

## **Research Trends of Middle East Countries in Library and Information Science: A Scientometric Study**

\*Ng. Thermi Moyon

\*\*Akhandanand Shukla#

\*\*\*R. K. Ngurtinkhuma

\* Research Scholar, Department of Library and Information Science, Mizoram University, Aizawl (Mizoram), INDIA; Email: ngthermi@gmail.com

\*\* Associate Professor, Department of Library and Information Science, Central University of Tamil Nadu, Thiruvavur (Tamil Nadu), INDIA; Email: akhandanandshukla@gmail.com

\*\*\* Professor, Department of Library and Information Science, Mizoram University, Aizawl (Mizoram), INDIA; Email: rkngur15@gmail.com

# Corresponding author.

*Received: 12 June 2023*

*Accepted: 30 June 2023*

---

### *Abstract*

*The study assessed research trends in Middle-East countries from Library & Information Science perspective. The required data have been retrieved from the Scopus database for ten years, from 2012 to 2021. The study covered seventeen Middle-East countries, and findings reveal that the major contributions of research documents have grown in the latest years. Most research documents belong to the "journal article" category; Iran has topped in terms of research contributions and citation share. Most research documents belong to "journal article" forms of research documents, and "Library Philosophy and Practice" was the top source journal for LIS research. Keyword co-occurrence and co-authorship networks are analyzed from different perspectives for the desired result.*

---

**Keywords:** Scientometric, Citations, Co-authorship Network, Keyword Co-occurrence, VOSviewer, Middle-East Countries.

### **1. Introduction**

For the last two decades, Library and Information Science has been one of the standard fields in publication, citation and co-authorship comparisons of nations, nation groups and major regions. Articles published in scientific journals are the main communication tools in different science fields; scientometric analysis is one of the most common evaluation methods of research activities. Scientometric mapping provides a means to visualize a particular field's publication and citation information. Cluster analysis revolves around many different algorithms aiming to detect the natural division of networks into groups based on similarity. This paper provides a comparative analysis of Library and Information Science publications of seventeen countries covered in the Middle East, i.e. Algeria, Bahrain, Cyprus, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Turkey, United Arab Emirates, Yemen.

### **2. Review of Literature**

Bazm et al. (2016) analyzed bibliometric mapping and cluster analysis of 3141 Iranian papers on Reproductive Medicine from the Scopus database (2010-2014). They found that the

number of publications per year has increased from 461 in 2010 to 749 in 2014. Tehran University of Medical Sciences and “Soleimani M” have occupied the top position based on productivity indicators. Likewise, “Soleimani M” has obtained the first rank among authors according to degree centrality, betweenness centrality and collaboration criteria. In addition, the Iranian Academic Center for Education, Culture and Research (ACECR) became the leader among institutions based on degree centrality, betweenness centrality and collaboration indicators. Viswanathan et al. (2017) examined 2619 research outputs published in the field between 2007 - 2016, and collaborated research work dominated throughout the study period. In the overall productivity, 80.45% of publications received citations with an average of 11.98 per paper. An article written by Cooper et al. published in 2009 on “World Health Organization reference values for human semen characteristics” received a maximum of 646 citations. The United States of America has contributed 23.37% of the total productivity and ranked top in publications. The study found “Andrology” as the most preferred journal among the researchers and the organization. Emami et al. (2018) examined diabetes research in Middle-Eastern countries between 2007 - 2013 and revealed that 6532 records were present from 3926 institutions. These records belonged to 19323 authors and appeared in 1420 journals. The *Journal of Diabetes Care*, with 3928 citations, had the most global citation score (GCS). Most of the Middle-East scientific documents were from Turkey (31.91%) and Iran (21.7%). Seven scientific clusters based on LCS and 5 based on GCS existed in the scientific mapping. Topical clusters based on global and local indices showed that the prevalence of diabetes, hyperglycemia, pregnancy outcomes, diabetic risk factors, diabetic complications and their new treatments, and glucose monitoring in Type 1 diabetes were present in the main articles of the clusters. Maurya et al. (2019) evaluated the contribution of LIS research in scientific research of Middle East countries and found a notable contribution of LIS to science. Gul et al. (2015) did a separate investigation in the field that looked at research performance and productivity across Middle Eastern Countries. Shahmoradi et al. (2020) analyzed the visualization of knowledge flow in interpersonal scientific collaboration network endocrinology and metabolism research institute. Total citations to the records were 47,528, and papers have appeared in 916 journals. The annual growth rate of publications and citations was 14.2% and 18.9%, respectively. A total of 9466 authors from 136 countries collaborated in the publications. The co-authorship patterns showed that the average co-authorship and collaboration coefficient was 3.3 and 0.19. Mansourzadeh et al. (2020) analyzed Osteoporosis research, and the study revealed that 558 independent authors participated in osteoporosis-related research at EMRI, and the average contribution of authors was 6.72 per paper. The co-authorship network for authors contributing to at least five publications showed four main clusters of independent authors. Tanveer et al. (2020) examined 7700 documents from the Scopus database published in the Saudi Medical Journal from 1979 to 2019, with an average of 187.80 papers per year. The majority of the documents were research articles. King Saud University is the most productive organization with 1,006 documents. More than half of the documents (n=3879; 50.37%) belong to international researchers; Turkey has been top with 806 documents. A paper published in 2004 entitled “*Diabetes Mellitus* in Saudi Arabia” was found to be the most-cited paper.

### **3. Scope and Limitations of the Study**

The study focuses on Middle Eastern countries' Library and Information Science publications. Using the Scopus database, the study is limited to 10 years, from 2012-2021.

#### 4. Objectives of the Study

The study aims to analyze the research trends of Middle-East countries in Library and Information Science using a scientometric approach. In the study, the following scientometric measures were used:

- a) Quantitative analysis of research documents (year-wise and country-wise),
- b) Citations performance of Middle-East countries,
- c) Forms of research documents,
- d) Preferred sources for LIS research,
- e) Co-occurrence of keywords in LIS research,
- f) Co-authorship network, geographical and organizational distribution of LIS research.

#### 5. Research Methodology

The study covered seventeen countries belonging to the Middle East. Among the Middle-East countries, Syria is excluded from the study as no data was available in the Scopus database. The Scopus database has been used to retrieve the relevant data. The data obtained were tabulated, organized, and analyzed using MS Excel and VOSviewer.

#### 6. Data Analysis and Interpretation

##### a) Quantitative analysis of research documents (year-wise and country-wise)

Table-1 displays year-wise and country-wise publication of research documents from Middle-East countries during 2012-2021. It is found that major contributions of research documents showed significant growth in 2021, with 483 documents and in 2020, with 341 documents. In contrast, the lowest number of publications was observed in 2012. Amongst the Middle-East countries, Iran has produced the highest number of research publications (945 documents) during the study period, followed by Saudi Arabia (295 documents) and Turkey (230 documents). On the observation, it has been found that Yemen has the least publications amongst the Middle-East countries (8 documents), followed by Lebanon (11 documents). The study revealed that the trends of LIS research publications in Middle-East countries were rising, although a slight stagnation appeared in 2014.

**Table 1: Quantitative research data (year-wise and country-wise)**

Country	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Algeria	2	4	1	1	3	2	4	0	3	3	23
Bahrain	0	0	1	2	3	1	0	2	4	5	18
Cyprus	1	4	4	4	1	2	6	4	4	2	32
Egypt	3	4	1	4	8	9	5	7	13	26	80
Iran	56	73	59	62	62	59	106	136	148	184	945
Iraq	0	0	0	1	3	1	3	4	10	13	35
Israel	13	9	13	13	13	20	15	19	16	14	145
Jordan	5	3	6	2	9	9	12	11	9	27	93
Kuwait	10	10	7	14	22	9	11	8	11	17	119
Lebanon	1	0	0	1	3	1	1	0	1	3	11
Oman	5	5	2	7	7	5	6	7	4	21	69

Palestine	0	0	3	0	1	3	1	1	2	2	13
Qatar	0	4	4	5	8	3	4	3	4	5	40
Saudi Arabia	5	14	15	16	11	27	15	34	57	101	295
Turkey	14	17	20	15	17	22	34	23	33	35	230
United Arab Emirates	4	3	3	6	7	13	13	17	20	22	108
Yemen	0	0	0	1	0	0	0	2	2	3	8
Total	119	150	139	154	178	186	236	278	341	483	2264

### b) Citation performance of Middle-East countries

Table-2 represents the distributions of publications from Middle-East countries and their citations. Citation is an essential factor for any research output, which is to be used to measure the quality of the publications. During the study period, the total number of research documents was found to be 2264, for which 17776 citations were received. From Table-2, we can examine that Iran has received the highest number of citations (5882) with an average of 6.22 citations per document, followed by Turkey (2403 citations) with an average of 10.44 citations per document and Saudi Arabia (1972 citations) with an average of 6.68 citations per documents. The highest average citations per document have been found for Palestine (36), followed by Lebanon (15.9) and Qatar (15.65), while overall, the average citation per document was 7.85.

**Table 2: Citation performance of Middle-East countries**

Name of the Country	No. of Research Documents	Number of Citations	Average Citations
Algeria	23	100	4.34
Bahrain	18	79	4.38
Cyprus	32	182	5.68
Egypt	80	541	6.76
Iran	945	5882	6.22
Iraq	35	267	7.62
Israel	145	1633	11.26
Jordan	93	584	6.27
Kuwait	119	925	7.77
Lebanon	11	175	15.9
Oman	69	374	5.42
Palestine	13	468	36
Qatar	40	626	15.65
Saudi Arabia	295	1972	6.68
Turkey	230	2403	10.44
United Arab Emirates	108	1477	13.67
Yemen	8	88	11
Total	2264	17776	7.85

Table-3 displays the top 10 highly cited research documents on LIS perspectives by the Middle-East countries. The top most cited paper belongs to the "Review" category with 340

citations. The second highest cited paper belongs to the "Article" category with 327 citations. The third highest cited paper belongs to the "Conference Paper" category with 221 citations. Out of the top 10 highly cited research documents, 70% belong to the "Article" category, and 20% belong to the "Review" category. In contrast, 10% of research documents belong to the "Conference Paper" category. Cites per author were found to be highest (139) for the research document entitled "Factors influencing continuance intention to use social network sites: The Facebook case" authored by S. Mouakket, followed by the research document entitled "Factors affecting number of citations: A comprehensive review of the literature" authored by I. Tahamtan, A. Safipour Afshar, K. Ahamdzadeh (with 109 citations per author).

**Table 3: Top 10 highly cited research documents of Middle-East countries during 2012-2021**

Rank	Authors	Title	Year	Source	Type	Cites	Cites per Author
1	M.T. Islam, N. Huda, A.B. Abdullah, R. Saidur	A comprehensive review of state-of-the-art concentrating solar power (CSP) technologies: Current status and research trends	2018	Renewable and Sustainable Energy Reviews	Review	340	85
2	I. Tahamtan, A. Safipour Afshar, K. Ahamdzadeh	Factors affecting number of citations: A comprehensive review of the literature	2016	Scientometrics	Article	327	109
3	A. Olteanu, C. Castillo, F. Diaz, S. Vieweg	CrisisLex: A lexicon for collecting and filtering microblogged communications in crises	2014	8th Int. Conf. on Weblogs and SocialMedia, ICWSM 2014	Conference Paper	221	55
4	A. Gazni, C.R. Sugimoto, F. Didegah	Mapping world scientific collaboration: Authors, institutions, and countries	2012	Journal of the American Society for Information Science and Technology	Article	215	72
5	M. Nilashi, O. Ibrahim, K. Bagherifard	A recommender system based on collaborative filtering using ontology and dimensionality reduction techniques	2018	Expert Systems with Applications	Article	203	68
6	M.I.M. Eid, I.M. Al-Jabri	Social Networking, knowledge sharing, and student learning: The Case of university students	2016	Computers and Education	Article	177	89
7	G. Halevi, H. Moed, J. Bar-Ilan	Suitability of Google Scholar as a source of scientific information and as a source of data for scientific evaluation: Review of the Literature	2017	Journal of Informetrics	Review	159	53
8	S. Mouakket	Factors influencing continuance intention to use social network sites: The Facebook case	2015	Computers in Human Behaviour	Article	139	139

Rank	Authors	Title	Year	Source	Type	Cites	Cites per Author
9	S. Gumus, M.S. Bellibas, M. Esen, E. Gumus	A systematic review of studies on leadership models in educational research from 1980 to 2014	2018	Educational Management Administration and Leadership	Article	137	34
10	M. Choshin, A. Ghaffari	An investigation of the impact of effective factors on the success of e-commerce in small- and medium-sized companies	2017	Computers in Human Behaviour	Article	112	56

### c) Forms of research documents

The study has been conducted to know the forms of research documents for LIS in Middle-East countries. From the observation of Table-4, it has been found that researchers preferred to publish their research documents in the form of “Journal Articles”. Out of the total research documents, 81.22% belongs to Journal Article, followed by Conference Paper (7.68%), Review Paper (5.60%), Book Chapter (4.06%), Letter (0.61%), Editorial and Note (0.22% each), Book (0.17%), Erratum (0.13%), and Short Survey (0.04%).

**Table 4: Forms of research documents in Middle-East countries**

Forms of Document	No. of Docs.	Percentage
Journal Articles	1839	81.22
Conference Paper	174	7.68
Review	127	5.60
Book Chapter	92	4.06
Letter	14	0.61
Editorial	5	0.22
Note	5	0.22
Book	4	0.17
Erratum	3	0.13
Short Survey	1	0.04
<b>Total</b>	<b>2264</b>	<b>100</b>

### d) Preferred source for LIS research

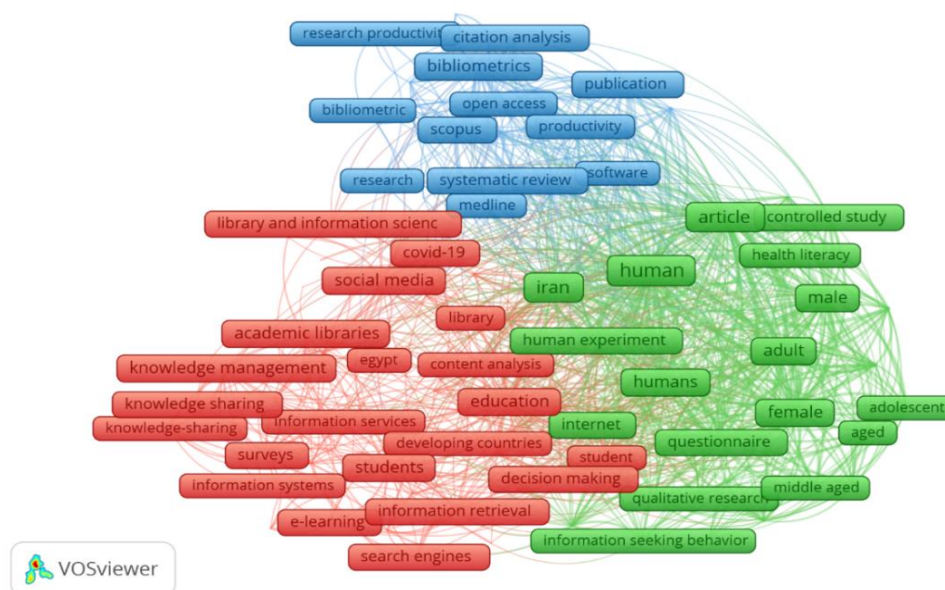
The top ten most productive journals in the Library and Information Science field have been identified in this research, which different publishers own. The "Library Philosophy and Practice" journal has produced the largest number of research documents (184 research documents with 301 citations), followed by the “International Journal of Information Science and Management” (68 research documents with 125 citations) and “Electronic Library” (53 research documents with 488 citations). “Scientometrics” (45 research documents) journal has received the highest number of citations among the top ten journals (810 citations). The “Journal of Librarianship and Information Science” has 42 research documents with 404 citations and ranked third highest in citations among the top ten journals.

**Table 5: Top 10 most productive journals on LIS research**

Rank	Source	NP	TC
1	Library Philosophy and Practice	184	301
2	International Journal of Information Science and Management	68	125
3	Electronic Library	53	488
4	Scientometrics	45	810
5	Journal of Librarianship and Information Science	42	404
6	Webology	33	157
7	Malaysian Journal of Library and Information Science	32	186
8	Journal of Academic Librarianship	30	257
9	Journal of Education and Health Promotion	28	50
10	Libri	24	99

**e) Co-occurrence of keywords in LIS research**

The co-occurrence network of keywords is shown in Figure-1, which includes author and index keywords in three clusters. Research keywords in Cluster 1 represent red frames which have 53 items. Keywords Academic Libraries, Digital Libraries, Library, Social Media, Students, Search Engines, Surveys, Higher Education, and Knowledge Management from Cluster 1 indicate document analysis on Academic and Digital Libraries, and it also investigates the impact of research on Social Media. The frames which are closer to each other are related. Cluster 2 in green colour has 27 items which include Iran, Information Literacy, Education, Content Analysis, Information Seeking, Human, Internet, and Article indicating documents on Information Seeking Behaviour. Cluster 3 in blue has 26 items like Bibliometric, Citations Analysis, Co-authorship, Scopus, Altmetrics, Scientometrics, Social Network Analysis, Research Productivity, Open Access, and Co-word Analysis indicating analysis on Bibliometric and Scientometric indicators in evaluating the impact of research.



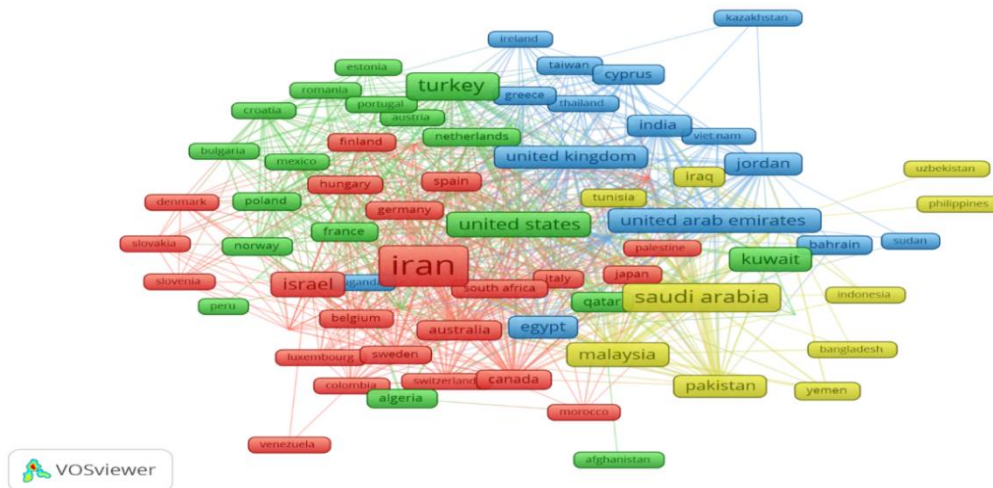
**Fig. 1: Co-occurrence of Keywords**

**Table 6: Top twenty keyword co-occurrences**

Keywords	Occurrences	Total link strength
Human	277	1774
Iran	195	680
Article	184	1248
Female	108	928
Humans	104	787
Students	99	295
Knowledge Management	97	243
Male	95	812
Adult	94	821
Academic libraries	93	118
Bibliometrics	91	260
Social media	89	264
Education	75	387
Questionnaire	69	588
Information retrieval	68	229
Surveys	68	188
Scientometrics	63	116
Information literacy	62	174
Social networking (online)	61	178
Scopus	60	257

**f) Co-authorship network, geographical and organizational distribution of LIS research**

As shown in Figure-2, the link represents countries' cooperation, and frames mean the contributing countries and 79 frames and 303 links formed a network. There are four clusters, which are in different colours. Each frame was linked according to its correlation towards the study, and the link thickness indicates the strength of cooperation. Figure-2 shows that Iran, Saudi Arabia, Turkey and Israel have made progress with several research documents in every period. The United States, Malaysia, Pakistan, United Kingdom, and India cooperated frequently with the Middle-East countries.



**Fig. 2: Co-author country network**



The top ten productive co-author countries with publications are displayed in Table-7. Iran played an indispensable role in this field and ranked first with 944 publications. Saudi Arabia and Turkey were ranked second and third with 295 and 230 publications, respectively. The number of publications in the top ten countries is significantly different; as we can see in the table, there is much difference between the first-ranked and second and third adjacent countries.

Figure-3 is an overlay visualization map showing the co-author link with the organization from 2012 - 2021. In Figure-3, the yellow colour of the nodes indicates the newer publication of research by the institution. The institution which has violet areas represents those that were published during 2017. From the above visualization, we can find that many papers were published during 2020-21. It is found from the analysis that 2264 publications come from 291 research institutes, and the collaboration and findings are shown in Figure-3. It could be seen from the nodes and links that the Department of Medical Library and Information Sciences, Hamadan University of Medical Sciences, Iran collaborates with the Department of Library and Information Science, Payamenoor University, Iran; Department of Knowledge and Information Science, Ferdowsi University of Mashhad, Mashhad, Iran; Department of Knowledge and Information Science, Islamic Azad University, Hamedan, Iran; Student Research Committee, Hamadan University of Medical Sciences, Hamadan, Iran and Department of Information Management, Hacettepe University, Ankara, Turkey.

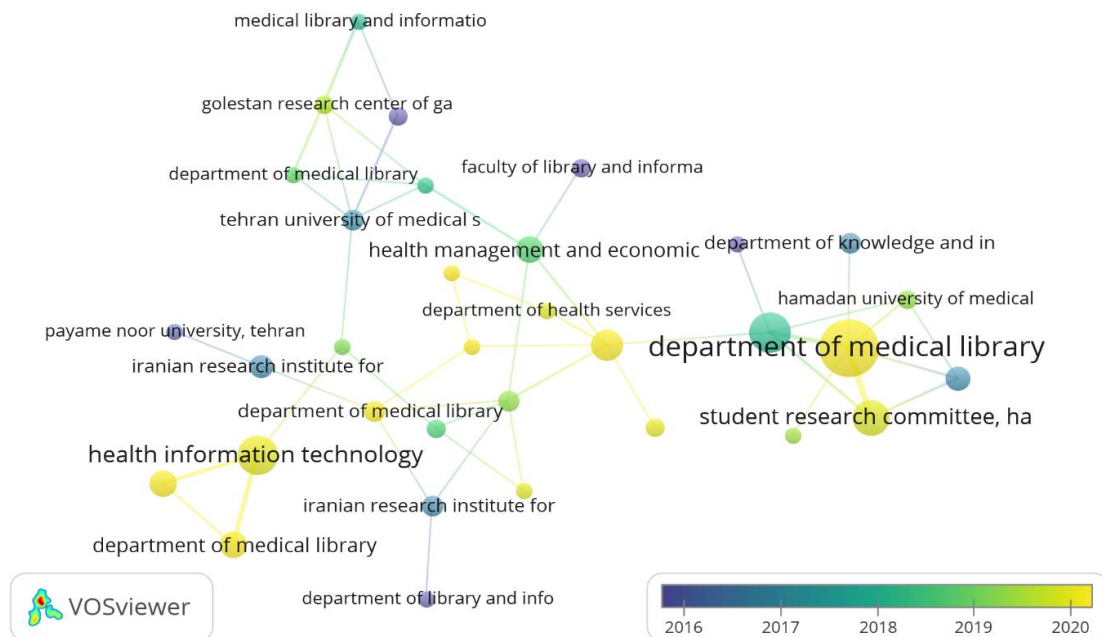
**Table 7: Top ten productive co-author countries**

Country	Documents	Citations	Total Link Strength
Iran	945	5882	201
Saudi Arabia	295	1972	303
Turkey	230	2403	107
Israel	145	1633	56
United States	136	1787	281
Kuwait	119	925	35
United Arab Emirates	108	1467	101
Malaysia	99	1471	157
Jordan	93	581	77
Pakistan	89	664	134

The top ten productive institutes are listed in Table-8. Hamadan University of Medical Sciences in Iran ranked first with 33 publications and 138 citations, followed by Shahid Beheshti University of Medical Sciences in Iran with 19 publications and 107 citations, Bar-Ilan University in Israel with 18 publications and 356 citations and Payamenoor University in Iran with 18 publications and 162 citations.

It is found from the analysis that 4366 authors from Middle-East countries in the field of Library and Information Science contributed 2264 research documents. In Figure-4, a co-authorship network was generated using VOSviewer; for co-authors with a minimum of ten articles, 37 authors were identified and divided into 13 clusters. In Figure-4, each node represents an author contributing their publications, a large node represents authors with many publications, and a small node represents few publications. The colours depict the community with strong collaboration in their research work. In this network, "Aharony N." from Bar-Ilan University, Isreal has the highest with 32 publications and 596 citations. The second-highest publication was authored by "Saber M. K." from Hamadan University of Medical Sciences, Iran, with 31 publications and 156 citations. The third highest publication

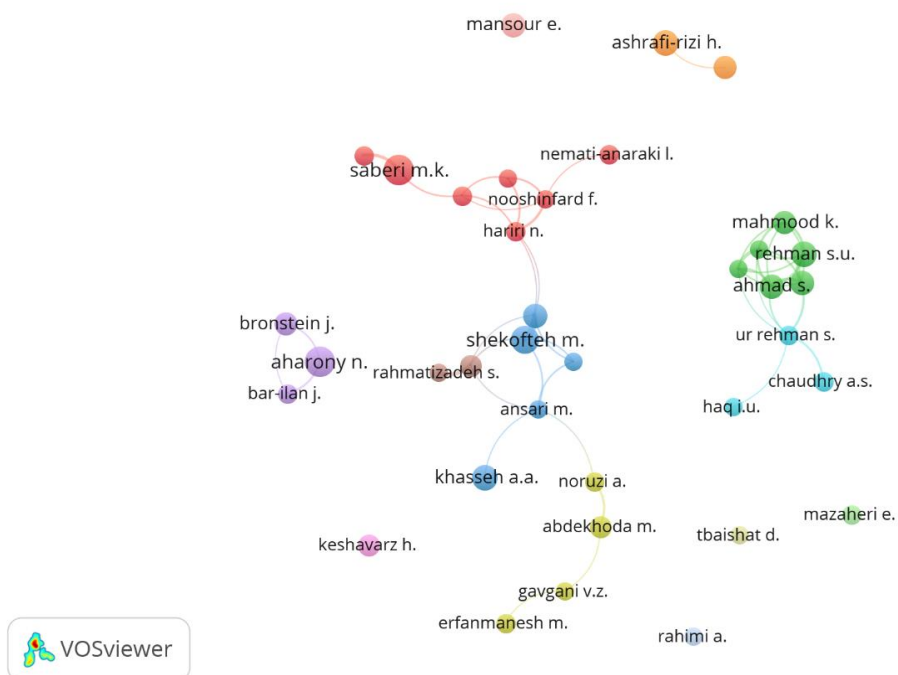
was authored by "Shekofteh M." from Shahid Beheshti University of Medical Sciences, Iran, with 27 publications and 94 citations. A list of the top fifteen productive co-authors in the field of Library and Information Science is given in Table-9.



**Fig. 3: Co-authorship link with organizations**

**Table 8: Top ten institutions**

<b>Institutions</b>	<b>NP</b>	<b>Citations</b>
Deptt. of Medical Library and Information Sciences, School of Paramedicine, Hamadan University of Medical Sciences, Hamadan, Iran	33	138
Deptt. of Medical Library and Information Sciences, School of Allied Medical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran	19	107
Deptt. of Information Science, Bar-Ilan University, Ramat Gan, Israel	18	356
Deptt. of Library and Information Science, Payamenoor University, Tehran, Iran	18	162
Health Information Technology Research Centre, Isfahan University of Medical Sciences, Isfahan, Iran	17	65
Student Research Committee, Hamadan University of Medical Sciences, Hamadan, Iran	15	101
Deptt. of Knowledge and Information Science, Ferdowsi University of Mashhad, Mashhad, Iran	13	26
Deptt. of Medical Library and Information Sciences, Faculty of Paramedical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran	13	76
Deptt. of Medical Library and Information Science, School of Health Management and Information Sciences, Iran University of Medical Sciences, Tehran, Iran	12	31
Deptt. of Library and Information Science, Kuwait University, Kuwait	11	89
University of Tehran, Iran	11	61



**Fig. 4: Networking of co-authorship**

**Table 9: Top fifteen productive co-authors**

Co-author	Institution	Country	Docs.	Citations
Aharony N.	Bar-Ilan University	Israel	32	596
Saberi M. K.	Hamadan University of Medical Sciences	Iran	31	156
Shekofteh M.	Shahid Beheshti University of Medical Sciences	Iran	27	94
Ashrafi-rizi H.	Isfahan University of Medical Sciences	Iran	23	165
Rehman S.U.	Imam Abdulrahman Bin Faisal University	Saudi Arabia	22	157
Khasseh A. A.	PayameNoor University	Iran	22	151
Ahmad S.	National Textile University	Pakistan	21	111
Ashiq M.	University of the Punjab	Pakistan	20	159
Kazerani M.	Shahid Beheshti University of Medical Sciences	Iran	20	71
Mansour E.	South Valley University	Egypt	20	119
Bronstein J.	Bar-Ilan University	Israel	19	214
Panahi S.	Iran University of Medical Sciences	Iran	19	105
Mahmood K.	University of the Punjab	Pakistan	18	81
Abdekhoda M.	Tabriz University of Medical Sciences	Iran	17	170
Valizadeh-haghi S.	Shahid Beheshti University of Medical Sciences	Iran	17	108

## 7. Conclusion

The study assessed Library and Information Science research documents from Middle-East countries through the Scopus database. A total of 2264 research documents have been contributed by the Middle-East countries during ten years of duration. Iran, Saudi Arabia and Turkey are leading in research document contribution, while Yemen, Lebanon, Palestine, Bahrain, Algeria, Cyprus, Iraq and Qatar are lagging. Iran has outperformed regarding the number of citations amongst Middle-East countries, while Palestine has the best citation per paper ratio. The top most cited research document belongs to the "review paper" category, while most top-cited research documents belong to the "journal article" category. The study revealed that "journal article" forms of documents are the first preference of researchers, and "Library Philosophy and Practice" has been found as the topmost productive journal in the LIS field amongst Middle-East countries. Other LIS journals like the International Journal of Information Science and Management (IJISM), Electronic Library, Scientometrics, and Journal of Librarianship and Information Science have contributed significantly to the LIS field. The co-occurrence of keywords displayed the interest of researchers in different LIS sub-domains. The United States, Malaysia, Pakistan, United Kingdom, and India cooperated frequently with the Middle-East countries in LIS perspectives. The organizational co-authorship network has been visualized, and it found that the Department of Medical Library and Information Sciences, Hamadan University of Medical Sciences, Iran, has collaborated highly with many other reputed institutions and established that Middle-East researchers extend national and international collaboration to promote quality of scientific outputs.

## References

1. Bazm, S., Kalantar, S.M., & Mirzaei, M. (2016). Bibliometric mapping and clustering analysis of Iranian papers on reproductive medicine in Scopus database (2010-2014). *International Journal of Reproductive BioMedicine*, 14(6), 371-382.
2. Emami, Z., Hariri, N., Khamseh, M.E., & Nooshinfard, F. (2018). Mapping diabetes research in Middle-Eastern countries (during 2007 and 2013): A scientometric analysis. *Medical Journal of Islam Republic of Iran*, 32(84), 1-9. <https://doi.org/10.14196/mjiri.32.84>
3. Gul, S., Nisa, N. T., Shah, T. A., Gupta, S., Jan, A., & Ahmad, S. (2015). Middle East: Research productivity and performance across nations, *Scientometrics*, 105,1157-1166. DOI: 10.1007/s11192-015-1722-3.
4. Maurya, S.K., Shukla, A., & Ngurtinkhuma, R.K. (2019). Contribution of Library and Information Science research in scientific research of Middle East countries: A scientometric assessment. *KIIT Journal of Library and Information Management*, 6(2), 194-203.
5. Mansourzadeh, M.J. et al. (2020). Osteoporosis researches in Endocrinology & Metabolism Research Institute (EMRI) of Tehran University of Medical Sciences: A scientometric study. *Journal of Diabetes & Metabolic Disorders*. Retrieved from <https://doi.org/10.1007/s40200-020-00599-w>
6. Shahmoradi, L., Ramezani, A., Atlasi, R., Namazi, N., & Larijani, B. (2020). Visualization of knowledge flow in interpersonal scientific collaboration network in Endocrinology and Metabolism Research Institute. *Journal of Diabetes & Metabolic Disorders*. Retrieved from <https://doi.org/10.1007/s40200-020-00644-8>
7. Tanveer, M., Bhaumik, A., Hassan, S., & Haq, I. U. (2020). A Scopus based bibliometric evaluation of Saudi medical journal from 1979 to 2019. *Talent Development & Excellence*, 12(2), 2328-2337.

8. Viswanathan, V., Elango, B., Chitra, V., & Yugapriya, S. (2017). Mapping of Andrology research productivity: A scientometric study based on Scopus database. *International Journal of Library and Information Studies*, 7(4), 61-71. <http://www.ijlis.org>

