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Research Article

Authorship Pattern and Collaborative Research in the Field of Information Literacy (1981 to 2015)

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A B S T R A C T

Scientometric techniques were applied to analyse the authorship pattern and collaborative trend in the field of information literacy for period 1981 to 2015. A total of 5682 papers were examined by year wise to ascertain authorship patterns, degree of collaboration and author productivity. 34.40% of papers were published with three authors and 18.76% of papers were with six authors. In the degree of collaboration of all years i.e. from 1981 to 2015 is 0.98 mean value is 0.5.

Keywords: Information Literacy, Authorship Pattern, Degree of Collaboration, AAPP, APPA

Introduction

Scientometric is the science of measuring and analyzing science research. Scientometric research includes studies related to the scattering & growth of literature, author productivity, obsolescence of documents, distribution of scientific literature by country, by language, etc. which helps to monitor the growth & pattern of research. The growth of literature is a key work for all scholars and students of comparative literature (Chadwick, 1986). Gupta, Sharma, and Karisiddappa (1977) suggested two approaches that have normally been considered in understanding knowledge growth: (i) Qualitative and (ii) Quantitative. A qualitative approach suggests structural or descriptive models of knowledge growth, while a descriptive model uses social phenomenon to explain diffusion and creation of knowledge. A quantitative approach employs summarization of statistics to describe the observed behaviour, while applying growth and technology diffusion models and bibliometric/ Scientometric techniques. Santhanakarthikeyan S, Grace M and Jeyshankar R. (2014) Scientometric is a reliable method for the evaluation of scientific development. One of its main indices is the number of published papers or science production in a specific field of science, in this case, information literacy.

Need for the study

Information Literacy is common to all disciplines, to all learning environments, and to all levels of education. It enables learners to master content and extend their investigations, become more self-directed and assume greater control over their own learning. An information literate individual is able to "determine the extent of information needed, access the need information effectively and efficiently, develop effective information search strategies, locate and retrieve its sources, organize, synthesize, use and apply information, incorporate selected information into one's knowledge base, use information effectively to accomplish a specific purpose, understand the economic, legal and social issues surrounding the

use of information and access and use information ethically and legally" (ACRL, 2000). With the purpose of analyzing the trends in publication on the subject of Information literacy using scientometric tools in order to provide an understanding of how the topic has been and is being addressed along with the authorship pattern and collaborative research.

Source

Library and Information Science Abstracts (LISA) is an international abstracting and indexing tool designed for library professionals and other information specialists. LISA currently abstracts over 440 periodicals from more than 68 countries and in more than 20 different languages. It updates in every two weeks, with more than 500 records added per update and it covers scholarly journals, conference papers and proceedings. The first paper on information literacy was reflected in LISA in the year 1981 and there onwards the appearances of papers were increased in LISA and same has been considered for the study.

Literature Review

Literature growth studies have become very common in the field of Bibliometrics, Informetrics, and Scientometrics. Karisiddappa, Maheswarappa, and Shirol (1990) revealed the authorship pattern and collaborative research in psychology, based on the data collected from Psychological Abstracts for the year 1988. A study conducted by Amsaveni and Vasanthi (2013) analysed the trend in authorship pattern and collaborative research in network security during 2002 to 2011 with a sample of 8051 papers downloaded from the database of web of knowledge. Pradhan, Panda and Chandrakar (2011) analysed the authorship pattern trends and author's collaborative research in Indian chemistry literature with the 53,977 papers downloaded from SCI-Expanded database in Web of Science for the period of 2000-2009.

Objectives

The objectives of the study were to find:

- Authorship patterns
- Degree of author collaboration
- Author Productivity

Scope and Methodology

The first article on 'information literacy' was appeared in LISA in 1981. Thus the present study is confined to information literacy literature as reflected in the LISA database for the years 1981 to 2015. The collected data uploaded to Excel spread sheets and analysed as per the objectives of the study.

Results and Discussion

Table 1.Growth of Information Literacy Research Literature and Authorship Patterns Year wise

Year	No. of Authors													
	Single	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	Eleven	Twelve	>Twelve	Total
1981	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1983	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1984	0	0	2	0	0	0	0	0	0	0	0	0	0	2
1985	1	0	0	0	0	0	0	0	0	0	0	0	0	1
1986	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1987	0	0	2	0	0	0	0	0	0	0	0	0	0	2
1988	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1989	0	0	3	0	0	0	0	1	0	0	0	0	0	4
1990	1	0	5	0	0	3	0	0	0	0	0	0	1	10
1991	1	0	20	0	0	7	0	0	2	0	0	1	0	31
1992	0	0	13	0	0	5	0	0	0	0	0	0	0	18
1993	0	0	8	0	0	3	0	0	0	0	0	0	0	11
1994	0	0	19	0	0	5	0	0	1	0	0	0	0	25
1995	3	0	39	0	0	15	0	0	1	0	0	2	0	60
1996	2	0	44	0	0	6	0	0	6	0	0	0	0	58
1997	4	0	54	0	0	16	0	0	3	0	0	2	2	81

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1998	3	0	77	0	1	20	0	0	6	0	0	1	0	108
1999	5	0	73	0	1	23	0	0	6	0	0	3	0	111
2000	4	0	104	0	0	25	0	0	14	0	0	4	0	151
2001	6	0	118	0	0	29	0	0	9	0	0	5	2	169
2002	2	0	105	2	2	52	0	1	13	0	0	1	3	181
2003	10	0	142	0	1	58	0	0	15	0	0	6	8	240
2004	2	0	142	1	1	60	4	7	18	4	3	4	4	250
2005	4	0	153	7	9	72	6	11	21	5	4	9	12	313
2006	7	0	49	25	22	57	18	23	33	21	7	3	14	279
2007	6	0	72	32	35	60	29	15	23	17	10	16	21	336
2008	3	0	115	26	19	64	31	16	29	11	10	11	21	356
2009	3	0	106	37	20	81	44	27	39	19	23	12	30	441
2010	6	1	96	36	27	87	46	44	43	37	27	10	41	501
2011	4	0	66	35	48	66	42	27	42	27	10	13	33	413
2012	7	0	103	33	36	86	46	24	44	24	12	21	39	475
2013	1	4	104	25	28	72	40	21	40	21	16	21	39	432
2014	14	33	100	24	20	64	31	16	29	19	5	9	26	390
2015	6	66	17	51	9	30	5	10	5	5	2	5	18	229
Total	**105**	**104**	**1955**	**334**	**279**	**1066**	**342**	**243**	**442**	**210**	**129**	**159**	**314**	**5682**

Growth of Information Literacy Research Literature and Authorship Patterns

As per the above table, five thousand six hundred and eighty two papers were contributed. The highest numbers of papers were published in 2010 with 501 papers followed by 475 papers in 2012. This demonstrates that information literacy research is increasing with a marginal decrease in 2013, 2014 and 2015. This may be due to the globalization of information literacy programme. In total, 98.15 per cent of papers were multi authored. Of 5682 papers 1955 (34.40 per cent) were published with three authors followed by 1066 (18.76 per cent) of papers with six authors. Only 1.85 percent of papers were single-authored.

Degree of Author Collaboration

The formula suggested by Subramanyam (1993) was used to find out the DC between the authors:

$$DC = \frac{Nm}{Nm + Ns}$$

Where DC=degree of collaboration; Nm= numbers of multi-authored papers; Ns= number of single-authored papers.

$$DC = \frac{5577}{5577+105} = \frac{5577}{5682} = \mathbf{0.98}$$

Thus the degree of collaboration during the overall 35 years is 0.98.

The DC of authors ranges from 0.5 to 1. A significant note of the study is that the majority of the papers were contributed by joint authors. Therefore, there is a collaborative research trend.

Table 2.Degree of Author Collaboration

S.No	Year	Single Author	Multiple Author	DC
1.	1981	0	01	1
2.	1982	0	0	0
3.	1983	0	01	1
4.	1984	0	02	0.5
5.	1985	1	00	0
6.	1986	0	01	1
7.	1987	0	02	0.5
8.	1988	0	01	1
9.	1989	0	04	1
10.	1990	1	09	0.9
11.	1991	1	30	0.96
12.	1992	0	18	1
13.	1993	0	11	1
14.	1994	0	25	1
15.	1995	3	57	0.95
16.	1996	2	56	0.96
17.	1997	4	77	0.95
18.	1998	3	105	0.97
19.	1999	5	106	0.95

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20.	2000	4	147	0.97
21.	2001	6	163	0.96
22.	2002	2	179	0.98
23.	2003	10	230	0.95
24.	2004	2	248	0.99
25.	2005	4	309	0.98
26.	2006	7	272	0.97
27.	2007	6	330	0.98
28.	2008	3	353	0.99
29.	2009	3	438	0.92
30.	2010	6	495	0.98
31.	2011	4	409	0.99
32.	2012	7	468	0.98
33.	2013	1	431	0.99
34.	2014	14	376	0.94
35.	2015	6	223	0.97
Total		**105**	**5577**	**0.98**

Author Productivity

The formula used to determine author productivity is as follows.

$$\text{AAPP} = \frac{\text{Total No. of Authors}}{\text{Total No. of Papers}} \quad \mathbf{AAPP} = \frac{34415}{5682} = \mathbf{6.05}$$

$$\text{APPA} = \frac{\text{Number of Papers}}{\text{Number of Authors}} \quad \mathbf{APPA} = \frac{5682}{34415} = \mathbf{0.16}$$

Table 3.Author productivity

S.No	Year	Total no. of papers	Total no. of authors	AAPP	APPA
1.	1981	01	3	3.00	0.33
2.	1982	00	00	00	00
3.	1983	01	3	3.00	0.33
4.	1984	02	6	3.00	0.33
5.	1985	01	3	3.00	0.33
6.	1986	01	3	3.00	0.33
7.	1987	02	4	2.00	0.50
8.	1988	01	3	3.00	0.33
9.	1989	04	17	4.25	0.24
10.	1990	10	48	4.80	0.21
11.	1991	31	125	4.03	0.25
12.	1992	18	75	4.17	0.24
13.	1993	11	45	4.09	0.24
14.	1994	25	90	3.60	0.28
15.	1995	60	249	4.15	0.24
16.	1996	58	224	3.86	0.26
17.	1997	81	388	4.79	0.21
18.	1998	108	428	3.96	0.25
19.	1999	111	455	4.10	0.24
20.	2000	151	640	4.24	0.24
21.	2001	169	708	4.19	0.24
22.	2002	181	842	4.65	0.21
23.	2003	240	1160	4.83	0.21
24.	2004	250	1223	4.89	0.20
25.	2005	313	1715	5.48	0.18
26.	2006	279	1952	7.00	0.14
27.	2007	336	2198	6.54	0.15
28.	2008	356	2266	6.37	0.16
29.	2009	441	2966	6.73	0.15
30.	2010	501	3585	7.16	0.14
31.	2011	413	2905	7.03	0.14
32.	2012	475	3322	6.99	0.14
33.	2013	432	3066	7.10	0.14
34.	2014	390	2428	6.23	0.16
35.	2015	229	1270	5.55	0.18
Total		**5682**	**34415**	**6.05**	**0.16**

Author productivity during the study period is given in the table 3 and shows that the average number of authors per paper (AAPP) is 6.05. The average productivity per author (APPA) is 0.16. After 2003, average number of authors per paper increased slightly from the average productivity per author with slight decrease in the 2014 and 2015 and the study has been evidenced a sudden increase in the output during the year 2010.

Conclusion

The results of the analysis, five thousand six hundred and eighty two papers were contributed. Highest numbers of papers were published in the year 2010 and 2012. 34.40% of papers were published with three authors and 18.76% of papers were with six authors. In the degree of collaboration of all years i.e. from 1981 to 2015 is 0.98 mean value is 0.5. After 2003, average number of authors per paper increased slightly from the average productivity per author with slight decrease in the 2014 and 2015 and the study has been evidenced a sudden increase in the output during the year 2010 and 2012 and a collaborative trend in information literacy research.

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