

Full Length Research

Bibliometric Analysis: A study of The Electronic Library

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This study aims to present a bibliometric analysis of 'The Electronic Library' journal, the aim being to offer a summary of research activity in Library and Information Science and characterize its most important aspects. The paper analyzes a bibliometric study of 704 articles were published during the period 1999 to 2012 in 'the Electronic Library' journal. The paper covers the bibliometric analyses of year-wise distribution of articles, category-wise classification of articles, authorship patterns, country wise, keywords and distribution of contributions. Special issues of 'The Electronic Library' brought out during 1999-2012, and prolific authors during 1999 to 2012 have been analyzed.

Keywords: Electronic Library, Bibliometrics, Content analysis, Electronic Journal

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INTRODUCTION

Bibliometrics is a promising area of research in the field of Library and Information Science. The current study is a bibliometrics analysis of a leading international referred journal "The Electronic Library" which is published bi-monthly with six issues per year/volume and containing the original research contributions of the authors. Established in 1983 initially as a quarterly journal, by the year 2009 had successfully brought out 30 volumes with some eight or nine articles in each issue. In this study, the articles published during the period 1999 to 2012 have been analyzed (Subramanyam, 1983).

In the recent decade the volume of scientific journals is increasing immensely and their prices are also on the upward to trend. This situation that poses a difficult

proposition for librarians to select and finalize journals. In order to assess the worthiness and usability of selecting journals, many concepts and theories have been evolved (Das & Sen, 2001). The term bibliometrics was first coined by (Pritchard, 1969). An initiating example of a bibliometric study was statistical analysis of the literature of comparative anatomy from 1543 to 1860, done by including book and journal titles, and grouping them by countries of origin and periods. According to (Hulme, 1923) entitled "Statistical Analysis of the History of Science". His investigation was based on the entries in the English International Catalogue of Scientific Literature. Another third study was the work of Gross and Gross reported in 1927. They counted and analyze the

citations in articles from the Journal of the American Chemical Society, and produced a list of journals estimates important to chemical education. (Zipf's law, 1949) relates to the frequency of word occurrence. Zipf derived his law from the empirical law of least effort. He said that there is relationship between the rank of the word and its frequency of textual matter, if the words are arranged in their decreasing order of frequency of occurrence in a long text. This law indicates that, "in a long textual matter if the words are arranged in their decreasing order of frequency then the rank of any given word of the text will be inversely comparative to the frequency of occurrence of the words". Another important 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".

Need for the Study

In the recent years, there has been an explosive growth in human knowledge. In fact, the nature and tempo of growth has been such far outstrip the achievements of past centuries. The field of Library and Information Science itself has grown and so as the number of information scientists. So obviously does the volume of literature generated by the Library and Information Science community. The growth of literature itself has caused a fairly widespread alarm and the term that describes explosion also known as information explosion. The 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 any particular journal for a library should be done more carefully. Therefore, the library authorities are forced to reduce the number of journal subscriptions. Bibliometric analysis has many applications in the Library and Information science field in identifying the research trends in the subject core journals, etc. and thereby framing new subscription policy for tomorrow. (ex. University of Mysore and University of Dharwad library subscribing the journals). These studies will be helpful for librarians to plan a better collection development.

OBJECTIVES OF THE STUDY

The objectives of the present study are:

1. To find out the year-wise distribution of articles.
2. To study the authorship pattern of the contributors.
3. To find out the number and types of articles published.
4. To study the geographical distribution of contributions.
5. To study the most prolific contributions of articles.

SCOPE AND METHODOLOGY OF THE STUDY

The present study is limited to the field of Library and Information Science. The data was collected from Emerald databases which covers 'The Electronic Library' from 1999 to 2012. Only certain aspects depicting research trends like subject-wise breakup, authorship pattern, category-wise classification, geographical region-wise classification, and identification of keywords are covered in this study.

The present study was bibliometrics analysis for studying 'The Electronic Library' available in the Emerald database. The bibliographical details of each issue of the journal articles were downloaded from the website of Emerald databases (<http://www.emeraldinsight.com>). All the required bibliographical data such as name of the author(s), title, and source of documents, year of publication, and volume of publication, issue number, and article type were collected and recorded on a spread sheet with pre-designed columns. The data so collected were tabulated and analyzed in order to obtain results in respect of the stated objectives.

Data analysis and interpretation

The data was collected by different methods were analyzed and interpreted and same has been presented in the following tables.

Year wise distribution of articles

During the period from 1999 to 2012, total 1337 articles were published. The Table 1 shows that the numbers differs from year to year and there is also steady increase in the number of articles from the year 1999 to 2012. Out of total 1337 articles, the maximum numbers of articles are in the year 2009 contributing 68 articles, which are 09.66% to the total publications. The minimum numbers of articles are in the year 1999 with 28 articles, which are 03.98% to the total publications.

Authorship Pattern

The Authorship Pattern was analyzed to determine the percentage of single and multiple authorship. As Harsanyi (John) has shown, different disciplines interpret the order of authorship differently. According to Terry (1996), there are no established norms for citation order in librarianship and information science

Table 2 reveals that during 1999 -2012 the highest proportion of articles were by two authors 480 (35.90%), followed by articles with single authors 341 (25.50%), 3 authors 294 (21.99%), and more than three authors 222 (16.60%).

Table 1. Year wise distribution of articles

Year	Number of Article (Issue- Wise)						Total No. of articles	Percentage
	1	2	3	4	5	6		
1999	4	5	5	6	3	5	28	03.98
2000	6	5	5	4	5	5	30	04.26
2001	5	5	5	6	6	6	33	04.69
2002	7	8	7	6	7	7	42	05.97
2003	7	8	9	9	12	9	54	07.67
2004	9	10	10	7	9	9	54	07.67
2005	10	10	11	12	10	9	62	08.81
2006	9	12	10	11	10	10	62	08.81
2007	8	8	9	9	8	12	54	07.67
2008	9	9	10	11	11	10	60	08.52
2009	12	12	12	11	11	10	68	09.66
2010	12	9	8	9	10	8	56	07.95
2011	8	8	8	9	9	9	51	07.24
2012	9	9	8	7	9	8	50	07.10
Total	106	109	109	110	111	109	704	100.00

As a result, the degree of collaboration in the *Electronic Library* journal is 0.79, which clearly indicates its dominance upon individual contribution. Less than 0.05 is significance

Category-Wise Classification of Articles

The Table 3 focuses that the category wise classification of the articles published during period from 1999 to 2012. The study reveals that the maximum number of articles published as under the category of research paper i.e. 338 (48.01%), whereas 154 (21.88%) articles published under the case study category. There were a small numbers of articles published as under the literature review category, i.e., 23 (03.27%).

Special Issues

The Table 4 shows the details of special / thematic issues of 'The Electronic Library' journal brought out during 1999-2010. Out of 78 issues published during 1999-2012, only 17 special issues were brought out. There were no special issues were brought out during 1999, 2000, 2001, 2006 and 2010. But in the later part of decade, i.e., 2002 onwards, the journal has published a number of thematic issues quite regularly except 2006 and 2012.

Length of articles published

The Table 5 shows the length of the article of

publications. The large number of articles i.e 269 (38.21%) were written in the range of '11-15' pages followed by 248 (35.23%) articles in the '6-10', 99 (14.06%) articles of '16-20' pages, 60 (08.52%) articles are in '1-5' pages, 21 (02.98%) articles are of '16-20' pages and only 07 (00.99%) articles are of '26 and Above' pages.

Prolific Authors

It was observed that there are a total of 1337 contributors for 704 articles. Howard falk contributed 15 (20.00%) articles, where as 08 (10.7%) contribution is from Shien-Chiang Yu, 07 (09.33%) Stephen M. Mutula, 07 (09.33%) Hsin-Ling Chen, 05 (06.66%) Rajesh Chandrakar, 06 (06.66%) Ina Fourie and 04 (05.33%) Pieter Van Barakel and other authors' contribution individual productivity. Table 6

Country wise

Researchers in bibliometric studies are interested to find the countries which are contributing most in any given field. This type of analysis also helps to identify the countries which have taken up the research work in the field.

The Table-7 shows the country-wise distribution of articles in the 'The Electronic Library'. Out of the total 704 articles, 115 (16.34%) articles have been published from U.S.A, showing its dominance in the field. United Kingdom and India stands second in the list with 55

Table 2. Authorship Pattern

Authorship Pattern	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	No. of Authors	%
Single Author	19	16	19	40	36	32	41	30	20	24	14	17	16	17	341	25.50
Two Author	10	24	24	22	20	30	26	34	46	44	74	46	44	36	480	35.90
Three Author	6	9	6	21	18	6	24	36	24	21	33	36	21	33	294	21.98
More than Three Authors	11	--	--	23	04	20	--	12	08	29	39	16	32	28	222	16.60
Year-Wise (Total no. of Authors)	46	49	49	106	78	88	91	112	98	118	160	115	113	114	1337	100.00

Degree of collaboration in the Electronic Library:

To determine degree of collaboration in quantitative terms, the formula given by K. Subramanyam (1983) was used

The formula is:		
Where, C = Degree of collaboration	C =	NM 1337
NM = Number of multi authored articles		NM + NS 1337+341
NS = Number of single authored articles	C = 0.79	

(07.81%) articles, 50 (07.10%) Taiwan, 50 (07.10%) China, 41 (05.82%) Iran, 39 (5.54%) Nigeria, 34 (04.83%) New Zealand and other countries contribution can be seen in the Table-7.

Keywords

The Table-8 shows that 32 keywords were

selected from 704 articles published in 'The Electronic Library' during 1999 to 2012 as given. It can be seen 247 key words from Libraries, followed 117 keywords as Internet, 93 digital Libraries, 52 Information retrieval, 50 Communication Technologies, 49 Databases, 42 User studies, 37 Information Services, 36 Education, 34 Electronic Media and Minimum

only 10 keywords in The Electronic Library' are information science key words. The frequency of other keywords can be clearly seen in the Table-8.

CONCLUSION

The publishing trend totally depends on the output

Table 3. Category-wise classification of articles

Category	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	%
Research Paper	8	12	6	8	27	18	21	30	29	28	42	40	32	37	338	48.01
Technical Paper	2	1	9	10	1	4	6	2	2	2	2	2	3	2	48	06.82
Conceptual Paper	--	--	--	1	--	19	2	2	2	3	2	2	2	1	36	05.11
Viewpoint	5	---	1	--	--	--	10	8	--	1	1	1	3	---	30	04.26
Case Study	8	10	10	14	18	4	9	13	12	21	14	8	8	5	154	21.88
Literature review	1	--	2	1	--	4	1	2	3	1	3	1	2	2	23	03.27
General review	3	8	5	8	8	5	13	4	6	4	4	2	2	3	75	10.65
Total	27	31	33	42	54	54	62	61	54	60	68	56	52	50	704	100.00

Table 4. Special issues

Year	Volume	Number of Issues (N=06)						Total	%
		1	2	3	4	5	6		
1999	17	-	-	-	-	-	-	-	-
2000	18	-	-	-	-	-	-	-	-
2001	19	-	-	-	-	-	-	-	-
2002	20	-	-	-	1	-	-	1	05.88
2003	21	-	-	1	-	1	-	2	11.76
2004	22	1	-	-	-	-	1	2	11.76
2005	23	1	-	1	-	1	-	3	17.65
2006	24	-	-	-	-	-	-	-	-
2007	25	-	1	-	1	1	-	3	17.65
2008	26	-	-	1	-	1	-	2	11.76
2009	27	-	1	-	-	1	-	2	11.76
2010	28	-	-	-	-	-	-	-	-
2011	29	-	1	-	-	-	-	1	5.88
2012	30	-	1	-	-	-	-	1	5.88
2013									
2014									
Total		2	4	3	2	5	1	17	100.00

of contributors, patterns of contributions and the quality of research. The year 2009 shows the maximum number of contributions to 'The Electronic Library' journal. This study reveals that the categories of article distributions are remarkable in this research journal. The majority of

the articles were contributed by single authors; and most authors were librarians, faculty members or researchers affiliated with academic or research institutions. Out of 78 issues published during 1999-2012, only 17 special issues were brought out from eminent editors and guest

Table 5. Length of articles published

Length of the Articles	Total Articles	Percentage
1-5	60	08.52
6-10	248	35.23
11-15	269	38.21
16-20	99	14.06
21-25	21	02.98
26 and Above	07	00.99
Total	704	100.00

Table 6. Prolific Authors

Sl. No	Authors Name	Rank	%	Sl. No	Authors Name	Rank	%
1	Howard falk	15	20.00	8	Monica Landoni	04	05.33
2	Shien-Chiang Yu	08	10.7	9	Hong xu	04	05.33
3	Stephen M. Mutula	07	09.33	10	Hao-Rank Ke	04	05.33
4	Hsin-Ling Chen	07	09.33	11	Dennis Nicholson	04	05.33
5	Rajesh Chandrakar	05	06.66	12	Alimohammadi	04	05.33
6	Ina Fourie	05	06.66	13	Alexei Oulanav	04	05.33
7	Pieter Van Barakel	04	05.33		Total	75	100.00

Table 7. Country wise

Sl. No	Country	Total	%	Sl. No	Country	Total	%
1	USA	115	16.34	29	Poland	5	0.71
2	UK	55	7.81	30	Turkey	4	0.57
3	India	55	7.81	31	Finland	3	0.43
4	Taiwan	50	7.10	32	Switzerland	3	0.43
5	China	50	7.10	33	Denmark	2	0.28
6	Nigeria	39	5.54	34	Netherland	2	0.28
7	Iran	41	5.82	35	Ireland	3	0.43
8	New Zealand	34	4.83	36	Thailand	2	0.28
9	South Africa	32	4.55	37	Oman	2	0.28
10	Australia	26	3.69	38	Kenya	2	0.28
11	Spain	17	2.41	39	Russia	2	0.28
12	Botswana	12	1.70	40	Birmingham	1	0.14
13	South Korea	14	1.99	41	Aberystwyth	1	0.14
14	Serbia	12	1.70	42	Ethiopia	1	0.14
15	Pakistan	10	1.42	43	Sweden	1	0.14
16	Canada	8	1.14	44	Lebanon	1	0.14
17	Scotland	8	1.14	45	Philippines	1	0.14
18	Greece	11	1.56	46	Norway	1	0.14
19	Kuwait	8	1.14	47	Manchester	1	0.14
20	Singapore	9	1.28	48	England	1	0.14
21	Malaysia	7	0.99	49	Uganda	1	0.14
22	Hong Kong	6	0.85	50	Belgium	1	0.14
23	Germany	5	0.71	51	Egypt	1	0.14
24	UAE	6	0.85	52	Portugal	1	0.14
25	Italy	5	0.71	53	London	1	0.14
26	Saudi Arabia	4	0.57	54	Srilanka	1	0.14
27	Iceland	4	0.57	55	Israel	1	0.14
28	Bangladesh	4	0.57	56	Country Not Mentioned	11	1.56
	Total					704	100.00

Table-8: Keywords

Sl. No	Keywords	Frequency	Sl. No	Keywords	Frequency
1	Libraries	247	17	Library Automation	18
2	Internet	117	18	Design	17
3	Digital Libraries	93	19	Computer software	15
4	Information retrieval	52	20	Distance learning	15
5	Communication Technologies	50	21	World Wide Web	12
6	Databases	49	22	Library Management	12
7	User studies	42	23	Mobile communication	12
8	Information Services	37	24	Information services	11
9	Education	36	25	Information Searches	11
10	Electronic Media	34	26	Data handling	11
11	Electronic books	31	27	E-learning	10
12	University Libraries	31	28	Library services	10
13	Electronic Publishing	30	29	Telecommunication	10
14	Librarians	22	30	Information Science	10
15	Information Technology	21	31	Copyright	10
16	Library Users	20	32	Special Libraries	10

editor of LIS professionals. It is registered that Howard Falk, Stephen M. Mutula and Shien-Chiang Yu were most proliferate authors who have contributed fifteen articles, seven articles and six articles each. The Electronic Library is notably a scholarly journal that stipulates or induces fruitful research for the Library and Information Science profession.

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