Creating Future Landscape for the New Generation Libraries and LIS Professionals: A Bibliometric Study

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ABSTRACT

This is a bibliometric study of research output as disclosed in the 'International Conference on Innovation Driven Librarianship: Creating Future Landscape for the New Generation Libraries and LIS Professionals' organized by the SRM University's Central Library, Chennai in conjunction with the Korea Society for Information Management (KOSIM) and the Korea Institute of Science and Technology Information (KISTI) in 2015. The purpose was to identify the Authorship pattern, to examine the Degree of Collaboration, to find out Authors Productivity, to study the Gender-wise Distribution of Authors and to examine the range of references appeneded. The study reveals that: there are 142 papers presented in 9 sections in the conference proceedings. The majority of the papers are found in the fourth section (20, 14.08%); the degree of collaboration is 0.6 showing the dominance of multi-authored style in the research output as depicted int the conference volume; the average number of authors per paper is 1.89 and the average productivity per author is 0.53; more than three-fourth of the authors are male (194, 72.39%) and the remaining one –fourth of them are (74, 27.61%) female authors; 106 (39.55%) authors who contributed papers in the conference were the Doctorates; majority of the papers (20, 14.08%) were received on the subject 'User Studies and User Education' and 'Collection Building to Connecting Contents (Open Access Sources); a majority of 56 (39.44%) articles appended references ranging between 6-10 pages and the majority of the authors are hailed from educational institutions(131, 92.25%).

Keywords: bibliometrics, authorship pattern, gender wise distribution, distribution of authors, subject wise distributions, conference metrics, SRM University

INTRODUCTION

The word 'Bibliometrics' is coined by two words 'biblio' and 'metrics'. The word 'biblio' is derived from the combination of a Latin and Greek word 'billion', which means book, paper. On the other hand, the word 'metrics' includes the science of meter i.e. measurement. The terms bibliometrics and scientometrics were almost introduced by Prichard and Nalimov and Mulchenko in 1969. While Priched explained the term bibliometrics as "the application

of those quantitative methods which are dealing with the analysis of science viewed as an information process".

REVIEW OF LITERATURE

Brahim Hamadicharef (2010) presented a bibliometric study of the Digital Audio Effects (DAFx) conference proceedings from 1998 to 2009. Results showed that the DAFx literature (with quasi-linear accumulative growth) now consists of 722 contributions (including key notes, papers and posters) from 767 unique authors. This study confirmed that the DAFx literature conforms to the Lokta's law (n=2.0771 and C=0.6336) at 0.01 level of significance using the Kolmogorov-Smirnov test (KS-test) of goodnessof- fit. The DAFx database will serve as the basis for an Author Co-citation Analysis (ACA) and to create a DAFx conferences archive DVD.

Doraswamy and Janakiramaiah(2013) undertook a bibliometric study of the conference papers published in National Convention on Knowledge, Library and Information Networking (NACLIN) from 2001 to 2008. 300 conference papers are published in the NACLIN proceedings during the eight years. Highest number (54) of articles is published in 2007. The conference volumes contained 3001 references for the study period of which 1709 are p-citations and 1292 are e-citations. Each conference volume published approximately 38 papers and each paper has an average of 5.7 p-references and 4.3 e-references. Among the p-citations, journals accounted for 40.08%, books 33.88%, and seminar/conference proceedings 17.44%. Among the e-citations, the .org websites are the most useful source of information.

Prithvi Raj and Sampath Kumar (2013) compared the characteristics of URLs cited in Indian LIS conference proceedings papers. A total of 15,745 references appended to 1,700 articles published in three Indian LIS conference proceedings published during 2001-2010 were selected. From these references, a total of 5698 URLs were extracted and were further classified according to their top level domains, file formats and path depths for further analysis. The results showed that the percentage of articles with at least one URL increased from 39.10% in 2001 to 91.67% in 2010. There was a constant and continuous increase in the number of articles with URLs over the years during 2001-2010. Of the 1,700 articles published in conference proceedings, there were 1,011 (59.47%) articles with URLs.

Padma and Ramasamy (2014) presented a metric study 22 conferences / seminars held in Tamilnadu during the period Jan.2011 – March 2014. The findings reveal that :The maximum number of Conferences /Seminars was conducted in the year 2012 and 2013 and minimum in the year 2011. Conferences are more popular than the seminars.Conferences/ Seminars of one day duration are popular. Most of the conferences / seminars are conducted in the month of February / March. Both 2012 and 2013 had witnessed seven conferences/seminars each. Bishop Heber college conducted 4 C/S followed by Annamalai

University with 3 seminars. Both Periyar University and Alagappa University have conducted two seminars each.

Padma and Ramasamy (2014) undertook a bibliometric analysis of 22 conferences / seminars held in Tamilnadu during the period Jan.2011 – March 2014. The findings reveal that : Acknowledgement is made available only in three Conference / Seminar Volumes. All the 22 C/S Volumes include working committees, editorial information, author index, subject index, preface and ISBN. Not even a single C/S Volume includes the photos and resumes of the authors. While editors' photos are available in 15 C/S Volumes , their resumes are made available in 16 C/S volumes. Eleven C/S volumes have header information in all the pages. Only one C/S volume had footer in its proceedings. 18 C/S Volumes presented the contents in such grouped fashion. Twenty Two C/S had published the proceedings with a total of 8541 pages. The average number of pages per conference is 417 in 2014. The average number of pages per article is 4.93 in the six proceedings published in 2014. 1859 articles were published within four years. Highest percentage of articles was published in the year 2012 constituting 32.92 %. In the average number of articles published per C/S volume 2012 tops with 87.43 %. C/S on Digital library era had 120 articles published in its volume and the volume of C/S on Best practices in LI centres had only 40 articles published therein. There are 04 conferences and 04 seminars which had included more than 100 articles in their proceedings. Out of 1859 articles published, 49.91 % (928) of articles used 0-2 keywords followed by 42.28 % (786) of the articles which used 3-5 keywords. The total number of references appended to 1859 articles was 1561. Highest percentage of references were included in the year 2013 constituting 33.18 % (518). The average number of references per article was highest in 2012 with 1.35 followed by 2011 with 1.19. 6-10 references were found in 796 articles (50.99 %). Only 77.25 % (1436) articles had abstracts. 1772 articles (95.32 %) had only single titles.

Padma, Ramasamy and Kavitha (2014) analyzed the authorship pattern and degree of collaboration of articles published in 22 conferences and seminars held in Tamilnadu from January 2011 to March 2014. The study reveals that: Single authorship papers are less in numbers than the multi authored papers. Three authored articles were very less and two authored articles are a lot. Two-author style is the most preferred style among the C/S articles under study. Year 2012 had seen most numbers of authors' i.e.979 (32.2 %) to contribute papers. Average number of articles per author are 1.73 in 2014. Year 2014 tops with the highest average number of authors per Conference/Seminar with 146.5 followed by 139.86 in 2012. The least average number of authors per C/S was 122.5 in 2011. The contribution by LIS professionals is more than that of any other kind of contributors. They alone constitute 65.34 % (1985) of total authors. Degree of collaboration was highest in 2014 with 0.79. The least degree of collaboration founded in 2011 with 0.69 degrees. The overall degree of collaboration for the period of study is 0.75. The rate of single authorship was highest in 2011 to 0.31 degrees and the lowest in 2014 to 0.21 degrees. The double authorship pattern was ranked first in all the years of researcher's study.

Chithambaravalli (2015) carried out a scientometric study of the 122 papers included in the "Proceedings of the National Conference on Advancement in Library and Information

Science and Technology: Challenges and Opportunities organized by central library of B.S.Abdul Rahman University, Chennai and SALIS" in 2015.

OBJECTIVES OF THE STUDY

The objectives of the study are as follows:
- ➢ To identify the Authorship pattern.
- ➢ To examine the Degree of Collaboration.
- ➢ To find out Authors Productivity.
- ➢ To find out the Relative Growth Rate and Doubling Time of conference output
- ➢ To study the Gender-wise Distribution of Authors
- ➢ To present gender-wise distribution of authors and their productivity
- ➢ To examine the references in terms of authors and exponential growth rate.

RESEARCH METHODOLOGY

a) Research Type : The study undertaken by the researcher belongs to a quantitative study. Ii is a bibliometric study of research productivity of authors as reflected in the articles included in the Conference Volume.

b) Sample Size : 'International Conference on Innovation Driven Librarianship: Creating Future Landscape for the New Generation Libraries and LIS Professionals' was organized by the SRM University's Central Library, Chennai in conjunction with the Korea Society for Information Management (KOSIM) and the Korea Institute of Science and Technology Information (KISTI). Organized by SRM, the 2nd International Conference on Innovation Driven Librarianship in 2015 provides an ideal forum for investigating the mix of traditional concerns and innovative, cutting edge adaptations and technologies. The papers included in the conference held at SRM University, Chennai have formed the samples of study.

c) Method of data collection : MS Excel worksheets were used for collecting data required for the study. The researchers have gone through each and every paper of the conference.

d) Data Analysis : The collected data were analyzed with the help of bibexcel software, Manual calculations, Microsoft Excel and presented in the form of tables.

DATA ANALYSIS AND INTERPRETATION

1. Section-wise Distribution of Papers

Table 1 shows that there are 142 papers presented in 9 sections. The majority of the papers is included in the fourth section (20, 14.08%) and eighth section (20, 14.08%) followed by

the first section(18, 12.68%). The least number of papers was included in fifth section (13, 9.15%) and sixth section (14, 9.86 %).

Table 1 : Section-wise distribution of papers

S.No	Section No.	Number of Articles	%	Cum. Total	Cum. %
1	I	18	12.68%	18	12.68
2	II	17	11.97%	35	24.65
3	III	16	11.27%	51	35.92
4	IV	20	14.08%	71	50.00
5	V	13	9.15%	84	59.15
6	VI	14	9.86%	98	69.01
7	VII	17	11.97%	115	80.99
8	VIII	20	14.08%	135	95.07
9	IX	7	4.93%	142	100
Total		142	100%		

2. Authorship pattern

Table 2 shows the authorship pattern of the papers published in the Conference. The analysis reveals that the number of authors per paper ranges from one to four. 45.77 % (65) of the articles are in 'Two author pattern' followed by 33.80 % (48) of the papers in single author pattern. The least number of just 1 paper was published in four author style.

Table 2 : Section-wise Distribution of Authorship Pattern

Sections	Number of Artilces by			
	Single Authors	Two Authors	Three Authors	Four Authors
I	9	8	1	-
II	5	8	4	-
III	6	8	2	-
IV	4	11	5	-
V	3	7	3	-
VI	6	4	4	-
VII	6	7	4	-
VIII	5	10	4	1
IX	4	2	1	-
Total	48 (33.80%)	65 (45.77%)	28 (19.72%)	1 (0.70%)

3. Degree of Collaboration

Table 3 : Degree of Collaboration

Sections	Single Author papers (Ns)	Multiple Author papers (Nm)	Total papers (Ns+Nm)	Degree of Collaboration (C)
I	9	9	18	0.5
II	5	12	17	0.7
III	6	10	16	0.6
IV	4	16	20	0.8
V	3	10	13	0.8
VI	6	8	14	0.6
VII	6	11	17	0.6
VIII	5	15	20	0.8
IX	4	3	7	0.4
Total	48 (33.80%)	94 (66.20%)	142	0.6

Table 3 shows the degree of authors' collaboration. It was calculated using Subramanian's formula:

C = NM / (NM + NS)
Where C = degree of collaboration,
Nm=Number of multi-authored works,
Ns= Number of single-authored works.
Nm=Number of multi-authored works 94 (66.20%); umber of single-authored works 48 (33.80%).

Thus, the degree of collaboration of the conference is = 94/(94+48) = 0.6 . That means, 60 % of the articles are multi-authored. The degree of collaboration was the highest for fourth, fifth and eight sections with C of 0.8. The least degree of collaboration was found in the nineth section with C of 0.4.

4. Authors Productivity

Table 4 : Authors Productivity

Section	Total No. of Papers	Total No. of Authors	AAPP	PPA
I	18	30	1.67	0.60
II	17	32	1.88	0.53
III	16	29	1.81	0.55
IV	20	40	2.00	0.50
V	13	27	2.08	0.48

VI	14	25	1.79	0.56
VII	17	33	1.94	0.52
VIII	20	41	2.05	0.49
IX	7	11	1.57	0.64
Total	**142**	**268**	**1.89**	**0.53**

Average Authors Per Paper (AAPP) = Number of authors/Number of papers.

Productivity per author (PPA) = Number of papers/Number of authors.

Table 4 shows the data related to author's productivity. The average number of authors per paper in the conference is 1.89. The average productivity per author for this conference is 0.53 i.e. on an average an author has published 0.53 articles.

The AAPP ranges from 1.67 (first section) to 2.08 (fifth section). The PPA ranges from 0.48 om the fifth section to 0.64 in ninth section.

5. Gender-wise Distribution of Authors

Table 5. : Gender wise Distribution

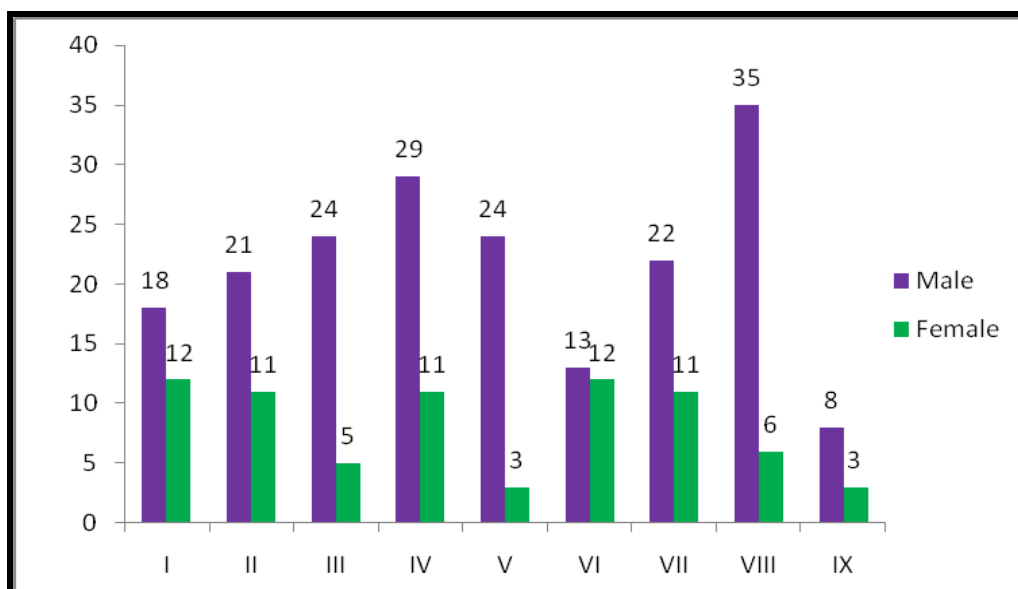| Section	No. of Male Authors		No. of Female Authors		G.Total	Percentage
	No.	%	No.	%		
I	18	9.27	12	16.21	30	(11.19%)
II	21	10.82	11	14.87	32	(11.94%)
III	24	12.37	5	6.75	29	(10.82%)
IV	29	14.95	11	14.87	40	(14.93%)
V	24	12.37	3	4.05	27	(10.07%)
VI	13	6.70	12	16.21	25	(9.33%)
VII	22	11.34	11	14.87	33	(12.31%)
VIII	35	18.04	6	8.10	41	(15.30%)
IX	8	4.12	3	4.05	11	(4.10%)
Total	**194 (72.39%)**	**100**	**74 (27.61%)**	**100**	**268 (100%)**	**100**

Figure 1: Gender- wise Distribution of Authors

Table 5 and Fig. 5.1 reveals that almost three-fourth of authors are Male (194, 72.39 %) and just one-fourth (74, 27.61 %) of them are Female.

6. Designation-wise distribution of Authors

Table 6: Designation of the Authors

Sections	Doctorate	Research Scholars	PG Students	Librarian	Assistant Librarian	Non LIS Professionals	Total
I	16	8	-	3	3	-	30 (11.19%)
II	16	6	1	3	5	1	32 (11.94%)
III	8	10	-	8	1	2	29 (10.82%)
IV	14	5	2	8	8	3	40 (14.93%)
V	13	6	2	3	2	1	27 (10.07%)
VI	11	6	2	2	2	2	25 (9.33%)
VII	13	5	2	10	2	1	33 (12.31%)

VIII	10	15	5	5	3	3	41 (15.30%)
IX	5	3	2	-	1	-	11 (4.10%)
Total	**106 (39.55%)**	**64 (23.88%)**	**16 (5.97%)**	**42 (15.67%)**	**27 (10.07%)**	**13(4.85%)**	**268 (100%)**

The table 6 clearly shows that 39.55% (106) of the authors were doctorates from various Universities followed by 23.88% (64) of the authors who were Ph.D Scholars. While 42 authors were the librarians, 27 authors were assistant librarians. While there are 16 (5.97%) PG students (MLISc) contributing papers in the conference, we could see 13 (4.85%) authors who don't belong to LIS field contributing papers in LIS conference.

Thus, most of the conference papers were contributed by doctorates and research scholars followed by librarians.

7. Subject-wise distribution of Papers

Table 7 : Subject Wise Distribution

S. No.	Subjects	Part-I	Part-II	Total
01	User Studies and User Education	2	18	20 (14.08%)
02	Collection Building to Connecting Contents (Open Access Sources)	5	15	20 (14.08%)
03	Libraries in Transformation and Digital Libraries	6	12	18(12.68%)
04	Web Technologies and Social media	3	14	17(11.97%)
05	Skills and Competencies of LIS Professionals	3	14	17(11.97%)
06	Information Services and Best practices in Innovation Driven Librarianship	5	11	16 (11.27%)
07	Information Seeking behavior	2	11	13 (9.15%)
08	Human Resources Development, Training and Management	4	10	14 (9.86%)
09	Intellectual Property Rights and related Issues	3	4	7 (4.93%)
	Total	33	109	142

The table 7 shows that the papers received in the conference were grouped in to nine subjects in tune with the main theme and sub-themes of the conference. Majority of the papers (20, 14.08%) received in the conference belong to 'User Studies and User Education' and 'Collection Building to Connecting Contents (Open Access Sources)'. While there are 17 papers each (11.97%) in two subjects namely - 'Web Technologies and Social media' and ;Skills and Competencies of LIS Professionals', the subject 'Libraries in Transformation and

Digital Libraries' had received 18 (12.68%) papers. 'Information Services and Best practices in Innovation Driven Librarianship' had 16 (11.27%) papers and 'Human Resources Development, Training and Management' had 14 (9.86%) papers. 'Intellectual Property Rights and related Issues' is the subject which had received the least number of 7 (4.93%) papers in the conference. Thus, user studies and collection building are the thrust areas of the researchers as revealed in this international conference.

8. Section-wise Distribution of Range of References

Table 8: Section-wise Distribution of Range of References

Range of References	I	II	III	IV	V	VI	VII	VIII	IX	Total
Nil	-	-	1	-	1	-	-	-	-	2 (1.41%)
1-5	5	5	5	8	3	1	1	1	2	31 (21.88%)
6-10	10	6	5	9	2	9	7	7	1	56 (39.44%)
11-15	2	5	2	1	6	4	2	10	2	34 (23.94%)
16-20	1	-	2	1	1	-	5	2	2	14 (9.86%)
21-25	-	-	1	1	-	-	2	1	-	5 (3.52%)
Total	18	16	16	20	13	14	17	21	7	142

Table 8 reveals that the majority of the articles (56, 39.44%) have included references having 6-10 pages followed by 34 (23.94%) papers appended references with 11-15 pages. While 31 (21.88%) papers had references with 1-5 pages, 14 (9.86%) papershad references with 16-20 pages. Just 2 (1.41%) papers don't have any reference.

9. Institution-wise Distribution of Authors

Table 9 : Institution-wise Distribution of Authors

S. N0	Institutions	No. of papers	Percentage
1.	Educational Institutions	131	92.25
2.	Others	11	07.75
	Total	142	100

Table 9 shows that a majority of 92.25 % (131) of the authors are from educational institutions compared to just 11 (7.75%) authors who are serving other institutions like research departments, corporate etc. The study reveals that authors from educational institutions have contributed the most in this conference.
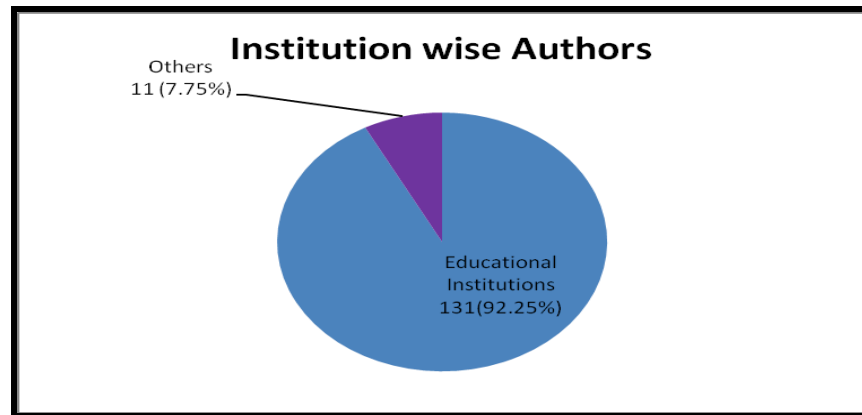
Institution wise Authors

Others
11 (7.75%)

Educational
Institutions
131(92.25%)

Figure 2 : Institution wise Distribution of Authors

FINDINGS OF THE STUDY

✓ There are 142 papers presented in 9 sections in the conference proceedings. The majority of the papers are found in the fourth section (20, 14.08%).

✓ The degree of collaboration is 0.6 showing the dominance of multi-authored style in the research output as depicted int the conference volume.

✓ The average number of authors per paper is 1.89 and the average productivity per author is 0.53.

✓ More than three-fourth of the authors are male (194, 72.39%) and the remaining one – fourth of them are (74, 27.61%) female authors.

✓ 106 (39.55%) authors who contributed papers in the conference were the Doctorates.

✓ Majority of the papers (20, 14.08%) were received on the subject 'User Studies and User Education' and 'Collection Building to Connecting Contents (Open Access Sources).

✓ A majority of 56 (39.44%) articles appended references ranging between 6-10 pages.

✓ The majority of the authors are hailed from educational institutions(131, 92.25%).

CONCLUSION

This kind of studies on conference proceedings / volumes give valid inputs to the library professionals on the format and scope of conferences. How a volume is to be organizesd, structured, what are the esentialn compoments of a conference volume, what is the most popular author pattern style, which kind of library professionals are contributing the papers, what kind of references are appeneed to the papers, what is the most sought after thrust areas in library and information science etc., are few information that can be inferred from such kind of studies. The mapping of research profuctivity of LIS professionals as depicted in the volumes published in LIS conferences is a tool for their performance analysis. The research trend of the subject can be studied through such conference metric studies.

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Gomathi P. & Rubinandhini A.