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# Research Impact of the Iranian Publications on Social Networks in Scopus Indexed

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# Research Impact of the Iranian Publications on Social Networks in Scopus Indexed

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## *Abstract*

Due to the major role of research in sustainable development of countries all around the world, mapping the scientific production must be designed according to indexed in databases. The purpose of the present study is to analyze Iranian literature on the field of social networks in comparison with the same studies at cross the Middle East and the world level. This is a research is a descriptive study. A total of 123,609 documents indexed pertained to this topic were processed from 1970 to the end of 2017 indexed in the Scopus database. Excel software was used to analyze the data. Different study types, characterized by years, city/country of origin, journals and more productive authors, the ratio cooperation between them by country and institutions, cites and H index. Data was collected and analyzed in Microsoft Excel software. Finding showed that United States was the highest producer (% 29.74), followed by China (%11.85) and Iran ranked 31th among the countries of the world and also 3th among the Middle East countries (H index=23). Although, the ratio of scientific production in bibliographical databases, particularly regional, is still relatively impressive then it is necessary to promote more research on it.

**Keywords:** Social Networks, Social Networking, Science Production, Research literature, Scientometrics, Iran

## I. INTRODUCTION

Currently, global Internet usage and the rise of its users have led to a new generation of Web sites called Web 2.0, which is more attractive, easier and more practical. Today, attention to web 2.0 issues has grown considerably, especially social networks. Social networks cause people with common interests, activities, insights, backgrounds, and/or friendships get together (1). The most important benefits of implementing Web tools (blog, Facebook, wiki, podcast and social networks) are the formation of collaborative groups and interactive environments. With the popularity of social networking sites, as an interactive web tool, more people can become part of an online community. Therefore, it affects many human relationships. Social interactions in these networks are crammed full with positive and negative relations. Positive relations are formed by support, endorsement, and friendship and thus, create a network of well-connected users which is useful for the promotion of market products, brands, services and new research ideas on social media (2). Negative relations, on the other hand, are a result of opposition, distrust, antagonism, and avoidance. Negative relationships represent a persistent, recurring set of negative social intentions toward another person (3). There are numerous researches available on different aspects of working done on social networks in Iran and world (4). Anyway, the main focus of our work is on social networks field, not only because of the importance of these fields but also because of special publication patterns. Due to one of the fundamental indicators is the number of published articles or scientific productivity in a specific field of science, so present article investigates to find a sketch of Iran's scientific production. Based on Iran's 20-year national vision, Iran must gain the first economic, scientific, and technologic rank among Middle East countries.

Nowadays, one of the key problems encountering scholarship is the growth in the number of its literature. On the other hand, Scientometrics indicators such as a number of papers, number of citations and citation per paper have become increasingly important as instruments for appraising scientific activities and their relationship with economic and social development (5). So, Metrics based on this data could build a "Scientometrics," supporting richer and timely pictures of articles impact. Scientometrics with its diverse indicators is a trustworthy method for appraisal of scientific development and productivity (6). Therefore, the purpose of this study is to investigate the portion of Iran's scientific production in field of social networks along a line with global and regional rates. We first reviewing our historical and quantitative data and methods, discuss regional trends in science production and within the center of science on this field, then, we present findings on ranking science production in each country, emphasizing the strong and growing contribution of research.

## II. OBJECTIVES

The main purpose of this research paper was to compare across countries to better understand how the growth of research on social networks and we address the other objectives, as follows:

- Identifying various kinds of manuscripts in the field of Social Networks (SN)
- Examining the chronology wise contribution of scholarly communications
- Analyzing highly cited articles as well as source journals in Social Networks
- Ranking of the top 10 countries in the field of Social Networks
- Ranking of the Middle East countries in the field of science production in the field of Social Networks

- Identifying the trend of Iranian science production in the field of Social Networks
- Ranking of the top universities in Iran in the field of scientific production in the field of social networks
- Investigating the scientific cooperation with Iran in the field of social networks
- Observing the subject dispersion of Iranian Scientific Productions in the field of Social Networks

## II. METHODS

This research is a descriptive study. In this study, all of the indexed social networks documents were reviewed at the Scopus database from up to 2017. We know that the number of citations could vary depending on each database (Web of Knowledge, Scopus and Google Scholar, etc.)(2). Scopus, which is the database consulted in this study, stores the most relevant scientific literature produced and published worldwide in different areas of knowledge and disciplines, particularly computer science(3). The choice of such a wide coverage of the study was necessary because the subject of social networks was studied by researchers from many different fields of science such as humanities, science and technology, computers, engineering, medicine, law, politics, and so on. Given that a large percentage of computer science products, including the subarea of social networks, are published as conference papers, due to the fact that Scopus focuses more on indexing conferences of major associations of computer science (3), so it was found to be more suitable for the implementation of this research. Hence, all of article indexed by Scopus which listed as their affiliated country was processed based on keywords such as social network, social networks, and social networking. Then the obtained results were evaluated based on various Scientometrics indices. Excel software was used to analyze the data.

## III. FINDINGS

### Manuscript type

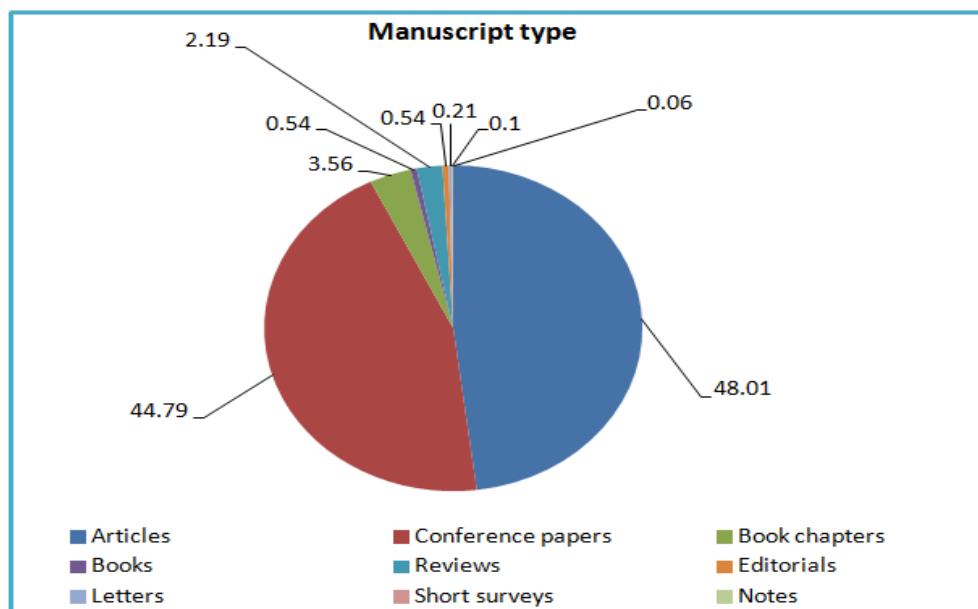
Table 1 (fig.1) depicts that the various kinds of nine manuscripts such as research articles, conference papers, book chapters, books, reviews, editorials, letters, short surveys and notes were covered in social networks research. Generally, in any scientific publications survey research articles are predominant. As expected, it is found that among the 4832 scientific output, the major proportion of 2320 (48.01%) documents were occupied research articles and ranked first and followed by the next productive manuscripts were conference papers with 2164 (44.79%) documents. The third place goes to book chapters with 3.56 percent and the least amount of documents were notes with 3 (0.06%). based on the analysis, the findings indicates that more than 96 percent of documents were includes articles, conference papers and book chapters and it shows that researchers from Iran, are interested to prepare first research papers and then conferee papers and book chapters. it is also found that the researchers were less interested to prepare books, reviews, editorials, letters, short surveys and notes. Therefore, this analysis suggested to researchers who are involved in research should concentrate other items such as books, reviews, editorials, letters, short surveys and notes etc.

Table. 1. Manuscript type

S. No	Type of manuscript	Records	Cum. Records	Percentage	Cum. Percentage
1	Articles	2320	-	48.01	-
2	Conference papers	2164	4484	44.79	92.80

3	Book chapters	172	4656	3.56	96.36
4	Books	26	4682	0.54	96.90
5	Reviews	106	4788	2.19	99.09
6	Editorials	26	4814	0.54	99.63
7	Letters	10	4824	0.21	99.84
8	Short surveys	05	4829	0.10	99.94
9	Notes	03	4832	0.06	100
Total		4832		100	

Figure. 1. Type of Manuscript



### Chronology wise distribution

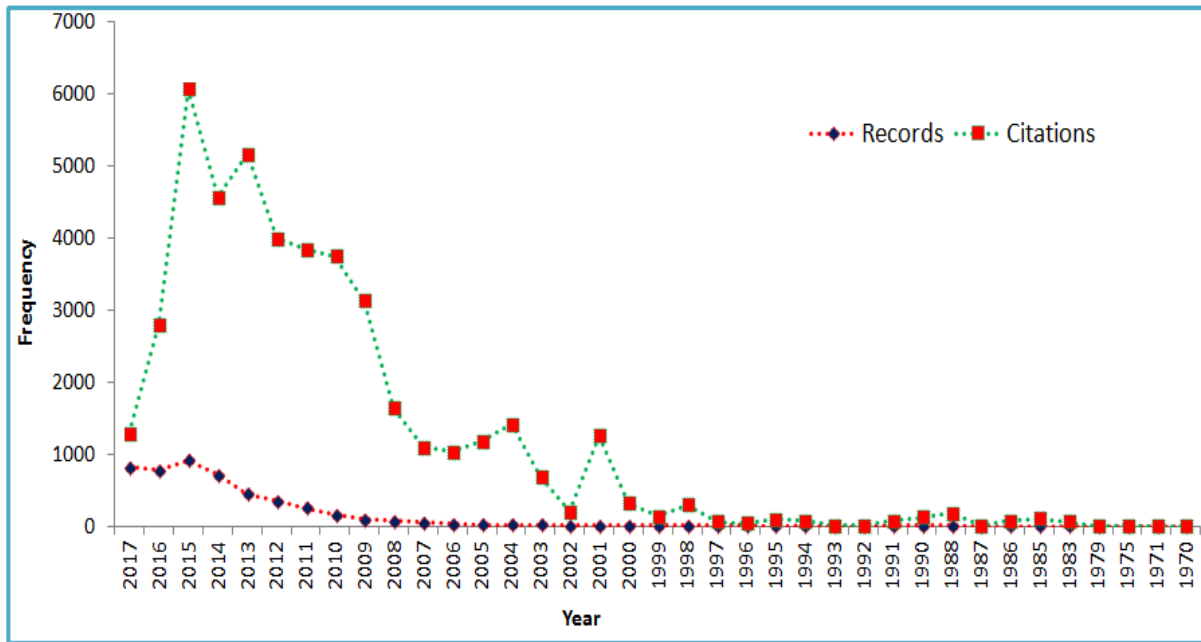
Forty eight years of social networks related scientific publications retrieved using the Scopus bibliographic database for period between 1970 and 2017. The data covers a total number of 4, 832 scholarly papers and the average paper per year is 130.5945. The total number of 44, 823 citations in the field of social networks and the average citation per paper is 1211.4324. It is found from the table 2 that there is no literature found out during the period such as 1972-74, 1976-78, and 1980-1982, 84, 1989. The highest numbers of publications were 813 (16.8%) published in 2017 and these publications have acknowledged 1282 citations and the average citation per paper was 1.58. table 1 (fig.2) represents the year wise growth of publications and their citations. it is counted and analyzed the declining trend in the number of publications in social networks research was observed since 1970 to 2009. It is identified in the year 2010 onwards the level of growth in terms of publications was increased in the field of social networks. As pointed out by Kademani et al, (2011) that the more number of literatures output in a particular year received the more number of citations which indicates the quality and quantity of research invariably go hand in hand. In this research, we can see that the growth trend has gradually increased during the research.

Table. 2. Year wise distribution in Global level

Year	TP	% share of TP	TC	% share of TC	ACP
2017	813	16.8%	1282	2.9%	1.58
2016	781	16.2%	2799	6.2%	3.58
2015	912	18.9%	6070	13.5%	6.66
2014	719	14.9%	4574	10.2%	6.36
2013	447	9.3%	5172	11.5%	11.57
2012	353	7.3%	3999	8.9%	11.33
2011	252	5.2%	3845	8.6%	15.26
2010	156	3.2%	3748	8.4%	24.03
2009	100	2.1%	3136	7.0%	31.36
2008	76	1.6%	1643	3.7%	21.62
2007	48	1.0%	1092	2.4%	22.75
2006	30	0.6%	1031	2.3%	34.37
2005	24	0.5%	1178	2.6%	49.08
2004	20	0.4%	1415	3.2%	70.75
2003	23	0.5%	686	1.5%	29.83
2002	12	0.2%	203	0.5%	16.92
2001	11	0.2%	1258	2.8%	114.36
2000	9	0.2%	321	0.7%	35.67
1999	6	0.1%	134	0.3%	22.33
1998	5	0.1%	299	0.7%	59.80
1997	3	0.1%	66	0.1%	22.00
1996	4	0.1%	45	0.1%	11.25
1995	2	0.0%	96	0.2%	48.00
1994	4	0.1%	70	0.2%	17.50
1993	1	0.0%	5	0.0%	5.00
1992	1	0.0%	14	0.0%	14.00
1991	3	0.1%	75	0.2%	25.00
1990	3	0.1%	124	0.3%	41.33
1988	5	0.1%	183	0.4%	36.60
1987	1	0.0%	14	0.0%	14.00
1986	1	0.0%	77	0.2%	77.00
1985	2	0.0%	101	0.2%	50.50
1983	1	0.0%	59	0.1%	59.00
1979	1	0.0%	1	0.0%	1.00
1975	1	0.0%	4	0.0%	4.00
1971	1	0.0%	2	0.0%	2.00
1970	1	0.0%	2	0.0%	2.00
Total	4832	100%	44823	100%	9.28

Note: TP- Total papers, Total Citations-, ACP- Average citations per paper

Figure.2. Trend of the world scientific publications and citations in Social Networks



### Ranking of top ten highly cited Publications

Table 3 reveals that the highly cited Social Networks publications during the period from 1970 to 2017. Goldenberg et al (2001) paper entitled, “Talk of the Network: A Complex Systems Look at the Underlying Process of Word-of-Mouth” which has been published in Marketing Letters,12(3) in the page number 211-223 received the huge number of (918) citations during 2001 and got ranked first and followed by Trusov, et al’s paper “Effects of word-of-mouth versus traditional marketing: Findings from an internet social networking site” in Journal of Marketing,73(5), with 818 citations and occupied the second place and the third rank received by Milo et al’ s paper entitled, “Superfamilies of Evolved and Designed Networks” in Science,303, 5663, with 727 citations. it is observed that among the top ten highly cited publications, most of the papers were research oriented and only one paper from conferee proceeding during the study.

Table.3. Ranking of highly cited publications (top 10)

Rank	Bibliographic details	Time Cited	Type of article
1	Goldenberg, J., Libai, B., Muller, E. (2001). Talk of the Network: A Complex Systems Look at the Underlying Process of Word-of-Mouth. Marketing Letters,12(3), 211-223.	918	Research
2	Trusov, M., Bucklin, R.E., Pauwels, K. (2009). Effects of word-of-mouth versus traditional marketing: Findings from an internet social networking site. Journal of Marketing,73(5), 90-102.	818	Research
3	Milo, R., Itzkovitz, S., Kashtan, N., Levitt, R., Shen-Orr, S., Ayzenshtat, I., Sheffer, M., Alon, U.(2004). Superfamilies of Evolved and Designed Networks.Science,303, 5663,1538-1542	811	Research
4	Song, C., Havlin, S., Makse, H.A. (2005). Self-similarity of complex networks. Nature, 433, 7024, 392-395.	727	Research
5	Noy, C. (2008). Sampling knowledge: The hermeneutics of	389	Research

	snowball sampling in qualitative research. <i>International Journal of Social Research Methodology</i> ,11(4), 327-344.		
6	Amichai-Hamburger, Y., Vinitzky, G. (2010). Social network use and personality. <i>Computers in Human Behavior</i> ,26 (6), 1289-1295	359	Research
7	Bastug, E., Bennis, M., Debbah, M. (2014). Living on the edge: The role of proactive caching in 5G wireless networks. <i>IEEE Communications Magazine</i> , 52 (8), 82-89.	353	Research
8	Davidov, D., Tsur, O., Rappoport, A. (2010). Enhanced sentiment learning using twitter hashtags and smileys. <i>Coling 2010 - 23rd International Conference on Computational Linguistics, Proceedings of the Conference</i> , 2, 241-249	331	Conference paper
9	Peres, R., Muller, E., Mahajan, V. (2010). Innovation diffusion and new product growth models: A critical review and research directions. <i>International Journal of Research in Marketing</i> , 27 (2), 91-106.	324	Research
10	Goldenberg, J., Han, S., Lehmann, D.R., Hong, J.W. (2009). The role of hubs in the adoption process. <i>Journal of Marketing</i> , 73 (2),1-13.	286	Research

#### Highly cites source journals

Table 4 (fig.3) shows the highly cited top ten source journals of social networks which were retrieved from the Scopus database. In this area, only top 10 highly cited journals and their places, h-index and Scimago journal report in 2017 were analyzed. Based on the source journal, it is noted that ‘Marketing Letters’ from Netherlands has got (918) high citations on Social Networks research output and ranked first and its h-index is 55 in 2001 and the SJR is 1.16 during 2017. The next productive journal is ‘Journal of Marketing’ in 2009 with 818 citations on Social Networks literature output from United States and its h-index is 208 and SJR is 8.62. The same journal in the same year cited with different articles and got 286 citations. The third important journal is ‘Science’ during 2004 with 811 citations from United States and its h-index is 1015 and SJR is 14.14. Based on the h-index and SJR the journals ‘Nature’ has occupied first place with 1052 on Social Networks scientific publications and SJR is 17.87 from United Kingdom.

Table.4. Highly cites source journals

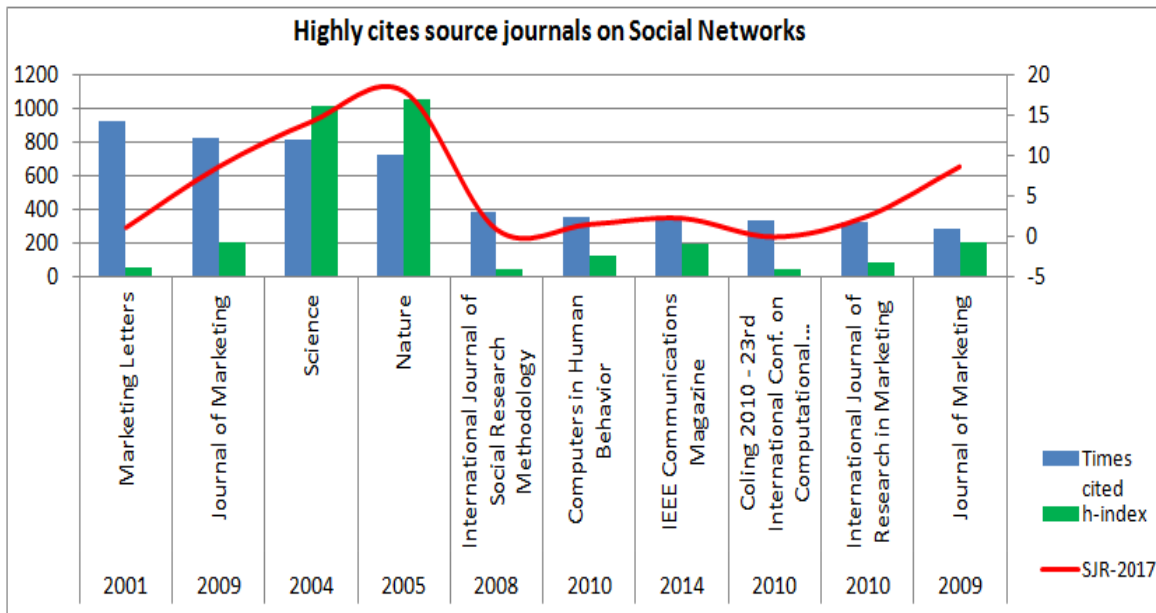
Year	Source journal	Times cited	Place	h-index	SJR 2017
2001	Marketing Letters	918	Netherlands	55	1.16
2009	Journal of Marketing	818	USA	208	8.62
2004	Science	811	USA	1015	14.14
2005	Nature	727	UK	1052	17.87
2008	International Journal of Social Research Methodology	389	UK	44	0.92
2010	Computers in Human Behavior	359	UK	123	1.55
2014	IEEE Communications Magazine	353	USA	199	2.3
2010	Coling 2010 - 23rd International Conference on Computational Linguistics, Proceedings of the	331	USA	43	0



	Conference				
2010	International Journal of Research in Marketing	324	Netherlands	83	2.53
2009	Journal of Marketing	286	USA	208	8.62

Source: h-index, SJR retrieved from SCIMAGO Website: <https://www.scimagojr.com/index.php>

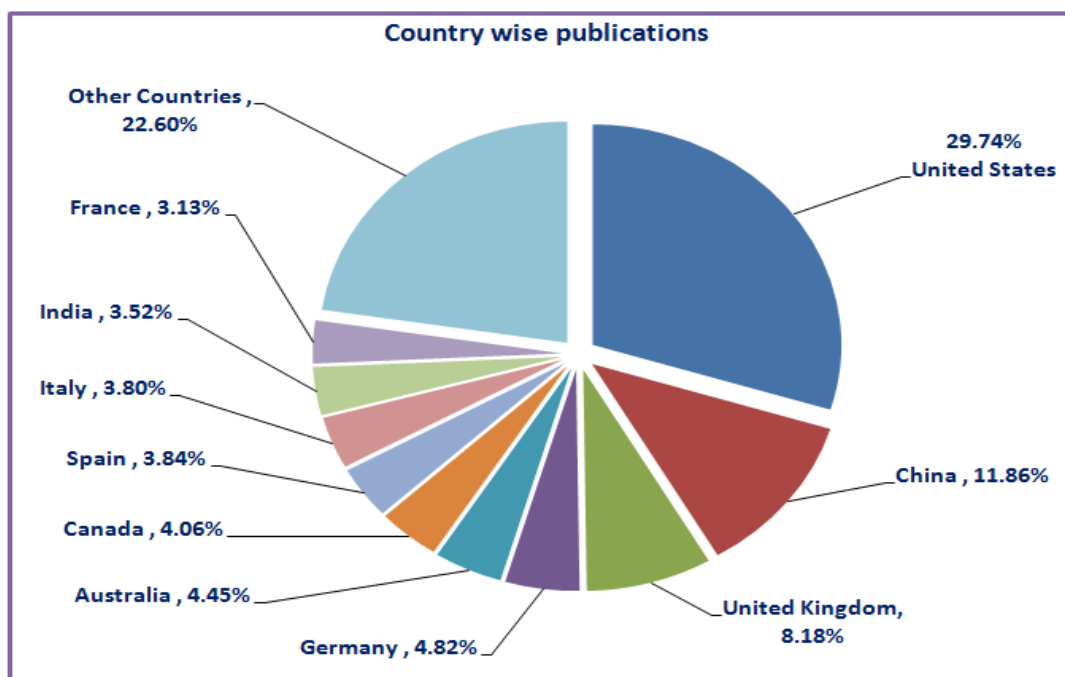
Figure.3. Highly cites source journals



### Country wise publications

A brief revision of science output in the world demonstrates that it has indexed 123,609 documents in the field of SN at Scopus database up to 2017. In the meantime, the portion of the Middle Eastern countries was 4763 documents, and Iran's portion was 880 documents. The survey of global production of social networks shows a modest slowdown between 1958 and 2004. Since 2004, the steep slope has been rising by 2015; so that the number of these documents ranged from 935 in 2004 to 19068 in 2015. From this year, by 2017, we are faced with declining documents in this field. At the international level, the United States (36,767 articles) is ranked the highest in the producing countries of science, followed by China (14,660 articles) and the United Kingdom (10108 articles) ranked second and third. Meanwhile, Iran with 880 documents, is ranked 31th in the international ranking. Figure 4 shows science production of the top 10 countries in the field of social networks based on Scopus database data.

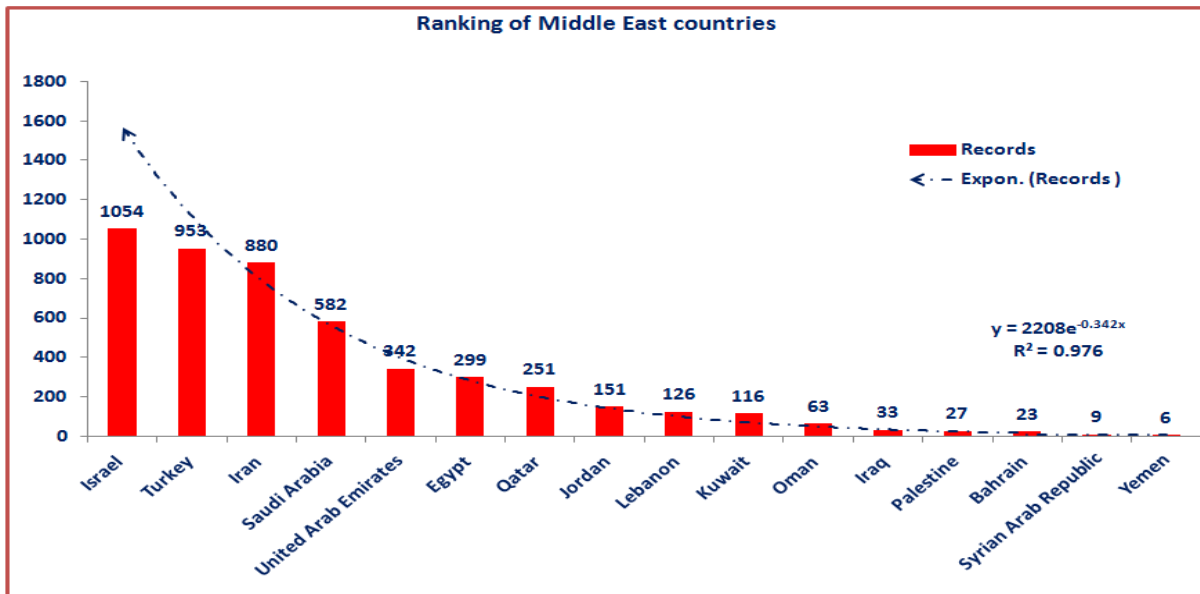
Figure.4. Country wise publications



While comparing all countries around the world in terms of the number of scientific publications which were retrieved from the Scopus database in the field of SN up to 2017, and it is investigated that the most productive country regarding the research paper publications was the United States with 36, 767 (29.74%) articles stands a top the list, and followed by China with 14660 (11.86%) and got second rank and the third rank goes to the United Kingdom with 10, 108 (8.18%) articles. The number of articles at Scopus in other countries, in descending order of frequency, is included: Germany (5964), Australia (5498), Canada (5014), Spain (4741), Italy (4695), India (4350), and France (3875).

A comparison of Iran with other 16 countries until the year 2017 shows that these 16 countries in total register 3.85% (4763 documents) of the science output of the world in Scopus. Israel and Turkey stand atop the list with 22.12% (1054 documents) and 20% (953 documents), respectively, and Iran with a rate of 18.47% (880 documents) stands on third place among these 16 countries. Figure 5 reveals ranking of Middle East countries in this regard.

Figure 5. Ranking of Middle East countries in producing science in social networks



The trend line technique has been applied in terms of exponential growth rate and the y value is  $y = 2208e^{-0.342x}$  and the  $R^2$  value is 0.976. The trend line of the value shows that the growth rate of Middle East countries is gradually increased during the research period.

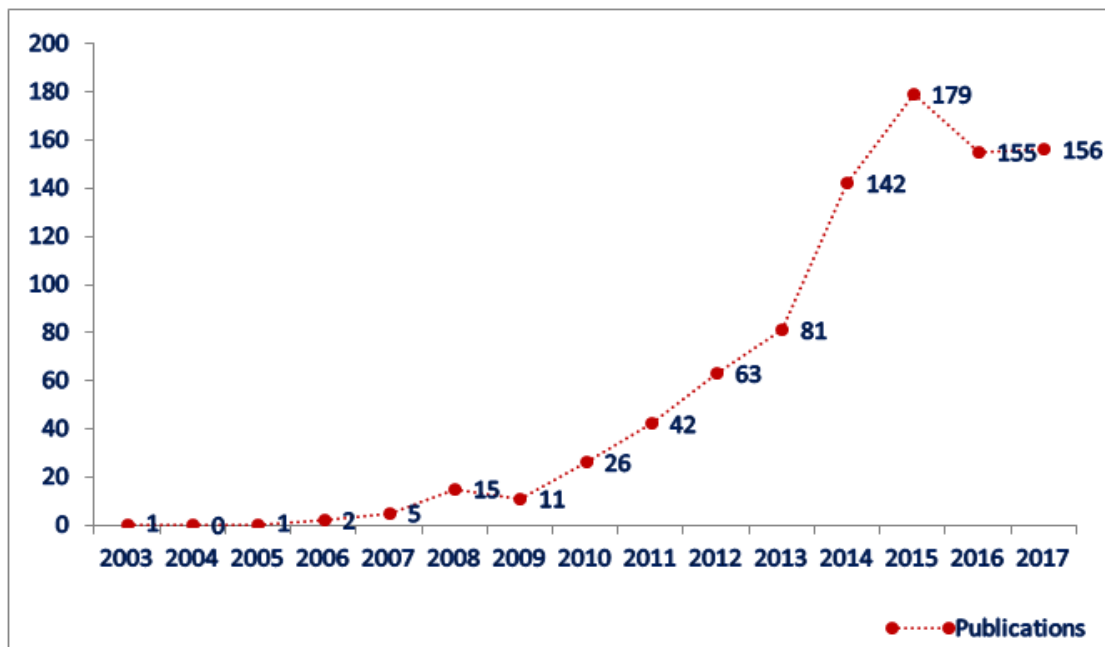


Figure 6 shows the trend of producing Iranian science in the field of SN up to 2017.

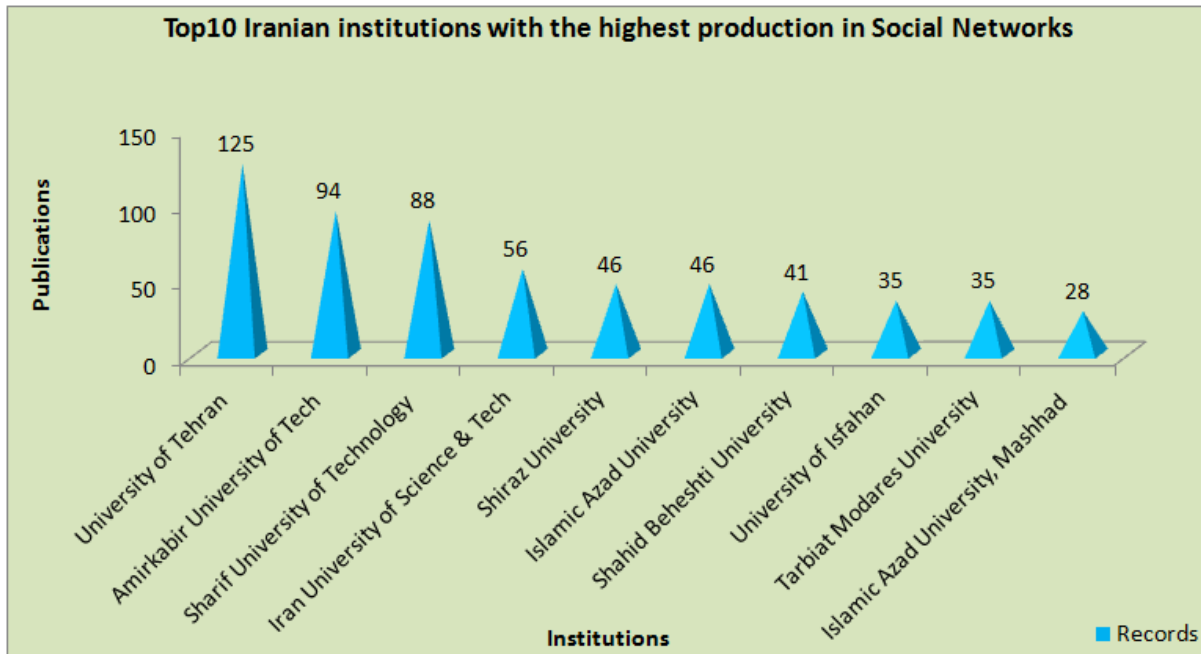


Figure 7. Top10 Iranian institutions with the highest production in the field of social networks

Figure 7 shows the most prolific universities and institutes of Iran in the field of SN up to 2017. According of research results, University of Tehran (125 documents), Amirkabir University of Technology (94 documents), and Sharif University of Technology (88 documents) have had the highest number of articles in all Universities in Iran, followed by Iran University of Science and Technology, Shiraz University, Islamic Azad University, Shahid Beheshti University, University of Isfahan, Tarbiat Modares University, and Islamic Azad University(Mashhad) with 56, 46, 41, 35, 35, and 28 documents respectively.

Scientometrics indices of Iranian scientific production in the field of SN at Scopus database are presented in Table 5 . These indicators include the number of documents, the number of citations, the average citation per document, the number and percentage of documents resulting from international cooperation in this regard at the end of 2017. This information is compared with the same indicators over a five-year period from 2013 to 2017 at Scopus database.

Table 5. Comparing Iranian scientific products in the field of social networks in all years and 5- year period

Year	Total Documents	Total Citations	Citation per Document	h-Index	International Collaboration #	International Collaboration %
All Years	880	3046	3.46	23	257	29.20
2013-2017	713	2598	3.64	17	200	22.72

The findings showed that all of the Iranian documents are 880 documents with 3046 citations in the field of social networking at Scopus (Table 5). In the 5-year period, there are 713 documents with 2598 citations received. In fact, roughly 85% of the total citations refer to indexed documents in the last five years.

Average citation per paper is one of the most important quality indicators to evaluate and rank the articles, researchers, subject areas, and countries. The citation per document for all documents determined 3.46, while the same indicator was 3.64 over the five year period. H-index of total documents has obtained 23 while H-index of the 5-year period was 17. The number and percentage of international cooperation for all documents were 257 and 29.20 respectively, and for the years 2013 to 2017, reached 200 and 22.72, respectively.

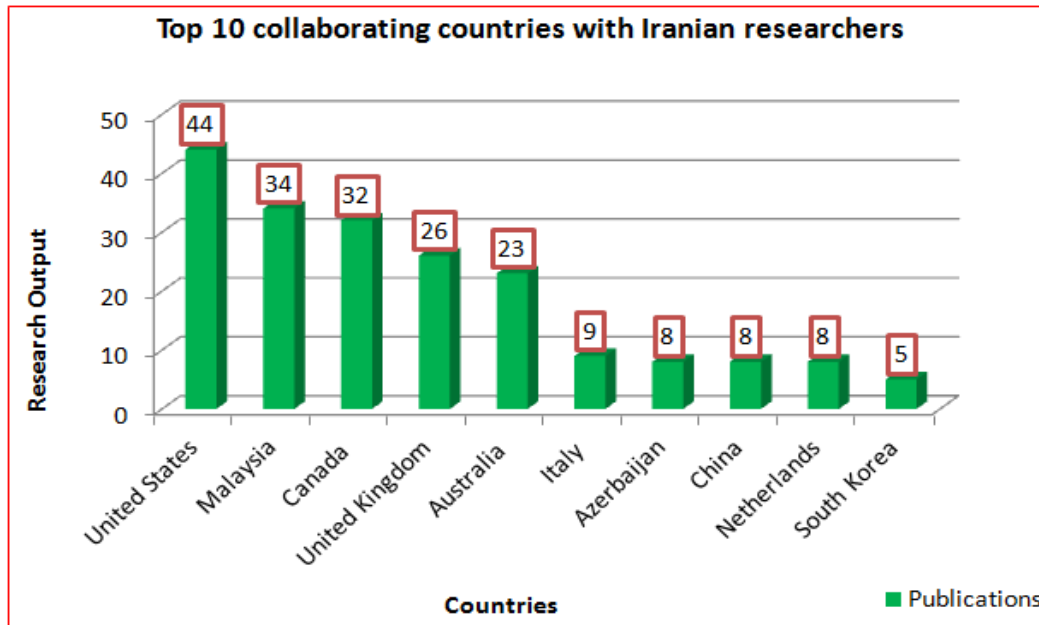


Figure 8. Top10 collaborating countries with Iranian researchers in the field of social networks

Figure 5 reveals ten top countries that have the most cooperation with Iran in the field of SN products. In this research was considered documents had one foreign author at least as international cooperation. Results show that the highest level of Iran's cooperation has been with the United States with 44 articles, followed by 34 and 32 joint articles with Malaysia and Canada.

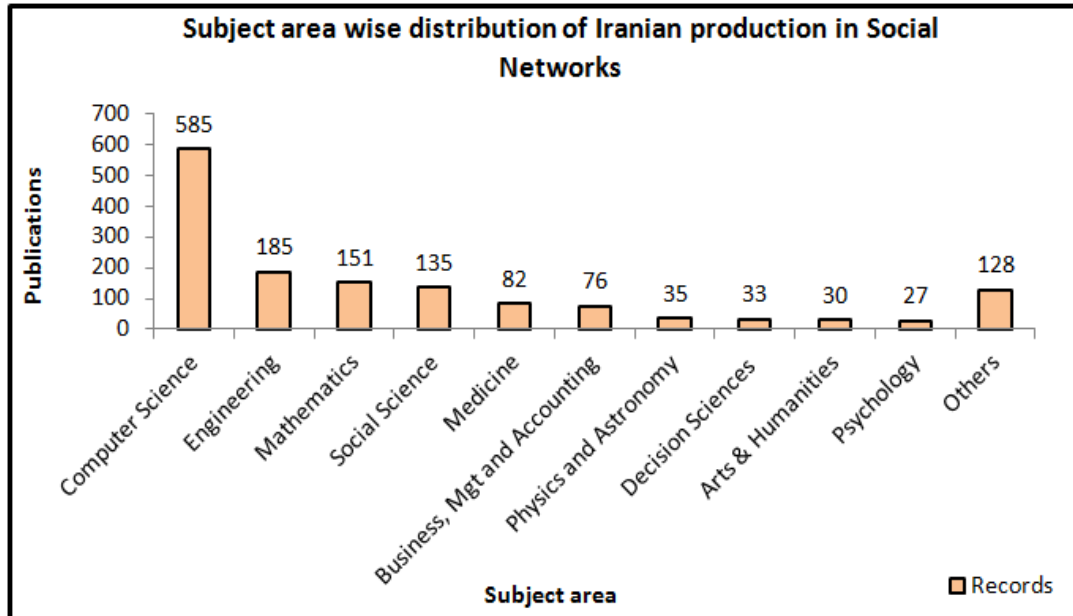


Figure 9. Subject area distribution of Iranian production in the field of social networks

Scopus database itself categorized published papers in different subject areas. It is inferred from the above figure 9 that represents the subject distribution of Iranian scientific products in the field of SN indexed in Scopus database during the research period. Based on the data, the Iranian documents in the field of social networks were distributed and found most of the research publications (585) were in the fields of Computer Science and got placed first and followed by Engineering got second rank with 185 publications and the third place goes to Mathematics with 151 research output. It is noted that most of the Iranian researchers are very interested to produce the research papers in the field of Computer Science and next to Engineering.

#### IV. DISCUSSION

There has been some research on the global scientific production(4–14). There are also studies of Iranian scientific production/productivity in specific areas such substance use and addiction(15), sports(7), gastric cancer(6), immunology(16) and etc. Social networks are an example of complex systems consisting of nodes that can interact with each other and based on these activities the social relations are defined. Online social networks are becoming popular among a large number of people, as a source of forming virtual communities online. These communities are developed by creating profiles and maintaining personal contacts of each user through social interactions. Most OSNs are Web-based and allow users to upload profiles (text, images, and videos) and interact with others in numerous ways". SNS are becoming an integral part of many people's daily lives(17–19). According to Studies revealed that majority of publications of Iranian research were including nursing, traditional medicine, immunology, orthopedics, dentistry and parasitology in recent years(16,20). The dynamics and evolution of social networks are very interesting but at the same time very challenging areas of research. Most bibliometric studies in computer science are on the analysis of social networks

of researchers. The goal of this paper is to study Iranian production in the particular scientific area of Social Networks, in the period of up to 2017.

Collaboration is a fundamental aspect of scientific research activity, especially international collaboration. Also, it is considered the key issue for solving complex problems in many areas of science (21). The practice of collaboration and especially international collaboration is becoming a widespread phenomenon. Some studies have shown a constant increase in terms of the number of papers with international collaborations (22,23) and enhance the quality of research, resulting in higher numbers of scholarly output and higher impacts(24). According to the present finding, the rate of international cooperation among Iranian researchers in social networks with other researchers reported %29.20. In other words, 29.20% of the Iranian productions have been done by affiliation at least one non-Iranian. However, the level of international scientific cooperation among Iranians in the fields of nursing and information security reported 22.12 (25), 26.08 (26) respectively. The findings of this study showed that at the end of 2017, the United States as the most important collaboration partner of Iranian researchers' publication, followed by Malaysia and Canada in pertaining to this field. It seems that more growth of international cooperation in the field of social networks can be more effective in advancing the field of computer science and technology in Iran.

Several studies confirmed an increase in scientific production in all fields in Iran. Saboury evaluated Iranian papers in Web of Science from 1993 to 2002 and compared research status of Iran with other Asian countries(27). He concluded that the percentage of Iranian scientific production experienced a relatively good increase during the mentioned time span. Osareh and Marefat(28) studied the scientific growth of Iranian researchers based on Medline database from 1976 to 2003 and reported a sharp increase in Iranian science production towards the end of that time span. Moin et al (25)also evaluated the scientific output of Iran from 1967 to 2003 and compared Iran with 15 countries in the year 2000. Accordingly, Iranian contribution to science increased from 0.0003% in 1970 to 0.29% in 2003. Noroozi et al (29) compared Iran, Turkey and Egypt scientific productions indexed in WOS from 2005 to 2006. According to this study, Turkey, Iran, and Egypt stood in the first, second and third place, respectively, among the Middle East countries.

In Iran, the number of published articles has increased significantly in the basic and applied sciences including medicine and its subspecialties during the recent years. In 2006, Butler reported that Iran after Turkey stood in the second position amongst Islamic countries according to the number of published papers. The survey of global production of social networks indicates a modest slowdown between 1958 and 2004. The publication curve has been rising from 2004 to 2015, but thereafter, by 2017, we are faced with declining document. At the international level, the United States is at the forefront of the producing countries of science in this area, followed by China and England. Iran is ranked 31th position.

To further approximate the USA proportions, Iranian researchers should increase the number of papers published in the Scopus indexed journal, in particular, the top-ranked Cite Score journals. China is a scientific puzzle. The volume and growth of Chinese SN production are surprising. We are accustomed to large figures of Chinese economic growth, but science has a different dynamics than the economy. One cannot create scientists in a few years even with very large investments. It is possible that China is now reaping the benefits of a long-term policy of sending computer science students to study abroad, especially in the USA. It is also possible that such growth is only possible under a more authoritarian control of the scientists themselves. Another explanation is that the index services are with time; including more

Chinese publications in their set of indexed journals. In fact, not only Scopus has some Chinese journals on its list, but there are a few Elsevier journals published in English that seem to have a majority of Chinese editors and authors(3). If, on one hand, it is interesting to know how Chinese SN achieved such success in terms of publications, how SN research is organized in China, and how the computer science researchers overcome the problem of publishing in English, on the other hand, it is unlikely that many of these policies and practices can be adapted to Iran, given the size and culture differences. Closer to the Iranian scenario are the countries of Middle East. We believe that the Iranian computer science community should carefully look into how SN research is organized in Israel and Turkey, and should search for data that would allow some evaluation of the productivity of computer science research in these countries. In the Middle East, Israel, Turkey, and Iran are ranked as first, second, and third respectively. Meanwhile, Iran is ranked second in the Middle East as nursing studies(25), and also in the field of information security, it is ranked first in the Middle East (26).

If indeed SN researchers in these countries have higher productivity than Iranian SN researchers, it would be very interesting to compare the cultural and organizational conditions that foster this increased productivity. Is the amount of time dedicated to research (as opposed to teaching and administration) in these countries larger than in Iran? Do researchers in these countries have a better acceptance rate in journals (because of better English writing, better access to editors, better knowledge of what are the hot research topics)? Do Iranian SN researchers produce more “invisible work” than other countries? Do researchers in these countries have a more competitive environment or a more collaborative one? Are international co-authors a factor in the increased productivity? These and other questions are of particular interest if the Iranian computer science community hopes to achieve a production level comparable to these countries.

In Iran, the University of Tehran has the most scientific output in the field of social networks; this finding is consistent with the previous review which stated that the University of Tehran has the most scientific output in the majority of scientific fields (25,27,30), followed by Amir Kabir University of Technology and Sharif University of Technology. According to research findings, more than 80% of Iran's scientific productions in the field of social networks have been published over the five-year period from 2013 to 2017.

In scientific circles, the reference is the information that is necessary to the reader in identifying and finding used sources. In terms of quality indicators, Iranian scientific productions in the field of social networks are in a relatively favorable situation. So that a total of 880 Iranian articles in this field received 3046 citations. The citation index for each article is 3.46, which was obtained 3.64 over the five-year period. In other words, in the last 5 years of the research period, Iranian articles have received more citations. This finding is also in line with the field of poisonous animals, the index was cited for each article 4.15(16) and in the modern Chinese medical biology field 3.9 (31). Also, toxicology was 3.48 (20). In addition, Velmurugan and Radhakrishnan (32) pointed out to evaluate the Nanotechnology papers in global level. Further, the authors evaluated scientometrically in terms of scientific publications in the field of Phytochemistry during 1994-2014 (Velmurugan and Radhakrishnan, 33). They also (34) analyzed the literature output on social media for period of 24 years between 1992 and 2015. Velmurugan and Radhakrishnan (35) visualized scientometrically the global Nanotechnology literature during 1989-2014. Energy and Environment Research Productivity in Australia by Velmurugan and Radhakrishnan (36),



## V. CONCLUSION

An important point of this paper is to provide some intuitions to measure and if necessary improve the Iranian social networks production. On the basis of Iran's 20-year national vision document, Iran is pictured as the highest developed country in science/technology by 2025. Due to the major role of research in the sustainable development of countries, research policies should be formulated according to the updated information on science production and research output of each country. The number of published articles of a country is a frequently used Scientometrics indicator of the scientific position of that country. Considering that social networks are used for many different political, economic, and social purposes, it seems better, Iran and other countries to develop their scientific cooperation programs as a desirable opportunity to benefit from the knowledge and experience of advanced countries in providing social Web sites and educational and research potential in this.

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### **Conflict of Interests**

Authors have no conflicts of interests.

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