Journal of Knowledge-Research Studies

Shahbazi, Rahim (2022). Analysis of Twenty Years Scientific Outputs of Chemistry of University of Tabriz, Azarbaijan Shahid Madani University and Sahand University of Technology Based on the WOS Database (1999-2018). *Journal of Knowledge-Research Studies*, 1 (1), 75-92.

DOI: 10.22034/jkrs.2021.47882.1008

URL: https://jkrs.tabrizu.ac.ir/article_14078.html

Analysis of Twenty Years Scientific Outputs of Chemistry of the University of Tabriz, Azarbaijan Shahid Madani University and Sahand University of Technology Based on the WOS Database (1999-2018)

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Received: October, 20, 2021; Accepted: December, 27, 2021

Abstract

Purpose: This study aimed to evaluate the scientific outputs of Azarbaijan Shahid Madani University, Tabriz University, and the Sahand University of Technology from 1999 to 2018 Based on the WOS Database.

Methodology: The present study was applied in a descriptive survey (with a Scientometrics approach). The research population was the indexed papers in WOS databases from 1999 to 2018. Data related to articles with the affiliations of (AD=Azarbaijan Shahid Madani University), (AD=Tabriz University), and (AD=Sahand University of Technology) were searched in the WOS. Then, the time limit for the scientific output was defined, and the final research was conducted. Lastly, Histcite and VOSViewer software were used to analyze the data and draw scientific maps.

Findings: The results demonstrated that the WOS Database records indexed for the University of Tabriz, Azarbaijan Shahid Madani University, and Sahand University of Technology during the last twenty years (1999-2018) were 1723, 279, and 365, respectively. Of course, science production in chemistry at the University of Tabriz, Azarbaijan Shahid Madani University, and the Sahand University of Technology have confronted a decrease in 2018, 2017, and 2015, respectively.

Conclusion: The growing trend of chemical science production in Tabriz University, Shahid Madani University of Azerbaijan, and the Sahand University of Technology from 1999 to 2018. Of course, in this field, science production in these three universities has been accompanied by a decrease during 2018, 2017, and 2015, respectively.

Value: The present study has studied the scientific productions of Azarbaijan Shahid Madani University, Sahand University of Technology, and Tabriz University in the field of chemistry for the first time.

Keywords: ***Scientific outputs, Scientometrics, Bibliometric, Citation analysis, Department of Chemistry***

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Extended Abstract

Purpose

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Table 1. Part of the trend of science production in the University of Tabriz, Azarbaijan Shahid Madani University, and the Sahand University of Technology in the field of chemistry (1999 to 2018)

Row	Univ. / Year	Azarbaijan Shahid Madani University		University of Tabriz		Sahand University of Technology	
		Freq.	%	Freq.	%	Freq.	%
1	2018	61	21%	209	12%	72	19.7%
2	2017	55	19%	215	12.5%	60	16.5%
3	2016	61	21%	198	11.5%	52	14.2%
4	2015	57	20%	168	9.7%	38	10.4%
5	2014	28	10%	108	6.2%	42	11.5%
Iran's share of total chemistry articles published in the world (1999-2018) = 61499 Records, Ranked 14th in the world (1.77%)				Total number of chemistry articles published in the world (1999-2018) = 3463934 records			

According to the findings, Azarbaijan Shahid Madani University had the most scientific cooperation of 27 works (9.5%) with the University of Tabriz in the science production in chemistry. The University of Tabriz also had the most rate with the Tabriz University of Medical Science with the output of 233 articles (13.5%), and the Sahand University of Technology had the most scientific cooperation for 22 articles (6%) with the Islamic Azad University of Tabriz in the production of chemistry science.

As presented in Table 2, in the years 1999-2018, the first rank in the chemistry production was dedicated to Mohammad Taghi Zafarani Moattar in the University of Tabriz with 147 articles (8.5%), Jaber Jahanbin in Azarbajian Shahid Madani University with 40 articles (14.3%), and Mohammad Haghighi in the Sahand University of Technology with 79 articles (21%). The second and third place in the University of Tabriz

were assigned to Alireza Khataee (118 records) and Mir Ali Farajzadeh (109 documents). In the Azarbaijan Shahid Madani University, the second and third ranks belonged to Biook Habibi (26 documents) and Zulfiqar Rezvani (26 documents). Also, Mehdi Salami Khalaji (34 documents) and Hossein Roghani Mamaqani (28 documents) were the second and third places of Sahand University of Technology, respectively.

Table 2. The most prolific authors of the University of Tabriz, Azarbaijan Shahid Madani University, and the Sahand University of Technology in the field of chemistry (1999 to 2018)

Rank	Azarbaijan Shahid Madani University			University of Tabriz			Sahand University of Technology		
	Author	Freq.	(279) %	Author	Freq.	(1723) %	Author	Freq.	(365) %
1	**Jahanbin Sardroodi J**	**40**	**14.3%**	**Zafarani-Moattar Mt**	**147**	8.5%	**Haghighi M**	**79**	**21%**
2	**Habibi B**	**26**	9.3%	**Khataee A**	**118**	٪۶٫۸	**Salami-Kalajahi M**	**34**	9%
3	**Rezvani Z**	**26**	9.3%	**Farajzadeh Ma**	**109**	٪۶٫۳	**Roghani-Mamaqani H**	**28**	7.4%

The results showed that in 1999-2018, the first rank of publishing chemistry articles for the University of Tabriz was dedicated to the Journal of Molecular Liquids with 64 articles (3.7%), for Azarbaijan Shahid Madani University, to the Journal of the Iranian Chemical Society with 16 articles (6.5%), and for Sahand University of Technology, to RSC Advances with 30 articles (8.2%). RSC Advances, which belongs to The Royal Society of Chemistry of England, was on the list of all three universities. In addition, according to the Web of Science, this journal was ranked first in publishing the chemical science production in Iran and fifth in the world. RSC Advances has published 51619 articles (1.5%) over 20 years, and, from the total 3463934 records, Iranian chemistry researchers have shared 1758 articles (3.5%).

Scientific collaborations, especially on the international scale, can benefit researchers and universities, increasing the quality of their research outputs. With this regard, based on findings, for the first rank of international cooperation with chemistry researchers of Azarbaijan Shahid Madani University, University of Tabriz, and the Sahand University of Technology, United States recorded seven articles (2.5%), Turkey, 97 articles (5.6%), and Canada, nine articles (2.5%) in 1999-2018 (Table 3).

According to results, 1702, 3203, and 20255 articles were cited by researchers of Azarbaijan Shahid Madani University, Sahand University of Technology, and University of Tabriz, respectively. The average citations received from each of the published records related to these three universities were 7, 16, and 13, respectively; Furthermore, the H-index of articles for these three universities was 19, 36, and 71, respectively.

The results showed that in 1999-2018, the first rank of article citations for the University of Tabriz was dedicated to the Journal of Molecular Liquids with 401 articles (2%), for Azarbaijan Shahid Madani University, to RSC Advances with 78 articles (6.5%), and for Sahand University of Technology, to RSC Advances with 100 articles (3%).

According to the findings, the highest scientific dependence of chemistry researchers at Azarbaijan Shahid Madani University, Sahand University of Technology, and the University of Tabriz on journal articles was approximately 86%. Also, the findings demonstrated that Iran achieved the first rank of article citations for chemistry researchers at Azarbaijan Shahid Madani University, University of Tabriz, and the Sahand University of Technology in 1999-2018. Interestingly, China, India, and the United States were ranked second to fourth in all three surveyed universities, respectively. In other words, nearly 60% of the science produced by chemistry researchers at Azarbaijan Shahid Madani University, Sahand University of

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Technology, and the University of Tabriz have relied on the scientific resources of four countries: Iran, China, India, and the United States (Table 3).

Table 3. Dependence of researchers of University of Tabriz, Azarbaijan Shahid Madani University, and the Sahand University of Technology on scientific resources of different countries in the field of chemistry based on the analysis of citations of scientific products (1999 to 2018)

Row	Azarbaijan Shahid Madani University				University of Tabriz				Sahand University of Technology			
	Country	Rank	Citations	%	Country	Rank	Citations	%	Country	Rank	Citations	%
1	Iran	14	610	35 %	Iran	14	6006	30 %	Iran	14	938	29 %
2	China	2	476	37 %	China	2	4643	22 %	China	2	845	26 %
3	India	5	149	8 %	India	5	2018	9%	India	5	249	8%
4	USA	1	97	5 %	USA	1	927	4.5 %	USA	1	195	6%
5	Turkey	21	81	4 %	Turkey	21	905	4.4 %	South Korea	8	126	4%

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Conclusion: The growing trend of chemical science production in Tabriz University, Shahid Madani University of Azerbaijan, and the Sahand University of Technology from 1999 to 2018. Of course, in this field, science production in these three universities has been accompanied by a decrease during 2018, 2017, and 2015, respectively.

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