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## Estimating the quality of Arabian Journals using bibliometric indicators

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# **Estimating the quality of Arabian Journals using bibliometric indicators**

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## **Abstract**

Scholarly published scientific journals' quality and the standard were measured in recent years based on their scientific indicators such as Journal Impact Factor (IF), citation values, and journal ranking values. Any experimental writer and researcher will investigate these factors of journals before publishing their research output. Analyzing and comparing these indicators among different bibliographic databases are welcomed by the research community and will give them some insight to decide or to choose which journals they need to select for publishing their research outputs. The main objective of the research work undertaken was to assess the impact and visibility of 66 Arabian journals using JCR bibliometric indicators for comparison of journal quality, i.e. comparison of Journal Impact Factor (JIF), Eugen Factor Score (ES), Cite Score (CS), Source normalized impact per publication (SNIP), Scimago Journal Ranking (SJR), and H5 index. This study also aimed to determine whether these indices were an alternative to each other for estimating the quality of 66 Arabian journals. The research data was collected from the Web of Science (WoS) and Scopus databases. The JIF and ES were taken from the WoS and CS, SNIP and SJR from Scopus. The analysis for this study was done using Microsoft Excel and SPSS software. Maximum Pearson's ( $r$ ) statistical correlation was found between JIF and CS ( $r=0.844$ ) while Maximum Spearman's ( $\rho$ ) statistical correlation was found between JIF and CS ( $\rho=0.843$ ). A linear correlation was found between the values and ranks of the indices. Hence, we conclude that the open-access indicator SJR can be used as an alternative to the JIF.

## **Key Words**

Bibliometric indicators, Arabian Journals, Journal Impact Factor, EugenFactor Score, Scimago Journal Ranking, Cite Score.

## **1. Introduction**

Scientific journals and periodicals are main avenues of data exchange, principal disseminators of scientific information, and main channel for scholarly interaction for the academic domain (Ahmad et al., 2018) as well as primary route for scholarly communication within the academic community (Pouris, 2005). Bibliometric analysis is progressively being used for research assessment as a useful tool to assess the quantity and quality of research performance (Zyoud et al., 2017). Evaluation of such journals is of interest to higher education institutions and research centers. It is favorably related to internal and external funding criteria in accord with the ratio of publications per staff and government interference in the affairs of the journals (Pouris, 2005). Pouris (2005) claimed that such assessments are needed for decisions about professional staff and resource allocation. According to Gasmelseid et al. (2014), the interest in evaluation of scientific quality and impact is expected to increase over the coming years due to growing emphasis on accreditation programs, emergence of different knowledge-commercialization initiatives, and expected rise of research funding through national and Pan-Arab foundations.

Ravenscroft et al. (2017) advocated measuring scientific impact beyond academia, on the economy, society, health, and legislation. Hence, coining and emergence of alternative metrics (Altmetrics) as another dimension of reassessing research impact, both at article and journal levels. Smith et al. (2014) studied international collaboration influence on publication success predicting that in most cases, citation proportion can be by journal placement alone. The present study

analyzes the Arabian journals indexed in web of science for assessing the quality and visibility. There are 22 Arabian countries as of 2020, namely United Arab Emirates, Saudi Arabia, Egypt, Kuwait, Jordan, Bahrain, Algeria, Djibouti, Comoros, Iraq, Lebanon, Libya, Morocco, Mauritania, Oman, Palestine, Qatar, Somalia, Sudan, Syria, Tunisia, and Yemen.

## 2. Literature Review

The journal impact factor (JIF) is the often-used citation-based assessment tool for the significance and performance of scientific journals. JIF measures the frequency with which an average article in a journal has been cited in a particular year. JIF can be calculated as dividing the number of citations in the current year by the total number of articles published in the past two years (Leydesdorff, 2009).

Mathematical equation (1)

$$JIF_i = \frac{\text{Citations}_i}{\text{Publications}_{i-1} + \text{Publications}_{i-2}}$$

Where: Citations<sub>i</sub> = Citations to the publications<sub>i-1</sub> + Citations to the publications<sub>i-2</sub>

JIF = Impact factor of a journal in a year i

i = year

Citations = number of citations received

Publications = articles published in that journal during a year

The strengths of JIF lie in its comprehensibility, stability, and seeming reproducibility as well as its relatively easy availability (Glänzel & Moed, 2002). Nonetheless, JIF has been criticized in terms of its link to a journal rather than an article (Onyancha, 2017). Eigenfactor Score (ES) is a measure of the total value given to all the papers that appeared in a journal over a given year. Eigenfactor algorithms are calculated by the rating of the total importance of a scientific journal as correlated with the total citation count for the journal. ES discards the self-citations. It ranks the journals in similar ways that is followed by Google for ranking the importance of webpages in a web search (Brown, 2011).

Mathematical equation (2)

$$ES = \frac{C}{TC}$$

Where: C = Impact of citing journal

TC = Total number of citations bagged by that journal

Cite Score (CS) is the average citations per document that a title receives over a three-year period. Thus, it calculates the average number of citations received in a calendar year by all items published in that journal in the preceding three years (James et al., 2019). Equation (3) gives a relationship to determine the CS value.

Mathematical equation (3)

$$CS_i = \frac{N_i}{M_{i-3}}$$

Where:  $CS_i$  = CiteScore for  $i^{\text{th}}$  year

$N_i$  = number of citations received in  $i^{\text{th}}$  calendar year

$M_{i-3}$  = all items published in that journal in the preceding three years

Moed (2017) developed Source Normalized Impact per Publication (SNIP) at the Centre for Technology and Technology Studies, Netherland. It is defined as the ratio of the journal's citation count per paper and the citation potential in its specific subject fields. Calculated as the number of citations received in the current year to publications in the past three years, by the total number of publications during the last three years (Ansari et al., 2020).

Mathematical equation (4)

$$SNIP = \frac{CCP}{CPS}$$

Where: CCP = Journal's citation count per paper

CPS = Citation potential in its subject field

SCImago Journal Rank (SJR) is another bibliometric indicator based on Elsevier's Scopus database developed by SCImago from the widely realized calculation of Google page rank. SJR utilizes a 3-year citation window. In SJR calculation, the citation system of a journal first settled where nodes are the journals and citations are edges. The more rising edges to a node, more is the significance of the node. However, the estimation of prestige follows an iterative procedure where every node is first assigned an equal value and the cycling procedure begins until the difference between journal prestige value in successive emphases don't outperform a pre-built-up edge (Kalita et al., 2018).

Mathematical equation (5)

$$SJR = \frac{\text{Average \# of weighted citations received in 1 year}}{\text{\# of documents published in the last 3 years}}$$

In April 2012, Google scholar metrics introduced and planned to give a tool for journal ranking and assessment by providing journal indicators, namely H5-index and H5-median (Zarifm Mahmoudi et al., 2015). H5-index is the largest number h such that at least h articles in that publication were cited at least h times in the last five years. Therefore, the H5 index of 100 means that the journal published 100 articles in the past five (5) years, which have at least 100 or more citations each (Zarifm Mahmoudi et al., 2015).

### 3. Objectives

The main objective of this work was to assess the visibility of the Arabian journals indexed in the web of science and listed in journal citation report (JCR) for the year 2019 and also to assess the quality of Arabian journals by employing bibliometric indicators such as JIF, ES, CS, SNIP,

SJR, and h5-index. The other objective was to compare these bibliometric indicators with each other to check the compatibility in case of using one indicator as an alternative to the others.

#### 4. Methods and Materials

All the required data were retrieved from the web of science (WoS) core collection (indicators JIF and ES), SCImago journals and country ranking website (indicator SJR), Scopus database (indicator SNIP and CS), and from the Google scholar metrics (H5-index) on November 11, 2020. The data were strategically filtered for JCR year 2019. SCIE and SSCI editions were selected. Selected countries/regions included United Arab Emirates, Saudi Arabia, Egypt, Kuwait, Jordan, Bahrain, Algeria, Djibouti, Comoros, Iraq, Lebanon, Libya, Morocco, Mauritania, Oman, Palestine, Qatar, Somalia, Sudan, Syria, Tunisia, and Yemen. Selected category scheme was WoS. Out of 22 countries, journals of only five countries were indexed in the WoS (The United Arab Emirates =39 journals, Saudi Arabia =15 journals, Egypt =7 journals, Kuwait =4 journals, and Jordan =1 journal). Sixty-six journals were retrieved using the strategy mentioned above and analyzed for different indicators and parameters. The ranks and values of all 66 journals were statistically compared with their indicators. JIF was considered the main indicator in comparison to the other indicators (ES, CS, SNIP, SJR, and H5-Index). To evaluate the compatibility of the indicators and to determine whether these indicators can be used as an alternative to each other for assessment of Arabian journals, the correlation coefficient Pearson's (r) and Spearman's (ρ) were calculated by IBM SPSS (version 21.0). Microsoft Excel (2016) and Microsoft Access (2016) were used for data visualization and a graphical representation.

In JCR, journals of only five Arabian countries (as mentioned above) were indexed. Therefore, journals from other Arab countries could not be included in the comparison. It is to be noticed that those countries were not available in the SNIP, SJR, and CS databases also. Therefore, results of this study should be considered keeping in view these limitations.

#### 5. Results and discussions

##### 5.1. Country-wise production of journals

There are 22 Arabian countries out of which journals of only five countries have been indexed in the web of science. The United Arab Emirates noted as the leading producer of journals (39) amongst the Arabian countries followed by Saudi Arabia (15), Egypt (7), Kuwait (4), and Jordan (1), respectively.

**Table 1: Country-wise distribution of Arabian journals**

#	Country	Number of journals	Percentage
1	United Arab Emirates	39	59 %
2	Saudi Arabia	15	23 %
3	Egypt	07	11 %
4	Kuwait	04	06 %
5	Jordan	01	01 %
	<b>Total</b>	<b>66</b>	<b>100 %</b>

## 5.2. Topmost Cited Arabian Journals

Table 2 shows that out of 66 Arabian journals, the top five most-cited journals are *Current Pharmaceutical Design* (TC=17,603), *Current Medicinal Chemistry* (TC= 17,243), *Arabian Journal of Chemistry* (TC=8,485), *Current Topics in Medicinal Chemistry* (TC=7,620), and *Arabian Journal of Geosciences* (TC= 6,325), respectively. The *Journal of Engineering Research* (TC=160) and *Kuwait Medical Journal* (TC=81) are the least cited Arabian journals.

## 5.3. Assortment of values and ranks

Table 2 shows that there are variations in the values and ranks of Arabian journals for different bibliometric indicators, namely JIF, ES, CS, SNIP, SJR, and H5. The values and ranks for each indicator fluctuate as compared to each other indicators. The JIF values for 66 Arabian journals range from 6.992 (*Journal of Advanced Research*; rank = 1) to 0.113 (*Kuwait Medical Journal*; rank = 66). ES values range from 0.01878 (*Current Pharmaceutical Design*; rank = 1) to 0.00008 (*Kuwait Medical Journal*; rank = 66). CS values range from 10.9 (*Journal of Advanced Research*; rank = 1) to 0.1 (*Kuwait Medical Journal*; rank = 65). SNIP values range from 3.572 (*Journal of King Saud University Science*; rank = 1) to 0.044 (*Kuwait Medical Journal*; rank = 64). SJR values range from 1.531 (*Current Neuropharmacology*; rank = 1) to 0.113 (*Kuwait Medical Journal*; rank = 64), and H5 values range from 71 (*Neurosciences*; rank = 1) to 5 (*Kuwait Medical Journal*; rank = 63). In most of the indicators, variations at the first position noted except for the *Journal of Advanced Research*. *Kuwait Medical Journal* shows consistency in all the indicators by securing the lowest position.

## 5.4. Assessment of the top five journals

Referring to table 2, very few Arabian journals offer the same ranks and values across all the selected bibliometrics indicators. Following are the assessments of the top five journals from each chosen index.

**JIF:** The journals are arranged rank wise with their value. The top five JIF journals include *Journal of Advanced Research* (6.992), *Arabian Journal of Chemistry* (4.762), *Current Neuropharmacology* (4.668), *Current Medicinal Chemistry* (4.184), and *Journal of King Saud University Science* (3.819). The *Journal of Engineering Research* (0.387) and *Kuwait Medical Journal* (0.113) have recorded the lowest JIF among Arabian journals.

**ES:** The top five ES journals contain *Current Pharmaceutical Design* (0.01878), *Current Medicinal Chemistry* (0.01295), *Arabian Journal of Geosciences* (0.01118), *Arabian Journal of Chemistry* (0.01054), and *Current Topics in Medicinal Chemistry* (0.00893) while the lowest ES recorded for the *Journal of Engineering Research* (0.00015) and *Kuwait Medical journal* (0.00008).

**CS:** The top five CS journals consist of *Journal of Advanced Research* (10.9), *Egyptian Informatics Journal* (8.9), *Arabian Journal of Chemistry* (8.2), *Current Neuropharmacology* (8.2), and *Journal of King Saud University Science* (8). The minimum CS counted for the *Kuwait Medical Journal* (0.1). The *Journal of Advanced Research* (rank = 1), *Arabian Journal of Chemistry* (rank = 2), and *Current Neuropharmacology* (rank = 3) have equal ranks for JIF and CS.



**SNIP:** The top five journals are, *Journal of King Saud University Science* (3.572), *Journal of Advanced Research* (2.814), *Bulletin of Mathematical Sciences* (2.503), *Arabian Journal of Chemistry* (2.349), and *Egyptian Informatics Journal* (2.278). Whereas, *Current Bioinformatics* (0.29) and *Kuwait Medical journal* (0.044) positioned at the lowest place in the SNIP.

**SJR:** *Current Neuropharmacology* (1.531), *Bulletin of Mathematical Sciences* (1.362), *Current Alzheimer Research* (1.079), *Journal of Advanced Research* (0.989), and *Current Medicinal Chemistry* (0.903) are the top five SJR journals. *Current Medical Imaging* (0.18) and the *Kuwait Medical Journal* (0.113) have the lowest SJR.

**H5:** *Arabian Journal of Chemistry* (71), *Neurosciences* (71), *Alexandria Engineering Journal* (55), *Current Pharmaceutical Design* (53), *Current Medicinal Chemistry* (52), and *Journal of Advanced Research* (48) are recorded as the top five journals in H5 index. *Journal of Engineering Research* (8) and the *Kuwait Medical Journal* (5) are found at the lowest rank in H5 index. Incidentally, the *Current Medicinal Chemistry* has the same rank (5) in SJR and H5.

**Table: 2 Comparative ranking and values of JIF, ES, CS, SNIP, SJR and H5 for Arabian journals**

Full journal title	Country	TC	TC R	JIF	JIF R	ES	ES R	CS	CS R	SNIP	SNIP R	SJR	SJR R	H-5	H-5 R
Journal of advanced research	Egypt	3,564	17	6.992	1	0.00547	10	10.9	1	2.814	2	0.989	4	48	6
Arabian Journal of chemistry	Saudi Arabia	8,485	3	4.762	2	0.01054	4	8.2	3	2.349	4	0.779	10	71	1
Current neuropharmacology	UAE	4,178	11	4.668	3	0.00629	7	8.2	3	1.277	10	1.531	1	42	10
Current medicinal chemistry	UAE	17,243	2	4.184	4	0.01295	2	5.8	11	1.036	13	0.903	5	52	5
Journal of King Saud university science	Saudi Arabia	1,640	35	3.819	5	0.00203	31	8	5	3.572	1	0.793	7	37	16
Complex & intelligent systems	Saudi Arabia	278	62	3.791	6	0.00075	52	0	66	0	65	0	65	20	39
Journal of Saudi chemical society	Saudi Arabia	3,203	20	3.517	7	0.00402	15	6.1	9	1.329	9	0.566	26	41	11
Current topics in medicinal chemistry	UAE	7,620	4	3.218	8	0.00893	5	6.6	6	0.902	16	0.788	8	45	8
Egyptian informatics journal	Egypt	579	55	3.119	9	0.00066	56	8.9	2	2.278	5	0.65	16	25	29
Current Alzheimer research	UAE	4,243	10	3.047	10	0.00624	8	6.3	8	0.873	18	1.079	3	36	17
Current drug metabolism	UAE	3,749	15	2.96	11	0.00307	19	4.5	19	0.764	22	0.65	16	30	21
Current cancer drug targets	UAE	3,032	22	2.912	12	0.00255	26	4.8	16	0.695	30	0.893	6	28	25
Applied nanoscience	Saudi Arabia	3,195	21	2.88	13	0.00406	13	4.9	14	1.226	11	0.572	25	41	11
Saudi pharmaceutical Journal	Saudi Arabia	2,933	23	2.879	14	0.004	16	5.9	10	1.816	6	0.7	13	43	9
Saudi Journal of biological sciences	Saudi Arabia	3,994	12	2.802	15	0.00581	9	4.8	16	1.734	7	0.649	18	48	6
Mini reviews in medicinal chemistry	UAE	4,605	8	2.733	16	0.00363	17	3.4	28	0.752	24	0.5	30	33	19
Current vascular pharmacology	UAE	1,786	33	2.672	17	0.0022	29	4.4	20	0.491	46	0.559	27	25	29
Current drug targets	UAE	5,515	6	2.632	18	0.00537	12	4.9	14	0.705	29	0.741	12	38	14
Current genomics	UAE	2,190	27	2.63	19	0.00207	30	3.6	25	0.721	28	0.766	11	25	29
Current stem cell research & therapy	UAE	1,335	37	2.614	20	0.00159	36	3.9	22	0.49	47	0.577	23	24	33
Recent patents on anti-cancer drug discovery	UAE	763	49	2.61	21	0.00094	50	4.3	21	0.647	34	0.603	21	19	43
Medicinal chemistry	UAE	1,994	30	2.577	22	0.00258	25	3.2	32	0.684	32	0.344	41	19	43

Full journal title	Country	TC	TC R	JIF	JIF R	ES	ES R	CS	CS R	SNIP	SNIP R	SJR	SJR R	H-5	H-5 R
Current protein & peptide science	UAE	2,795	25	2.52	23	0.00302	21	3.7	24	0.623	37	0.666	15	28	25
Alexandria engineering journal	Egypt	3,853	13	2.46	24	0.00545	11	6.5	7	1.651	8	0.576	24	55	3
Current gene therapy	UAE	1,161	40	2.431	25	0.0015	37	3.8	23	0.475	50	0.782	9	21	36
Bulletin of mathematical sciences	Saudi Arabia	222	63	2.241	26	0.00192	33	3.3	30	2.503	3	1.362	2	0	64
Current pharmaceutical design	UAE	17,603	1	2.208	27	0.01878	1	5.1	13	0.659	33	0.606	20	53	4
Current pharmaceutical biotechnology	UAE	3,463	19	2.097	28	0.00282	24	3.3	30	0.636	35	0.497	31	25	29
Current bioinformatics	UAE	615	53	2.068	29	0.00108	45	2.1	45	0.29	63	0.333	43	18	48
Anti-cancer agents in medicinal chemistry	UAE	3,853	13	2.049	30	0.00405	14	5.7	12	0.917	15	0.543	28	30	21
Saudi Journal of gastroenterology	Saudi Arabia	1,021	44	1.99	31	0.00147	39	3.5	27	0.77	21	0.611	19	20	39
Current organic synthesis	UAE	1,199	39	1.983	32	0.00113	44	2.9	36	0.564	40	0.33	44	20	39
Endocrine metabolic & immune disorders - drug targets	UAE	993	45	1.973	33	0.00123	41	2	46	0.525	43	0.465	32	21	36
Ain shams engineering journal	Egypt	2,171	28	1.949	34	0.003	22	4.6	18	1.212	12	0.402	35	41	11
Current organic chemistry	UAE	4,408	9	1.933	35	0.00353	18	3.6	25	0.527	42	0.398	36	29	24
International Journal of photoenergy	Egypt	2,820	24	1.88	36	0.00233	28	3	34	0.688	31	0.376	38	24	33
Journal of Taibah university for science	Saudi Arabia	1,126	41	1.863	37	0.00147	39	1.3	56	0.636	35	0.229	59	30	21
Current nanoscience	UAE	1,314	38	1.836	38	0.00104	46	3	34	0.446	52	0.246	54	21	36
Mini reviews in organic chemistry	UAE	672	51	1.824	39	0.00053	57	2	46	0.416	54	0.244	55	12	58
Arabian Journal for science and engineering	Saudi Arabia	5,213	7	1.711	40	0.0071	6	2.7	38	0.877	17	0.327	45	34	18
Current neurovascular research	UAE	985	47	1.649	41	0.00115	43	2.5	39	0.481	48	0.512	29	19	43
Current molecular medicine	UAE	3,559	18	1.6	42	0.00284	23	3.4	28	0.56	41	0.694	14	28	25
Current drug delivery	UAE	1,799	32	1.582	43	0.00171	34	3.2	32	0.499	45	0.359	39	22	35
Current analytical chemistry	UAE	721	50	1.365	44	0.00069	53	2.3	42	0.4	56	0.271	53	15	54
Arabian Journal of geosciences	Saudi Arabia	6,325	5	1.327	45	0.01118	3	2	46	0.752	24	0.404	34	38	14
Medical principles and practice	Kuwait	1,924	31	1.295	46	0.00239	27	2.4	41	0.825	19	0.463	33	28	25
Combinatorial chemistry & high throughput screening	UAE	1,497	36	1.195	47	0.00102	48	2.5	39	0.425	53	0.296	48	18	48
Saudi medical Journal	Saudi Arabia	3,575	16	1.195	47	0.00305	20	1.7	52	0.799	20	0.381	37	32	20
Letters in drug design & discovery	UAE	1,106	42	1.169	49	0.00104	46	1.8	51	0.374	59	0.24	56	16	53
Protein and peptide letters	UAE	1,995	29	1.156	50	0.00201	32	2.2	44	0.326	61	0.357	40	20	39
Applied bionics and biomechanics	Egypt	585	54	1.141	51	0.0008	51	2	46	0.763	23	0.32	46	0	64
Emirates journal of food and agriculture	UAE	1,066	43	1.008	52	0.00122	42	1.9	50	0.745	26	0.339	42	19	43
Recent patents on nanotechnology	UAE	386	60	0.977	53	0.00029	63	2.9	36	0.477	49	0.275	51	14	55
Current computer-aided drug design	UAE	549	56	0.935	54	0.00027	64	1.6	53	0.614	38	0.216	60	9	60
Current pharmaceutical analysis	UAE	484	57	0.923	55	0.0004	59	1.3	56	0.461	51	0.286	49	12	58

Full journal title	Country	TC	TC R	JIF	JIF R	ES	ES R	CS	CS R	SNIP	SNIP R	SJR	SJR R	H-5	H-5 R
Annals of Saudi medicine	Saudi Arabia	1,783	34	0.917	56	0.001	49	1.3	56	0.742	27	0.232	58	18	48
Current medical imaging	UAE	463	59	0.812	57	0.0003	62	0.9	63	0.405	55	0.18	63	13	56
Current HIV research	UAE	987	46	0.802	58	0.00148	38	2.3	42	0.38	58	0.588	22	17	51
Letters in organic chemistry	UAE	963	48	0.779	59	0.00069	53	1.1	61	0.321	62	0.211	61	13	56
Current proteomics	UAE	286	61	0.68	60	0.00031	61	1.4	55	0.361	60	0.234	57	9	60
Eastern Mediterranean health journal	Egypt	2,292	26	0.678	61	0.00169	35	1.1	61	0.505	44	0.28	50	19	43
Neurosciences	Saudi Arabia	484	57	0.592	62	0.00069	53	1.3	56	0.567	39	0.272	52	71	1
Kuwait journal of science	Kuwait	207	64	0.519	63	0.00034	60	1.5	54	0	65	0	65	0	64
International Arab Journal of information technology	Jordan	645	52	0.467	64	0.00045	58	1.2	60	1.012	14	0.315	47	17	51
Journal of engineering research	Kuwait	160	65	0.387	65	0.00015	65	0.7	64	0.397	57	0.202	62	8	62
Kuwait medical journal	Kuwait	81	66	0.113	66	0.00008	66	0.1	65	0.044	64	0.113	64	5	63

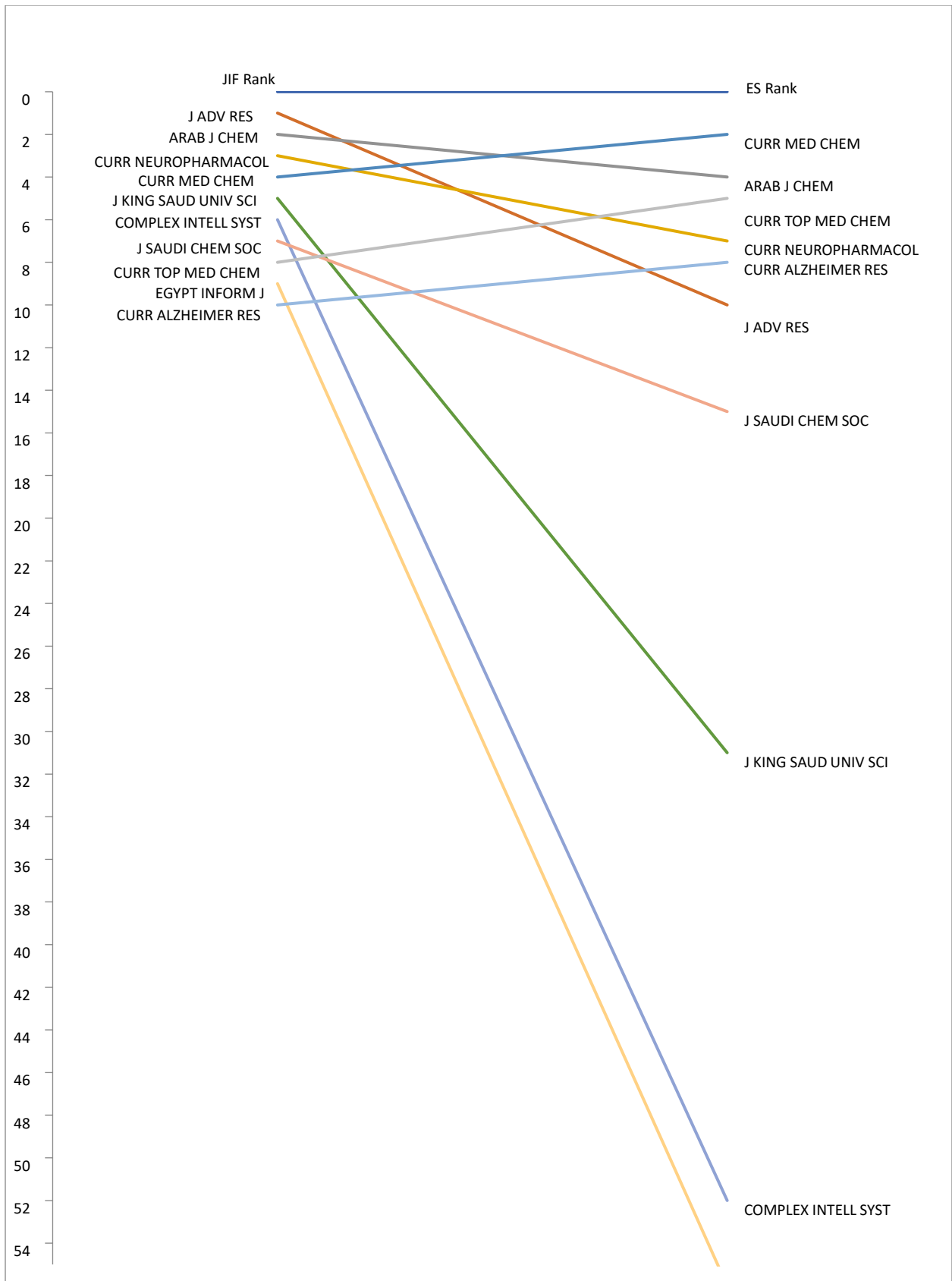
## 5.5. Estimation of top ten Arabian journals by bump chart

For gauging the quality of Arabian journals, JIF was considered primary bibliometric indicator and top ten impactful journals were selected for comparison with other indicators with the help of bump chart, which can be noticed in figure 1 to 5. Figure 1 shows a bump chart of the top ten (JIF rank) Arabian journals with respective ES ranks. It is to be noted that five journals (50%) are included in the top ten Arabian journals in the ES indicator. The most massive differences in the ranking are found for *Egyptian Informatics Journal* and *Complex & Intelligent Systems*.

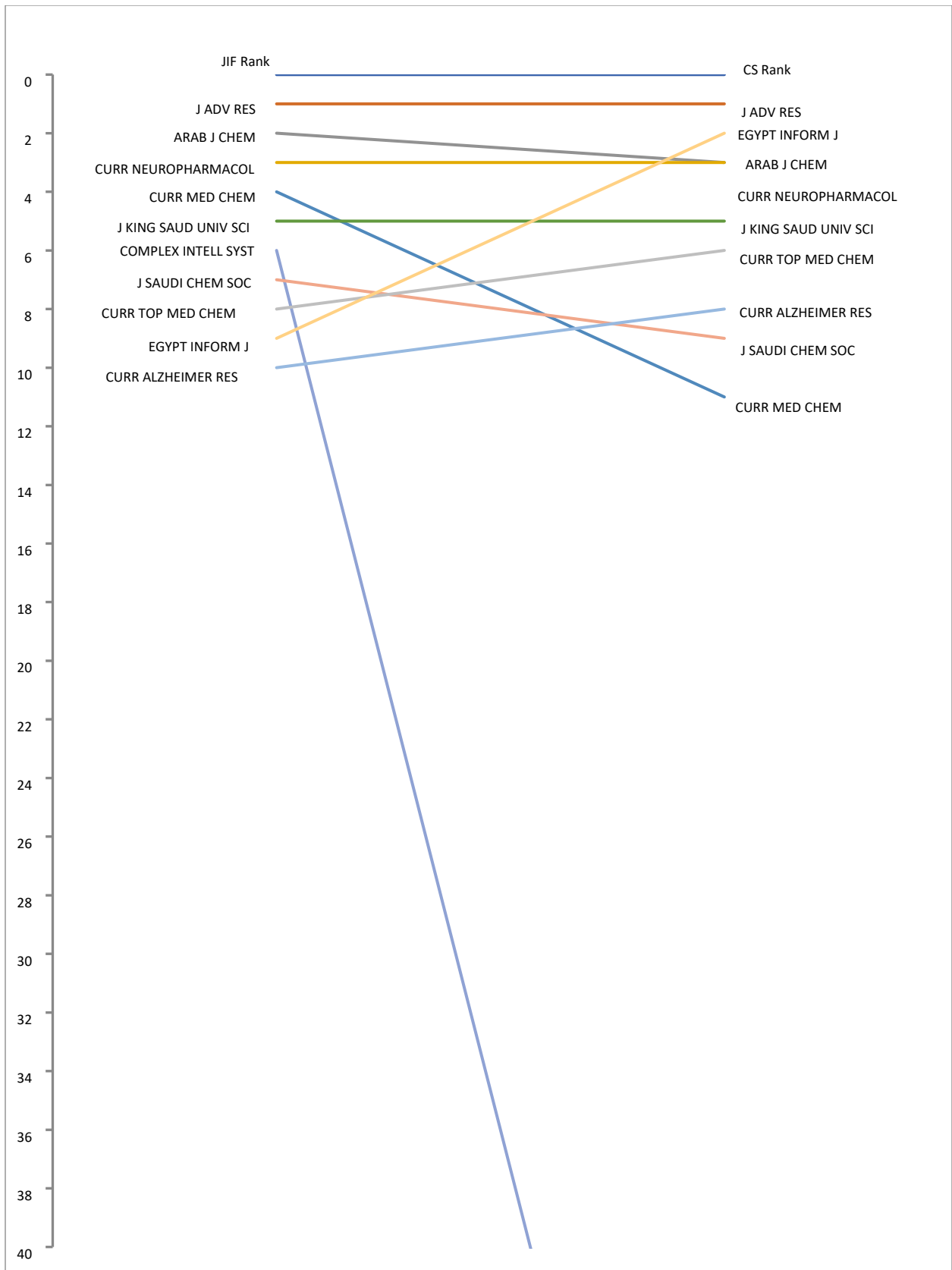
Figure 2 represents a bump chart for the top ten (JIF rank) Arabian journals in comparison with their CS ranks. The figure shows that seven journals (70%) are also ranked in the top ten in the CS list. Four journals have the same rank and the rest of the six journals show the varying ranking for both indicators. All the journals are showing reasonable correlation except *Complex & Intelligent Systems* as it was not indexed in the CS and offering the most massive difference in the list. This result agrees with Rahaman et al. (2020).

Figure 3 denotes a bump chart for the top ten (JIF rank) Arabian journals with SNIP ranks. The six journals (60%) also appeared in the top ten Arabian journals in the SNIP list. The figure reveals that ranks fluctuated for both the indicators for Arabian journals. The journal '*Complex & Intelligent Systems* has enormously dropped for SNIP rank.

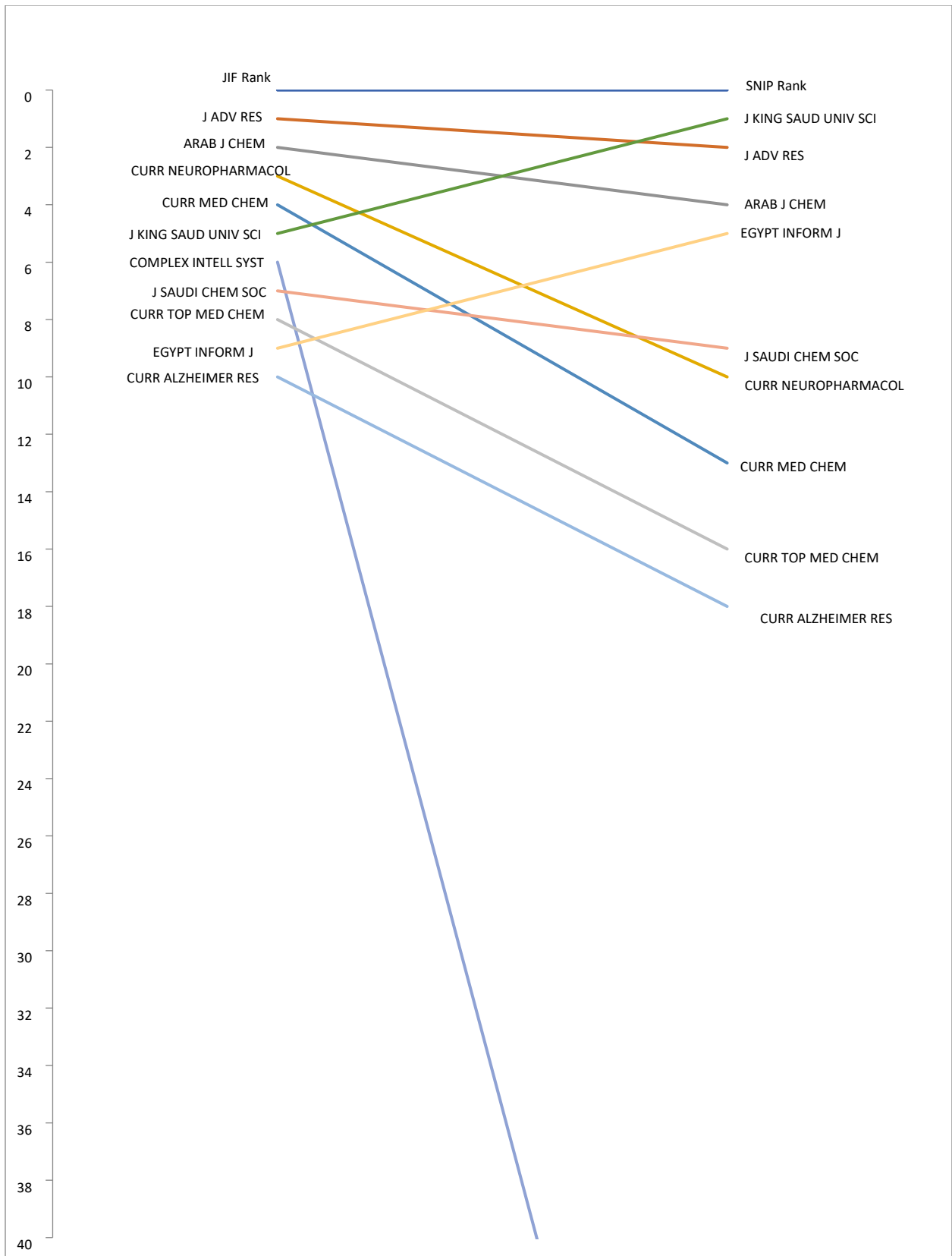
Figure 4 describes the bump chart for the top ten (JIF rank) Arabian journals in comparison with their SJR ranks. The figure reveals that six journals (60%) are also included in the top ten in the SJR indicator list. The ranks of both indicators have fluctuated with the changing arrays of ranking for Arabian journals. *Complex & Intelligent Systems* and *Journal of Saudi Chemical Society* dragged down in the SJR list.



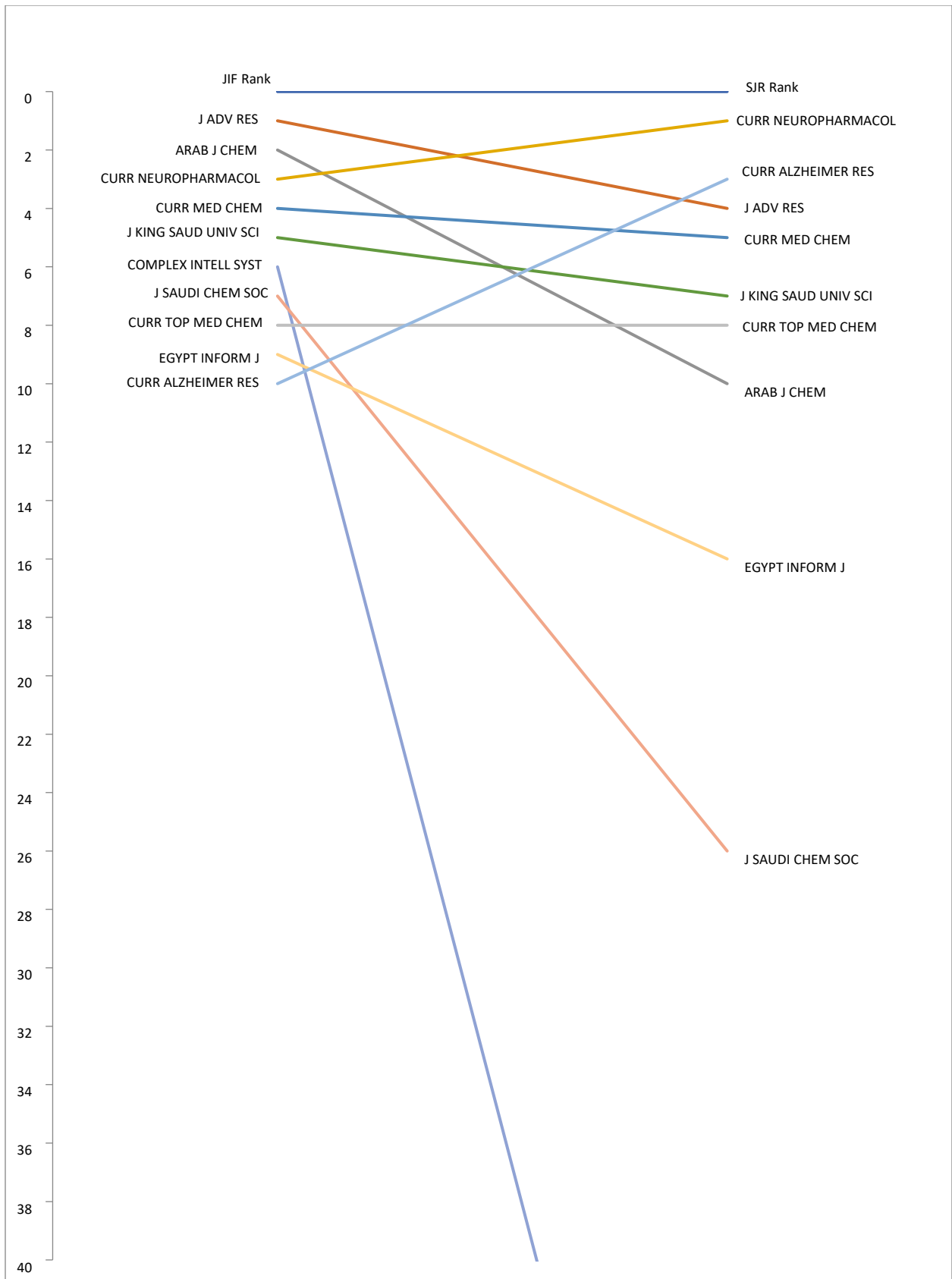
**Figure 1: Bump Chart JIF vs ES**



**Figure 2: Bump Chart JIF vs CS**

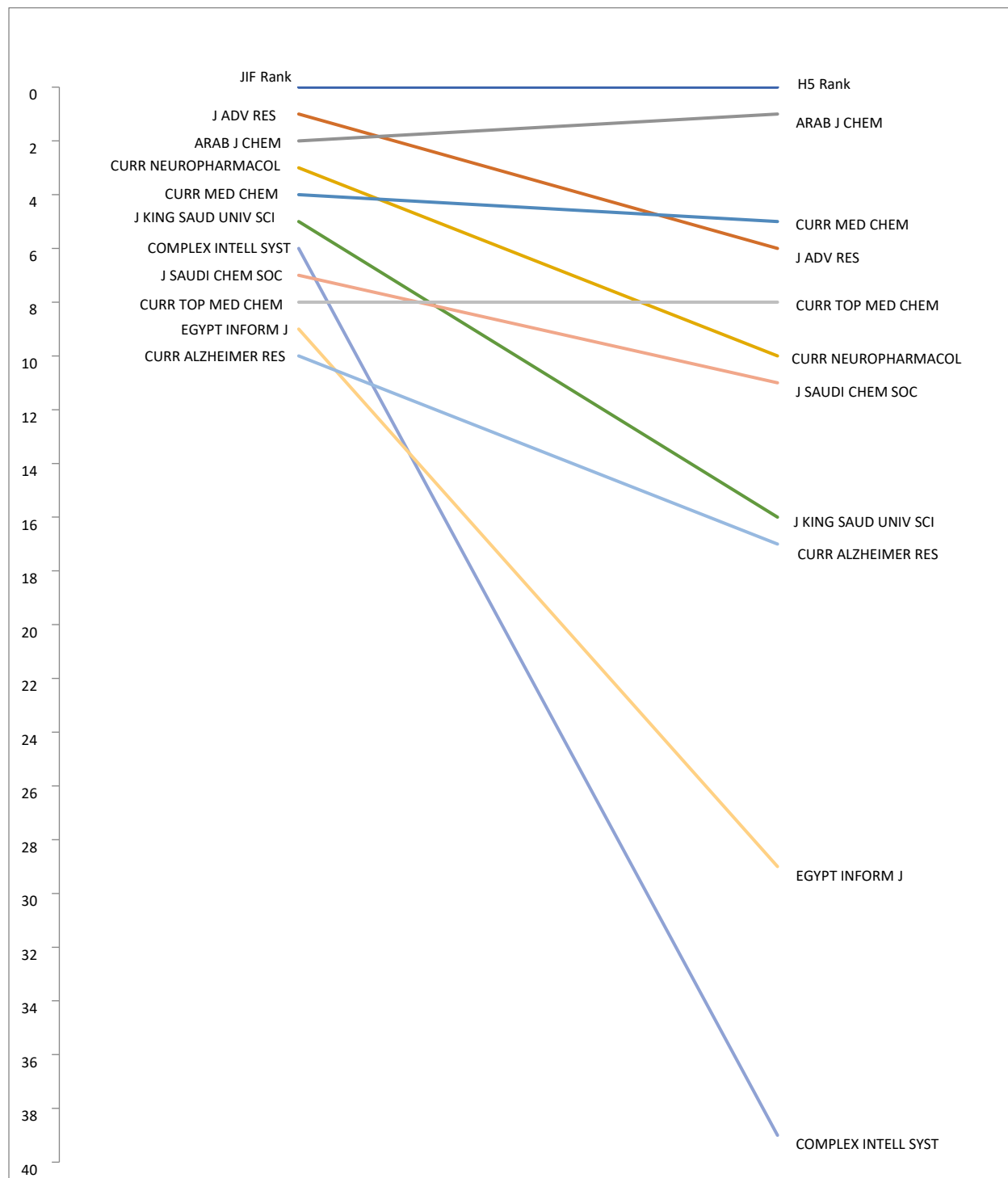


**Figure 3: Bump Chart JIF vs SNIP**



**Figure 4: Bump Chart JIF vs SJR**

Figure 5 represents a bump chart for the top ten (JIF rank) Arabian journals in association with the Google Scholar H5 index. Half of the Arabian journals secured top ten positions in the H5 list. *Complex & Intelligent Systems* suffered to the maximum level, and all other journals showed a fair correlation with varying their rank with each other.



**Figure 5: Bump Chart JIF vs H5**

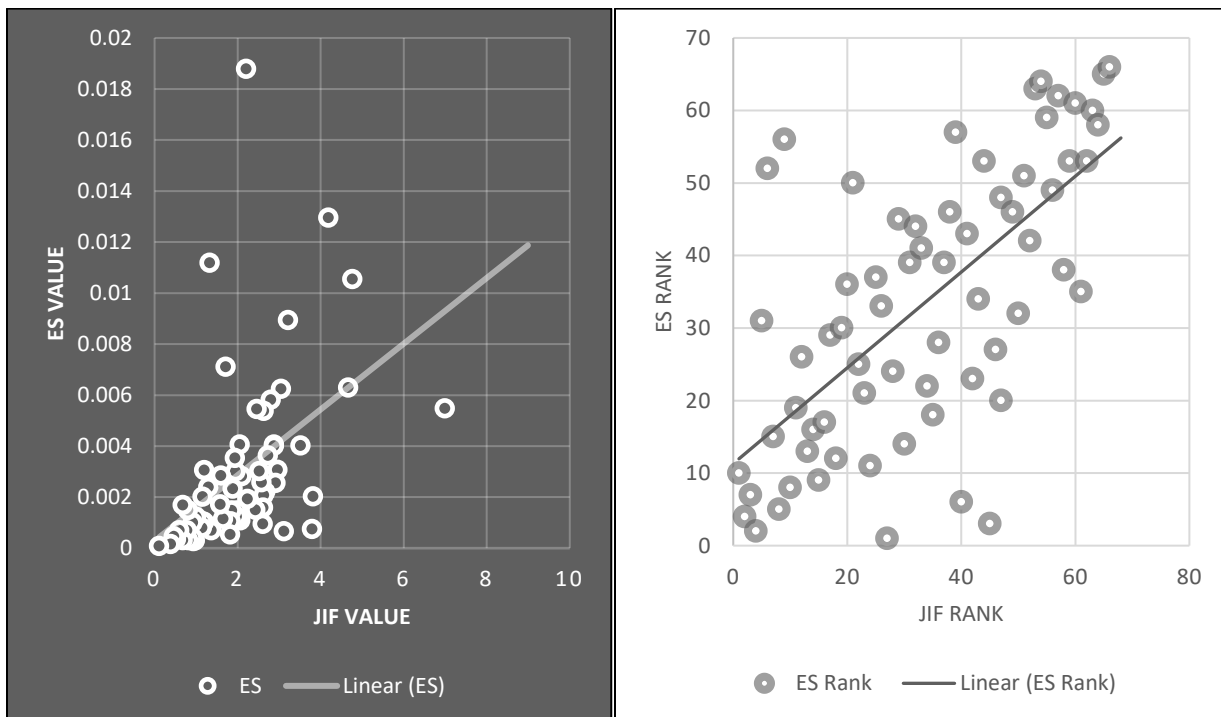


In table 3, the correlation coefficient is calculated for the 66 Arabian journals as per the metrics of values and ranks. Pearson's (r) considered for values and Spearman's (ρ) calculated for ranks. Table demonstrates that there is a maximum Pearson's (r) statistical correlation between JIF and CS (r=0.844) followed by JIF and SNIP (r=0.677), JIF and SJR (r=0.627), JIF and H5 (r=0.579). There is the lowest statistical correlation between JIF and ES (r=0.465). In regard to Spearman's (ρ) statistical correlations, the maximum correlation is between JIF and CS (ρ=0.843) followed by JIF and SJR (ρ=0.766), JIF and H5 (ρ=0.664), JIF and ES (ρ=0.663) and the lowest correlation exist between JIF and SNIP (ρ=0.588).

**Table 3: Bivariate Correlation between JIF and ES, CS, SJR, SNIP & H5 for Arabian journals**

Correlation statistic	Coefficient Values	Significant
Pearson's r between JIF and ES values	0.465	0.000
Pearson's r between JIF and CS values	0.844	0.000
Pearson's r between JIF and SJR values	0.627	0.000
Pearson's r between JIF and SNIP values	0.677	0.000
Pearson's r between JIF and H5 Values	0.579	0.000
Spearman's rho between JIF and ES rankings	0.663	0.000
Spearman's rho between JIF and CS rankings	0.843	0.000
Spearman's rho between JIF and SJR rankings	0.766	0.000
Spearman's rho between JIF and SNIP rankings	0.588	0.000
Spearman's rho between JIF and H5 rankings	0.664	0.000

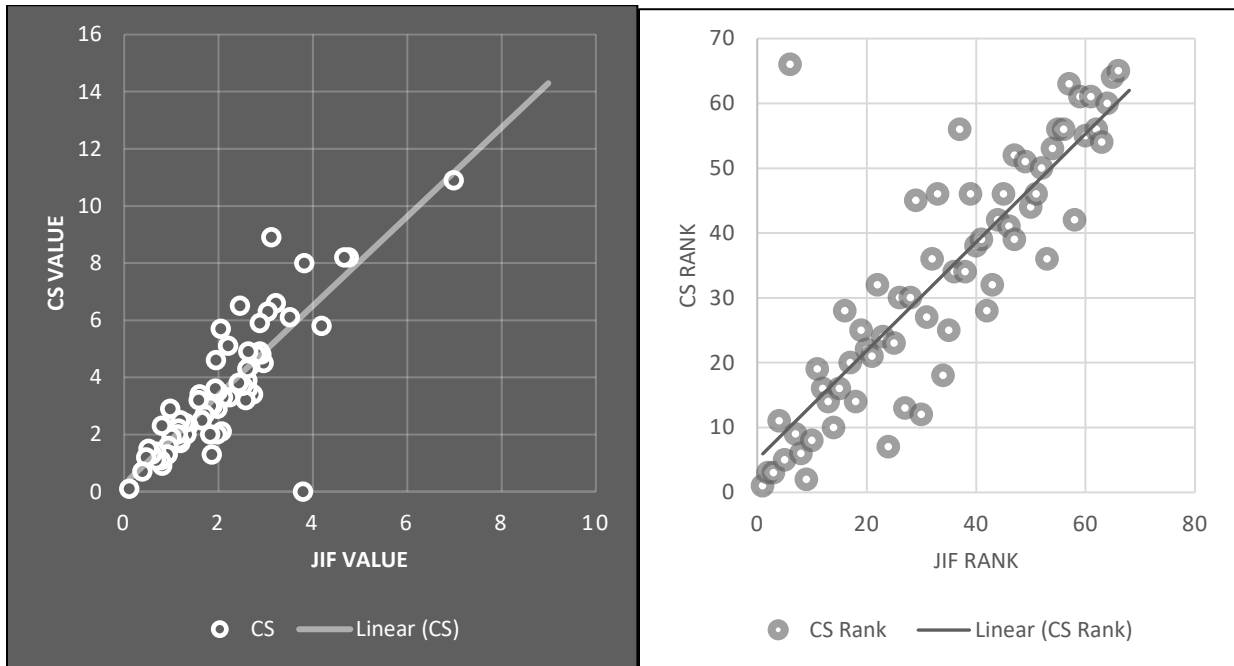
\*\* correlation is significant at the 0.01 level (2-tailed).



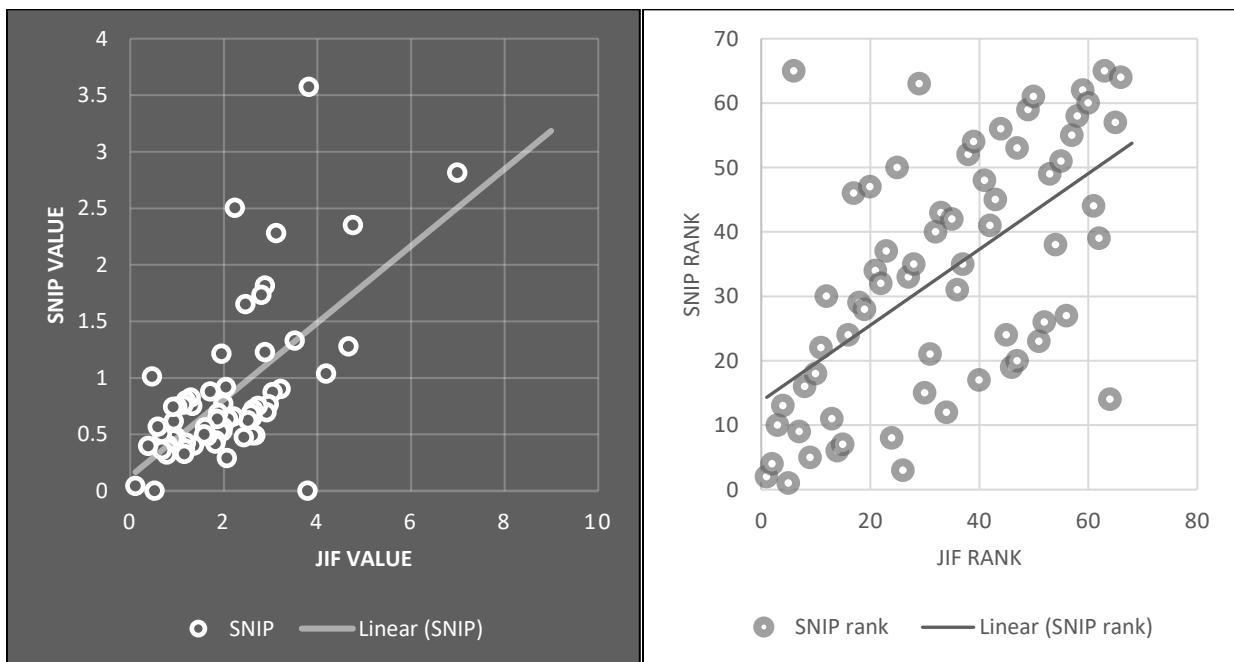
**Figure 6: Correlation between JIF and ES (Values and ranks)**

Figure 6 displays the Scatter plots showing the correlation between JIF and ES (values and ranks) as well as their fit lines for 66 Arabian journals. The figure demonstrates that there is a linear correlation between the values and ranks of JIF and ES indicators. This result is in agreement with Ahmad et al. (2019).

Figure 7 shows scatter plots showing the correlation between JIF and CS (values and ranks) as well as their fit lines for 66 Arabian journals. A noticeable association present between the values and ranks of JIF and CS indicators.



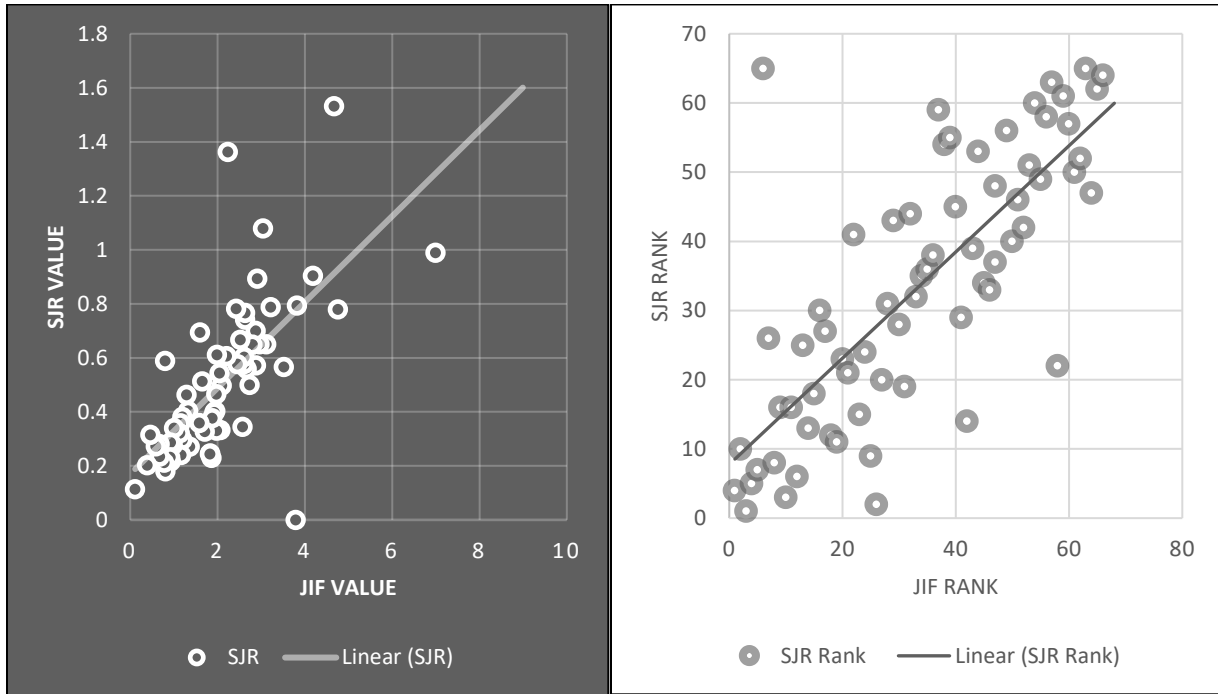
**Figure 7: Correlation between JIF and CS (Values and ranks)**



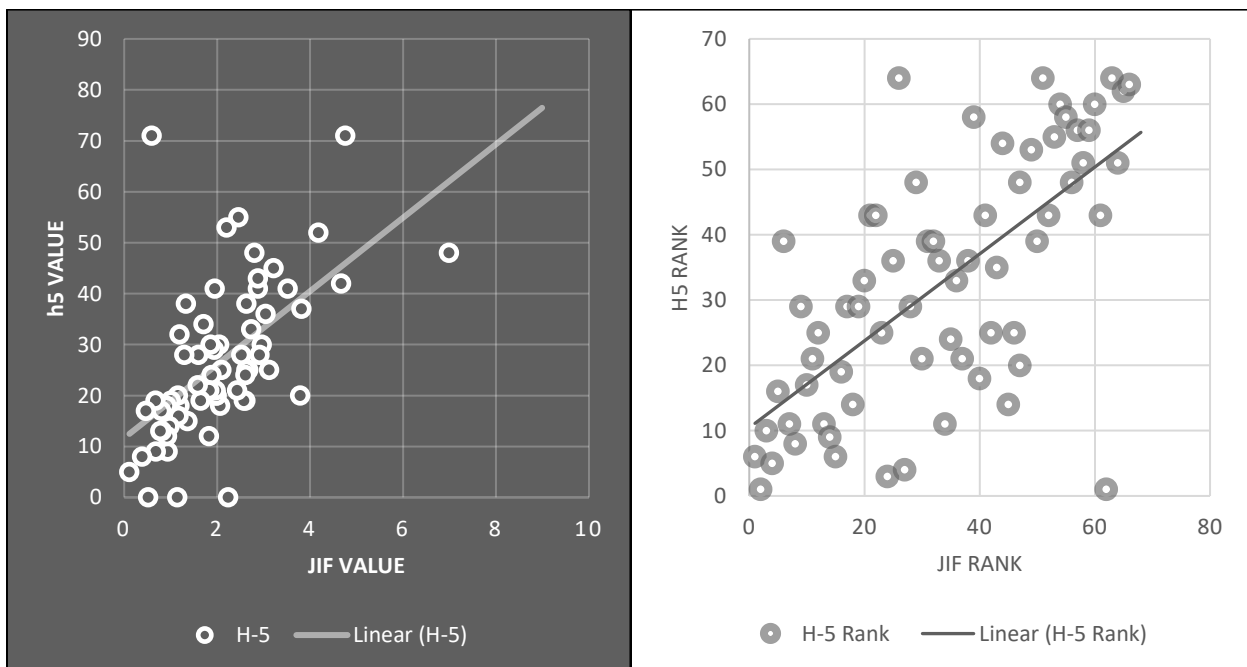
**Figure 8: Correlation between JIF and SNIP (Values and ranks)**

Figure 8 illustrates Scatter plots showing the correlation between JIF and SNIP (values and ranks). The figure describes the strong correlation between JIF and SNIP ranks and values of selected Arabian journals.

Figure 9 represents a Scatter plot showing the correlation between JIF and SJR (values and ranks) as well as the linear trend for 66 Arabian journals. The figure displays linear correlations between the values and ranks of JIF and SJR.



**Figure 9: Correlation between JIF and SJR (Values and ranks)**



**Figure 10: Correlation between JIF and H5 (Values and ranks)**

Figure 10 displays Scatter plots showing the correlation between JIF and H5 (values and ranks) as well as their fit lines for 66 Arabian journals. The figure again reveals the same level of association between the values and ranks of the JIF and H5 index.

## Findings

- The United Arab Emirates is leading producer of Arabian Journals (39, 59%).
- The most-cited journal identified as *Current Pharmaceutical Design* (TC=17,603).
- The highest JIF (6.992) and CS (10.9) values recorded for *Journal of Advanced Research*.
- The *Current Pharmaceutical Design* scored maximum ES (0.01878).
- The *Journal of King Saud University Science* secured the highest SNIP score (3.572).
- The *Current Neuropharmacology* showed highest SJR Score (1.531).
- The *Arabian Journal of Chemistry and Neurosciences* were the leading in H5 index (71).
- Range of values were found fluctuating between JIF (0.113 - 6.992), ES (0.00008 - 0.01878), CS (0.1 - 10.9), SNIP (0.044 - 3.572), SJR (0.113 - 1.531), and H5 (5 - 71).
- Maximum Pearson's (r) statistical correlation was recorded between JIF and CS (r=0.844) while the lowest statistical correlation was recorded between JIF and ES (r=0.465).
- Maximum Spearman's (ρ) statistical correlations was found between JIF and CS (ρ=0.843) while the lowest correlation existed between JIF and SNIP (ρ=0.588).
- Scatter plots represented the linearity of correlation between the JIF and ES; JIF and CS; JIF and SNIP; JIF and SJR; & JIF and H5.

## Conclusion

The quality of scholarly published Arabian scientific journals has been measured by scientific indicators (JIF, ES, CS, SNIP, SJR, H5, citation values, and journal ranking values). There are 66 Arabian journals indexed in the web of science and analysed for this research. The impact and visibility of Arabian journals tested for different countries. Bivariate correlation between the six indicators of the selected Arabian journals revealed a varied Pearson's (r) and Spearman's (ρ) statistical correlation. This showed a clear indication that the *Journal of Advanced Research* has the highest rank (1) for JIF and CS. It was also revealed that the *Arabian Journal of Chemistry and Neurosciences* has the highest value of 71 for the H5-index. The study also found that UAE leads in the production of journals (39) and Jordan holds the lowest journals count (1). The scattered plot of correlation coefficient denotes almost all linear fitted lines. Hence, it can be concluded that all the indicators can be employed with respect to each other as compatibility was found amongst them. We also conclude that the open-access indicator SJR can be used as an alternative to the JIF.

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