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# **Indian Journal of Agricultural Library and Information Services: A Bibliometric Study (2008-2016)**

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## **Abstract**

The present study is based on the bibliometric analysis of 161 articles published in 09 volumes (24-32) of 18 issues of Indian Journal of Agricultural Library and Information Services (IJALIS) for the period of nine years (2008-2016). This article brings out the results of a bibliometric study carried on all the issues of the source journal (IJALIS) on various parameters such as authorship pattern, gender wise distribution of papers, length of papers, average number of references, volume & issue wise average papers, geographical distribution of articles, range of reference cited and most prolific authors of the journal. The study finds that on an average, 18 research articles were published per volume in a year during the period of study, whereas, maximum number (39.75%) of articles was two authored followed by single authored (32.36%). Karnataka begged the top rank among all the 20 contributed states of India from where maximum number of contribution in the journal.

**Keywords:** Bibliometrics, Research output, Authorship pattern, References, Citation analysis.

## **Introduction**

The whole world faces technological challenges in every field of life. Research and Development particularly in science and technology affected the way of life. Still, research is in process especially in developed and developing countries to achieve the height of success in every part of society. Research is known as the structured enquiry that uses scientific methodology to solve problems and create new knowledge. In academia, research is also doing for advancement in knowledge in the form of variety of publications such as articles published in research journals, papers published in conference proceedings and in one other form. The research activities of an institution are reflected through its publications and analysis of these publications helps in providing the research productivity of that particular institution (Siwach and Kumar, 2015). Library and information centers tried to accumulate and provide best resources and services to its users. Libraries in the world over also affected with new technological challenges and tried to accommodate with those latest technologies for easily and fast delivery of services. What should be the easy method to deliver the services to the end users, how to satisfy the demands of the users, how to accumulate the best resources in the library premises, what are the other significant trends going in the service sectors are some of the emerging fields, which leads the libraries and information professionals to do the research in their concerned field so that they can adopt the challenges and be able to provide the better services to their users. Analysis of research output of particular institution(s) or in particular filed of knowledge could reveal some interesting facts and may prove beneficial for the concerned research fraternity. Hence, it was decided to analysis the research trends in library and information science particularly agricultural librarianship. Therefore, Indian Journal of Agricultural Library and Information Services (IJALIS) was selected to get the research output by using bibliometric technique.

## **Bibliometrics**

Bibliometrics is a quantitative evaluation of literary or research output by mathematical and statistical applications. Bibliometrics earlier was known as “Statistical Bibliography”. Allen Prichard (1969) first used the term bibliometrics in his publication “Statistical Bibliography of Bibliometrics” and considered as the father of bibliometrics. The word bibliometrics was derived from Latin and Greek words, *i.e.*, *biblio* and *metrics*. Prichard defined bibliometrics as “the application of mathematical methods to books, journals and other media of communication”. Hawkins (1977) defines Bibliometrics as “quantitative analysis of the bibliographic feature of a body of literature”.

In order to understand the latest trend and pattern of publication distribution in the field of library and information science particularly agricultural librarianship in India, it was conceived to undertake the bibliometric study on the journal published in the field of agricultural librarianship in India and accordingly, Indian Journal of Agricultural Library and Information Services (IJALIS) was chosen for the purpose and the present study remains confined for the period 2008-2016.

### **Source Journal: Indian Journal of Agricultural Library and Information Services**

Indian Journal of Agricultural Library and Information Services (IJALIS) is an official publication of Association of Agricultural Librarians and Documentalists of India presently based at Hyderabad, India. IJALIS publishes research articles on every aspect of agricultural librarianship and library & information science in general. Nehru Library, CCS Haryana Agricultural University, Hisar have bound volumes in its collection from 2008 (Volume 24) to 2016 (Volume 32). Currently, the source journal publishes on regular basis.

## **Literature Review**

Many bibliometric studies on different subject fields have been reviewed for this study. These are arranged from earliest to most recent once.

In a study, Panda, Maharana, and Chhatar (2013) found that single authored papers (68.70%) were dominant in the journal with on average 12 references per article, whereas, per paper had on an average length of nine pages. Tella and Olabooye (2014) observed that majority of the articles (57.8%) were published in single authorship on the topic of information retrieval with average length of 6-10 pages and also found that majority of articles were of theoretical nature 49.5%. In another study conducted by Singh and Bebi (2014) found that 48.72% articles were contributed by single authors and majority of the articles (299) were contributed by the male authors. In the same year (2014), another study was conducted by Pandita, who found that maximum number of articles (147) were contributed in the journal were on two author pattern, whereas, on an average 6.20 articles were published in each issue and on an average 13.83 references each article were cited during the period of investigation. Verma, Sonkar, and Gupta (2015) revealed that on an average 117 articles were published each year, while most of the articles written in single authorship pattern. It is observed by Pandey, Jain and Gupta (2015), that on an average 29 articles were published per year with average page length of 1-5 per paper during the period of investigation and most of the articles (167) were related to agronomy field, whereas, maximum number of articles were three authored. Rajev and Joseph (2016) found that majority of articles were the length of 11–20 pages and also found that maximum number of articles (56 articles) were authored and co-authored by Malaysian authors, while total 184 citations were received for the published articles during the period of study. On the other hand, Jagjit Singh (2017) found that maximum number (43.50%) of papers were two-authored followed by single authored (39.02%) and 65.92% papers had length of 6-10 pages, while about 10% foreign authors who contributed their papers in the journal. It was found that single authored contributions was very less and average number of citation cited in

articles was 45.46, which shows healthy production of article in good manner (Joseph, 2017). In an another study, Tsafe, Musa, & Yusuf (2017) found that 98.9% of the articles were published through collaborative efforts and the highest numbers of contributors (82%) were from the universities, whereas, total citations (4,464) were made in the journal with different information materials, while the highest information material cited were journal articles (70.6%).

### Objective of the Study

The following objectives were intended to be achieved for the present study:

- To assess the articles published in IJALIS during the period from 2008-2016
- To analysis the authorship pattern of articles published during the period of study
- To examine the gender wise distribution of articles
- To measure the year-wise and issue-wise distribution of articles
- To examine the page length of articles
- To analysis the number of references given in an articles
- To quantify average articles published per volume and issue
- To identify the most prolific authors and their work affiliation
- To examine the geographical distribution of articles

### Methodology

The data required for analysis was collected from the print copy of “Indian Journal of Agricultural Library and Information Services (IJALIS)” available with Nehru Library, Chaudhary Charan Singh Haryana Agricultural University (CCS HAU), Hisar, India. For the present study, the data were collected from all the volumes of nine years (2008-2016) and put to analysis as per the objectives of the study. IJALIS since being a half-yearly journal, as such in all 161 published articles were scanned from nine volumes from 2008-2016.

### Scope and limitation of the study

The scope of the present study was limited to the nine volumes (18 issues) published between 2008-2016. The study covers all the research articles published during the period of study.

### Data Analysis

Keeping in view the nature of data and the type of analysis to be carried out, the data were simply put feed into MS-Excel worksheet for executing simple operations like addition, subtraction, percentage and averages, *etc.*

**Table 1: Year wise distribution of articles**

Year	Vol. no.	Total articles	%age
2008	24	14	8.70
2009	25	20	12.42
2010	26	15	9.32
2011	27	18	11.18
2012	28	16	9.94
2013	29	18	11.18
2014	30	22	13.66
2015	31	18	11.18
2016	32	20	12.42
<b>Total</b>		<b>161</b>	<b>100</b>

Table 1 highlight the data on year wise distribution of articles contributed by library and information science professionals in the source journal (IJALIS) during 2008-2016. It is found from the study that total 161 research articles were published during the period of study with on an average of 18 articles per year. The data given in above Table 1 also depicts

that the maximum number (22) of articles were published in the year of 2014 (Vol. 30) and minimum number (14) articles were published in the year 2008 (Vol. 24). Less number of articles were published in the year 2008 (14 articles) and 2010 (15 articles) because volume 24 and 26 were published as combined volume of two issues. A good number of articles were also published in the year of 2009 (20 articles) and 2016 (20 articles). On the other hand, in 2011, 2013 and 2015, 18 articles were published in each volume, whereas, 16 articles were published in the year of 2012.

**Table 2: Volume wise and Issue wise distribution of articles**

Year	Vol. no.	Issue- 1	Issue- 2	Total articles & %age	Average articles per issue
2008	24	14		14 (8.70)	7
2009	25	10	10	20 (12.42)	10
2010	26	15		15 (9.32)	7.5
2011	27	10	08	18 (11.18)	9
2012	28	08	08	16 (9.94)	8
2013	29	08	10	18 (11.18)	9
2014	30	10	12	22 (13.66)	11
2015	31	08	10	18 (11.18)	9
2016	32	10	10	20 (12.42)	10
<b>Total</b>				<b>161 (100)</b>	<b>8.95</b>

The data given in Table 2 presents the volume wise and issue wise distribution of articles in the source journal during the period of study and it was found that maximum number of articles (22) was published in the volume (30) and less number of articles (14) was published in the volume of 24. In the year of 2008 and 2010, combined volume was published for two issues, hence, less number of publications were in the volumes. On an average, 8.95 articles per issue were published.

**Table 3: Gender wise distribution of authorship**

Year	Vol. No.	Male	Female	Total Authors & %age
2008	24	18	03	21 ( 6.70)
2009	25	30	06	36 (11.50)
2010	26	20	10	30 (9.60)
2011	27	25	09	34 (10.85)
2012	28	25	03	28 (8.95)
2013	29	34	05	39 (12.50)
2014	30	32	11	43 (13.70)
2015	31	34	06	40 (12.80)
2016	32	31	12	43 (13.40)
<b>Total</b>		<b>249 (79.30)</b>	<b>65 (20.70)</b>	<b>314 (100)</b>

Table 3 show the gender-wise analysis of authorship, which shows that out of 314 authors, 249 (79.30%) were male authors who contributed maximum articles, whereas, 65 (20.70%) were female authors who contributed less number of articles. The analysis shows that during the period of study, the female authors are less interested to contribution in the source journal as compared to male authors.

**Table 4: Authorship pattern of articles**

Year	Vol. no.	Single author	Two authors	Three authors	>3 authors	Total articles & %age
2008	24	08	05	01	00	14 (8.70)
2009	25	09	06	05	00	20 (12.42)
2010	26	05	05	05	00	15 (9.32)
2011	27	09	04	03	02	18 (11.18)
2012	28	06	08	02	00	16 (9.94)
2013	29	05	08	03	02	18 (11.18)
2014	30	08	10	03	01	22 (13.66)
2015	31	01	13	03	01	18 (11.18)
2016	32	09	05	05	01	20 (12.42)
<b>Total</b>		<b>60 (32.26)</b>	<b>64 (39.75)</b>	<b>30 (18.64)</b>	<b>07 (4.35)</b>	<b>161 (100)</b>

The data given in Table 4 elaborate the authorship pattern of articles contributed during the period of 2008-2016 in the source journal. The Table 4 shows that maximum number (39.75%) of articles were two authored followed by single authored (32.36%) and three authored (18.64%). The proportion of more than three authored contributions was very less, *i.e.*, 4.35%. Therefore, it is clear from the above table that the publications in the source journal were dominated by single and two authored articles.

**Table 5: Distribution of page length of articles**

Year	Vol. no.	<5	6-10	11-15	>15	Total articles per year & %age
2008	24	03	06	04	01	14 (8.70)
2009	25	11	07	02	00	20 (12.42)
2010	26	04	09	01	01	15 (9.32)
2011	27	04	07	07	00	18 (11.18)
2012	28	05	08	03	00	16 (9.94)
2013	29	03	12	02	01	18 (11.18)
2014	30	07	13	02	00	22 (13.66)
2015	31	04	12	02	00	18 (11.18)
2016	32	03	13	04	00	20 (12.42)
<b>Total</b>		<b>44 (27.32%)</b>	<b>87 (54.05%)</b>	<b>27 (16.77%)</b>	<b>03 (1.86%)</b>	<b>161 (100)</b>

Table 5 presents the data about the page length of the articles published in the source journal during the period of study. It was found that majority of the articles (54.05%) were published in the source journal (IJALIS) between 6-10 pages followed by up to five pages (27.32%) and 11-15 pages (16.77%). On the other hand, very less contribution was made by the authors for more than 15 pages (1.86%) in the source journal.

**Table 6: Range of references per article**

Year	Vol. no.	<5	6-10	11-15	16-20	21-25	26-30	>30	Total articles per year & %age
2008	24	03	07	02	02	00	00	00	14 (8.70)
2009	25	06	08	03	02	01	00	00	20 (12.42)
2010	26	04	04	05	00	00	01	01	15 (9.32)
2011	27	08	06	02	01	01	00	00	18 (11.18)
2012	28	06	04	04	02	00	00	00	16 (9.94)
2013	29	07	05	03	02	00	01	00	18 (11.18)
2014	30	03	14	02	00	02	00	01	22 (13.66)
2015	31	04	06	04	02	01	00	01	18 (11.18)
2016	32	04	06	05	02	02	01	00	20 (12.42)
<b>Total</b>		<b>45</b>	<b>60</b>	<b>30</b>	<b>13</b>	<b>07</b>	<b>03</b>	<b>03</b>	<b>161 (100)</b>

The data given in Table 6 shows the range of references per article published in the source journal (IJALIS) during the period of study. It is revealed that out of total 161 articles, majority of articles (60) have cited 6-10 references followed by less than five references (45 articles), between 11-15 references (30 articles), 16-20 references (13 articles) and 21-25 references (07 articles). Further, it is revealed that out of 161 articles, only 06 articles published with 26 and more references.

**Table 7: Assessment of number of references**

Year	Vol. no.	Total articles	Distribution of References							Total references	Average references per paper
			<5	6-10	11-15	16-20	21-25	26-30	>30		
2008	24	14	12	61	26	35	00	00	00	134	9.57
2009	25	20	18	63	40	57	00	00	00	178	8.90
2010	26	15	13	32	63	00	00	27	88	223	14.86
2011	27	18	32	46	30	16	21	00	00	145	8.05
2012	28	16	14	34	48	17	20	00	00	133	8.31
2013	29	18	26	42	34	39	00	28	00	169	9.38
2014	30	22	15	106	25	00	46	00	35	227	10.31
2015	31	18	14	51	51	35	23	00	36	210	11.66
2016	32	20	15	56	62	33	48	30	00	244	12.21
<b>Total</b>		<b>161</b>	<b>159</b>	<b>491</b>	<b>379</b>	<b>232</b>	<b>158</b>	<b>85</b>	<b>159</b>	<b>1,663</b>	<b>10.35</b>

Table 7 present the data of distribution of references in the source journal (IJALIS) during the period of study. It was revealed that out of total 1,663 references, on an average per article 10.35 references were cited. Maximum numbers of references (491) were found from the range between 6-10 references per article followed by 379 references between the range of 11-15 and 232 references between the ranges of 16-20 references. On the other hand, equal number of references (159) were found for the range of less than five and more than 30 references per article. A very less references (85) were cited in the articles between the ranges of 26-30.

**Table 8: Prolific authors and their contributions**

Sr. No.	Author	Affiliation	Contribution
1.	Chetan Prakash Rajpurohit	S.K. Rajasthan Agricultural University, Bikaner, Rajasthan	07
2.	Stanley Madan Kumar	University of Agricultural Sciences, Dharwad, Karnataka	06
3.	G. Rathinasabapathy	Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamilnadu	05
4.	K. Veeranjanyulu	Professor Jayashankar Telangana State Agricultural University, Rajendranagar, Hyderabad, Telangana	05
5.	Rabindra K. Mahapatra	Orissa University of Agriculture and Technology, Bhubneswar, Odisha	05
6.	Raj Kumar Singh	Central Agricultural University, Pasighat, Arunachal Pradesh	05
7.	B. Ramesh Babu	University of Madras, Chennai, Tamilnadu	04
8.	K.N. Kandpal	ICAR- Indian Veterinary Research Institute, Izatnagar, Uttar Pradesh	04
9.	P. Visakhi	Indian Institute of Science Education & Research, Mohali, Punjab	04
10.	Rajive Kumar Pateria	CCS Haryana Agricultural University, Hisar, Haryana	04
11.	Shalini R. Lihitkar	R.T.M. Nagpur University, Nagpur, Maharashtra	04
12.	S.M. Rokade	Gondwana University, Gadcholi, Maharashtra	04
13.	Surender Kumar	ICAR- Indian Institute of Soybean, Indore, Madhya Pradesh	04

The data given in Table 8 highlight some of the prolific authors who significantly contributed (Four or more articles) to the Indian Journal of Library and Information Services (IJALIS). The total number of 161 articles was authored by the 314 authors in single or collaboration. On the basis of analysis of the data, Sh. Chetan Prakash Rajpurohit contributed seven articles in the source journal during the period of study followed by Dr. Stanley Madan Kumar who contributed six numbers of articles. On the other hand, four authors, *i.e.*, Dr. G. Rathinasabapathy, Dr. K. Veeranjanyulu, Dr. Rabindra K. Mahapatra and Dr. Raj Kumar Singh contributed five articles each during the period of study 2008-2016, while seven authors contributed four articles each in the journal during the same period. The total output of these thirteen prolific authors shown in above table is 19.5%.

**Table 9: Geographical distribution of contributors**

Sr. No.	State	Contributors	Ranking
1.	Karnataka	43	1
2.	Telangana	31	2
3.	Tamilnadu	29	3
4.	Maharashtra	27	4
5.	New Delhi	22	5
6.	Rajasthan	19	6
7.	Uttar Pradesh	19	6
8.	Madhya Pradesh	17	7
9.	West Bengal	17	7
10.	Andhra Pradesh	15	8
11.	Himachal Pradesh	15	8



12.	Haryana	12	9
13.	Punjab	11	10
14.	Uttarakhand	10	11
15.	Kerala	07	12
16.	Odisha	07	12
17.	Arunachal Pradesh	06	13
18.	Chhattisgarh	05	14
19.	Goa	01	15
20.	Gujarat	01	15
<b>Total</b>		<b>314</b>	

The Table 9 shows the geographical affiliation of authors who have contributed to IJALIS during the period of study, and accordingly the ranking of states was done based on the number of contributors from a particular state. A total of 314 authors have contributed to the Source journal (IJALIS) during the period of study from 20 different states of India. No articles have been contributed from the foreign countries neither in single authorship nor in collaboration. Karnataka is in the first place in the list where from total forty three authors have been contributed single or in collaboration followed by Telangana on 2nd place with total 31 contributors, Tamilnadu on 3rd place with total 29 contributors, Maharashtra on fourth place with total twenty seven contributors and New Delhi on 5th place with total 22 contributors. Two each states were ranked jointly on 6th, 7th and 8th, *i.e.*, Rajasthan and Uttar Pradesh (19 authors each), Madhya Pradesh and West Bengal (17 authors each), and Andhra Pradesh and Himachal Pradesh (15 authors each). On the other hand, Haryana ranked 9th with total 12 contributors followed by Punjab on 10th (11 contributors) and Uttarakhand on 11th place with 10 contributors, whereas, Kerala and Odisha jointly on 12th place with 07 contributors each. Arunachal Pradesh was on 13th place (06 contributors), Chhattisgarh 14th place (05 contributors) and Goa and Gujarat jointly on 15th place with one each contributor.

### Major Findings

Based on the analysis of the data, the following are the major findings observed from the study:

- On an average, 18 research articles were published per volume in a year during 2008-2016 in IJALIS.
- Maximum number of articles (22) were published in the volume 30 (Year 2014) and less number of articles (14) was published in the volume of 24 (Year 2008).
- Out of total 314 authors, majority of the authors were male (79.30%), while female authors (20.70%) were contributed less number of articles.
- Maximum number (39.75%) of articles were two authored followed by single authored (32.36%) and three authored (18.64%), whereas, more than three authored (4.35%) contributions was very less.
- Majority of the articles (54.05%) were published in the source journal between 6-10 pages followed by up to five pages (27.32%) and 11-15 pages (16.77%).
- Out of total 161 articles, majority of articles (60) cited 6-10 references followed by less than five references (45 articles), between 11-15 references (30 articles), 16-20 references (13 articles) and 21-25 references (07 articles).
- Out of total 1,663 references, on an average per article 10.35 references were cited and maximum numbers of references (491) were between the range of 6-10 references per article followed by 379 references between the range of 11-15 and 232 references between the range of 16-20 references.
- Sh. Chetan Prakash Rajpurohit (07 articles), Dr. Stanley Madan Kumar (06 articles), Dr. G. Rathinasabapathy (05 articles), Dr. K. Veeranjanyulu (05 articles), Dr. Rabindra K.

Mahapatra (05 articles) and Dr. Raj Kumar Singh (05 articles) were the prolific authors who contributed significantly in the source journal during the period of study.

- Top five states of India where from most of the contributions in the IJALIS are Karnataka, Telangana, Tamilnadu, Maharashtra and New Delhi.

### **Conclusion**

Bibliometric studies have achieved great popularity in various disciplines in the growth of literature on bibliometric and its related areas, which can be useful for understanding various aspects and recent research trends. Detailed study and analysis of publication productivity in an area of specialization or in an institution can be an important tool for policy makers and research advisories to take decisions to improve the publication productivity. The present study was aimed to explore the publication productivity on various aspects of agricultural library and information services. During the period of study, *i.e.*, 2008-2016, this journal (IJALIS) tried to keep up its main aim of raising and distributing issues and tend to serve as a forum of agricultural library and information services. This is the only journal in the field of agricultural librarianship in India and has its importance in the related aspects of agricultural library and information services. Bibliometric analysis of this journal reveals some important output, which could be useful for the research community in the field of library and information services.

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