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A bibliometric analysis of contributions in the journal ‘Library Trends’

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Abstract

This paper presents the findings of a bibliometric study one of the renowned journal “Library Trends” into consideration with an aim to analyse the contributions of the author and the citations cited by various articles appeared in it. The present study comprises of 206 articles published in the said journal from 2007-2012. Highest number (51) of articles is published in 2007-08. Majority of authors preferred to publish their research results in individual authorship mode 122 (59.22%). The majority of articles 63 (30.58%) have the length of 16-20 pages. The highest number of contributions with citations between 11-20 is 48 (23.30%).

Key Word: Bibliometric study, Library Trends, Citation analysis

Introduction

Literature is the thought content expressed by the author in published writings. It is the sensitive indicators of the emerging new ideas in any discipline. The primary role of literature is to record and transmit innovative ideas or discoveries in any specific field of knowledge that bring in advancement of knowledge and further development of a subject as well. Therefore, a careful evaluation of literature may indicate a complete picture of the discipline towards development.

In this regard bibliometric study is one of the important research areas in the field of Library and Information Science and it has practical applications in measuring the coverage and quality of books, journals, and articles (Jena, Swain, & Sahu, 2012). 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 (Narang, 2004). This can lead to better organization of information resources, which is essential for effective and efficient use.

British Librarian A. Pritchard first introduced the term bibliometrics in 1969 as the “application of mathematics and statistical methods to books and other media of communication” (Narang & Kumar, 2010). 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 analysed 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, infometrics, and subdisciplines like econometrics, psychometrics, sociometrics, biometrics, technometrics, 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, 2010).

The present study has undertaken one of the renowned journal, *Library Trends* into consideration with an aim to analyse the contributions of the author and the citations cited by various articles appeared in it. *Library Trends* is a quarterly journal issued in summer; fall, winter and spring by Graduate School, of Library and Information Science at the University of Illinois since 1952 edited by W. Boyd Rayward. It explores critical trends in professional librarianship. The journal is an essential tool, for both practicing librarians and educators in the professional development and continuing education (Jan, 2009). Therefore a bibliometric study of this journal is of immense significance.

Literature Review

Some of the pertinent studies on bibliometrics and citation analysis conducted by the scholars of LIS all over the world are worthy of examination.

Biswas, Roy and Sen conducted a study with 358 original contributions published in the journal *Economic Botany* during 1994-2003 and they stated that among the citations, books accounted for 59%, journals 41% and e-citations started appearing from 1998 are still negligible in number. Furthermore, they found that the highest numbers of contributions i.e. 60.61% were emanated from academic institutions such as universities (Biswas, Roy, & Sen, 2007). Liu studied the scholarly communication of educational psychology by exploring its intellectual structure and general journal citation patterns and six clusters of journals were identified, including general educational psychology/learning/literacy, school psychology, measurement and counseling, Germany-based educational psychology, creativity, and the other. Furthermore, the study revealed that a small number of journals accounted for a relatively high percentage of the intra-disciplinary citations; the majority of the selected journals cited more than being cited in the field (Liu, 2007). Turk indicated that there is quite a uniform way about methodology of citation counts and substantial research about motivation for URL citations to LIS articles (Turk, 2008). Willet found that the *Journal of Chemical Information and Modeling* is the core journal for the subject, but with many significant papers being published in journals whose principal focus is molecular modeling, quantitative structure-activity relationships or more general aspects of chemistry and many of the most cited papers in this *Journal* describe software packages that play a key role in modern chemo informatics research (Willett, 2008). Zainab, Anyi and Anuar conducted a bibliometric study on *Malayasian Journal of Computer Science* and evaluated the article productivity of the journal from 1985 to 2007 using Lotka's Law. The study further revealed authorship, co-authorship pattern by authors' country of origin and institutional affiliations (Zainab, Anyi, & Anuar, 2009). Narang and Kumar carried out a bibliometric study on 400 articles in five volumes – 34 (2003) to 38 (2007) of the *Indian Journal of Pure and Applied Mathematics*. They founded that the most cited documents are articles from research journals and the foreign authors have contributed more than Indian authors (Narang & Kumar, 2010). Narang undertook a bibliometric study of 8396 citations appended to 737 articles in the five volumes 29 to 33 published in the *Indian Journal of Pure & Applied Mathematics* during the years 1998-2002 and founded that the number of contributions is increasing in successive volumes and highest number of papers have been written by joint authors (Narang, 2004). Swain in his scientometric analysis of *Library Philosophy and Practice* from 2004 to 2009 found that the highest percentage of contributions from single authors, with respect to other types of authorship and It is observed that the degree of collaboration ranged from 0.222 to 0.52 in *Library Philosophy and Practice* from 2004 to 2009 (Swain, 2011). Swain and Panda

conducted a bibliometric study on Journal of Intellectual Property Rights, 2002 to 2010 and found that solo contributing authors are dominant in JIPR (Swain & Panda, 2012). Jena, Swain and Sahu in their bibliometric study of The Electronic Library from 2003 to 2009 revealed that the majority of citations are from journals, followed by web resources and books and the average length of articles is 13.017 pages (Jena, Swain, & Sahu, 2012). Jan carried out the citation analysis of all the journal articles published in the Library Trends from 1994-2007. 593 articles are published in the journal during 14 years. Highest number i.e. 52 of articles is published in 2004. The Journal contained 15662 references for the study period of which 13783 are p-citations and 1879 are e-citations. Every issue published approx. 11 articles and each article has an average of 23.2 p-references and 3.1 e-citations. It was found that 44.51 % print books are consulted by the authors and 0% e-books are accessed. Authors have consulted 44.04% p-journals as against 11.82% e-journals. The study shows that 88.14% other web references are used in the articles reference. Female contribution (52.34%) accounts more than male contribution (47.66%) (Jan, 2009). Jena, Swain, and Sahoo attempted to measure the publication traits of a premier Indian referred journal namely, Annals of Library and Information Studies (ALIS) from 2002 to 2010. Out of the total 247 articles the maximum numbers of articles are reported to have been published in the year 2010 (43 articles; 17.4%) while the least number of articles have been published in the year 2002 (18 articles; 7.29%). Moreover, it is found that the rate of citations of articles has witnessed an increasing trend. It is also studied that two authorship mode (47.4%) followed by individual authorship mode (32.4%) and three authorship mode (17.409%) (Jena, Swain, & Sahoo, 2012). Thanuskodi, S. presented a bibliometric analysis of the journal titled Library Herald for the period between 2006 to 2010. The analysis cover mainly the number of articles, authorship pattern, subject wise distribution of articles, average number of references per articles, forms of documents cited, year wise distribution of cited journals etc. The result showed that out of 138 articles single author contributed 72 (52.17%) articles while the rest 66 (47.83%) articles were contributed by joint authors. Study reveals that most of the contributions are from India with 89.85 % and the rest 10.15 % only from foreign sources (Thanuskodi, 2011). Thanuskodi stated that the journal published 249 articles during the period of study. The maximum numbers of contributors are single authors with 31.32%. The Study revealed that majority of articles (96.85%) contains references which include journals, books, conference proceedings, dissertations, etc. (Thanuskodi, 2010) Chaurasia carried out a bibliometric analysis of the journal “Annals of Library and Information Studies (2002-2006)” and observed a trend of growth in contributions and average number of contributions is 21.4 per volume. Majority of the library and information scientists prefer to do collaborative research and contribute their papers jointly. Majority of the library and information scientists have cited journals in large number (50.15%) while books comes on second with 273 (19.96%) citations (Chaurasia, 2008). Kulkarni, Poshett, & Narwade carried out a bibliometric analysis of the journal Indian Journal of Pharmaceutical Education and Research revealed that journals were the pre-dominant citation source followed by books. Analysis shows that majority of the scientists preferred to publish research papers in multiple authorships and there is considerable time lag in publication of articles from the date of receipt of the papers (Kulkarni, Poshett, & Narwade, 2009). Taking the above mentioned literature into context, the present study aims to provide some value addition to the corpus of literature on bibliometric studies.

Need for the Study

Periodicals are the indicators of literature growth in any field of knowledge. They emerge as the main channel for transmitting knowledge. Due to the escalating cost of the periodicals

and lack of adequate library budgets, the selection of any particular journal for a library should be done carefully. Therefore, the library authorities are forced to reduce the number of journal subscriptions. Bibliometric analysis has many applications in library and information science in identifying research trends, core journals, etc., and thereby framing subscription policies for tomorrow. These studies will be helpful for librarians in collection development.

Objectives of the Study

The present study aims to evaluate the scholarly publication trends in the journal 'Library Trends' during the period 2007-08 to 2011-12. The main objectives of the study are:

- To study the year wise contribution of articles;
- To examine and study the volume-wise distribution of contributions and to find the average number of contributions per volume;
- To study the authorship pattern of the contributions;
- To study the Authorship Pattern of Contributions (Volume wise);
- To study the Single Authored vs. Multi Authored Papers;
- To find out the authors' degree of collaboration;
- To study the length of contributions;
- To study the average length of contributions published in Library Trends;
- To study the citation pattern of contributions;
- To study the distribution of citations (volume-wise);

Methodology

The present study comprises of 206 articles published in the journal 'Library Trends' from 2007-2012. The articles were accessed from the website of Johns Hopkins University Press' (one of the world's largest university presses, publishing 80 scholarly journals and nearly 200 new books each year. The Press is also home to Project MUSE, a ground-breaking collaboration with the Sheridan Libraries at JHU launched in 1995, which provides online access to more than 260,000 journal articles and 410,000 book chapters from 120 scholarly publishers for millions of students, scholars, and other readers around the world) (Library Trends, www.press.jhu.edu). Each articles published during the study period were examined. The references listed for each article were examined and duplicate references in each individual list were removed. Data concerning total number of articles, total number of references, total number of articles with electronic references, total number of print references were recorded along with the authorship pattern for each article. The collected data have been analyzed and is presented in the form of tables and figures as follows (Jan, 2009).

Scope

An attempt has been made to analyze the contributions in 19 issues of 5 volumes of Library Trends (vols. 56-60; 2007-08 to 2011-12).

Source Journals

Library Trends has been selected as the source journal for the present study. It is a quarterly peer-reviewed academic journal published quarterly by the Johns Hopkins University Press, USA (Library Trends, en.wikipedia.org) in summer, fall, winter and spring by Graduate School, of Library and Information Science at the University of Illinois since 1952 (Jan, 2009) edited by Boyd Rayward and Alistair Black (Library Trends, www.press.jhu.edu). It explores critical trends in professional librarianship, including practical applications, thorough analyses, and literature reviews. Both practicing librarians and educators use Library Trends as an essential tool in their professional development and continuing

education. Each issue brings readers in-depth, thoughtful articles, all exploring a specific topic of professional interest. Every year, Library Trends covers a wide variety of themes, from special libraries to emerging technologies (Library Trends, www.press.jhu.edu). Library Trends is a quarterly journal issued. So far 61 volumes of the journal have been published in 2012-13.

Analysis and findings

Table 1 - Year-wise distribution

Year	Vol.	Issue	No. of contributions	% age
2007-08	56	1-4	51	24.76
2008	57	1-4	42	20.39
2009	58	1-4	37	17.96
2010	59	1-4	39	18.93
2011-12	60	1-4	37	17.96
5 Years	5 Vols.	19 Issues	206	100.00

The total number of contributions in 19 issues of 5 volumes of the source journal is 206, which consists of full articles. As indicated in table 1, it gives details regarding the distribution of 206 contributions published in five years (2007-2012). The highest number of articles i.e. 51 (24.76%) was published in volume 56 in 2007-08 and minimum number of contributions i.e., 37 (17.96%) in the volumes 58 and 60 in 2009 and 2011-12 respectively. The average number of contributions per volume is 41.2.

Table 2 - Authorship Pattern of contribution

No. of Author (s)	No. of Contributions	% age
One	122	59.22
Two	48	23.30
Three	21	10.19
More than 3	15	7.28
Total	206	100

Table 2 reveals the authorship pattern of the articles published during the period of study. Majority of authors preferred to publish their research results in individual authorship mode 122 (59.22%). The single authorship pattern has the most productive publications papers than the multiple authorship pattern papers. The multiple authorship patterns are further analysed to shed more light on the pattern of collaboration. Publications with two authors are 48 (23.30%) papers followed three authorship mode 21 (10.19%) and more than three authors with 15 articles (7.28%) of the total articles. Therefore, it is deduced that the publication output of the source journal 'Library Trends' is dominated by single authors almost throughout the publication phase of 2007-08 to 2011-12.

Table 3 - Authorship Pattern of Contributions (Volume wise)

Vol. No.	One Author	% age	Two Author	% age	Three author	% age	More than three	% age	Total %
56	37	72.55	11	21.57	2	3.92	1	1.96	100.00
57	26	61.90	5	11.90	4	9.52	7	16.67	100.00
58	20	54.05	9	24.32	5	13.51	3	8.11	100.00
59	13	33.33	16	41.03	7	17.95	3	7.69	100.00
60	26	70.27	7	18.92	3	8.11	1	2.70	100.00
Total	122	58.42	48	23.55	21	10.60	15	7.43	100.00

The above table shows the trends in authorship pattern, as single authored papers are leading in frequency of occurrence in the journal “Library Trends” throughout the study except 2010 only and more interestingly this growth is almost continuous which indication about the future pattern in authorship. It is more than 58% every year which provides a definite pointer that individual work occupies more prominent position than the team work.

Table 4 - Single Authored vs. Multi Authored Papers

Year	Vol. No.	With Single Author		With Multi Authors		Total Contribution
		No. of papers	% age	No. of papers	% age	
2007-08	56	37	30.33	14	16.67	51
2008	57	26	21.31	16	19.05	42
2009	58	20	16.39	17	20.24	37
2010	59	13	10.66	26	30.95	39
2011-12	60	26	21.31	11	13.10	37
		122	100.00	84	100.00	206

The highest numbers of contributions in the category of single authorship are contributed in 2007-08 which are 37 (30.33%) out of 122 single authored papers while in the category of multi authored papers, the highest number of contributions are contributed in the year 2010 having 26 (30.95%) contributions out of 84 contributions.

The above Table shows that in every volume of the journal “Library Trends” except the volume no. 59, the numbers of single authored papers are dominating to multi authored papers. The overall single authored papers are almost 1.5 times of multi authored papers.

Table 5 - Degree of collaboration

Year	Single Author	Multi Authors	DC
2007-08	37	14	0.27
2008	26	16	0.38
2009	20	17	0.46
2010	13	26	0.67
2011-12	26	11	0.30
Total	122	84	0.41

The degree of collaboration among authors who were published in Library Trends is depicted in Table 5. It was calculated using Subramayam’s formula (Subramanian, 1983):

The formula is as follows:

$$DC = Nm / (Nm + Ns)$$

Where,

C=Degree of Collaboration

Nm=Number of Multi Authored Contributions

Ns= Number of Single Authored Contributions

In the present study the value of DC is

$$=0.41 \text{ (C=84/84+122)}$$

Thus the degree of collaboration in the journal “Library Trends” is 0.41. As DC value does not exceed 0.5, it is deduced that single-authored contributions occupy the prominent position.

It is also observed that the degree of collaboration ranged varied from 0.27 to 0.62 in Library Trends during the period of study. However, the calculated value for the degree of collaboration in this study indicates that Library Trends has accommodated more number of single authored contributions than collaborative ones.

Table 6 - Length of Articles

Pages	Year					Total	% age
	2007-08	2008	2009	2010	2011-12		
(1-5)	0	0	0	0	0	0	0.00
(6-10)	5	6	6	0	0	17	8.25
(11-15)	14	10	19	11	7	61	29.61
(16-20)	12	15	8	15	13	63	30.58
(21-25)	9	8	4	11	12	44	21.36
(26-30)	8	3	0	1	3	15	7.28
(31-35)	3	0	0	1	1	5	2.43
(36-40)	0	0	0	0	0	0	0.00
(41-45)	0	0	0	0	1	1	0.49
Total	51	42	37	39	37	206	100.00

Table 6 indicates the details about the page length of the contributions. It reveals that out of 206 contributions, the majority of articles 63 (30.58%) have the length of 16-20 pages followed by 61 (29.61 %) articles with 11-15 pages and 44 (21.36%) articles with 21-25 pages. There is no article that has the length between 1-5 and 36-40 pages while there is only one contribution that has page length between 41-45 pages i.e. (0.48%).

Table 7 - Average Length of Contributions

Year	No. of Contributions	Cumulative Total of Contributions	Pages	Cumulative Total of Pages	Average Pages per Contribution	Cumulative Average No. of Contributions
2007-08	51	51	958	958	18.784	18.784
2008	42	93	730	1688	17.381	18.151

2009	37	130	533	2221	14.405	17.085
2010	39	169	730	2951	18.718	17.462
2011-12	37	206	764	3715	20.649	18.034

The table shows that the average length of articles varied from a minimum of 14.405 pages to a maximum of 20.649 pages. Taking all the issues from 2007-08 to 2011-12 into account, it is found that Library Trends has accommodated on an average 18 pages per article.

Table 8 – Study of Citation

No. of citations	2007-08	2008	2009	2010	2011-12	Total	% age
NIL	5	3	0	0	1	9	4.37
(1-10)	4	6	6	3	3	22	10.68
(11-20)	11	11	15	8	3	48	23.30
(21-30)	11	9	8	9	8	45	21.84
(31-40)	1	8	5	8	8	30	14.56
(41-50)	4	2	1	4	3	14	6.80
(51-60)	2	0	1	2	7	12	5.83
(61-70)	4	2	0	2	0	8	3.88
(71-80)	3	1	0	2	1	7	3.40
81-90	2	0	0	0	2	4	1.94
91-100	0	0	1	0	0	1	0.49
101-110	0	0	0	0	0	0	0.00
111-120	1	0	0	1	0	2	0.97
121-130	1	0	0	0	0	1	0.49
131-140	1	0	0	0	0	1	0.49
141-150	0	0	0	0	0	0	0.00
151-160	1	0	0	0	0	1	0.49
161-170	0	0	0	0	1	1	0.49
Total	51	42	37	39	37	206	100

Out of 206 contributions published, 9 i.e. 4.37% contributions have no citation. The highest number of contributions with citations between 11-20 is 48 (23.30%), followed by citation between 21-30 is 45 (21.84%) and the lowest number of contributions with citation between 91-100, 121-130, 151-160 and 161-170 is 1 (0.49%).

Table 9 - Distribution of Citations (Volume Wise)

Vol. No.	No. of citation	% age
56	1895	28.79
57	1015	15.42
58	828	12.58
59	1354	20.57
60	1490	22.64

Total	6582	100.00
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The above Table shows that volume 56 has highest number of citation (28.79%) in the total citation i.e., 1895 received during the study. While least citations has been recorded in volume number 58 with 828 (12.58%) citations. Total 6582 citations have been recorded in 206 contributions therefore the average number of citations per contribution is 31.95 which is good enough.

Limitations

This bibliometric study is based on data collected from volume numbers 56 to 60 of the journal 'Library Trends' therefore its results may vary on different times for the different journals. The validity of the result depends upon the sample size and as this study is based on only 19 issues therefore it may not be fully representative in all the result but it gives a trend about what is happening in the publication arena of library and information science.

Conclusion

Bibliometric study of a single journal provides a portrait of the concerned journal by indicating the quality, maturity and productivity of the journal. It informs about the research orientation that the journal supports to disseminate and its influence on author's choice as a channel to communicate or retrieve information for their research needs (Zainab, Anyi, & Anuar, 2009). In this respect, total of 206 articles in 19 issues are published in the journal 'Library Trends' during the period. On an average 11 articles are appended to each issue of the journal. It is deduced that the publication output of the source journal 'Library Trends' is dominated by single authors almost throughout the publication phase of 2007-08 to 2011-12. The DC in the journal is 0.41. As DC value does not exceed 0.5, it is further deduced that single-authored contributions occupy the prominent position during this study period. 6582 citation are consulted with greater reliance and most of them are print citations with less consultation of e-citations. The average number of citations per contribution is 31.95 which is good enough. It is also found that it has accommodated on an average 18 pages per article.

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