Journal of Knowledge-Research Studies

Doulani, Abbas, Gholami, Farzaneh; Karbala Aghaei Kamran (2022). Visualization and analyzing the scientific map of the scientific outputs of the faculty members of Urmia University in the Web of Science database in the period 1982-2012. *Journal of Knowledge-Research Studies*, 1 (1), 3-27.

DOI: 10.22034/jkrs.2021.47032.1002

URL: https://jkrs.tabrizu.ac.ir/article_14075.html?lang=fa

Visualization and Analyzing the Scientific Map of the Scientific Outputs of the Faculty Members of Urmia University in the Web of Science Database in the period 1982-2012

Abbas Doulani[1], Farzaneh Gholami[2], Masoumeh Karbala Aghaei Kamran[3]

Received: July, 18, 2021; **Accepted: October, 10, 2021**

Abstract

Purpose: This study aimed to investigate the status of publication, drawing the scientific structure and citation analysis of scientific products of Urmia University.

Methodology: The present research has been done in terms of applied purpose and terms of descriptive-analytical methodology with a scientometric approach. The data has been collected through the web of science. The research community includes 5837 scientific productions of the faculty members of Urmia University, which have been indexed in the web-science database from 1982 to 2019. To answer the research questions, web-based database analysis was used, as well as Excel software, website, CIA Explorer and Vivasior.

Findings: The findings indicate that the scientific production of Urmia University has had an upward trend, but its growth rate has fluctuated. The average growth rate of Urmia University is 31.85%. Co-authorship indicators have shown the willingness of faculty members to collaborate in scientific production. Urmia University has the highest scientific cooperation at the national level with the Azad University and in the international arena with American universities. The level of collaboration among Urmia University and Iranian organizations is high, and in contrast, scientific collaboration at the level of international organizations is low. The busiest subject areas in Urmia University are related to engineering, chemistry, agriculture, physics, veterinary medicine, materials science, and computer science, respectively.

Conclusion: Although most of the humanities disciplines are available at Urmia University, none of the subject areas of the humanities disciplines are among the busiest subject areas of Urmia University's scientific productions. The most prolific and most-cited faculty members are professors in technology and engineering. Such research can be used as a roadmap to see and identify the strengths and weaknesses of science in the country.

Value: This research, for the first time, assesses the scientific production community of Urmia University with bibliometrics and illustration.

Keywords: ***bibliometric, scientific productions. Citation analysis, WOS, Urmia University***

1. Assistant Professor, Department of Knowledge and Information Science, Faculty of Education and Psychology, Alzahra University, Iran, Tehran (Corresponding Author) a.doulani@alzahra.ac.ir
2. Master, Department of Knowledge and Information Science, Faculty of Education and Psychology, Alzahra University, Iran, Tehran
3. Associate Professor, Department of Knowledge and Information Science, Faculty of Education and Psychology, Alzahra University, Iran, Tehran

Extended Abstract

Introduction

Currently, one of the most important issues in the country is the issue of science production. Research is the basis of science production, and increasing scientific output in each country leads to development and self-sufficiency in various fields. Therefore,; researchers and experts do not consider any factor as influential in scientific development as research practices. Meanwhile, universities and institutes of higher education and research as a source of scientific nutrition in the country, are the central axis of science production through research and research.

Purpose

This study aimed to investigate the status of publication, drawing the scientific structure and citation analysis of scientific products of Urmia University.

Methodology

This research is applied in terms of purpose, methodologically with bibliometric and illustration approaches. Also; the library method has been used to formulate the theoretical foundations and research background. The statistical population of the present study includes all scientific productions that have been written by the faculty members of Urmia University since 1982-2019 (total scientific productions of Urmia University) and are indexed in the web science database. In the first step, enter the phrase (OG = Urmia University) in the advanced search, and the search year is set in the period 1982 to 2019. To answer the analytical questions after the examination, the number of scientific products indexed in the database was 5837. Then, in the mentioned database, select the storage of records in 500 files, which is the maximum limit for each storage of documents, and the documents were saved in full text with the source, in text format (txt.). A total of 12 files with the txt extension. Saved, which eventually merges all the files into one file called end3.txt. Also, for drawing a map, a co-author for drawing a map, 50 top authors were selected and entered into the map. In the map, each color represents a cluster. Authors in a cluster have the most co-authorship with each other. The size of the circles indicates the number of publications, and the thickness of the lines shows the number of co-authors. VosViewer software illustration capability has been used to cluster the scientific products of Urmia University. For this purpose, 24647 keywords were extracted from the titles and abstracts of scientific publications. Then a threshold of 40 was considered.

Findings

Researchers and faculty members of Urmia University in the period 1982-2019 have published a total of 5837 scientific degrees that are indexed on the Web of Science website. Table 1 shows the top 25 universities in Iran regarding frequency of publications. These top 25 universities have published about 86.84% of Iran's scientific products. All units of Islamic Azad University with 77839 degrees have the highest scientific output among Iranian universities, followed by Tehran University, Tehran University of Medical Sciences, Sharif University of Technology, and Tarbiat Modares University in the second to fifth ranks, respectively. The share of Urmia University with 5837 degrees and 1.076 is the scientific production of the country. To check the status of scientific productions of Urmia University, it was searched and examined separately in the Web of Science database. As shownin Table 1, the total number of scientific products indexed by this university in the Web of Science database is 5837. The first article was indexed by Urmia University on the Web of Science website in 1982. The number of scientific productions in 1998 has grown more, and after that, the upward trend has continued. Also, the growth rate of scientific productions of Urmia University is shown by year. The following formula was used to calculate the growth rate: G = (X_t-X_ (t-1)) / X_ (t-1) × 100 (Mokhtari & et.al, 2017).The g growth rate of scientific productions, X_t number of scientific productions in period t, X (t-1) number of scientific productions in period t-1. Most of the articles of Urmia University have been published in the scientific journal (Veterinary Research Forum), which is one of the journals of Urmia University. The subject area of this journal is a

Journal of Knowledge-Research Studies

Journal of Knowledge-Research Studies (JKRS)

Vol. 1

Issue 1

Serial Number 1

Journal of Knowledge-Research Studies (JKRS)

Vol 1

Issue 1

Serial Number 1

veterinary medicine. Also, the highest impact factor of 7.181 is related to the journal Energy Conversion and Management, which has published 36 articles from Urmia University. This journal publishes articles in energy conversion and management (engineering). The scientific production map of Urmia University consists of 5 clusters. The first cluster is marked in red and includes acid, adsorption, behavior, catalyst, and is the best title for this cluster in physics and chemistry. The second cluster with green color includes exergy, energy, design, and algorithm and is the best title for this technical and engineering cluster. The third cluster, highlighted in blue, contains keywords such as mice, apoptosis, oxidative stress, expression, and rats, and is the best title for this cluster of medical sciences. The next cluster is marked in yellow and includes the keywords growth, antioxidant activity, in vitro, quality, plant and is the best title for this agricultural cluster. Purple cluster with the terms sheep, prevalence, Iran and the best title for this cluster is the field of veterinary medicine. As can be seen from the clusters of the image below, humanities and arts are among the fields that have the least scientific production. He also points out that the guidance of experts in each field was used to name these clusters.

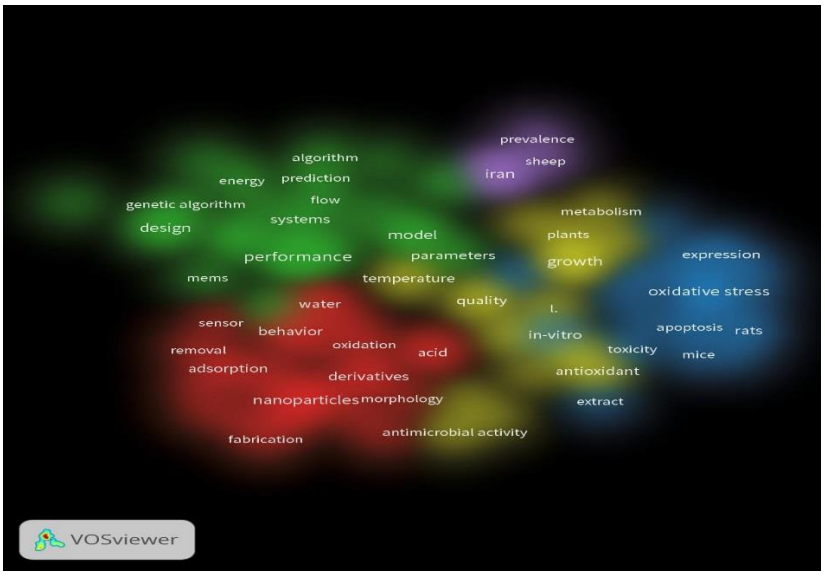

Figure 6: Clustering of scientific productions of faculty members of Urmia University according to the fields of study of the departments

Table 10: Influential and highly cited articles of Urmia University

Rank	Titles	Authors	Jounal	Year	Citations	Quartile
۱	Multiwalled Carbon Nanotubes As Adsorbents For The Kinetic And Equilibrium Study Of The Removal Of Alizarin Red S And Morin	Ghaedi, M; Hassanzadeh, A; Kokhdan, SN	Journal Of Chemical and Engineering Data	۲۰۱۱	۲۲۰	Q2
۲	Dispersive Liquid-Liquid Microextraction Followed By High-Performance	Farajzadeh, MA; Bahram, M; Jonsson, JA	Analytica Chimica Acta	۲۰۰۷	۲۲۱	Q1

	Liquid Chromatography-Diode Array Detection As An Efficient And Sensitive Technique For Determination Of Antioxidants					
۳	Highly Selective Hg2+ Colorimetric Sensor Using Green Synthesized and Unmodified Silver Nanoparticles	Farhadi, K; Forough, M; Molaei, R; Hajizadeh, S; Rafipour, A	Sensors And Actuators B-Chemical	۲۰۱۲	۲۰۳	Q1
۴	Characterization Of Antioxidant Chitosan Film Incorporated with Zataria Multiflora Boiss Essential Oil And Grape Seed Extract	Moradi, M; Tajik, H; Rohani, SMR; Oromiehie, AR; Malekinejad, H; Aliakbarlu, J; Hadian, M	Lwt-Food Science and Technology	۲۰۱۲	۱۸۹	Q1
۵	Analytical Model for Connectivity In Vehicular Ad Hoc Networks	Yousefi, S; Altman, E; El-Azouzi, R; Fathy, M	Ieee Transactions on Vehicular Technology	۲۰۰۸	۱۸۵	Q1
۶	Tio2 Nanocomposite Based Polymeric Membranes: A Review on Performance Improvement For Various Applications In Chemical Engineering Processes	Bet-moushoul, E; Mansourpanah, Y; Farhadi, K; Tabatabaei, M	Chemical Engineering Journal	۲۰۱۶	۱۷۶	Q1
۷	Microvesicles Derived from Mesenchymal Stem Cells: Potent Organelles For Induction Of Tolerogenic Signaling	Mokarizadeh, A; Delirezh, N; Morshedi, A; Mosayebi, G; Farshid, AA; Mardani, K	Immunology Letters	۲۰۱۲	۱۵۴	Q2
۸	Impact Of Salicylic Acid on Post-Harvest Physiology Of Horticultural Crops	Asghari, M; Aghdam, MS	Trends In Food Science & Technology	۲۰۱۰	۱۵۵	Q1
۹	Application Of Piezoelectric Layers In Electrostatic MEM Actuators: Controlling Of Pull-In Voltage	Rezazadeh, G; Tahmasebi, A; Zubstov, M	Microsystem Technologies-Micro-and Nanosystems-Information Storage and Processing Systems	۲۰۰۶	۱۴۷	Q2
۱۰	Design And Simulation of A Novel Electrostatic Peristaltic Micromachined Pump For Drug Delivery Applications	Teymoori, MM; Abbaspour-Sani, E	Sensors And Actuators A-Physical	۲۰۰۵	۱۴۸	Q1

Journal of Knowledge-Research Studies (JKRS)

Vol. 1

Issue 1

Serial Number 1

Conclusion

Although most of the humanities disciplines are available at Urmia University,none of the subject areas of the humanities disciplines are among the busiest subject areas of Urmia University's scientific productions. The most prolific and most-cited faculty members are professors in technology and engineering. Such research can be used as a roadmap to see and identify the strengths and weaknesses of science in the country.

Value

This research, for the first time, assesses the scientific production community of Urmia University with the approach of bibliometrics and illustration.

Resources

Ackermann, E. (2005). Bibliometrics of a controversial scientific literature: polywater research, 1962-1974. *Scientometrics*, *63*(2), 189-208.

Ahmed, A. and Al-Reyaee, S. (2019), "Bibliometric analysis of research publications of Al-Jouf university, Saudi Arabia during the year 2006–2017", Library Philosophy and Practice, Vol. 2019 No. 2467, pp. 1-9.

Allendoerfer, K. R. (2010). How information visualization systems change users' understandings of complex data. Retrived From: https://idea.library.drexel.edu/islandora/object/idea%3A3159/datastream/OBJ/view

Azar, M. (2012). *Analysis of the status of scientific production of faculty members of Mohaghegh* Ardabili *University and its reflection in the web of science database*. *M.S. Dissertation. Faculty of Education and psychology*. Allame Tabatabaei. Tehran, Iran.

Brodons, K., Garcia, J.F., & Barrigon, s. (1992). Bibliometric analysis of publications of Spanish pharmacologists in the SCI (1984-1989)-I- Contribution to the Pharmacology and Pharmacy. Scientometrics, 24(7), 163-179.

Darmadji, A., Prasojo, L.D., Kusumaningrum, F.A. and Andriansyah, Y. (2018), "Research productivity and international collaboration of top Indonesian universities", Current Science, Vol. 115 No. 4, pp. 653-658.

Doulani, A. (2021). A bibliometric analysis and science mapping of scientific publications of Alzahra University during 1986–2019. *Library Hi Tech*, 39(4), 915-935.

Dwivedi, S. (2017). Publications of Banaras Hindu University during 1989–2016: a three-dimensional bibliometric study. *DESIDOC Journal of Library and Information Technology*, 37(6), p. 403.

Golayni Moghaddam, G. Taheri, P. (2014). Drawing the co-authorship network and the coefficient of scientific cooperation of Iranian researchers in the field of aerospace in the science citation index until 2014. *Quarterly Journal of Knowledge Recovery and Semantic Systems*, 2(3), 27-42.

Haq, I. (2017). Research productivity at King Saud bin Abdul Aziz University for health sciences, Kingdom of Saudi Arabia: a bibliometric appraisal. *Journal of Rawalpindi Medical College*, Vol. 21 No. 2, pp. 182-186.

Jafarzadeh, S (2012). *Assessing the scientific outputs of researchers at Shahid Chamran University in the web-science database between 1990 and 2011 based on scientometric indicators and emphasizing the drawing and analysis of their co-authorship networks*. M.S. Dissertation. Faculty of Education and psychology. Shahid Chamran. Ahvaz, Iran.

Khodadoost, R (2011). *Study of publishing status, both authorship and citation of scientific products in the field of nanotechnology of the Islamic Republic of Iran*. M.S. Dissertation. Faculty of Education and psychology. Tarbiat Modarres. Tehran, Iran.

Maharana, R.K. and Sethi, B.B. (2013). A bibliometric analysis of the research output of Sambalpur University's publication in ISI Web of Science during 2007–11. *Library Philosophy and Practice*, Vol. 2013 No. 926, pp. 1-13.

Milojević, S., & Leydesdorff, L. (2013). Information metrics (iMetrics): a research specialty with a socio-cognitive identity? *Scientometrics*, *95*(1), 141-157.

Journal of Knowledge-Research Studies (JKRS)

Vol 1

Issue 1

Serial Number 1

Mirhossani, Z. Vahabi, F (2011). A study of the scientific products of the faculty members of the pharmacy faculties of a country in the database of the Scientific Information Institute. *Health Information Management*, 8(3), 27-42.

Mokhtari H, Mirzaei A. Differences among Science, Social Science and Humanities from the Perspective of the Scientometric Indicators of Scientific Information Institute (ISI). *CJS*. 2016; 3 (1):23-29

Mokhtari, H., Mirezati, S., Saberi, M.K., Fazli, F. and Kharabati-Neshin, M. (2019). A bibliometric analysis and visualization of the scientific publications of universities: a study of Hamadan University of Medical Sciences during 1992–2018. *Webology*, 16 (2), Article 198,

Osareh, F., Qane, M., Rahmani Sefidoyeh, M. (2010). Scientific Outputs of Faculty Members of Shiraz University from 2000 to 2007. *National Studies on Librarianship and Information Organization*, 21(3), 104-127.

ÖZKÖSE, H., & GENCER, C. T. (2017). Bibliometric analysis and mapping of management information systems field. Gazi University *Journal of Science*, 30(4), 356-371.

Romanelli, J.P., Fujimoto, J.T., Ferreira, M.D. and Milanez, D.H. (2018). Assessing ecological restoration as a research topic using bibliometric indicators. *Ecological Engineering*, Vol. 120, pp. 311-320.

Saber, S (2017). *The study of publication, co-authorship co-citation status of scientific production of faculty members in Tarbiat Modares University (TMU)*. M.S. Dissertation. Faculty of Management and Medical Information. Tarbiat Modarres. Tehran, Iran.

Shojaei, M., Jowkar, A. (2013). Citation analysis & historiography map of scientific production by Islamic Azad University in Web of Science from 2000 to 2009. *Journal of Knowledge Studies*, 6(22), 19-34.

Siwach, A.K. and Kumar, S. (2015). Bibliometric analysis of research publications of Maharshi Dayanand University (Rohtak) during 2000-2013. *DESIDOC Journal of Library and Information Technology*, Vol. 35 No. 1, pp. 17-24.

Sweileh, W.M., Zyoud, S.E.H., Al-Khalil, S., Al-Jabi, S.W. and Sawalha, A.F. (2014). Assessing the scientific research productivity of the Palestinian higher education institutions: a case study at An-Najah National University, Palestine. *SAGE Open*, Vol. 4 No. 3, p. 2158244014544287.

Synnestvedt, M. B., Chen, C., & Holmes, J. H. (2005). CiteSpace II: visualization and knowledge discovery in bibliographic databases. *AMIA ... Annual Symposium proceedings. AMIA Symposium*, *2005*, 724–728.

Talachi, H. (2017). *A study of medical and biomedical information produced and published by Iranian authors in foreign journals during the years 1980-94 Research Project*. Faculty of Education and psychology. Iran Medical University. Tehran, Iran.

Tsafe, A.G., Chiya, U. and Aminu, B.A. (2016). Scholarly publications of librarians in universities in Nigeria: 2000–2012–a bibliometric analysis. *Library Philosophy and Practice*, Vol. 2016 No. 1394: pp. 1-24.

Vanani, I. R., & Jalali, S. M. J. (2017). Analytical evaluation of emerging scientific trends in business intelligence through the utilisation of burst detection algorithm. *International Journal of Bibliometrics in Business and Management*, *1*(1), 70-79.

Journal of Knowledge-Research Studies

Journal of Knowledge-Research Studies (JKRS)

Vol. 1

Issue 1

Serial Number 1