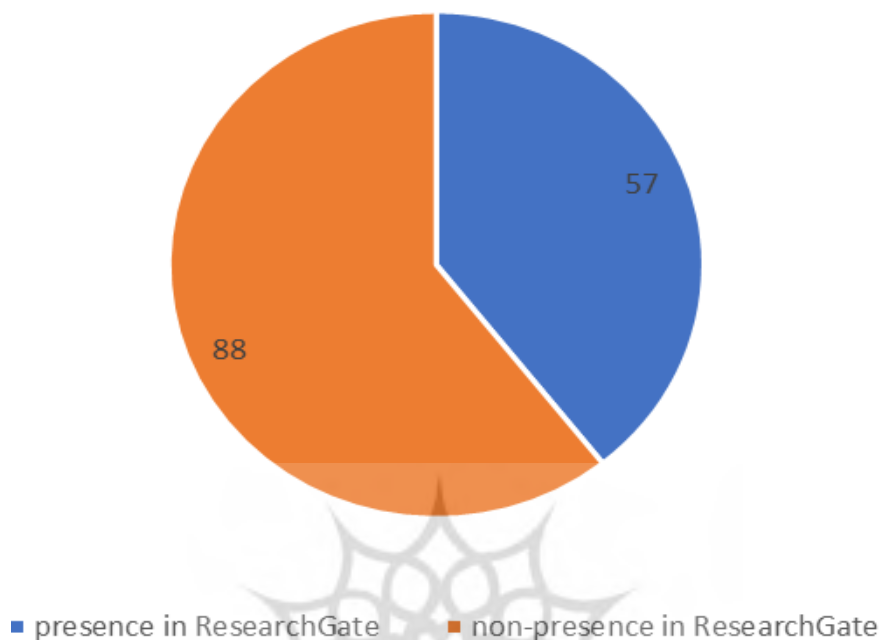
Figure.1: Participation of faculty members affiliated with best institutes (Times ranking 2021) in the political sciences and international studies field

According to figure 1, only, 57 of 145 faculty members in the field of politics and international studies affiliated with the top 10 scientific institutes (Times Ranking), registered in the ResearchGate network (39% participation).

Answer to the second research question

Three indicators of "reads", "citations", and "RG score" among the faculty members in the field of political science affiliated with the top ten scientific centers (Times Ranking) who have registered on the ResearchGate, have been analyzed.
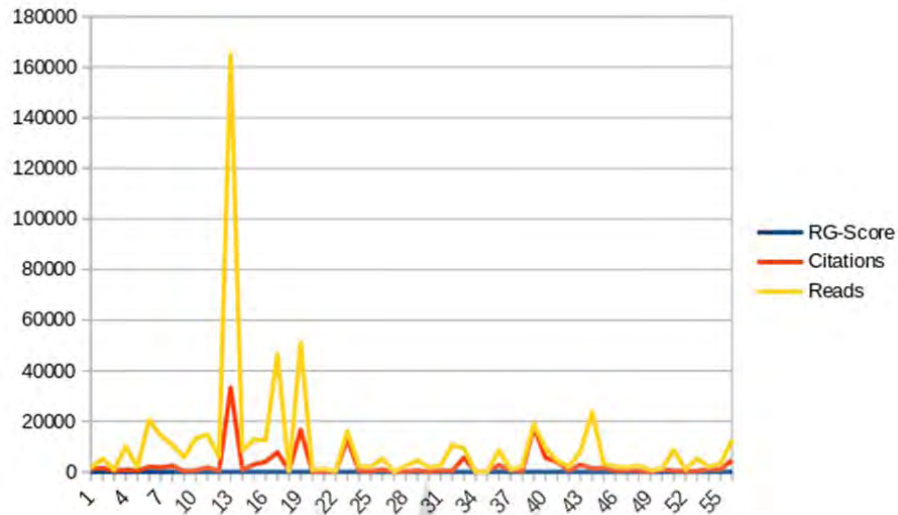
Figure.2: RG score, Citations, and Reading indicators of ResearchGate network

Figure 2 shows activities of faculty members of political sciences belonging to the 10 best Times scientific institutes (2021), from standpoints of RG- score, Citations, and Reading indicators of ResearchGate network. The Citations indicator seems to be related to the RG score.

Answer to the third research question
RG score in general (for all disciplines) has been compared with the RG score in the field of political sciences in the top 10 scientific centers (Times ranking).
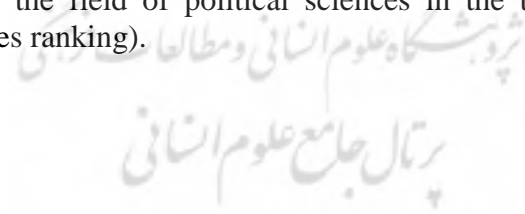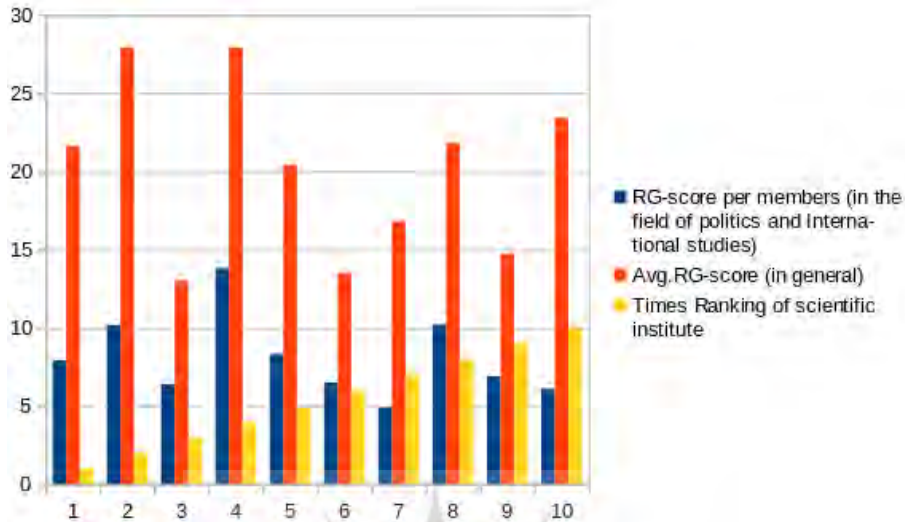
Figure.3: RG score in General versus RG score in Political Sciences field at the 10 best scientific institutes (Times Ranking)

According to figure 3, the California Institute of Technology (4th Times ranking under figure 3) was observed as high ranking between 10 best Times scientific institutes from standpoints of RG Score per member in the field of politics and international studies and also in general (in all the fields).

Answer to the fourth research question
RG score per member and publication per member have been analyzed for fifteen top scientific institutes of the Times.
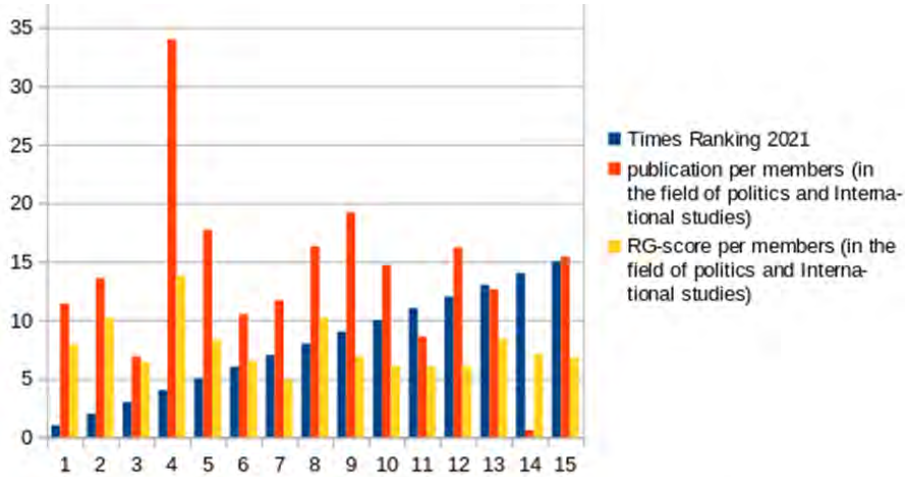
Figure.4: Publications and RG-Score per member in the ResearchGate profiles of faculty members affiliated with the 15 best Times institutes, the digits of each column indicate the Times ranking of the scientific centers

California Institute of Technology (4th Times ranking under figure 4) was observed as high ranking between 15 best Times scientific institutes from standpoints of RG Score per member, and also the number of publications per member.

In addition, according to figure 4, ETH Zurich university (14th Times ranking) had the lowest number of publications per member. Furthermore, California scientific center in Berkeley (7th Times ranking) appeared as the lowest RG score per member.

Answer to the fifth research question

The analysis of the correlation between the three indicators of the ResearchGate network was done in pairs with each other (about the research community).

Table.1: A test to investigate data normality

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
RGscore	.057	57	.200[*]	.986	57	.758
Citations	.316	57	.000	.477	57	.000
Reads	.329	57	.000	.385	57	.000
TimesRanking	.139	57	.008	.912	57	.001

According to table 1, ResearchGate network of Citations, and Reading indicators do not have a normal distribution by the Kolmogorov-Smirnov test. But RG- Score has a normal distribution (concerning 57 registered faculty members of the political sciences field, affiliated with 10 best Times institutes which have been selected by stratified random sampling).

Correlation analysis, between ResearchGate's (RG-score, Citations and Reading Indicators) and Times ranking has been done. Then, table 2, table 3, table 4, were developed.

These analyses (table 1, ..., table 4) are related to 57 faculty members affiliated with the top 10 universities of the Times institutes who have registered in the Research Gate network (in the field of political sciences).

Table.2: Correlation Analysis between Times ranking and RG Score indicator

Correlations

		RGscore	TimesRanking
RGscore	Pearson Correlation	1	-.208
	Sig. (2-tailed)		.120
	N	57	57
TimesRanking	Pearson Correlation	-.208	1
	Sig. (2-tailed)	.120	
	N	57	57

Table 2, has shown that there is no significant relationship between Times ranking and RG Score (P-Value=0.120). Pearson test has been used because RG Score has a normal distribution.

Table.3: Correlation Analysis between Times ranking and Citation indicator

Correlations

			Citations	TimesRanking
Spearman's rho	Citations	Correlation Coefficient	1.000	-.143
		Sig. (2-tailed)	.	.288
		N	57	57
	TimesRanking	Correlation Coefficient	-.143	1.000
		Sig. (2-tailed)	.288	.
		N	57	57

According to table 3, there is no significant relationship between Times- ranking and the Citation indicator of the ResearchGate network (P-Value=0.288).

Table.4: Correlation Analysis between Times ranking and Reading indicator

Correlations

			TimesRanking	Reads
Spearman's rho	TimesRanking	Correlation Coefficient	1.000	-.314*
		Sig. (2-tailed)	.	.018
		N	57	57
	Reads	Correlation Coefficient	-.314*	1.000
		Sig. (2-tailed)	.018	.
		N	57	57

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4 shows that there is a significant relationship between Times ranking and RG Score with a weak reverse correlation (P-Value=0.018; Spearman coefficient= - 0.314).

Answer to the sixth research question

Correlation analysis between three ResearchGate indicators with each others has been done in the field of political sciences (table 5, table 6, table 7).

Table 5: Correlation Analysis between Citations and Reading indicators

Correlations

			Citations	Reads
Spearman's rho	Citations	Correlation Coefficient	1.000	.765**
		Sig. (2-tailed)	.	.000
		N	57	57
	Reads	Correlation Coefficient	.765**	1.000
		Sig. (2-tailed)	.000	.
		N	57	57

**. Correlation is significant at the 0.01 level (2-tailed).

According to table 5, there is a strong significant relationship between Citations and Reading altmetric indicators of the ResearchGate network (P-Value=0.000, Correlation Coefficient=0.765). Spearman correlation test has been used because Citations, and Reading indicators don't have a normal distribution.

Table.6: Correlation Analysis between Reading Indicators and RG Score

Correlations

			RGscore	Reads
Spearman's rho	RGscore	Correlation Coefficient	1.000	.758**
		Sig. (2-tailed)	.	.000
		N	57	57
	Reads	Correlation Coefficient	.758**	1.000
		Sig. (2-tailed)	.000	.
		N	57	57

**. Correlation is significant at the 0.01 level (2-tailed).

According to table 6, there is a strong significant relationship between RG-Score and Reading altmetrics indicators of the ResearchGate network (P-Value=0.000, Correlation Coefficient=0.758). Spearman correlation test has been used because Citations, and Reading Indicators don't have a normal distribution.

Table 7: Correlation Analysis between Citations, and RG-Score

Correlations

			RGscore	Citations
Spearman's rho	RGscore	Correlation Coefficient	1.000	.732[**]
		Sig. (2-tailed)	.	.000
		N	57	57
	Citations	Correlation Coefficient	.732[**]	1.000
		Sig. (2-tailed)	.000	.
		N	57	57

[**]. Correlation is significant at the 0.01 level (2-tailed).

According to table 7, there is a strong significant relationship between RG- Score, and Citations altmetric indicators of the ResearchGate network (P-Value=0.000, Correlation Coefficient=0.732). Spearman correlation test has been used because Citations and Reading Indicators don't have a normal distribution.

Conclusion

In the present study no significant relationship was observed between the academic Times rankings and some ResearchGate network indicators. Except the Reading Indicator for which a weak reverse correlation was observed. This is perhaps so because the ResearchGate guide page (Help Center, retrieved on November 6, 2021) has stated that calculating the reading indicator is not dependent on member registration and that anyone outside this mentioned network can read the researchers' files. This mentioned finding is in the same direction as one study done by Tavosi and Naghshineh (2021).

It seems that Times Ranking (as a scientific scale), and RG score are not aligned with each other as it has been pointed out in other studies. For example, O'Brien (2019) has stated that the data or scientific papers in the ResearchGate network have significant legal

challenges, and also there is no transparency in awarding RG scores to the participating researchers.

According to Masic (2019) only less than 50% of researchers' activity is reflected in social networks such as ResearchGate and Google Scholar. The present study also approves of this, because only 39% of faculty members in the field of politics and international studies affiliated with best Times's institute, participated in the ResearchGate network. Also, in this regard, Kowalska-Chrzanowska and Krysiński (2020) found that although 60% of Polish researchers are present in at least one of the research social media ResearchGate, or the academy, or Google Scholar, the other 40% are in none of the media.

Ortiz-Torres and Viamonte-Garrido have stated the altmetric indicators on ResearchGate and Google Academic are insufficient to generalize scientific leaders (influential people in science). In the present study, also it is observed that the best scientific centers of the Times' institute are not active in the ResearchGate network.

The current study has been conducted in the field of political sciences and presumably other results involving the relationship between the Times ranking and ResearchGate indicators may be obtained in other areas.

References

Bardus, M., El Rassi, R., Chahrour, M., Akl, E. W., Raslan, A. S., Meho, L. I., & Akl, E. A. (2020). The use of social media to increase the impact of health research: systematic review. *Journal of medical Internet research*, *22*(7), e15607. https://www.jmir.org/2020/7/e15607/

Copiello, S., & Bonifaci, P. (2018). A few remarks on ResearchGate score and academic reputation. *Scientometrics*, *114*(1), 301-306. https://doi.org/10.1007/s11192-017-2582-9

Costas, R., & Franssen, T. (2018). Reflections around 'the cautionary use 'of the h-index: response to Teixeira da Silva and Dobránszki. *Scientometrics*, *115*(2), 1125-1130. https://doi.org/10.1007/s11192-018-2683-0

Help center. (n.d.). Retrieved November 6, 2021, from: https://explore.researchgate.net/display/support/Help+Center

Johnson, R., Watkinson, A., & Mabe, M. (2018). The STM report: An overview of scientific and scholarly publishing. *International Association of Scientific, Technical and Medical Publishers*, *5*, 212. Available at: https://www.stm-assoc.org/2018_10_04_STM_Report_2018.pdf (accessed 1 April 2021)

Kowalska-Chrzanowska, M., & Krysiński, P. (2020). Role of social networking services for scientists in promoting scientific output on example of Polish representatives of social communication and media sciences. *Global Knowledge, Memory and Communication*. https://doi.org/10.1108/GKMC-12-2019-0147

Lepori, B., Thelwall, M., & Hoorani, B. H. (2018). Which US and European Higher Education Institutions are visible in ResearchGate and what affects their RG score? *Journal of Informetrics*, *12*(3), 806-818. https://doi.org/10.1016/j.joi.2018.07.001

Viana Lora, A., Andreu, N. L., & Gemma, M. (2020). Alternative metrics for assessing the social impact of tourism research. *Sustainability*, *12*(10), 4299. https://doi.org/10.3390/su12104299

Mansourkiaie, R., Babalhavaegi, F., Nooshinfard, F., & Soheili, F. (2019). Study of the Future of the Dissemination of Scientific Productions of Knowledge and Information Science in Social Networks from the Iranian Experts' Viewpoint. *Library and Information Sciences*, *22*(3), 136-163. http://lis.aqr-libjournal.ir/article_82928_en.html [in Persian]

Masic, I. (2019). The most important Google Scholar index disadvantages. 17th International Conference on Informatics, Management and Technology in Health Care, Athens, Greece, 5-7 July, 2019. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6854473/

Memisevic, H., Pasalic, A., Mujkanovic, E., & Memisevic, M. (2019). In Search of a Silver Bullet: Evaluating Researchers' Performance in Bosnia and Herzegovina. *J. Sci. Res.*, *8*(3), 125-130. https://www.jscires.org/article/321

Meier, A., & Tunger, D. (2018). Investigating the transparency and influenceability of altmetrics using the example of the RG score and the ResearchGate platform. *Information Services & Use*, *38*(1-2), 99-110. https://content.iospress.com/articles/information-services-and-use/isu180001

Naderbeigi, F., & Isfandyari-Moghaddam, A. (2018). Researchers' Scientific performance in ResearchGate: The Case of a Technology University. *Library Philosophy & Practice*. https://digitalcommons.unl.edu/libphilprac/1752/

Ortiz-Torres, E. A. Viamonte-Garrido, Y. I. (2020). Indicadores cienciométricos y altmétricos para la identificación de líderes científicos". Palabra Clave (La Plata), Vol.10 No.1, e105. https://doi.org/10.24215/18539912e105

Patthi, B., Prasad, M., Gupta, R., Singla, A., Kumar, J. K., Dhama, K., ... & Niraj, L. K. (2017). Altmetrics–a collated adjunct beyond citations for scholarly impact: a systematic review. *Journal of clinical and diagnostic research: JCDR*, *11*(6), ZE16. https://pubmed.ncbi.nlm.nih.gov/28764311/

Tavosi, M. Correlation Analysis between ResearchGate Indicators and Academic Times Ranking in the Field of Computer Sciences. *CJS*, 8 (1) :87-94. http://cjs.mubabol.ac.ir/article-1-228-en.html

Yan, W., & Zhang, Y. (2018). Research universities on the ResearchGate social networking site: An examination of institutional differences, research activity level, and social networks formed. *Journal of Informetrics*, *12*(1), 385-400.https://ideas.repec.org/a/eee/infome/v12y2018i1p385-400.html

Appendix
Best scientific institutes based on world Times ranking in order of priority (2021)
1. University of Oxford
2. Stanford University
3. Harvard University
4. California Institute of Technology
5. Massachusetts Institute of Technology (MIT)
6. University of Cambridge
7. University of California, Berkeley
8. Yale University
9. Princeton University
10. The University of Chicago
11. Imperial College London
12. Johns Hopkins University
13. University of Pennsylvania
14. ETH Zurich
15. University of California, Los Angeles