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Comparative Analysis of Citation Based Scientometric Indicators of DESIDOC Journal of Library & Information Technology (DJLIT) and Annals of Library and Information Studies (ALIS) Journals Using SCImago Journal Rank for the Period 2016-2020

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Abstract

In the academic world, journal rankings have broadly used to evaluate the impact and quality of scholarly journals. The study's key objective is to comparatively analyze the citation-based scientometric indicators of *DESIDOC Journal of Library & Information Technology (DJLIT)* and *Annals of Library and Information Studies (ALIS)* journals using SCImago Journal Rank from 2016 to 2020. The data was collected from SCImago Journal Rank website. This article discusses the year wise SJR with quartile, citation per document 4years/3years/2years wise, self cites and total cites, external cites and cites per document, percentage of international collaboration, citable and non-citable documents, cited and uncited documents. The SJR value for the last five years results illustrates that the highest SJR for *ALIS* and *DJLIT* journals is 2.98 and 0.514, respectively, in the year 2020. The highest 23 self-citations and 250 total citations received for *ALIS;* however, *the DJLIT* journal is 106 and 637 for the last five years. The total international collaborations for the *ALIS* and *DJLIT* journals are 16.65 and 19.4, respectively.

Keywords: ALIS Journal, Citation Analysis, DJLIT Journal, LIS Journals, Scientometric Indicators, SCImago Journal Rank (SJR)

1. Introduction

The mainstream scientific journals that ought to meet quality criteria are measured through scientometric tools. A variety of metrics are used to indicate the level and the influence of scholarly journals. Most of these metrics are obtained by analyzing the citation data of journal articles. Ranked journal lists based on citation-based metrics allow the reduction of uncertainty in choosing publication targets and assessing research output. The quality indicators of journals attract researchers, academicians and information scientists to use them to assess the journals from their area of interest. As a result, citation-based scientometric indicators are widely accepted topics among researchers and academicians worldwide. There are several journal-level metric tools, but the data are mostly generated from two major indexing databases: Web of Science (WoS) and Scopus. Both databases allow users to search articles on a topic, track the scholarly impact of a journal or individual author, and retrieve a list of journals in a specific field, e.g., journals in Library and Information Science (LIS). The SCImago Journal and Country Rank (https://www.scimagojr.com) website rank journals based on various metrics, including the quartiles (Q) by area of knowledge, the H-index, the SJR, details of international collaboration, and various citation indicators based on the world's largest indexing database Scopus. The current study compares the citation-based scientometric indicators of two prominent Indian LIS journals, *Annals of Library and Information Studies (ALIS)* and *DESIDOC Journal of Library and Information Technology (DJLIT),* using data from the SCImago Journal and Country Rank databases from 2016 to 2020.

2. SCImago Journal Rank

The SCImago Journal and Country Rank is a publicly available portal that includes scientometric indicators developed from information contained in the Scopus database of Elsevier. Infact, SCImago is a research group from the Consejo Superior de Investigaciones Cientificas (CSIC), University of Granada, Extremadura, Carlos III (Madrid) and Alcala de Henares, dedicated to information analysis, representation and retrieval by means of visualization techniques (SCImago, 2007). Based on the Scopus database, scholarly journals and the nation’s scientific productivity indicators were developed by SCImago. It is now publicly available through their portal. The productivity related to various scientific disciplines can be assessed and evaluated using the indicator

mentioned earlier. The portal facilitates the separate comparison of journals and country rankings.

3. Review of Literature

Garg and Bebi (2014) analyzed the number of articles published in *ALIS* and *DJLIT* during 2010-2013 and the citations obtained by these articles during 2010-2014 (April) using Google. The study developed the two journals' immediacy index and impact factor, besides identifying the highly cited authors/papers. The study revealed that *DJLIT* published more papers than *ALIS* and also received more citations. However, citation per paper for both journals is almost equal. *DJLIT* have a better immediacy index than *ALIS*. The impact factor of both the journals was less than one in 2012; however, it increased in 2013 and was more than one in 2013.

Sudhi Vijayan and Renjith (2017) investigated the journal rankings in the field of LIS based on SCImago Journal and Country Ranking for the year 2015. The paper clarified the significant relationship between different factors of LIS journals and compared the *h* index of open access and subscription-based access journals. A regression approach for predicting the h index based on relevant predictor variables are also discussed in the study.

Renjith and Sudhi Vijayan (2018) in another paper analyzed the *h* index and SJR of 10 LIS journals of the Asiatic region as appeared in the SJR database for the period 2006-2015. Citations, self-citations and citations without self-citations are also analyzed. The study found that the Taiwan LIS journal '*Journal of Information Science and Engineering*' has the highest average *h* index. The Indian LIS journal '*Annals of Library and Information Science*' has the highest SJR value among the LIS journals of Asiatic region during the period.

Open access journals in LIS enable speedy publication of research findings on emerging trends and trendy topics in the subject field. **Renjith (2018)** in another paper, investigated the trend of open access LIS journals' metrics, namely SJR, h index and total citation count based on SCImago for the period 2012-2016. It is observed that scientometric indicators of open access journals remain steady during the study period.

Barman (2020) analyzed the citations of articles published in *DJLIT* and *Annals of Library & Information Studies (ALIS)* during 2017 to 2019 using GS data. The study

revealed that *DJLIT* published more papers than *ALIS* and the papers of *DJLIT* have received more number of citations than the papers of *ALIS*. It also revealed that both impact factor and immediacy index of *DJLIT* are higher than that of *ALIS*.

Stephen (2020) examined citation-based analysis using the SCImago Journal Rank to compare two LIS journals *Library Quarterly* and *Library Hi-Tech*, published from 1999 onwards. The study found that in 2018, SJR ranking, H indexes and best quartile for the journals. For *Library Hi-Tech* Journal, SJR 0.75, *h* index is 33, Q1 is the best quartile, and in 2018 about *Library Quarterly* Journal SJR 0.73, *h* index 34, and Q1 best quartile. And also found a number of citable documents and non-citable documents, number of self-citations and total citation of both journals from 1999 to 2018.

4. Methodology

SCImago Journal and Country Rank database was used as the source to collect data for evaluating the various scientometric aspects of the journals *ALIS* and *DJLIT* for the period 2016 to 2020. The data was collected on 1st June 2021. The excel software was used for analysis. The scientometric indicators collected for the journals are SCImago Journal Rank (SJR), quartile values, citation per document, self-cites and total cites, external cites and cites per document, percentage of international collaboration, citable and non-citable documents, cited and uncited documents.

5. Objectives of the Study

The study is based on SCImago Journal and Country Rank, the scientometric indicators of *ALIS* and *DJLIT* journals. The specific objectives of the present study are the following;

1) To find out the SCImago Journal Rank (SJR) of *ALIS* and *DJLIT* journals along with their quartile values during the period 2016-2020.
2) To know the percentage level of citation per document wise *ALIS* and *DJLIT* journals during 2016-2020.
3) To extract the number of cited and uncited documents in both the journals during the period.
4) To get the percentage level of self cites and total cites of the journals.
5) To analyze the number of suitable and non-suitable documents from 2016 to 2020.

6. Data Analysis and Interpretation

6.1 Preliminary Details of the Journals Studied

6.1.1 Annals of information studies (ALIS)

The NISCAIR publishes *Annals of Library and Information Studies (ALIS)* (formerly known as INSDOC), an apex body for promoting India's library and information science profession. It was started in 1954 as a quarterly publication with March, June, September and December issues. This journal published original papers, survey reports, reviews, short communications, and letters about library science, information science and computer applications, library and information profession such as professional development, public and special library development, classification and cataloguing, IT and its application in libraries, digital and virtual libraries, bibliometrics, articles on standardization and international cooperation among various library associations and institutions. This journal is indexed in Library and Information Science Abstracts (LISA), the UK and Indian Library and Information Science Abstracts, India, leading indexing and abstracting databases like Scopus and Web of Science (WoS).

6.1.2 DESIDOC Journal of Library and Information Technology (DJLIT)

DESIDOC Journal of Library and Information Technology (DJLIT), formerly DESIDOC Bulletin of Library and Information Technology Journal is one of the leading Library and Information Science journals in India, being published by Defence Science Documentation Centre (DESIDOC), DRDO, Government of India, New Delhi since 1981 on a bimonthly basis, each volume having six issues. DJLIT is a peer-reviewed journal indexed in Library and Information Science Abstract (LISA), Library and Information Science Technology Abstracts (LISTA), Indian Citation Index (ICI), Indian Science Abstracts (ISA), Scopus, Web of Science etc. The DJLIT is an open-access journal with high visibility and discoverability of authors and papers in Google Scholar. DJLIT is now indexed in Scopus, Web of Science (Emerging Source Citation Index), UGC-CARE, Dimensions, LISA, LISTA, EBSCO, J-Gate Plus, Proquest, Library Literature and Information Science Index/Full-text, The Informed Librarian Online, Indian Science Abstracts, Indian Citation Index, WorldCat, Google Scholar, etc.

The background details of these two prominent Indian LIS journals as appeared in SCImago Journal Ranking are given in Table 1.

Table 1
General Information of the Journals Based on SCImago Ranking

S.N	Categories	DJLIT	ALIS
1	**Country**	India	India
2	**Subject Area and Category**	Social Sciences & Library and Information Science	Computer Science Computer Science Applications Information Systems Social Sciences Library and Information Sciences
3	**Publisher**	Defence Scientific Information & Documentation Centre (DESIDOC)	National Institute of Science Communication and Information Resources (NISCAIR)
4	**Publication Type**	Journal	Journal
5	**ISSN**	09740643 (Print), 09764658 (Online)	09725423 (Print), 09752404(Online)
6	**Coverage**	2012 Onwards	2011 Onwards
7	***h*-index (2020)**	13	13
8	**SJR (2020)**	0.514	0.298
9	**Best Quartile**	Q1	Q2

6.2 Year-wise SCImago Journal Rank (SJR) with Quartiles (Q)

SJR is based on the concept of a transfer of prestige between journals via their citation links. The SJR is a size-independent prestige indicator that ranks journals by their 'average prestige per article'. It is based on the idea that 'all citations are not created equal'. Scimago journal rank (SJR) weights each incoming citation to a journal by the SJR of the citing journal, with a citation from a high-SJR source counting for more than a citation from a low-SJR source (Pathak & Mohan, 2019). SJR is a calculation of scientific inspiration of scholarly journal that accounts for both the number of citations acknowledged by a journal and the significance or reputation of the journals where such citations originate (Pereira, 2010).

SCImago Quartiles are determined by the CiteScore percentile of the journal indicating the relative standing of a serial title in its subject field. For example, a serial that has a CiteScore percentile of 96% is ranked according to CiteScore as high or higher than 96% of titles in that category. A title will receive a CiteScore percentile for each subject area in which it's indexed in Scopus. The following are the SCImago quartiles:

Quartile 1 (Q1): 99th – 75th CiteScore percentile, Quartile 2 (Q2): 74th – 50th CiteScore percentile, Quarter 3 (Q3): 49th – 25th CiteScore percentile and Quartile 4: 24th – 0 CiteScore percentile.

Table 2
Year-wise SJR with Quartile

Year	ALIS	Quartile	DJLIT	Quartile
2016	0.268	Q3	0.392	Q2
2017	0.268	Q2	0.313	Q2
2018	0.235	Q3	0.274	Q2
2019	0.178	Q3	0.298	Q2
2020	0.298	Q2	0.514	Q1
Mean : 0.249			**Mean : 0.358**	

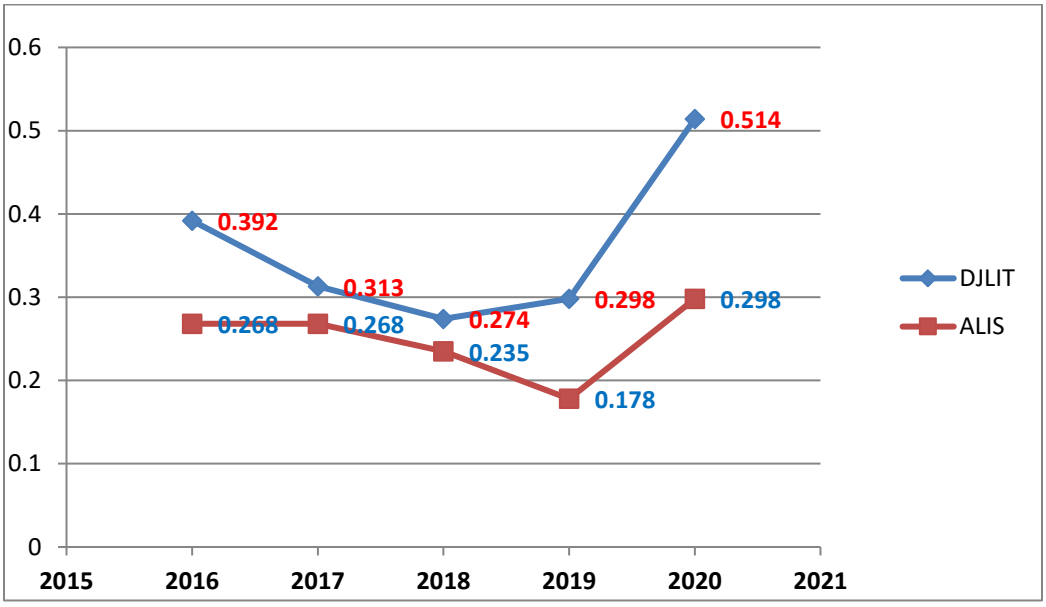

Figure 1: Last five year SJR

The *ALIS* and *DJLIT* journals began airing in 2011, 2012 respectively. The SJR value for the last five years results illustrates that the highest SJR for *ALIS* and *DJLIT* journals is 2.98 and 0.514 respectively in 2020, and the lowest is 0.235 and 0.274 in 2018. The highest quartile for the *ALIS* and *DJLIT* journals is Q2 and Q1 in 2020 and lowest Q3 and Q4 in 2018 (Table 2). In *ALIS* and *DJLIT* journals, the SJR is unstable for the last five years (Figure 1). The mean SJR of *ALIS* and *DJLIT* for the five years is 0.294 and 0.358, respectively (Table 2).

6.3 Citation per Document

Citations are important and expected component of scholarly communication. This indicator counts the number of citations received by documents from a journal and divides them by the total number of published documents in that journal. It shows the evolution of the average number of times documents published in a journal in the past two, three and four years have been cited in the current year. The two years line is equivalent to Journal Impact Factor (JIF) (Clarivate Analytics) metric.

Table 3
Citation per Document
(4Years/3Years/2Years)

Year	ALIS			DJLIT		
	4years	3years	2years	4year	3years	2years
2016	0.338	0.309	0.313	0.488	0.530	0.615
2017	0.387	0.417	0.300	0.402	0.435	0.381
2018	0.728	0.490	0.547	0.711	0.618	0.523
2019	0.623	0.663	0.533	0.938	0.890	0.967
2020	0.743	0.740	0.644	1.106	1.211	1.209
Mean	**0.56**	**0.52**	**0.47**	**0.73**	**0.74**	**0.74**

The year 2020 is the best year for the highest citation per document over four years, three years, and two years, with 0.743, 0.740, 0.644 and 1.106, 1.211, 1.209 for *ALIS* and *DJLIT* journals. For the past four years and three years, the lowest citation rate for *ALIS* journal has been 0.338 and 0.309 per document, respectively, in 2016 and for the two years, with 0.300 in 2017 and the lowest citation rate per document for *DJLIT* journal for the past four years, three years, and two years are 0.402, 0.435, and 0.381 respectively in 2017. The mean for *ALIS* journal citation per document over four years, three years, and two years is 0.56, 0.52, and 0.47, respectively, and for the *DJLIT*, it is 0.73, 0.74, and 0.74.

6.4 Self Cites and Total Cites

Self-citation is one of the challenging subjects in scientific evaluation or citation analysis. Self-citation is a usual process but this cannot be ignored in citation analysis. Journal self-citation is defined as the number of citation from a journal citing article to

articles published by the same journal. Here these indicators show the evolution of the total number of citations and journal's self-citations received by a journal's published documents during the three previous years.

Table 4
Self Cites and Total Cites

Year	ALIS		DJLIT	
	Self-citation	Total Citation	Self-citation	Total Citation
2016	7	34	21	97
2017	7	48	23	73
2018	6	50	27	102
2019	1	61	9	153
2020	2	57	26	212
Total	**23**	**250**	**106**	**637**
Mean	**4.60**	**50.00**	**21.20**	**127.40**

In 2016 and 2017, the *ALIS* journal got the highest number of 7 self-citations and total citations of 61 in the year 2019. The lowest self-citation was 1 in 2019, and the total citations of 34 in 2016. The mean for the self-citation and total citation is 4.60 and 50.00, respectively.

The highest self-citation 27 in 2018 and total citations 212 in 2020 for the *DJLIT* journal. The lowest self-citation 9 in 2019, and the total citations 23 in 2017. The mean for the self-citation and total citation is 21.20 and 127.40, respectively.

According to SCImago ranking, the *ALIS* journal has 23 self-citations and 250 total citations and *DJLIT* Journal 106 self-citations and 637 total citations received for the last five years. (Table 4).

6.5 External Cites and Cites per Document

Evolution of the number of total citation per document and external citation per document (i.e. journal self-citations removed) received by a journal's published documents during the three previous years. External citations are calculated by subtracting the number of self-citations from the total number of citations received by the journal’s documents.

Table 5
External Cites and Cites per Document

Year	ALIS		DJLIT	
	External Cites per Document	Cites per Document	External Cites per Document	Cites per Document
2016	0.250	0.309	0.434	0.530
2017	0.360	0.417	0.307	0.435
2018	0.436	0.490	0.463	0.618
2019	0.652	0.663	0.852	0.890
2020	0.714	0.740	1.088	1.211
Total	**2.412**	**2.619**	**3.144**	**3.684**
Mean	**0.48**	**0.52**	**0.63**	**0.74**

Table 5 discloses that *ALIS* highest external cites per document is 0.714 and cites per document is 0.740 whereas 1.088 and 1.211 respectively for the *DJLIT* journal in 2020. The assessment shows that external cites per document and cites per document rapidly grew in the last two years for both the journals. The table also exposes that *ALIS* lowest external cites per document and cites per document are 0.250 and 0.309 in 2016 and in *DJLIT* journal 0.307 and 0.435 respectively in 2017.

For the last five years, *ALIS* Journal received 2.412 external cites per document and 2.619 cites per document, whereas *DJLIT* Journal received 3.144 external cites per document and 3.684 cites per document.

The *ALIS* journal's mean values for external cites per document and cites per documents are 0.48 and 0.52, whereas in the *DJLIT* is 0.63 and 0.74, respectively.

6.6 Percentage of International Collaboration

Collaboration is a fundamental aspect of scientific research activity. Large number of research papers in LIS field is being published as part of international collaborative research activity. International Collaboration accounts for the articles that have been produced by researchers from several countries. The chart shows the ratio of a journal's documents signed by researchers from more than one country; that is including more than one country address.

Table 6
Percentage of International Collaboration

Year	ALIS	DJLIT
2016	3.13	0.00
2017	6.25	3.33
2018	3.57	4.92
2019	0.00	9.26
2020	3.70	1.89
Total	**16.65**	**19.4**
Mean	**3.33**	**3.88**

In terms of international collaboration, the highest percentage level in *ALIS* in 2017 is 6.25, and the *DJLIT* journal in 2019 is 9.26. In 2019, there is no international collaboration for the *ALIS* journal and 2016 for the *DJLIT* journal.

Table 6 exposes that the total percentage of international collaborations for the *ALIS* and *DJLIT* journals for the last five years is 16.65 and 19.4, respectively and the mean for the *ALIS* and *DJLIT* journals is 3.33 and 3.88, respectively.

6.7 Citable and Non Citable Documents

Not every article in a journal is considered primary research and therefore "citable", this chart shows the ratio of a journal's articles including substantial research (research articles, conference papers and reviews) in three year windows vs. those documents other than research articles, reviews and conference papers.

Table 7
Citable and Non Citable Documents

Year	ALIS		DJLIT	
	Citable Documents	Non Citable Documents	Citable Documents	Non Citable Documents
2016	108	1	175	8
2017	114	1	163	5
2018	101	0	162	3
2019	92	0	169	3
2020	77	0	171	4
Total	**492**	**2**	**840**	**23**
Mean	**98.4**	**0.4**	**168**	**4.6**

Citable documents in the *ALIS* journal published highest in 2017 with 114 citable documents and non-citable documents are only 1 in 2016 and 2017. The lowest citable

documents are 77 in 2020 and non-citable documents are zero in 2018, 2019 and 2020. The citable documents are appeared unsteady in the *ALIS* journal.

The highest citable documents in the *DJLIT* journal are 175, and non-citable documents were 8 in 2016. The lowest citable documents are 162 in 2018 and non-citable documents are three in 2018 and 2019.

ALIS Journal publishes a total of 492 citable documents and 2 non-citable documents during the period. For the *DJLIT* journal, it is 840 and 23, respectively. The mean for the citable documents and non-citable documents is 98.4 and 0.4 for the *ALIS*, while the *DJLIT* journal is 168 and 4.6.

6.8 Cited and Uncited Documents

Ratio of a journal's items, grouped in three years windows, which have been cited at least once vs. those not cited during the following year.

Table 8
Cited and Uncited Documents

Year	ALIS		DJLIT	
	Cited Documents	Uncited Documents	Cited Documents	Uncited Documents
2016	28	82	65	118
2017	35	80	58	110
2018	34	68	61	104
2019	41	51	80	92
2020	30	47	109	66
Total	**168**	**328**	**373**	**490**
Mean	**33.6**	**65.6**	**74.6**	**98**

The *ALIS* journal published the highest 41 cited documents in 2019 and 82 uncited documents in 2016. On the other hand, in the *DJLIT* journal, 109 cited documents in 2020 and uncited documents 118 in 2016 as per SCImago record. The lowest cited documents and uncited documents is 30 and 47 for *ALIS* in 2020 and 58 and 66 for the *DJLIT* journal in the year 2017 and 2020 respectively.

ALIS Journal publishes 168 citable documents and 328 uncited documents, whereas *DJLIT* journal publishes 373 and 490, respectively, for the last five years. The *ALIS journal* has a mean for citable and uncited documents of 33.6 and 65.6, respectively, whereas the *DJLIT* journal is 74.6 and 98.

.

7. Major Findings

- *ALIS* and *DJLIT* journals started publication in 2011 and 2012, respectively. The highest SJR for *ALIS* and *DJLIT* journals is 2.98, 0.514 and quartiles are Q2, Q1 respectively, in 2020. The mean SJR for *ALIS* and *DJLIT* journals for the previous five years is 0.249 and 0.358, respectively.
- In 2020, *ALIS* journals had the highest citation per document for four years, three years, and two years, with 0.743, 0.740, and 0.644, respectively, and *DJLIT* journals, with 1.106, 1.211, and 1.209. The mean for the *ALIS* journal's citation per document over four years, three years, and two years is 0.56, 0.52, and 0.47, respectively, and for the *DJLIT*, it is 0.73, 0.74, and 0.74.
- The *ALIS* journal received the most self-citations in 2016 and 2017 is 7, and total citations were 61 in 2019. In 2018, the *DJLIT* journal received the most self-citations (27), with a total of 212 citations in 2020. As a result, for *ALIS* and *DJLIT* journals, the mean self-citation is 4.60, 21.20, and the total citation is 50.00, 127.40. According to SCImago rankings, *ALIS* and *DJLIT* journals received 23 and 106 self-citations, respectively, and 250 and 637 total citations over the last five years.
- The highest external cites per document are 0.714, 1.088 and cite per document, which is 0.740, 1.211 in 2020 for *ALIS* and *DJLIT* journals. For the last five years, *ALIS* and *DJLIT* journals received 2.412, 3.144 external cites per document and 2.619, 3.684 cites per document, as per SCImago Journal ranking. The mean value for external cites per document are 0.48, 0.63 and cites per document is 0.52, 0.74 respectively, for *ALIS* and *DJLIT* Journals.
- The highest international collaboration for *ALIS* and *DJLIT* journals was 6.25 in 2017 and 9.26 in 2019, respectively. For the last five years, the total percentage of international collaborations for the *ALIS* and *DJLIT* journals is 16.65 and 19.4, respectively. The mean for the international collaborations for the *ALIS* and *DJLIT* journals is 3.33 and 3.88, respectively, for the previous five years.
- The *ALIS* journal had the most citable and non-citable documents in 2017, with 114 and 1 in 2016 and 2017, respectively, while the *DJLIT* journal had 175 and 8 in

2016. For the last five years, the total number of citable and non-documents in the *ALIS* is 492 and 2, respectively, whereas the *DJLIT* journal has 840 and 23. The mean for the citable documents and non-citable documents is 98.4 and 0.4 for the *ALIS* 168 and 4.6 for the *DJLIT* journal.

- ☞ The most widely cited documents are 41 and 82 uncited documents in the *ALIS* journal in 2019 and 2016, respectively, whereas 109 and 118 in 2020 and 2016 in the *DJLIT* journal. The total cited documents, and uncited documents are 168 and 328 for *ALIS* and 373 and 490 for *DJLIT*. For the cited and uncited documents, the *ALIS* has a mean of 33.6 and 65.6, respectively, whereas the *DJLIT* journal has 74.6 and 98.

8. Conclusion

Journals in Library and Information Science (LIS) discipline play a vital role in disseminating the research communication among LIS professionals. Ranking of LIS journals based on their scientometric indicators is now the significant criteria for evaluating the quality of articles published in these journals. As an increasingly useful tool for ranking scientific journals, SCImago is an important database providing valuable information for identifying core journals on a particular subject. Such journal ranking systems based on citation analysis will enable LIS professionals and research scholars to publish their valuable research articles in the most prestigious and reputed LIS journals. From the journals' point of view, this ranking attracts more and better quality research article submissions. *ALIS* and *DJLIT* are the two most prestigious and prominent Indian LIS journals with high visibility and impact on their published papers.

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