

A BIBLIOMETRIC STUDY OF WORLD RESEARCH OUTPUT ON INFORMATION LITERACY IN THE FIELD OF LIBRARY AND INFORMATION SCIENCE DURING 1999-2013



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INTRODUCTION :

Bibliometrics is a set of methods to quantitatively analyze academic literature. Citation analysis and content analysis are commonly used bibliometric methods. The bibliometric methods are most often used in the field of library and information science. They have wide applications in other areas too. Many research fields use bibliometric methods to explore the impact of their field, the impact of a set of researchers, or the impact of a particular paper. Allan Pritchard was the first man who coined the term Bibliometrics in 1968. It became more popular during 1980s. According to D. T. Hawkins bibliometrics is "quantitative analysis of the bibliographical features of body of literature". Nicholas and Ritchie (1978), in their book entitled "Literature on

ABSTRACT

This study attempts to identify the bibliometric characteristics of the articles published in the various journals from WEB of Knowledge during the study period 1999-2013. Bibliometric analysis use data on numbers and authors of scientific publications and on articles and the citations therein (and in patents) to measure the "output" of individuals/research teams, institutions, and countries, to identify national and international networks, and to map the development of new (multi-disciplinary) fields of science and technology. The results show that the most prolific author is 'Julien Heidi' with 21(1.64%) articles and 'Pinto Maria' with 19 (1.49%). 'The continent America ranked first by contributing 690 (52.43%) articles. followed by The Europe continent occupies the second position with 338 (25.68%). Among the key words Appeared in the publications shows that high frequency keywords were "information literacy" is topped with 221(24.07%) publications with followed by next "Information" has scored with 38 (4.13%) publications.

KEYWORDS : *Bibliometric; Information Literacy; quantitative analysis; Citation studies.*

SHORT PROFILE

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is common to all disciplines, to all learning environments and to all levels of education, while recognizing the disparities in learning

Bibliometrics", stated that bibliometrics "provide information about the structure of knowledge and how it is communicated." One of the main areas in bibliometric research is concerned with the application of bibliometric laws. The three most commonly used laws in bibliometrics are: Lotka's Law of Scientific Productivity, Bradford's Law of Scattering, and Zipf's Law of Word Occurrence. Information literacy Information literacy is concerned with teaching and learning about the whole range of information sources and formats. Information literacy forms the basis for lifelong learning. It

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styles and in the nature and development of literacy in different countries. It enables learners to master contents and extents their investigations, become more self-directed, and assume greater control over their own learning; UNESCO insisted that information literacy should be introduced wherever possible within national curricula as well as in tertiary non formal and lifelong education.

Several conception and definitions of information literacy have become prevalent. For example, one conception defines information literacy in terms of a set of competencies that an informed citizen of an information society ought to possess to participate intelligently and activity in that society. The American Library Association's (ALA) Presidential Committee on Information Literacy, Final Report states that, "To be information literate, a person must be able to recognize when information is needed and have the ability to locate evaluate and use effectively the needed information" (1989).

REVIEW OF RELATED LITERATURE

Research output of studies on subject

Satyanarayana (2000) examined Indian contributions in biomedical research (3605 papers in 1990 and 3241 papers in 1994) as indexed in three databases, such as Index Medicus, Excerpta medical and Tropical Disease Bulletin. Gupta and Karisiddappa (2002) who have worked in the field of Theoretical Population Genetics for the period from 1907-1980, by applying different growth models, concluded that power model is observed to be the only model among the models viz., exponential logistics.

Research outputs of studies on institution

Jeevan and Gupta (2002) examined the quantitative profile of a research in Indian Institute of Technology (IIT) in Kharagpur, with a view to characterizing the performance and impact of research produced in each department and to compare the impact of research in various

departments. Klaic (1990) analyzed the research activity of chemists from the 'RugjerBoskovic' Institute of Zagreb, Yugoslavia for the period 1976-1985. They were classified according to the subfields used in the JCRs, and the results compared with the data published by Schubert, Glanzel and Braun. Rakesh Mani Sharma (2009) studied a total of 2603 research articles published by the scientists of Central Potato Research Institute (CPRI) during 1991 to 2007 by scanning the annual reports of CPRI and the Journal of the Indian Potato association. In his analysis, he showed that majority of the scientists preferred to publish research papers in joint authorship (82.67%) having 0.82 degree of collaboration.

Research output of studies on journal

Anil et al. (2008) focused on publishing trend; impact factor; authorship pattern; types of articles; institutional collaboration of authors; affiliated institutions of authors; countries of contributing authors; keyword analysis; and referencing pattern. The number of articles being published in Pramana and its ISI impact factor are increasing. Maz-Machado (2014) analysed the citation patterns of the Spanish journal Education & Educational research within the Journal Citation Report (JCR). The results show that the mean reference age is higher than eleven years. Moreover, the citation to journals represent less than the half of the total amount of references.

Research output of studies on country

Gupta and Bala (2011) analysed the research activities of India in Medicine during 1999-2008. The publication data on medicine has been retrieved by using SCOPUS database. Result shows that India holds 12th rank among the productive countries in medicine research consisting of 65,745 papers with a global publication share of 1.59% and registering a growth rate of 76.68% for the papers published during 1999-2003 to 2004-2008. Walke &

Dhawan (2007) analysed the growth and publications size of the Indian publications in Materials science during 1993-2001. It also analyses various other features of publications output such as modes of communication, areas of research priority, research quality, nature of collaboration and institutional productivity. Rathor and Mishra (1981) presented the relative usefulness of periodicals in Biochemistry in India with the object of keeping the ever rising subscription requirements of serials within budgetary constraints. Vinitha et al. (2010) have attempted a study to analyse quantitatively the growth and development of water resource management research in India in terms of publication output as reflected in Web of Science database for the period between 1982-2009.

Research output of studies on bio-bibliometric

Arruda et al. (2009) analyzed the distribution of some characteristics of computer scientists in Brazil according to region and gender. Findings revealed that in the areas of artificial intelligence, computers in education and human-computer interface, Brazilian computer scientists had 5.3 journal publications per male researchers. Parvathamma & Gunjal (1993) studied on growth and scientific productivity in the field of Earth sciences. It indicates that the relative growth rate is declining from 0.35 to 0.11. The publications of Dr. M. S. Swaminathan, world's leading biologist from India were biobibliometrically analyzed by Kalyane (1992). He played a catalytic role in India's green revolution between 1960 and 1982 from April 1982 to January 1988. In this study, authors provide the in depth biographical profile of M. S. Swaminathan, highlighting his life and contributions..

Research output of studies on citation

Osareh and McCain (2008) studied the intellectual structure of Iranian chemistry research in Science Citation Index (SCI) during 1990 to 2006. The results of this study showed

that since 1990, Iranian chemistry research, as represented in the SCI, has grown at a rate of roughly 26% and 7 major clusters were formed during the study period. Sinha and Ullah (1993) attempted a citation analysis to determine the citation characteristics of periodical articles and books published by Ramachandran in the field of cement and concrete chemistry. They found that he was certainly a highly quoted scientist, and that his books were more cited than his articles.

Statement of the problem

The research problem is conceived under the title "A Bibliometric study of world research output on Information Literacy in field of Library and Information Science during 1999 - 2013"

OBJECTIVES OF THE STUDY

The major objectives of the study are as follows.
To find out the authorship pattern of the contributions.
To find out the research productivity count of the contributions on the basis of geographical distribution.
To identify most frequently used keywords.
To identify the Source of publications;
To rank the Universities and Research Institutes;

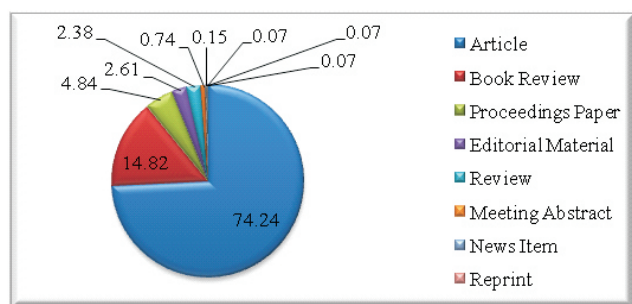
METHODOLOGY

The data source for the study is ISI Web of Science, Science Citation Index, published by Thomson Scientific. It is the world's leading abstracting & indexing service providing on all aspects of science. By using suitable strategy related to literature produced Information Literacy, the bibliographic details for each record included author, authors affiliation, title, type of document, source of publication, year of publication, keywords, language of the article and country of input have been collected. Further all the bibliographic details have been transferred to a spreadsheet. Later the data was analyzed as per the objectives of the study.

Bibliometrics method has been used in the present study. At very initial stage researcher has started to search the articles from the web of science on Information literacy from 1999 to 2013 has taken into consideration. For each article one card was prepared with bibliographical details like Name of Authors, Title, Name of Journals, Year of Publication, Keywords etc.

DATA ANALYSIS AND INTERPRETATION

Figure 1: Type of Documents



The above figure shows the data about share of publication output in different types of documents. Out of total 1343 documents on information literacy, articles are the most prominently found publication and it occupies 997 (74.24%) of total publications, followed by 199 (14.82%) book reviews, 65 (4.84%) proceedings papers, 35 (2.61%) editorial materials, 32 (2.38%) reviews and 15 (1.11%) notes. Remaining document types scored the low numbers of output i.e., below one percentage of output for communication among the information literacy scientists.

Year-wise Distribution of Publications

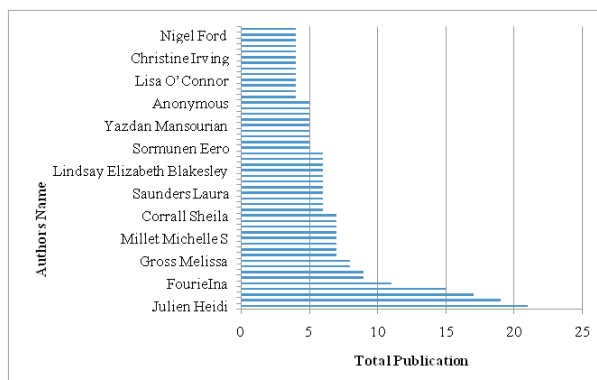
Table 1:Year-wise Distribution of Publications

Sl.No	Year	TP	%	Sl.No	Year	TP	%
1	2011	156	12.21	9	2005	77	6.03
2	2013	150	11.74	10	2003	48	3.76
3	2012	143	11.19	11	2004	47	3.68
4	2010	137	10.72	12	2002	39	3.05
5	2007	124	9.70	13	2001	23	1.80
6	2008	113	8.84	14	2000	18	1.41
7	2009	109	8.53	15	1999	15	1.17
8	2006	79	6.18		Total	1278	100

It is clearly observed from the table 1 that during the period 1999-2013 a total of 1278 publications were published at the global level. There is more number of contributions of 156 (12.21%) items in 2011, followed by 150 (11.74%) papers in 2013 and 143 (11.19%) papers in 2012. The lowest publication is 15 (1.17%) papers in 1999. The study also reveals that all these 1278 publications shows a healthy trend in citation found among the scientists belongs to information literacy.

The Most Productive Authors

Figure 2: Most Productive Authors



The figure 2 shows data on top productive authors published between the range of 4 and 21 papers. The most publishing author is Julien Heidi with 21(1.64%) articles, followed by Pinto Maria 19 (1.49%), Lloyd Annemarie 17 (1.33%), Bruce Christine 15 (1.17%), and Fourielna 11 (0.86%) on Information Literacy.

Authorship Pattern of Contributions

Table 2: Authorship Pattern of Contributions

Year	Single Author	Two Authors	Three Authors	Four Authors	Five Authors	Six Author	Seven Authors	Eight Authors & above	Total	Percentage	Cumulative Frequency
1999	13	1	1	0	0	0	0	0	15	1.18	1.18
2000	11	4	2	1	0	0	0	0	18	1.41	2.59
2001	15	4	2	1	0	0	0	0	22	1.73	4.32
2002	26	8	5	0	0	0	0	0	39	3.06	7.38
2003	28	10	5	1	1	1	0	2	48	3.77	11.15
2004	31	9	6	0	0	0	0	1	47	3.69	14.84
2005	47	16	5	4	1	0	1	2	76	5.97	20.81
2006	44	20	8	4	0	1	0	0	77	6.05	26.86
2007	69	34	13	5	2	1	0	0	124	9.74	36.6
2008	68	24	13	4	1	0	0	3	113	8.88	45.48
2009	56	32	12	5	1	2	0	1	109	8.56	54.04
2010	59	43	15	10	2	2	1	5	137	10.76	64.8
2011	64	49	21	9	8	3	2	0	156	12.25	77.05
2012	53	42	25	9	7	2	2	3	143	11.23	88.28
2013	54	47	19	13	8	4	0	4	149	11.70	100

Table 2 shows the authorship pattern of contributions. Out of 1278 articles, there are single authored contributions with 638 (49.88%) articles, followed by two authored articles are published with 343 (26.94%), followed by three authored articles were contributed with 152 (11.94%) four authors of articles are contributed with 66 (5.18%), five authors of articles are

contributed with 31 (2.44%), articles were published with eight and more than eight authors are 21(1.65%), followed by contributions were published by six authors 16(1.26%) seven authors of articles were contributed with 6(0.47%) respectively.

Ranking of Most Productive Institutions

Table 3: Most Prolific Institutions and Impact of Their Output

Rank	Institutional Name	TP	%
1	University of Illinois	26	2.03
2	University of Alberta	25	1.96
3	University of Granada	24	1.88
4	Charles Strut University	24	1.88
5	University of Sheffield	22	1.72
6	Queensland University of Technology	17	1.33
7	University of Pretoria	16	1.25
8	Washington State University	14	1.10
9	Victoria University of Wellington	14	1.10
10	University of Maryland	14	1.10

The table 3 indicates institution-wise research productivity on information literacy. It is noted that University of Illinois contributed the highest number of research publications 26 (2.03%) and University of Alberta with research publications of 25(1.96%), followed by University

of Granada and Charles Strut University with research publications 24(1.88%) and University of Sheffield with research publications 22(1.72%) position with publications in global level.

Country-wise Distribution of Publications

Table 4:Country-wise Distribution of Publications

Sl. No.	Countries	TP	% of TP
1	USA	579	45.31
2	England	134	10.49
3	Australia	92	7.20
4	Canada	77	6.03
5	Spain	44	3.44
6	South Africa	34	2.66
7	Sweden	29	2.27
8	Scotland	24	1.88
9	Nigeria	21	1.64
10	Brazil	21	1.64

The table 4 indicates that among the country-wise distribution of publications on information literacy covered by the study the United States of America tops with 579 (45.31%) publications, followed by England with 134 (10.49%), Australia with 92 (7.20%), Canada with 77 (6.03%) and

Spain with 44 (3.44%) publication’s. India is occupying the 16th position in the world in terms of publications, followed by other countries next respective positions.

Continent-wise Distribution of Publications

Table 5: Continent-wise Distribution of Publications

Sl. No	Continents	No of Countries	TP	% of TP	Cumulative Percentage
1	Africa	11	80	6.08	6.08
2	Asia	18	96	7.29	13.37
3	Europe	29	338	25.68	39.05
4	America	8	690	52.43	91.48
5	Australia	2	112	8.51	99.99

Table 5 indicates the continent-wise distribution of total research output on information literacy research literature. The American continent stood in the first place with the highest publication of 690 (52.43%) on information literacy output from 8 contributing countries,

followed by Europe continent occupies the second position with 338 (25.68%) among the 29 countries publications.

Distribution of Journal-wise Research Output

Table 6: Distribution of Journal-wise Research Output

Sl. No.	Journal Name	TP	% of TP
1	Journal of Academic Librarianship	141	11.27
2	Journal of Health Communication	77	6.16
3	Portal Libraries and The Academy	70	5.60
4	College Research Libraries	66	5.28
5	Information Research an International Electronic Journal	62	4.96
6	Electronic Library	61	4.88
7	Health Information and Libraries Journal	52	4.16
8	Journal of Librarianship and Information Science	49	3.92
9	Library Trends	47	3.76
10	Journal of Documentation	47	3.76

The Journal-wise total research productivity of Library and Information science journals for the year 1999 -2013 is presented in the table 6. It is observed from the table that ‘The Journal of Academic Librarianship’ ranks first in order by contributing with 141 (11.27%) of total research output. ‘The Journal of Health Communication’ occupies the second place

which shares 77 (6.16%). ‘Portal Libraries and the Academy’ contributing with 70 (5.60%), ‘College Research Libraries’ contribute with 66 (5.28%) respectively. ‘Information Research an International Electronic Journal’ is in fifth position contributing with 62(4.96%).

Year-wise Distribution of Length of Articles

Table 7: Year-wise Distribution of Length of Articles

Year	1-5	6-10	11-15	16-20	21-25	26-30	31 & Above	Total	%
1999	6	4	2	2	1	0	0	15	1.24
2000	3	9	4	1	1	0	0	18	1.49
2001	6	7	7	1	0	0	1	22	1.82
2002	8	13	6	7	4	1	0	39	3.22
2003	14	11	13	2	4	0	2	46	3.80
2004	14	8	14	20	2	2	0	60	4.95
2005	22	24	12	9	2	2	3	74	6.11
2006	14	15	22	14	6	1	1	73	6.03
2007	30	28	28	16	9	3	0	114	9.41
2008	30	22	29	13	11	2	1	108	8.92
2009	27	25	29	14	7	0	3	105	8.67
2010	29	36	30	18	9	3	1	126	10.40
2011	28	31	48	19	13	6	1	146	12.06
2012	28	34	35	22	12	2	1	134	11.07
2013	19	40	41	18	9	2	2	131	10.82
Total	278	307	320	176	90	24	16	1211	100.00
	22.96	25.35	26.42	14.53	7.43	1.98	1.32		

Regarding the length of articles, 11-15 pages in length gets the first position by sharing 320 (26.42%). Second position is by 6-10 pages sharing 307 (25.35%). Third position is by 1-5 pages sharing 278 (22.96%). 31 above pages get the last position by sharing 16 (1.32%). From the analyses 11-15 page articles are highly contributed than others and 31 above page

articles have the minimum contribution by the scientists during the study period. Average number of pages from the table 5.23 is ten. The same result is confirmed in this length of articles analysis.

Most Occurred Keyword Associated With Articles Published in Web of Science

Table 8: Most Occurred Keyword Associated With Articles Published in Web of Science

Sl. No.	Keywords	Total	Frequency
1	Information literacy	221	24.07
2	Information	38	4.14
3	Literacy	33	3.59
4	Internet	31	3.38
5	Academic libraries	30	3.27
6	University libraries	28	3.05
7	Information retrieval	25	2.72
8	Libraries	23	2.51

1	World Wide Web	23	2.51
2	Higher education	22	2.40
3	Learning	19	2.07
4	Communication Technologies	17	1.85
5	Information seeking behavior	17	1.85
6	Librarians	17	1.85
7	Students	16	1.74
8	Information management	14	1.53
9	Information skills	13	1.42
10	Nigeria	13	1.42
11	E-learning	12	1.31
12	Information seeking	11	1.20

The important words called ‘Key Word’ are one of the best indicators to understand and grasp instantaneously the thought content of the papers, methodologies used and areas of research addressed to the high frequency keywords were “information literacy” is topped with 221(24.07%) publications with followed by next “Information” has scored with 38(4.13%) publications.

FINDINGS

According to data analysis and interpretation investigator has find out the major findings to the study.

- ✦ Among various document types the share of information literacy articles is the most prominent as it occupies 997 (74.24%) of total publications.
- ✦ Among the total 1278 publications at global level during the period 1999-2013 the highest number of contributions published in the year 2011 with 156 (12.21%) items.
- ✦ The most the prolific author is ‘Julien Heidi’ with 21(1.64%) articles, followed by ‘Pinto Maria’ with 19 (1.49%), ‘Lloyd Annemarie’ with 17 (1.33%), ‘Bruce Christine’ with 15 (1.17%) and ‘Fourie Ina’ with 11 (0.86%) articles on Information Literacy.
- ✦ Out of 1278 articles, multiple authored contributed articles are in highest numbers with 640 (50.12%), followed by single authored took a second place with 638 (49.88%).
- ✦ Among the Institution-wise Ranking of

research productivity it is noted that ‘University of Illinois’ contributed the highest number of research publications i.e., 26 (2.03%), followed by ‘University of Alberta’ with 25(1.96%) and ‘University of Granada’ and ‘Charles Strut University’.

- ✦ Among the country-wise distribution of publications on information literacy, the United States of America tops with 579 (45.31%) publications, followed by England with 134 (10.49%).
- ✦ The continent America ranked first by contributing 690 (52.43%) articles. followed by The Europe continent occupies the second position with 338 (25.68%).
- ✦ The largest number of collaborative countries the United States and Canada with 11 (0.86%), followed by United States and Australia 8 (0.63%) total shares.
- ✦ Distribution of Journal-wise Research Output show that ‘The Journal of Academic Librarianship’ ranks first in order by contributing 141(11.27%) of total research output. ‘The Journal of Health Communication’ occupies the second place which shares 77(6.16%).
- ✦ Year-wise Distribution of Length of Articles found that 11-15 pages length gets the first position by sharing 320 (26.42%). Second position is by 6-10 pages sharing 307(25.35%).
- ✦ Among the key words Appeared in the publications shows that high frequency keywords were “information literacy” is

topped with 221(24.07%) publications with followed by next "Information" has scored with 38 (4.13%) publications.

CONCLUSION

A correct estimation of the significance of research carried out is the necessary element of self-knowledge of the scientific community. Bibliometric indices allow one to study temporal variations in the scientific productivity in the qualitative and quantitative aspects (for a separate researcher and for an institute in general), subjects of research, nomenclature and core of the journals used to publish the results, citations of publication and their impact on the community, etc. This study attempts to identify the bibliometric characteristics of the articles published in the various journals from WEB of Knowledge during the study period 1999-2013.

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