



ResearchGate Social Network: Opportunities and Challenges

Saeideh Valizadeh-Haghi¹ , Azam Shahbodaghi¹ , Hamed Nasibi-Sis^{1*} 

¹ Department of Medical Library and Information Sciences, School of Allied Medical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Abstract

Received: 13 Oct 2020

Accepted: 26 Dec 2020

Keywords:

ResearchGate

Altmetrics

Citation indicators

Social networks

Introduction: ResearchGate, as one of the academic-social networks, has become a platform for scientific cooperation to promote scientific skills. A large number of researchers engage in scientific activities and share research results. This paper aims to study the ResearchGate related researches and examines its opportunities and challenges for the academic communities.

Methods: The present research is a narrative-review. The study population includes English-language articles indexed in reputable databases such as Scopus and Web of Science and articles retrieved through Google Scholar published in reputable journals.

Results: Activity in ResearchGate enhances citation indexes more than ever. According to some studies and due to the importance of citation in universities' ranking, the use of the ResearchGate professional network can lead to improving the ranking of universities in international ranking systems. However, according to former studies, there are drawbacks to this network, and it is necessary for the scientific communities to use the benefits of this network consciously.

Conclusion: Familiarity with the opportunities and challenges of applying ResearchGate can provide relevant information to authorities to make informed decisions about using this social network in academic communities.

* Corresponding author

Hamed Nasibi-Sis

nasibi.lib@gmail.com

Introduction

Social networks are the product of integrating new web technologies, such as RSS, HTML, and XML (1,2). The advent of social media has transformed the communication process that governs communities, especially academia in general. These networks, which can be referred to as socio-scientific networks, have transformed the process of scientific communication and have entered a new phase for researchers' communication methods. The relevant potential of these networks for the exchange of scientific information has

provided an appropriate opportunity for researchers' scientific development and activities related to scientific communication (3,4). One of these social networks that are highly appreciated among the scientific community is the ResearchGate network. The ResearchGate social network was founded in 2008 by two virologists, Ijad Madisch and Sören Hofmayer, and a computer scientist, with the goal of providing a set of tools for collaboration, knowledge sharing, and networking and exploration among researchers. It is currently headquartered in Boston and Hanover.



The main purpose of ResearchGate is exploration, communication, and collaboration. Scientific forums such as the International Academy of Life Sciences, the European Science Foundation, and the Social Network of Max Planck Phdnet students have embraced ResearchGate as their communication medium (5–7).

ResearchGate is the most used among scientific-social networks in academic-scientific communities (8,9). It is reported that by 2019, more than 15 million researchers were members of this network (7). Therefore, considering the importance of ResearchGate made in scholarly communication and its high acceptance among researchers, the current study aims to identify the capabilities of this network and the opportunities and challenges that researchers especially the academic community can use.

Methods

The reputable articles of academic journals have been selected to carry out this narrative review. To retrieve the contents related to

study, the databases including: PubMed, Embase, Science Direct, Scopus, Web of Science, and Google Scholar were searched for the related keywords. The retrieved articles were reviewed and evaluated by the research team. Only those articles that either introduced the ResearchGate social network features or explored the opportunities and challenges of using it for the academic community were selected at the discretion of the researchers to be included in the research population. It should be noted that in terms of time, no specific restrictions were imposed on search formulas; however, the latest and more authoritative articles were chosen for the study. In terms of language, only English language articles were selected. Finally, the selected articles were reviewed to answer the research questions, and the information required for the research was extracted.

Results

In achieving the research objectives, the findings are extracted from the articles and shown in Table 1.

Table 1. Research findings related to ResearchGate

Features	Findings	Articles
Research facilities for academic communities	Ability to create a personal profile for researchers to introduce themselves and research records as well as other scientific-research activities; To assign RG score to researchers to determine the extent of researchers' activity at ResearchGate	(5–11)
	Contributing to the formation of a socio-scientific network among researchers and universities	(12–18)
	Access to up-to-date information about researchers and their scientific activities	(5–11)
Opportunities	The effect of presence and activity in ResearchGate social network on citation indicators	(13,14,16,18–21)
	Creating opportunities for membership in scientific circles and human-social networks at the national and international levels	(5–18)
	The effect of using ResearchGate on the ranking of universities in ranking systems	(22–25)
	Problems with how to calculate the RG score	(26–28)
Challenges	ResearchGate score commercial bias	(28)
	Inadequacy of ResearchGate score to assess the scientific credibility of researchers	(26–29)
	Soft approach of ResearchGate network against predatory and fake publications	(30)
	Obvious violation of copyright laws	(31)

Discussion

This section discusses the features and capabilities of the ResearchGate, the opportunities it offers to the academic community, and the challenges raised by some researchers.

ResearchGate Features

Effective and efficient collaboration with other researchers, confirmation of the researchers' organizational affiliation through academic e-mail account, networking, communication,

updating, and working on joint projects are some of the facilities that ResearchGate provides to researchers (10). This social network provides opportunities for the researcher to stay up to date with network and research news, allow the creation of specialized profiles, access information of interest, and follow other users who work in similar research fields (11). Researchers have no restrictions on uploading articles to their profiles. In addition to journal articles and conferences, they can upload



raw data, negative research results, and unfinished research. As a result, others do not make previous mistakes, and there is hope that their scientific research will be completed as soon as possible.

The most important feature of ResearchGate is the score assigned to researchers who are members of this network. The RG score is the interaction between researchers, which is an important part of the research process that makes this interaction observable and measurable. The RG score is a tool for measuring the scientific credibility of researchers on the ResearchGate social network. By sharing their compilation, researchers are able to take advantage of immediate peer feedback. The researchers' writings will also be a source of credibility, as all the activities that the researcher does in the ResearchGate network will be among the factors that increase the RG score. The criterion for calculating the RG score in terms of four factors includes the number of shared writings, the researcher's activity in asking questions, and answering questions from others and followers. RG score increases when a researcher raises a question on ResearchGate, answer other people's questions or uploads information to their profile. Besides, when a person with a high RG score communicates with the researcher, these interactions positively affect increasing the person's RG score. A researcher's score is calculated based on how, to what extent, and which of the network's researchers interacted with the researcher. Increasing the RG score, in addition to increasing the researcher's credibility, will also increase the RG score of other researchers who interact with him/her (7). An RG score can determine users' presence and activity in ResearchGate and help in the relative recognition of active members in this network.

According to the latest information recorded on the ResearchGate website, this network has partnered with major international publishers, including Wiley, Springer Nature, Cambridge University Press, Thieme. Accordingly, these publishers' research is easily observable and accessible, used by researchers, and can be re-shared (7).

Opportunities

Given that faculty members are one of the main components in universities' educational structure, the realization of universities' mission depends on the ability and effectiveness of faculty members as the main human resources. Faculty members are considered an important factor in the production, transfer, and dissemination of knowledge in university departments. So, they can exchange tacit information and knowledge with others through scientific communication. Obviously, researchers' mere production and dissemination of scientific results are not enough, but these documents should be shared with other researchers (22). In this regard, the existence of networks and communication links helps the advancement of science and the sharing of information and knowledge. The results of various studies have shown that some faculty members in ResearchGate have profiles and are active (12–18). Typically, the goal of faculty and academic researchers is to publish articles that have a greater impact on science by receiving more citations. Besides, receiving more citations is effective in career advancement and promotion of researchers. Among the reasons for the low average number of faculty members' citations are the low number of publications, lack of open-access policy, and less access to these publications. Also, the non-membership in the ResearchGate social network

can be mentioned as one of the reasons for the low number of citations, which has been confirmed by various studies (15,21,32,33). Therefore, the use of the ResearchGate social network can provide a platform to increase the visibility of researchers' works and lead to the wider dissemination of their research results.

Citing scientific-research outputs is essential. Considering that more than half of the published articles are never cited, and this non-citation may be due to reasons such as lack of timely publication, inability to use the content due to access restrictions, lack of visibility, and non-indexing publication in the valid databases. Therefore, measures should be taken to increase citations. By sharing scientific works with other researchers, it is possible to increase these works' citation rates (22). Various studies have shown that open access and visible articles receive more citations than other articles (34–37). Also, the results of various studies show that there is a significant relationship between RG ResearchGate score and citation indicators. There is also a significant correlation between Scopus citation indicators and ResearchGate indicators (14,16,18,19). Given the role that the ResearchGate social network can play in increasing the visibility of researchers' scientific outputs, the use of this network can be considered as one of the tools to increase the rate of citations. Accordingly, faculty members can increase their citations more than before due to the capabilities of this network.

On the other hand, the results of various studies have demonstrated that researchers who were more active in ResearchGate and scored higher RG, their H-index is higher than other members (13,14,16,18,21). Therefore, ResearchGate can be considered one of the appropriate tools to increase the researchers' H-index (14,20). Since one of the indicators in the methodologies of different university ranking systems is the number of citations received by articles (38–40), it can be said that using ResearchGate can provide a basis for improving the ranking of universities. As mentioned earlier, ResearchGate can increase the visibility of articles and provide more citations for articles, so ResearchGate can be effective in improving universities ranking in universities ranking systems.

In this regard, the results of a study conducted to investigate the participation of Iranian universities of medical sciences in ResearchGate indicated that medical universities whose faculty members are most active in ResearchGate are ranked higher in the Leiden Ranking system(23). The research that was carried out to examine the activity of Iranian universities and research institutes in the ResearchGate social scientific network revealed that universities and institutes that have been very active in ResearchGate are in a better position in ranking Iranian universities than other universities (22).

Challenges

Despite the many opportunities that the ResearchGate social network presents to the academic community, it has also been criticized. Some researchers have found serious flaws in the ResearchGate score. They state that the ResearchGate score is not transparent and is irreproducible (26,27). Others have suggested that the ResearchGate score seems to be more of a tool for implementing the ResearchGate owner's entrepreneurial strategy than an academic evaluation indicator (28). For these reasons, researchers have not considered the ResearchGate score to be a suitable criterion for measuring academic credibility and evaluations in general (26–29).



On the other hand, researchers believe that with the growing market of publications and increasing progress in the research area, this social network has become a victim of cybercrime of predatory publications, counterfeit publishers, and fake impact metrics. The reason for this is the soft approach of this social network in dealing with these criminals in the scientific environment (30). Some studies also confirm the obvious violation of copyright laws in this social network (31).

Despite the criticism, the ResearchGate social network's impact on increasing the visibility of scientific products and, as a result, increasing the citation indexes is not hidden from anyone. However, this network must take effective measures to clarify its policies and eliminate the concern about the spread of scientific pollution. Therefore, academic communities can confidently use it to evaluate scientific credibility and academic evaluations and confidently identify human networks in their desired scientific fields.

Conclusion

Scientific-social networks are one of the suitable platforms for disseminating scientific outputs. In addition to being a tool for finding research related to researchers' fields of interest, these networks have provided the possibility of interaction between researchers by creating a dynamic environment. Easy accessibility and increasing the visibility of research outputs is one of the most important features of academic-social networks, such as ResearchGate network. According to the findings of this study, there has been a significant impact on increasing researchers' research outputs and thus increasing citations. Researchers' participation in academic-social networks, especially the ResearchGate social network, has a great impact on increasing citation indicators, including the number of citations and H-index. Also, researchers' activity in academic-social networks will have favorable results in raising institutions and universities' ranking.

Increasing awareness about the benefits of using the ResearchGate network and sharing the scientific outputs of

researchers in this network seems to be very useful in researchers and universities' scientific promotion. However, in addition to the benefits, the network needs to be informed about the drawbacks and threats such as copyright violation, scientific pollution, and predatory publications. It seems that academic librarians can play a positive role in this regard. Holding workshops on the opportunities and challenges of using ResearchGate to familiarize researchers with the network and policymakers and decision-makers in the field of academic evaluation can provide a clear vision of the conscious use of this social network.

Declarations

Acknowledgement

None

Conflicts of Interests

The authors declare no conflict of interests.

Ethical statement

The Research Ethics Committee has approved this research under the ethical code number: IR.SBMU.RETECH.REC.1398.606. Researchers have complied with all ethical requirements throughout research.

Funding and support

This research has been funded by the School of Allied Medical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran (grant number 21269).

Authors' contributions

Dr Saeideh Valizadeh-Haghi contributed to this study by leading the research team, framing research objectives, and revising the manuscript. Azam Shahbodaghi contributed to this study by framing the methodology and revising the manuscript. Hamed Nasibi-Sis contributed to this study by carrying out literature review and data collection and writing the initial version of paper jointly with co-authors.

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