

*Full Length Research Paper*

## **A reference analysis of doctoral theses in the field “Education”: An interesting issue for librarians as well as scientometricians or bibliometricians**

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The 3195 citations analyzed were cited in 35 doctoral theses of Education awarded to Kurukshetra University, Kurukshetra from the period 1995-2008. The bibliographic formwise distribution of citations accounted for 1380 (43.20%) periodical publications followed by Books 672 (21.04%). More than two third contributions (56.23%) were produced under single authorship. Largest of total cited periodicals were of Indian origin (31.01%) followed by the periodicals published from U.S.A. (17.83%) and U.K. (12.40%).

**Key words:** Collaboration, cybermertrics, webmetrics, education, behavioral, obsolescence, citing.

### **INTRODUCTION**

Bibliometric is a type of research method used in library and information science. It utilizes quantitative analysis and statistics to describe pattern of publication within a given field or body of literature. The researchers may use bibliometric method of evaluation to determine the influence of a single author or to describe the relationship between two or more authors or workers (Parameswaran, 2001). Bibliometric studies are used to identify the pattern of publication authorship citations or secondary journal coverage in the hope that, such studies can give an insight into the dynamics of the area under consideration. This consequently leads to better organization of information resources which is essential for their effective and efficient use. Authorship of a paper has become important for scientists and researchers and

understandably this topic has become an important area of study (VijayaKumar and Naqvi, 2002). Bibliometrics can be used to study productivity count (number of publications) of literature in a given field for the purpose of comparing the amount of research in different countries, the amount of research produced during different periods, or the amount of research produced in different subdivisions of a field, or types of publications, or amount of publications by individuals or organizations. It can be used to study the pattern of scattering literature on a subject in different periodicals in terms of the relationship of quantity of publications of individuals and their recognition and identification of papers. Bibliometrics can also be used to study citations used by researchers. The term Bibliometric was first introduced in 1969, in

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Pritchard in preference to the term "Statistical Bibliography" coined by Hulme in 1923. The word "Bibliometrics has two roots, 'Biblio and Metrics'...", meaning 'measurement'. Thus, Bibliometrics is an application of mathematical and statistical method for measuring quantitative and qualitative changes in producing literature in a given subject or area of specialization (Kumar, 2005). There are other terms related to the bibliometrics study, such as Scientometrics, Cybermetrics and Webmetrics, Information and Librametrics. In other words, it is a qualitative and quantitative analysis of publications for the purpose of ascertaining specific kinds of phenomena. There are two types of Bibliometrics Studies: Descriptive Studies and Behavioral Studies. Descriptive studies are those studies, which describe various features of a literature. These cover medium of communication, subject matter and volume of information covered; while behavioral studies explore the bibliographic relationship between different documents. These studies also show the relationship between different authors and disciplines (Devrajan, 1997).

### Citation analysis

Citation analysis is an established researches tool used by librarians, teachers and information scientist to indicate the relationship that exists between the cited documents. Citation analysis is largely used for putting things in order. The things ordered can be articles, books, authors, organizations, etc. The type of ordering can be linear like ranking and multidimensional like citation networks (Baughman, 1974).

### Objectives

The objectives of the study are to know the following:

1. Year wise distribution of papers;
2. Bibliographic form wise distribution;
3. Ranking of cited journals;
4. Subject wise analysis of papers;
5. Authorship pattern in subject wise;
6. The degree of collaboration in a literature.

### Statement of the problem

The university library of Kurukshetra primarily caters to requirements of post-graduate or research students besides the teaching faculty. The user community of a university library has homogeneity in its literature use pattern because preparation for research is done at the level of master's degree. The present study aims to identify the primary information use pattern of researchers in the recent year in the field of education in Kurukshetra University, Kurukshetra. There are a number

of methods that can be used in studying the use of information: 1. By asking people about it; 2. By observing its occurrence; 3. By examining the resultant products.

### REVIEW OF LITERATURE

Vijayakumar and Naqvi (2002) conducted a study on "Authorship Trend in Azadirachta Indica literature: A Bibliometric study". The work analyzed the abstract of papers in Biological research output in Azadirachta Indian for a period of 11 years (1989-99). The findings were likely to have general implications for the scientific community working on Azadirachta Indica. The study revealed that increasing collaborative research was seen in the field of Azadirachta Indica. The study also revealed that collaborative research was more favorable than solo research. The degree of collaboration in Azadirachta Indica literature was 0.94.

Surendra and Kumar (2005) conducted a study on "A Bibliometric study of the Journal of Oil Seeds Research, since 1993-2001". This study shows that journals were still the most favorable form of documents in research. They are few titles of journals, cited by most researchers and libraries must recognize them. To save money, it is better to use documents instead of being occasionally used by scientists. Often scientists, in doing small researches, subscribe to get information from journals related to their field without much use and refer to few articles with many volumes on purchase.

Damodaram (1998) undertook a citation study of Doctoral dissertations of groundnut, submitted to 66 universities in India from 1948 to 1996. In the first 27 years since 1948 only 43 theses (13%) were produced. Significant trend of growth on groundnut theses was seen in the subsequent years during 1981-1992. 70% of total theses on groundnut were submitted to 12 major universities. 58.82% of theses were submitted to 19 agricultural universities and 41.18% to 47 non-agricultural universities.

### METHODOLOGY

The study being empirical in nature is designed to estimate the extent of use of various documentary sources of information in the process of identification, selection, designing, execution and presentation of doctoral research studies during a specified period of 1995-2008 in a particular field of education in Kurukshetra University, Kurukshetra. The design of the study also facilitates identification of other relevant characteristics of literature used like documents, their subject wise distribution, country wise distribution and authorship pattern. After a careful examination of various studies conducted by citation count, an instrument was designed to fulfill the specific objectives of the present study, which consists of 5"x 3" slips. The information is written down on those slips from the citations of the theses.

### Analysis of data

This article includes analysis of primary data of the study. Data

**Table 1.** Year wise distributions of citations.

Year	No of theses	Citations	Average Citation/per theses
1995	1	120	120.00
1996	4	280	70.00
1997	3	236	78.00
1998	4	268	67.00
1999	5	492	98.4
2000	1	92	92.00
2001	1	96	96.00
2002	1	116	116.00
2003	1	108	108.00
2004	6	640	106.66
2005	6	522	87.00
2006	1	108	108.00
2007	1	117	117.00
Total	35	3195	91.28

**Table 2.** Bibliographic form of cited literature.

No.	Bibliographic form	Citations	%
1.	Periodicals	1380	43.20
2.	Books	672	21.04
3.	Reports	553	17.31
4.	Conference Paper/ Proceedings	369	11.54
5.	News papers	22	0.68
6.	Dissertations	79	2.47
7.	Theses	111	3.47
8.	Others	9	0.29
	Total	3195	100.00

collected from Ph. D theses in Education (1995-2008) field have been classified, tabulated and analyzed in accordance with the set objectives of the study. Only data belonging to the periodicals were analyzed in depth. The present study includes analysis of 3195 citations from 35 Ph. D theses in the field of Education.

Table 1 shows that there is no significant change in the number of citations over different years. The average numbers of citation per thesis submitted in the year 1998 were lowest (67.00) in the thirteen year period for which data were analyzed. One theses submitted in 1995 contained the highest number of citations i.e. 120. The average number of citations per theses for the whole study was 91.28, which is relatively low compared to average citations of theses of the previous study (120).

Table 2 presents the different forms of literature used by research scholars of Education. Out of 3195 citations 1380 (43.20%) are from periodical publications followed by books 672 (21.04%). There are the two major forms of literature which comprise 64.24% of total citations. The rest are reports, 553 (17.31%); Conference papers/ proceedings, 369(11.54%); newspapers, 22(0.68%); dissertations, 79 (2.47%); theses, 111 (3.47%) and 9(0.29%). Table 3 shows the ranked list of cited journals with their citation percentages. In Education, 22 journals have been cited at least 10 times or more. These 22 journals account for 709 citations (%) out of 1380 and the remaining 319 journals have been cited less than 10 times, accounting for 48.62% citations. First 10 periodicals which have been cited at least 20

times or more contribute 36.87% of total periodical citations. These may be considered as most useful and core journals. Journal of Indian Education is at the top of the rank list with the highest citations (6.96%). It is followed by Journal of Higher Education (6.08%). These two most cited journals contribute 13.04% and are of Indian origin. Most of the first 22 journals which comprise 80% citations of total periodical literature are from India, followed by USA (5) and UK (2).

Table 4 shows that out of the first 10 journals of both studies, 5 journals are common; however, their ranks have changed. In previous study, the journal which was at the top of rank list is in the present study at 11<sup>th</sup> place, and the journal which was at 10<sup>th</sup> place in previous study, in present study is at 2<sup>nd</sup> place. Indian Educational Review which is at 5<sup>th</sup> place in present study was at 22<sup>nd</sup> place in previous study.

While among the 10 most cited periodicals only 6 are currently being subscribed by the university Library. These finding greatly differ from the previous study, where 9 out of first 10 journals were available in the university library (Table 5).

Table 6 indicates that the research scholars of Education have cited the periodicals from 16 countries. Majority of the cited periodicals belong to three countries and out of these India is at the top with 80 (31.01%) periodicals, followed by USA (17.83%) and UK (12.40%). This shows that researchers of Education in Kurukshetra University do not use only Indian periodicals but foreign periodicals also to a great extent.

**Table 3.** Rank lists of periodicals.

No.	Ranks No.	Periodical title	No of Citations	Cumulative citations	%	Cumulative %	Country
1.	1	Journal of Indian Education	96	96	6.96	6.96	India
2.	2	Journal of Higher Education	84	180	6.08	13.04	India
3.	3	Journal of Education & Psychology	72	252	5.22	18.26	India
4.	4	American Education Research Journal	46	298	3.33	21.59	USA
5.	5	Indian Education Review	42	340	3.05	24.64	India
6.	6	British Journal of Educational Psychology	38	378	2.75	27.39	U.K
7.	7	Abhigyan	36	414	2.60	29.99	India
8.	7	Educational Quarterly	36	450	2.60	32.59	India
9.	8	Indian Education Abstracts	31	481	2.25	34.84	India
10.	9	Edutracks	28	509	2.03	36.87	India
11.	9	Media & Technology for Human Resource Development	28	537	2.03	38.90	India
12.	9	Perspectives in Education	28	565	2.03	40.93	India
13.	10	University News	22	587	1.59	42.52	India
14.	11	Education Research	17	604	1.23	43.75	USA
15.	12	Exceptional Children	16	620	1.16	44.91	USA
16.	13	Indian Journal of Disability and Rehabilitation	15	635	1.09	46.00	India
17.	13	Harvard Education Review	15	650	1.09	47.09	UK
18.	14	Journal of Educational Research & Extension	14	664	1.02	48.11	India
19.	14	Haryana Journal of Education	14	678	1.02	49.13	India
20.	15	Journal of Educational Psychology	11	689	0.79	49.92	USA
21.	16	Disabilities and Impairments	10	699	0.73	50.65	India
22.	16	Journal of Educational Research	10	709	0.73	51.38	USA
		Remaining 319 titles cited less than 10 times	671	1380	48.62	100.00	-----

**Table 4.** Common periodicals in the rank lists of the two studies.

Title of the periodical	Rank in present study	Rank in previous study
Journal of Higher Education	2	10
American Educational Research Journal	4	8
Indian Educational Review	5	29
Abhigyan	7	9
Indian Educational Abstracts	8	6
Edutracks	9	7
Harvard Educational Review	13	11
Education Research	11	10
Haryana journal of Education	14	12
Journal of Educational Research	16	13

Table 7 shows that 138 (53.48%) periodicals cited by the research scholars are from their own filed i.e. Education, followed by Psychology with 48 scholars. Periodicals were cited from generalia 24 (9.31%) and remaining 28 (10.85) periodicals were cited from other subjects. Subject of 20 periodicals could not be determined as their subject was not expressed from their titles.

Table 8 shows the authorship pattern reflected in periodical articles. Single author articles contributed 776 (56.23%) citations, followed by two authors' contributions 406(29.42%) and three authors' contributions 136 (9.86%). The remaining articles are contributed by four or more authors.

Table 9 shows that 192 (13.92%) periodicals articles were in the

range of 0-5 years old, 324 (23.48%) articles were in the range of, 6-10 years old, 488 (35.36%) articles were the range of 11-20 years old, and 368 (26.66%) articles were more than 20 years old. Highest numbers of articles were in the range of 10 years old. It shows that researchers in education cite old literature more than current literature.

### Findings of the study

The present study was an effort to identify the information

**Table 5.** Availability of periodicals in Kurukshetra University Library.

Sr. No	Title of periodicals	Rank
1.	Journal of Indian Education	1
2.	Journal of Education & Psychology	3
3.	British Journal of Educational Psychology	6
4.	Educational Quarterly	7
5.	Media and Technology for Human Resource Development	9
6.	Perspectives in Education	9
7.	Exceptional children	12
8.	Indian Journal of Disability and Rehabilitation	13
9.	Journal of Educational Psychology	15
10.	Disabilities and Impairments	16

**Table 6.** Country wise distribution of periodicals.

Country	periodicals	%
India	80	31.01
USA	46	17.83
UK	32	12.40
Australia	18	6.98
Netherland	16	6.20
Canada	11	4.26
Germany	9	3.48
Sri Lanka	7	2.71
Switzerland	5	1.93
Kenya	3	1.16
Saudi Arabia	2	0.78
Iran	2	0.78
Romania	2	0.78
Malaysia	1	0.39
Pakistan	1	0.39
Hungary	1	0.39
Unidentified	22	8.53
Total	258	100.00

**Table 7.** Subject wise distribution of periodicals.

Sr.No.	Subject	Periodicals	%
1.	Education	138	53.48
2.	Psychology	48	18.60
3.	Generalia	24	9.31
4.	Others	28	10.85
5.	Unidentified	20	7.76
	Total	258	100.00

use pattern of the research scholars in the Department of Education Kurukshetra University, Kurukshetra on the basis of citations cited by 35 doctoral theses submitted

during 1995-2008. The following were some important findings of the study:

1. Periodicals articles were the major source of information used by the researchers. Almost half of the total citations were from periodical articles followed by books (21.04%).
2. 22 periodicals accounted for more than half (70%) of total periodical citations and two Indian periodicals titled, Journal of Indian Education and Journal of Education and Psychology were the most used periodicals.
3. Only one out of three most cited periodicals (i.e. 7 out of 22 periodicals) were available in the Kurukshetra University Library. This shows that availability of most used periodicals in the field of education is far from satisfactory.
4. Largest number of total cited periodicals were of Indian origin (31.01%), followed by the periodicals published from U.S.A. (17.83%) and U.K. (12.40%).
5. More than two third contributions (56.23%) were produced under single authorship. This is a common phenomenon in social sciences.
6. Only one third of total citations were 10 years or less in age while almost the same number of citations (26.66%) were more than 20 years old. It shows that research scholars in Education use relatively old literature.

## Conclusion

The study was intended to ascertain the information use pattern of the researchers in Education based on the citations provided in their doctoral theses. It has now become an established tool to aid the formulation of various library policies and making decisions about specific bibliographical forms and publications. The study was conducted by making use of available doctoral theses in the university library as well as the department of education library. The instrument used for data collection was slip of 5" X 3" size. The findings based on

**Table 8.** Authorship pattern.

No. of Authors	No. of citations	%	Cumulative %
One author	776	56.23	56.23
Two author	406	29.42	85.65
Three author	136	9.86	95.51
Four or more authors	62	4.49	100.00
Total	1380	100.00	

**Table 9.** Obsolescence of periodicals literature.

Period intervals (in years)	No. of citations	%	
0-5	192	13.92	13.92
6-10	324	23.48	37.40
11-20	488	35.36	72.76
More than 20	368	26.66	99.42
Incomplete citations	8	0.58	100.00
Total	1380	100.00	

the analyzed data revealed a number of significant aspects of the literature use pattern of the researchers. Findings of the study were compared by the references cited in the theses of the Kurukshetra University.

### Conflict of Interests

The authors have not declared any conflict of interests

### REFERENCES

- Baughman JP (1974). Problems and performance of the Role of Chief Executive in the General Electric Company, 1882-1974( working paper, Graduate School of business Administration Harvard University, 1974).
- Damodaram T (1998). Growth of Doctoral Dissertations on Groundnut In India: A Study. *Ann. Libr. Sci. Document.* 45(1):32-38.
- Devrajan G (1997). *Bibliometric Studies.* Ed. 1:1-294.

- Parameswaran M, Smitha KG (2001). Bibliometric Analysis of LISA. *Ann. Libr. Inform. Stud.* 48(4):149-156.
- Surendra K, Kumar S (2005). A Bibliometric Study of the Journal of Oil Seeds Research, Since 1993-2001. *J. Inform Manage.* 42(3):305-334.
- Vijayakumar M, Naqvi SH (2002). Autorship Trend in azadirachta indica literature: A Bibliometric study. *SRELS J. Inform. Manage.* 39:445-455.