

AQUACULTURE INTERNATIONAL 2013-2016: A BIBLIOMETRIC ANALYSIS

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Abstract

Bibliometric is an emerging thrust area of research and has now become a well-established part of information research and a quantitative approach to the description of documents. Bibliometric has grown out of the realization that literature is growing and changing out of a rate with which no librarian or information worker equipped with traditional bibliographic skills and methods could keep abreast. The present study shows that journals are most cited form of communication amongst the library and information scientists and the source journal is the most cited publication.

Keywords: Authorship pattern, citation analysis, Bibliometric analysis.

1. INTRODUCTION:

Bibliometrics is a research method used in library and information science. It is a Quantitative study of various aspects of literature on a topic and is used to identify the Pattern of publication, authorship, and secondary journal coverage to gain insight into the dynamics of growth of knowledge in the areas under consideration. This can lead to better organization of information resources, which is essential for effective and efficient use. Bibliometrics has attained sophistication and complexity with a national, International, and interdisciplinary character. **(Thanuskodi, 2010)** The term “bibliometrics” was coined by Pritchard in 1969. A pioneering example of a bibliometric study was statistical analysis of the literature of comparative anatomy from 1543 to 1860, done by counting book and journal titles, and grouping them by countries of origin and periods. In 1923, a study was conducted by Hulme, entitled “Statistical Analysis of the History of Science”. His analysis was based on the entries in the English

International Catalogue of Scientific Literature. A third study was the work of Gross and Gross reported in 1927. They counted and analyzed the citations in articles from the Journal of the American Chemical Society, and produced a list of journals deemed important to chemical education. Another prominent work was Bradford’s 1934 article on the distribution of literature in lubrication research. It is an important part of the theoretical foundation of bibliometrics, “Bradford’s Law of Scattering.” In 1948, the great library scientist, S.R. Ranganathan, coined the term “Librametry”, which historically appeared first and was intended to streamline the services of librarianship. Bibliometrics is analogous to Ranganathan’s librametrics, the Russian concept scientometrics, info

metrics, and sub disciplines like econometrics, psychometrics, sociometrics, biometrics, techno metrics, chemometrics, and climetrics, where mathematics and statistics are applied to study and solve problems in their respective fields. Scientometrics is now used for the application of quantitative methods to the history of science and overlaps with bibliometrics to a considerable extent. (Thanuskodi, 2010a) According to Huang et al. (2006), bibliometric data has been used to describe and evaluate countries, universities, research institutes, journals, specific research topics and specific disciplines. Since journals are one of the most significant vehicles of scholarly communication in any discipline, bibliometric analysis of the contents of any scholarly journal portrays the scientific productivity, trends and emphases of research in a discipline and in the journal itself. Articles published in scholarly journals, including those in library and information science (LIS), reflect changes in the interests and concerns of their author constituencies and of the discipline in general (Koehler et al. 2000). There are many journals in the LIS disciplines. Among them, the IFLA journal is one of the most important international journals of LIS.

2. SCOPE AND OBJECTIVES

The scope of bibliometric includes the study of relationship within a literature and describing a literature. Bibliometrics studies are generally based on quantitative measurements without any qualitative evaluation. They are, therefore considered only as partial indicators of scientific progress. The scope of bibliometrics includes studying the relationship with a literature (citation studies) or describing a literature typically, these descriptions focus on consistent patterns, involving authors, monographs, journals or subject / language. It is a quantitative science and it is divided into two basic categories. Description and Evaluative bibliometrics. The descriptive Bibliometrics further includes the study of the number of publications in a given field or productivity of literature in the field for the purpose of comparing the amount of production during different periods or the amount product in different subdivisions of the field. This kind of study is made by a count of the papers, books and other writings in the field or often by a count of these writings which have been abstracted in specialized abstracting journals. Evaluative Bibliometrics includes the study of literature used by research worker in a given field. Such a study is often made by counting the references cited by a large number of research workers in their papers.

The Present study has been undertaken to ascertain the nature and contents of articles in the Aquaculture International (AI). Aquaculture International (AI) is the bi-monthly organ of the Springer International Publishing, Switzerland. Being published for the last 16 years, Journal provides a platform to the scientific community to publish their research findings and explore prospects for further research. It publishes original research papers on different aspects of biology, physiology, pathology and genetics of cultured fish, crustaceans, molluscs and plants, especially new species; water quality of supply systems, fluctuations in water quality within farms and the environmental impacts of aqua cultural operations; nutrition, feeding and stocking practices, especially as they affect the health and growth rates of cultured species; sustainable production techniques; bioengineering studies on the design and management of offshore and land-based systems; the improvement of quality and marketing of farmed products; sociological and societal

impacts of aquaculture, and more. In 2012, journal had National Academy of Agricultural Sciences (NAAS) rating of 7.4.

Objective of the study:

The objectives of the present study are:

- Analyze the articles and notes issue wise published in the Aquaculture International.
- To study the authorship pattern of the papers.
- To study the average length of papers.

3. REVIEW OF LITERATURE:

During the last few decades, many articles have addressed the bibliometric aspects of journals across many fields across the world. **Heydon et al. (2000); Bauer and Balkalbasi (2005); Patra (2006); Tigga (2005); Hussain (2011); Chaurasia (2004); Kumar (2011); Khaparde (2011); Thanuskodi (2011); Thanuskodi (2011); Tsay (2011); Isiakpona (2012).** According to **Thanuskodi (2010)**, the majority of articles of bibliometric study contain bibliographic references to journals, books, conference proceedings, dissertations, etc. **Verma, Tamrakar and Sharma (2007)** revealed that the majority of articles in journals published in India have two authors and that the majority of the contributions are from New Delhi. **Tiew (2000)** found that 53% of journal articles contained self-citations and that there was a tendency for authors affiliated to the institution that published the journal to cite the journal. **Shokeen and Kaushik (2004)** in their study on Indian Journal of Plant Physiology found that journal articles are predominant with 81% of total citations. The ratio of author self-citation to total citations is 1:16.65. The ratio of Journal Self Citation to total citation is 1:31.91. The results also highlight that 398 citations are below 10 years old, whereas 358 citations are below 20 years but more than 10 years old.

Jena, Swain and Sahu (2012) in their bibliometric study of The Electronic Library from 2003 to 2009 revealed some interesting bibliometric traits of this journal. Taking the above mentioned literature into context, the present study aims to provide some value addition to the corpus of literature on bibliometric studies. **Zainab (2009)** in their bibliometric study on Malaysian Journal of Computer Science evaluated the article productivity of the journal from 1985 to 2007 using Lotka's Law. The study further revealed authorship, co-authorship pattern by degree of authors' collaboration that ranged from 0.25 to 0.95. **Patra, Bhattacharya and Verma (2006)** analyzed the growth pattern, core journals and authors' distribution in the field of bibliometrics, using data from Library and Information Science Abstract (LISA).

In the aforesaid direction, **Jena (2006)** in his study on Indian Journal of Fibre and Textile Research, 1996–2004' revealed various details of the trend of publications of this Journal. **Biswas, Roy and Sen (2007)** conducted a bibliometric study on Economic Botany from 1994-2003 and revealed that among the citations, books accounted for 59%, journals 41% while, e-citations were quite negligible. Furthermore, they found that the highest numbers of contributions were emanated from academic institutions such as universities. **Dhiman**

(2000) has done ten year bibliometric study Ethno botany Journal published during 1989-1998. Jha,Kundan(2016) conducted a bibliometric study on Indian Journal of Fisheries gives research trends in the field of fish and fisheries science. In this paper examines year-wise, institution-wise, country-wise, authorship pattern, range of references cited and length of the articles. To the best of my knowledge no bibliometric study has yet been conducted to analyze the several quantifiable characteristics of this journal. In this bibliometric analysis, we examined 3 elements: articles, authors and citations. This journal was chosen as the single source journal for the bibliometric study because of its uniqueness.

4. MATERIAL AND METHODS

The data source for the study was Aquaculture International published Springer International Publishing, AG at Switzerland. It is world's leading journal providing information on biology, physiology, pathology and genetics of cultured fish, crustacean, molluscas and plants. A total of 479 records were traced from the Journal. The bibliographic details for each record included yearly wise distribution of articles, types of documents, length of article, geographical distribution of article and profile of authors. Further all the bibliographic details were transferred to spreadsheet .the data was analysed as per objectives of study.

5. FINDINGS

5.1 Year-Wise Distribution of Article:

Table 5.1 indicates the year-wise distribution of articles in the journal. The numbers differs from year to year and there is also steady increase in the number of articles from the year 2013 to 2016.Out of total 479 articles, the maximum numbers of articles are in the year 2014 contributing 150 articles, which are 31.13 to the total publications. The minimum numbers of articles are in the year 2013 with 103 articles, which are 22.30 to the total publications.

Table 5.1: Year Wise Distribution of articles

Year	Vol. No.	No. Of Issues						No. Of Articles	Percentage
		1	2	3	4	5	6		
2013	22	15	21	16	18	13	20	103	22.30
2014	22	30	50	20	20	15	15	150	31.03
2015	23	30	20	10	20	14	15	109	22.35
2016	24	30	20	11	21	21	14	117	24.32
Total		105	111	57	79	63	64	479	100

5.2 Authorship Patterns

Table 5.2 reveals the authorship pattern of the articles published during the period of study. The largest number of articles had multiple authors 312 (65%). This is followed by

three author 95 (20.00%), two authors 60 (12.50%) and single author with 12 (2.50%) of the total articles.

Table5.2: Authorship Pattern

Authors	2013	2014	2015	2016	No. Of articles	Percentag
Single Author	06	01	01	04	12	2.5
Two Authors	09	19	18	14	60	12.5
Three Authors	20	13	25	35	95	20.0
Multiple Autho	67	91	60	94	312	65.0
Total	104	124	104	147	479	100

Length of articles Table 5.3 depicts that the detail about page length of articles. The majority of contributions have pages length of articles of 10-14pages for example 265(55.35%), whereas 107(22.35%) contribution have pages length of 15-19 pages. There were 66(13.80%) contribution have length of article of 05-09, whereas 28(05.84) contribution have length of 20-24, followed by 9(.54%) have length of 25-29 pages. There was only one contribution that has page length between 30-34 pages, i.e., (0.20%).

Table5.3: Length of articles

No. Of Pages	Year				No. Of Aticles	Percentage
	2013	2014	2015	2016		
01-04	-	01	02	-	03	0.62
05-09	18	17	14	17	66	13.80
10-14	56	92	53	64	265	55.35
15-19	21	26	30	30	107	22.35
20-24	09	06	07	06	28	05.84
25-29	-	02	04	03	09	00.54
30-34	-	01	-	-	01	00.20
	104	145	110	120	479	100

5.4: Study of Citation

Table 5.4 indicates that the detail of number of citations appearing at the end of contribution in the year 2013 to 2016. Out of 479 articles published, 09 articles have no citations. The highest number of articles with citation between 40-49 is 135 (28.28%), whereas 111 (23.37%) articles have citation between 30-39. The lowest numbers of contributions with citation between 10-19 is 11 (02.30%)

Table5.4: Study of Citations

No. Of citations	Year				No. Of Articles	Percentage
	2013	2014	2015	2016		
01-09	-	-	-	-	-	-
10-19	04	03	01	03	11	02.30

20-29	15	08	10	15	48	10.02
30-39	27	51	12	21	111	23.37
40-49	27	47	33	28	135	28.28
50-59	13	12	22	24	71	14.85
60-69	07	09	16	16	48	10.02
70-79	10	14	11	10	45	09.19
Nil	01	-	05	03	09	01.97
Total	104	145	110	120	479	100

Distribution of citations Table 5.5 reveals that the 4 volumes have 21295 citations add to the 479 articles. Out of 21295 citations, vol.22 has the highest number i.e., 5896 (27.74%) and vol.21 has the lowest number i.e. 4850 (22.71%).

5.5 Distribution of Citations

Year	Vol. No	Numbers of Issue						No. Of Citations	Percentage
		1	2	3	4	5	6		
2013	21	701	1443	615	627	690	774	4850	22.77
2014	22	1204	1972	756	774	672	518	5896	27.70
2015	23	1701	943	262	820	612	647	4985	23.40
2016	24	850	542	765	1045	1007	1355	5564	26.13
4 year	4 Vols	4456	4900	2398	3266	2981	3294	21295	100

Types of Publication Table 5.6 indicates that the majority of the contributors preferred journals as the source of information which occupied the top position with the highest number of citations 13266 (82.71%) of the total 16039 citations. The second highest position is occupied by books with 1784 (11.13%) citations. It is followed by online search/web search with 567(3.53%).

5.6: Type of Publications

Types of Publications	Year				No. Of Articles	Percentage
	2013	2014	2015	2016		
Journals	2420	2887	2776	5183	13266	82.71
Books	332	282	756	414	1784	11.13
Conferences, Seminars, Workshops	14	15		59	8	0.55
Online Search/Websites	07	-	464	96	567	3.53
Reports, projects, commission	23	22	45	67	157	0.98
Reference Sources	13	34	16	34	97	0.60
Thesis/Dissertations	09	17	30	24	80	0.50
Newspapers/Magazines	-	-	-	-	-	-
Others	-	-	-	-	-	-
Total	2818	3257	4087	5877	16039	100

Geographical distribution of contributions Table 5.7 focuses the country-wise distribution of contributions in the four volumes of the journal. Out of 479 contributions, the highest number, i.e., 95 (19.83%) has been contributed by authors from china and lowest number i.e., 1 (0.20%) has been contributed by authors from sir countries.

Ranking list of Geographical Distribution contribution at International Level

Ranks	Name of Country	No. Of Contribution	Percentage
1	China	95	19.83
2	Iran	60	12.52
3	Poland	56	11.69
4	India	54	11.27
5	Brazil	42	08.76
6	Thailand	27	05.63
7	Czech Republic	17	3.54
8	Italy	12	2.50
9	Japan	10	2.09
10	Ireland	09	1.87
11	Canada	09	1.87
12	Norway	08	1.67
13	Spain	07	1.46
14	Turkey	07	1.46
15	USA	07	1.46
16	Switzerland	06	1.25
17	Germany	06	1.25
18	Korea	06	1.25
19	Sedew	05	1.04
20	Greece	04	0.83
21	Mexico	03	0.62
22	Chile	03	0.62
23	Ghana	03	0.62
24	Egypt	03	0.62
25	Denmark	03	0.62
26	Estonia	03	0.62
27	Indonesia	02	0.41
28	Hungry	02	0.41
29	Malaysia	02	0.41
30	New Zealand	02	0.41
31	Philippines	02	0.41
32	Republic of Korea	02	0.41
33	South Africa	02	0.41
34	Taiwan	02	0.41
35	Kenya	01	0.20
36	Finland	01	0.20
37	Iceland	01	0.20

38	Peru	01	0.20
39	Serbia	01	0.20
40	Tunisia	01	0.20
Total		479	100%

Profile Contributors in 2013-16

Ranking of contributors of articles Table 5.8 shows the ranking of authors/contributors of articles. In the rank list the contributors who have contributed more than 5 articles. There are a total of 355 of contributors for 479 articles. *P. S .Furtado* has contributed 04 articles whereas *B.Falahatkar, J.Nowosad & Jianjun .Fu* contributing 3 articles each. 55 authors contributed 2 articles. Others have contributed one article during the period of study.

Rank	Author	No. Of Contributors	Percentage
1	P S Furtado	04	0.84
2	B Falahatkar	03	0.62
3	J Nowosad	03	0.62
4	Jianjun Fu	03	0.62
5	Authors Contribution 2 times	55	16.50
6	Authors contribution 1 times	287	80.50

Conclusion

- The analysis shows that the aquaculture international has published 479 articles during the period of 2013-2016.
- It was found that the year wise contribution of papers were maximum number (150 out of 479) during 2014.
- The majority of fisheries scientist prefers to contribute their paper by multiple authors in authorship pattern of 479 articles
- The study on prolific author show that P S Furtado first rank followed by him, B. Falahatkar, J. Nowosad & Jianjun got second rank, they contributed 3 articles.
- It was revealed that geographical distribution of article is taken in to consideration. China produces maximum number of contribution when compared with countries. China show the hightest of 95 articles was published out of 479 articles.

REFERENCES

- Hussain, A. & Fatima, N. 2011. A bibliometric analysis of the 'Chinese Librarianship: an International Electronic Journal, (2006-2010). Chinese Librarianship: an International Electronic Journal, 31. Available at: <http://www.iclc.us/cliej/cl31HF>

- Hussain, Akhtar, Fatima, Nishat. & Kumar, Devendra . 2011. Bibliometric analysis of the ElectronicLibrary Journal (2000-2010). Webology, vol.8, no.1, Available at: <http://www.webology.org/2011/v8n1/a87.html>
- Kundan, Jha. 2016. Indian Journal of fisheries during 2000-2010.A bibliometric analysis.Research Journal of Animal Husbandry & Dairy Science, vol.7, no.1:51-55.
- Lochan Jena K, A., (2006). Bibliometric analysis of the journal Indian journal of fibre and textile research 1996-2004.Annals of Library and Information Studies, vol.53, no.1: 22-30.
- Surrendra Kumar.and S Kumar. 2004. Indian Journal of plant physiology: A citation analysis .Annals of Library and Information studies, vol.51, no.3: 104-107.
- Swapan Kumar.,Patra, S., Bhattacharya, P. and Verma, N.2006. Bibliometric Study of Literature on Bibliometrics. DESIDOC Bulletin of Information Technology, vol. 26, no.1: 27-32.
- Thanuskodi S. 2010. Bibliometric Analysis of the Journal Library Philosophy and Practice from 2005-2009. Library Philosophy and Practice. Available at: <http://www.webpages.uidaho.edu/~mbolin/thanuskodi-lpp.htm>
- Tiew ,W. S.,Abrizah Abdullah. and Kiran, Kaur. 2002. Malaysia Journal of Library & Information science 1996-2000.a bibliometric study. Malaysian Journal of Library & Information Science, vol.6, no.2: 43-56.
- Tiew, W.S. 2000.Characteristics of Self-citations in Journal of Natural Rubber Research 1988-1997. a ten-year bibliometric study. Malaysian Journal of Library & Information Science,vol. 5,no.1: 95-104.
- Verma ,N.,Tamrakar, R .and Sharma, P. 2007. Analysis of contributions in 'Annals of Library and Information Studies. Annals of Library and Information Studies, vol.54, no.2: 106-111.