Content and References Metrics: A Bibliometric Study of 'e-Library Science Research Journal'

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Abstract

This study analyses the content and reference metrics of e-library Science Research Journal covering 521 articles published from Jan.2013 to Dec.2015. The articles were gone through online and necessary data were noted down in the specially prepared Excel worksheets. The study reveals that : Most of the articles (280, 53.74%) have 6-10 pages followed by 151 articles (28.98 %) with 1-5 pages and 77 articles (14.78 %) have 11-15 pages. All 521 articles being analysed have abstracts. 98.27 % (512) of the articles have Key words. A majority of 289 (56.45 %) articles have 1-10 references followed by 163 articles (31.84 %) with 11-20 references. The year 2014 had the maximum numbers of Print references i.e. 198 (40.75 %) followed by the year 2015 with 189 print references

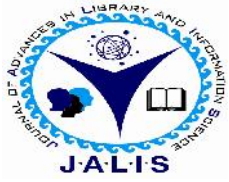
Keywords

e-Library Science Research Journal, abstracts, tables, charts, keywords, print references, web references, authorship pattern

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Introduction

Pritchard suggested the word 'Bibliometrics' in 1969 in preference to statistical bibliography. Hence, the bibliometrics has a very recent origin. The terms 'Librametrics', 'scientometrics', and 'informetircs' are also in use in the literature. Bibliometrics is analogues to 'Ranganathans', 'Librarmetrics', Russian concept 'scientometrics', FID's 'Informetrics and also to some other well established sub disciplines like 'Econometrics', 'Psychometrics', 'Sociometrics' and 'Biometrics' where mathematical and statistical calculus have been systematically applied to study and solve the problems in the field of library science, history of science, information science, economics, psychology, sociology and biology respectively

Bibliometrics is one of the quantitative techniques applied by information managers to measure the records of human communication.Bibliometrics is the quantitative analysis of the bibliographic features of a body of literature. It is the quantitative study of physical published units or of bibliometric units or of surrogates of either.

Review of Literature

Ghar and Urkudkar (2016) did a bibliometric study on "Journal of Biosciences" for the period 1979 to 2015. The data were downloaded from the journal's website. The analysis focused on: the research output performance of all areas of Biology; number of citations; authorship pattern of cited references; Age of citation references etc. Gogoi and Barooah (2016) conducted a bibliometric study on "Indian Journal of chemistry" to understand the usage pattern of information in the field of Material science and to ascertain the types of documents most frequently used in the research process. The year wise distribution of the cited documents reveals that publications of pre 1950s still continue to be cited in the source journal. The year-wise distribution of journals indicated that journals published from 2000 – 09 are highly preferred. Padma and Ramasamy (2015) undertook a bibliometric study of contributions found in the 'Malaysian Journal of Library and information science' during the years 2007-2012. The analysis focused on the volume-wise distribution of articles, authorship-pattern, degree of collaboration, reference pattern, range of references, length of papers, the rank list of prolific authors, the ranked list of geographical affiliation of

the authors, the subject categories etc. The overall degree of collaboration for the period 2007-2012 is 0.725. 44 (36.67 %) articles were in the page range of 16-20 followed by 43 articles within the page range of 11-15. 45% (54) of the articles used 21-40 references and 37.5% of the articles used up to 20 references. Verma, Sonkar and Gupta (2015) did a bibliometric study of the E-Journal, 'Library Philosophy and Practice' for the period 2005 to 2014. The study covers the growth of literature and authorship patterns of the journal, and various other bibliometrics aspects such as authors' degree of collaboration, geographical productivity in scholarly publications, subject wise distribution of articles and ranking pattern etc. 1177 no. of articles was taken up for the evaluation. In all with an average 117 articles were published each year. Single authorship is leading authorship trend but also two authored articles have shown good number of contribution with the 0.51 rate of degree of collaboration.

Mishra (2014) presented a bibliometric analysis of the Health and Population: Perspectives Journal during the year 2001-2010. The study analyzed 254 articles published during the period. The analyses covers the bibliometric analyses of year-wise distribution of articles, subject-wise distribution of articles, authorship patterns, citation count and geographical distribution of contributions. Vijayanathan and Kaliyamoorthi (2014) did a bibliometric study on the articles published in the open Software Engineering Journal from 2007-2012 to find out authorship pattern, degree of collaboration and geographical distribution of papers. The findings showed that : Majority of papers are multi authored. The degree of collaboration is found to be 0.75. The contribution by Finland and Canada is the highest in foreign. Maximum number of articles is 6 (37.50%) which have been contributed by Two authors.

Das (2013) analyzed the journal "Library Trends" with an aim to analyse the contributions of the author and the citations cited by various articles appeared in it. The study comprised of 206 articles published 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 have citations between 11to 20 is 48 (23.30%). Edeworr (2013) evaluated the 'Journal of Information and Knowledge Management (IIJIKM)' over a four year period of 20110-2013 to assess its performance viz-a viz importance index, influence weight and popularity index. The study reveals that journal is the most preferred source of citation in LIS research. Library Philosophy and Practice, an e-journal topped the list of journals most cited in IIJIKM. Swain (2012) undertook a bibliometric study of 'Journal of Intellectual Property Rights' for the period 2002-2010. The study covers totally 332 articles carrying 1,541 journal citations. 471 authors contributed articles during the nine years. Due to the absolute domination of solo contributions, the visibility of collaborative contribution was found remarkably less. More than half of the cited articles carried just 1 citation, one fourth got 2 citations, and the rest received citations between 3 to 9 times. The average number of citations against all published articles was found to be 0.66 per article. Self-citations among authors constituted 22.01% of the total cited scholarly papers.

Objectives

The broad objective of the study is to perform a bibliometric analysis of contents and references of articles published in e-library science research journal from jan.2013 to Dec.2015.

Content Analysis :

- Length of the articles,
- Availability of abstracts, keywords, tables, graphs and charts
- Range of keywords, range of tables, , range of charts and graphs
- Year-wise number of tables, graphs and charts.

Reference Analysis

- Availability of references
- Range of references
- Year-wise print and web references
- Age of references
- Authorship pattern of references

Research Method

The study undertaken by the researcher is a quantitative study. It is a bibliometric study of research productivity of authors as reflected in the articles included in the journal (e-Library Science Research Journal – online and print monthly journal) from Jan. 2013 to Dec.2015. 521 articles published in the journal 'e-Library Science Research Journal' during the study period from the sample of the study. The researchers themselves went through each and every article individually and personally. An Excel

sheet was prepared with relevant variable in rows, to collect the required data from 521 articles.

Data Analysis
1. Content Analysis
1.1 Page Length of Journal Articles

Table- 1: Page Length of Journal Articles

S:No	Length	No. of	Percentage
1	1 - 5	151	28.98 %
2	6 – 10	280	53.74 %
3	11 - 15	77	14.78 %
4	16 - 20	10	1.92 %
5	>20	03	0.58 %
Total		521	100

(Sources: Primary data)

Table 1 and Fig.1 show the length of journal articles published in ELSRJ during 2013-2015. Most of the articles (280, 53.74%) have 6-10 pages followed by 151 articles (28.98 %) with 1-5 pages. 77 articles (14.78 %) have 11-15 pages, 10 articles (1.92%) have 16-20 pages and just 3 articles (0.58 %) with more than 2 pages. Thus, articles of 6-10 pages are the most preferred article length among the researchers in LIS.

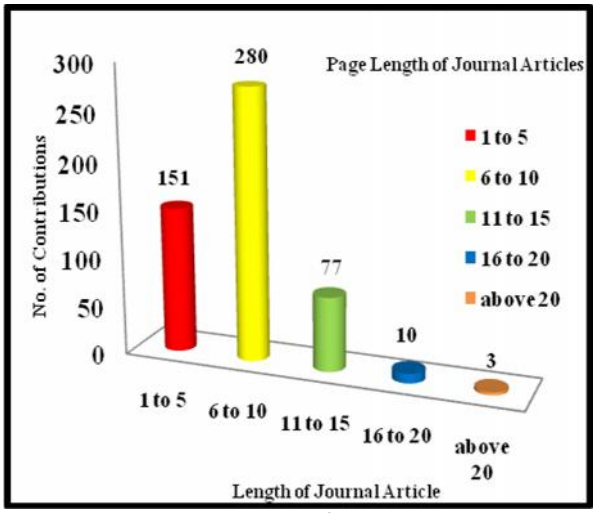


Figure 1 : Page Length of Journal Articles

1.2 Availability of Abstract

Table-2: Availability of Abstract

S:No	Available	No. of	Percentage
1	Yes	521	100 %
Total		521	100

(Sources: Primary data)

Table 2 makes it joyful to note that all 521 articles being analysed have abstracts. There is no article without an abstract in ELSRJ during 2013-2015.

1.3 Availability of Key Words

Table-3: Availability of Key Words

S:No	Available of Key Words	No. of Key	Percentage
1	Yes	512	98.27 %
2	No	09	1.73 %
Total		521	100

(Sources: Primary data)

Table 3 makes it clear that out of 521 articles published; 98.27 % (512) of the articles have Key words. Keywords are not given only for 9 (1.73 %) articles.

1.4 Range of Key Words

Table-4: Range of Key Words

S:No	Range of Key	No. of Contributions	Percentage
1	1 to 5	411	80.27 %
2	6 to 10	96	18.75 %
3	>10	5	0.98 %
Total		512	100

(Sources: Primary data)

Table 4 and Fig.2 show the range of keywords as available in the articles being analysed in ELSRJ. A maximum of 411 (80.27 %) articles have 1-5 Key words followed by 96 articles (18.75 %) with 6 to 10 Key words. There are only 5 articles (0.98 %) with more than 10 keywords. Thus, providing 1-5 keywords for a journal article seem to the widely accepted standard in LIS research these days.

1.5 Availability of Tables

Table-5: Availability of Tables

S:No	Available of Tables	No. of Contributions	Percentage
1	Available	331	63.53 %
2	Not Available	190	36.47 %
Total		521	100

(Sources: Primary data)

Table 5 uncovers that out of 521 articles published during the study period in ELSRJ, 331 (63.53 %) articles have tables in them. Tables are not available in 190 (36.47%) articles. It may be inferred that around 2/3rd of articles are survey / field oriented studies propelling the researchers use tables.

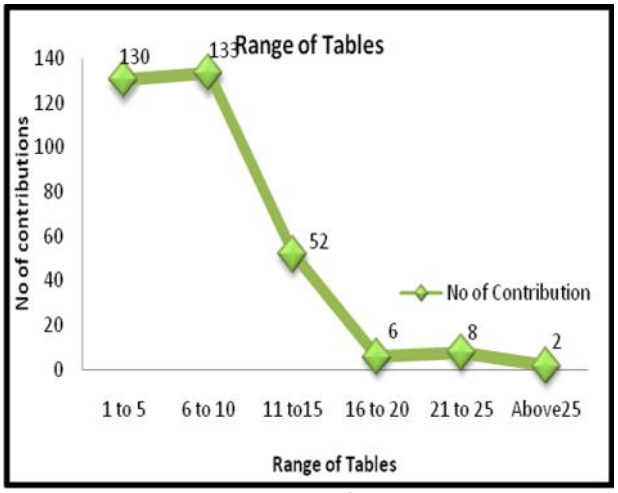
1.6 Range of Tables

Table- 6: Range of Tables

S:No	Range of Tables	No. of Contributions	Percentage
1	1 - 5	130	39.27 %
2	6 – 10	133	40.19 %
3	11 - 15	52	15.71 %
4	16 - 20	06	1.81 %
5	21 - 25	08	2.41 %
6	>25	02	0.61 %
Total		331	100

(Sources: Primary data)

Table 6 and Fig.3 unearth that most of the articles say, 133 (40.19 %) contain 6-10 tables followed by 130 articles (39.27%) including 1-5 tables. While 52 articles (15.71%) have 11-15 tables, 6 articles (1.81%) contain 16-20 tables and 8 articles (2.41 %) include 21-25 tables. Only 2 articles (0.61 %) have more than 25 tables. It may be inferred that articles with either 1-5 or 6-10 tables considered to be ideal.



Figures 3: Range of Tables

1.7 Year - wise Distribution of Tables

Table-7: Year - wise Distribution of Tables

S:No	Year	No. of Articles	No. of Tables	Avg. Table Per Article
1	2013	114	74	1.54
2	2014	210	127	1.65
3	2015	197	130	1.51
Total		521	331	
2013-2015 : Average Number of Tables per year : 110.33				
2013-2015 : Average Number of Tables per article : 1.57				

(Sources: Primary data)

Table 7 and Fig. 4 indicate the year-wise distribution by tables in ELSRJ articles during 2013-2015. The maximum numbers of 130 tables were found in 197 articles in 2015 followed by 127 tables for 210 articles in 2014 and 74 tables for 114 articles in 2013. The average number of tables per article ranged from 1.51 in 2015 to 1.54 in 2013 to 1.65, the highest, in 2014. The average number of tables per article for the whole study period is 1.57 and the average number of tables per year is 110.33.

1.8 Availability of Graphs/Charts

Table-8: Availability of Graphs/Charts

S:No	Available of Graphs and Charts	No of Graphs and Charts	Percentage
1	Available	227	43.57 %
2	Not Available	294	56.43 %
Total		521	100

(Sources: Primary data)

It is obvious to note in Table 8 that out of 521 articles published, only 227 (43.57 %) articles have graphs and charts. A maximum of 294 (56.43%) articles don't have charts and graphs.

1.9 Range of Graphs / Charts

Table- 9: Range of Graphs/Charts

S:No	Range of Graphs/Charts	No. of Contributions	Percentage
1	1 – 5	160	70.49 %
2	6 – 10	47	20.70 %
3	11 – 15	13	5.72 %
4	16 – 20	04	1.77 %
5	>20	03	1.32 %
Total		227	100

(Sources: Primary data)

Table 9 and Fig.5 show the range of Graphs/Charts available in the journal articles published in ELSRJ during 2013-2015. A maximum of 160 articles (70.49 %) contain 1-5 Graphs/Charts followed by 47 articles (20.70 %) having 6-10 Graphs/Charts. While 13 articles (5.72 %) include 11-15 Graphs/Charts, 4 articles (1.77 %) possess 16-20 Graphs/Charts. Only 3 articles (1.32 %) contain more than 20 graphs/charts. Thus, 1-5 graphs/charts in a research articles has become the minimum requirement in industry standards these days.

1.10 Year-wise Distribution of Graphs/Charts

Table 10: Year- wise Distribution of Graphs/Charts

S:No	Year	No of Articles	No. of Graphs/ Charts	Avg. No. of Graphs/
1	2013	114	45	2.53
2	2014	210	91	2.31
3	2015	197	91	2.16
Total		521	227	
Average number of Graphs/Charts per year : 75.67				
Average number of Graphs/Charts per Article : 2.29				

(Sources: Primary data)

Table 10 and Fig.6 indicate the year-wise distribution of tables in the articles published in ELSRJ during 2013-2015. A maximum numbers of 91 Graphs/Charts are available in 210 articles published in 2014 and 197 articles published in 2015 followed by just 45 graphs/charts in 114 articles published in 2013. The average number graphs/charts per year has decreased from 2.53 in 2013 to 2.31 in 2014 and 2.16 in 2015. The average number of graphs/charts per year for the whole study period is 75.67. The average number of graphs/charts per article during the period of study is 2.29.

2. REFERENCE ANALYSIS

2.1 Availability of References

Table-11 : Availability of References

S.No	Available of References	No. of Contributions	Percentage
1	Available	512	98.27 %
2	Not Available	09	1.73 %
Total		521	100

(Sources: Primary data)

Table 11 makes it clear that out of 521 articles published, 512 (98.27 %) articles have references. Only 9 (1.73%) articles don't contain references. It is a good trend that most of the authors acknowledge the contributions of other researchers.

2.2 Range of References

Table- 12 : Range of References

S.No	Range of References	No. of Contributions	Percentage
1	1 – 10	289	56.45 %
2	11 – 20	163	31.84 %
3	21 – 30	40	7.81 %
4	31 – 40	10	1.95 %
5	>40	10	1.95 %
Total		512	100

(Sources: Primary data)

Table 12 and Fig.7 bring it to the light that a majority of 289 (56.45 %) articles have 1-10 references followed by 163 articles (31.84 %) with 11-20 references. While 40 (7.81 %) articles included 21-30 references, 10 (1.95 %) articles quoted 31-40 references. Just 10 (1.95 %) articles included more

than 40 references. Thus, including 1-10 or 11-20 references in a journal articles is being adopted as a general rule of thumb by the LIS researchers.

2.3 Year - wise Print and Web References

Table- 13: Year - wise Print and Web References

S:No	Year wise Print and Web References				
	Year	No. of Print References	Percentage	No. of Web References	Percentage
1	2013	99	20.37	74	22.08 %
2	2014	198	40.75	134	40 %
3	2015	189	38.88	127	37.92 %
Total		486	100 %	335	100 %
Average Number of Print References/Article = 486/512 = 0.949					
Average Number of Web References/Article = 355/512 = 0.693					
Average Number of Print References/Year = 486/3 = 162					
Average Number of Web References/Year = 355/3 = 118.33					

(Sources: Primary sources)

Table 13 and Fig.8 disclose the year-wise distribution of print and web references included in 512 articles published in ELSRJ during 2013-2015. The year 2014 had the maximum numbers of Print references i.e. 198 (40.75 %) followed by the year 2015 with 189 print references (38.88%) and 2013 with 99 (20.37%) print references. Thus, 4.75% of print references appeared in the articles published in 2014.

As far as web references are concerned, year 2014 had seen a majority of 134 (40%) web references followed by 127 (37.92%) web references in 2015 and just 74(22.08%) web references in 2013. The average number of print references per article is 0.949 and per year is 162. The average number of web references per article is 0.693 and per year is 118.33.

2.4 Age of References

Table- 14: Age of References

S.No	Age of References				Total	Percentage
	Period	2013	2014	2015		
1	<1996	246	402	191	839	13.53 %
2	1996 – 2005	655	1026	824	2505	40.39 %
3	2006 – 2015	566	726	556	1848	29.79 %
4	No Year	246	447	317	1010	16.29 %
Total		1713	2601	1888	6202	100

(Sources: Primary data)

Table 14 and Fig.9 provide a view of the publication years of the references appended to e-Library science research journal articles. The total references in 521 research papers are 6202, of which, nearly 2505 (40.39 %) are in the decade 1996-2005 and 1848 (29.79 %) are in 2006-2015. Only 1010 references (16.29 %) don't have any years in them. The least number of 839 (13.53%) references were published before are between No years of references and lowest references before 1996. Thus, the researchers wish to cite only those references which are new and relevant to the study.

2.5 Authorship Pattern of References

Table- 15 : Authorship Pattern of References

S.No	Authorship Period				Total	Percentage
	Pattern	2013	2014	2015		
1	One Author	291	559	236	1086	17.51 %
2	Two Author	357	681	338	1376	22.19 %
3	Three Author	336	461	323	1120	18.06 %
4	Four Author	316	257	329	902	14.54 %
5	>Four Author	105	232	298	635	10.24 %
6	Institutions	308	411	364	1083	17.46 %
Total		1713	2601	1888	6202	100

(Sources: Primary data)

Table 15 and Fig.10 reveal the authorship pattern of references appended to the articles published during 2013-2015 in ELSRJ. Maximum numbers of references (1376, 22.19 %) were published in two authors pattern followed by 1086 (17.51 %) references set in single authorship style. Three author pattern has contributed 1120 (18.06 %) references while 902 references (14.54 %) were in four author style. It is good to mention here that there are 1083 (17.46 %) references emanated from the institutions. Thus, the researchers prefer to refer two authored, three authored and single authored papers. Not only the contributions of individuals, but also the research publications of the institutions are quoted by the researchers.

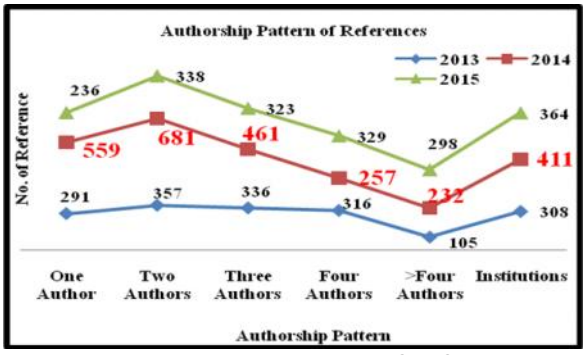


Figure 4 : Authorship Patterns of References

Conclusion

The findings of the study prompt the researchers recommend few suggestions. The authors may be instructed to include sufficient number of key words in their research articles. A minimum of 4 and maximum of 6 keywords may be included in every journal article to exactly describe the contents of the articles. It is not advisable to have 20 or more tables in a single journal article. If needed, the tables may be combined into composite / custom tables. The authors should be instructed to append used / required references without fail. The references wherever appended in the journal article should have complete bibliographic information about the source being referred to. The authors should be encouraged to use both print and web references equally well. As the researchers mostly cite the literature of recent past, the librarian in the periodical section and back-volume section should see that the recent volumes or sources of information are placed at accessible points in the library.

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