

CITATION ANALYSIS OF PH.D. THESES IN ELECTRONICS AWARDED BY NORTH MAHARASHTRA UNIVERSITY, JALGAON.

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ABSTRACT

A citation analysis of Ph.D. theses Awarded by North Maharashtra University Library was performed as a way of determining the use of information sources made by the scholars of the university. for the present study 10 Ph.D.theses of Electronics were chosen as a sample from the year 2000-2010,there are in all 1452 citations appended in 10 theses. The data was collected from the bibliographical entries listed at the end of the theses, which was used by the researchers for completing the theses. The citations were photocopied and the data was collected. Citation analysis have been carried out to find the types of cited document, the chronological distribution of cited documents, to find out the authorship pattern of cited document. The rank list of cited journals books, to find out the form. Wise distribution, geographical distribution of cited documents, the rank list of cited Journal and the cited authors.

KEYWORDS: Citation analysis, Bibliometrics, Ph.D. Theses, Electronics Authorship Pattern, Ranking of Journals.

1. INTRODUCTION

Citation analysis is an important tool used by the librarian, teachers and Information scientist to represent the relationship which exists between the cited and citing document, the technique of citation analysis involve the process of collection, counting and analysis given in various types of literature. This is the direct

method to analyze the library record to determine the actual use of the documents. These types of information can provide useful ideas for acquisition of important material, selection of documents etc. This can help libraries, it also helps the information system designers, to plan their products and services.

2. THE MAIN OBJECTIVES OF THE STUDY

- Chronological distribution of cited documents.
- Authorship pattern of cited document.
- Geographical distribution of cited document.
- Ranking of journals.
- Indian and Foreign authored citations

3. SCOPE AND LIMITATION

The present study is based on 1452 citations appended at the end of 10 Ph.D. theses on Electronics, awarded by North Maharashtra University, Jalgaon. The span of 10 years was taken into consideration that is from 2000-2010.

4. METHODOLOGY

For the present study 10 Ph.D. theses of Biotechnology were chosen as a sample from the year 2000-2010, there are in all 1452 citations appended in 10 theses. The data was collected from the bibliographical entries listed at the end of the theses, which was used by the researchers for completing the theses. The citations were photocopied and the data was collected. The analysis was done by using various parameters.

5. REVIEW OF LITERATURE

Study of citation analysis Based on references has appeared in the 16 Ph.D. theses of Biotechnology awarded by North Maharashtra University Jalgaon, Maharashtra. The studies like (Kannappanava, 1991; Berhanuddin, 1992; Sangam, 1986; Thoidingjam, 1997; Mishra, 1997; Chikate, 2008) found useful for the

study. Bibliometrics is the most active field of library and information science. Citation analysis study is the major portion of it. Bibliometrics is a sub field in the information science – Bibliometrics is the study of documents and their bibliographic reference and citation structure. Bibliometrics methods have been successfully applied to examine the intellectual structure of several disciplines (Schneider, 2004).

Bibliometrics involves the quantitative analysis of the literature of a subject domain, as represented by bibliographic entries such as key words, classification codes, authors and citations, purpose of the bibliometrics study is to find out the growth and characteristics of digital literature. The major objectives of the bibliometrics study are to find out authorship pattern, author productivity, prolific authors, core journals in subject area, indexing terms frequency, Bradford distribution of articles, year – wise distribution of articles, language –wise distribution of articles and country – wise distribution of journals (Singh, 2007). “Bibliometrics”, Informetrics”, “Scientometrics” and “Technometrics” are unfortunately not very clear and there is choice in the terminology (Wormell 1998). Citation represent the pool of archival knowledge from which authors retrieve established ideas and, in turn generate new research ideas. This knowledge may be disseminated; within an area and across disciplinary boundaries (Sharif, 2004). Citation count and Impact factors can be easily manipulate (Gorman, 2005). Citation impact can be used as a measure of the impact an article has within its particular field. An article being widely read and cited is an indication that it has had influence with other researchers within the field (Turk, 2008). Citation analysis focuses on the investigation; of the relationship between the citing and cited documents or the link expressed in the references (Tang, 2008, Sharif, 2004). Citation analysis is an important tool used to trace scholarly, measure impact, and justify tenure and funding decisions. It allows a research to follow the development and impact of an article through time by looking backward at the references the author cites, and forward to those author who then cite the article (Bauer and Bakkalasi, 2005). The review of literature shows the use –fullness of citation analysis study to the librarians and researchers in the various disciplines.

6. NORTH MAHARASHTRA UNIVERSITY JALGAON, MAHARASHTRA

The North Maharashtra University is one of the upcoming universities in India, the university was established on 15th August, 1990 under the Maharashtra University Act No. XXIX of 1989 as a teaching and affiliating University. It actually started its academic and administrative activities under the leadership of Prof. Dr. N. K. Thakare, the first Vice Chancellor of the university, from academic year 1991-92. The jurisdiction of North Maharashtra University is spread over three districts of North Maharashtra i.e. Jalgaon, Dhule and Nandurbar. The university is imparting education to students, through various courses at under graduate, post graduate, doctoral and post doctoral level, under 09 faculties, which includes Science, Engg. & Technology , Education , Medicine & Pharmacy , Ayurvedic Medicine , Arts & fine arts, Commerce and Management, Mental, Moral & Social Sciences, Law faculties .

North Maharashtra University, Jalgaon was ranked 40 amongst universities in India, as per the survey done by India Today in June 2013 and ranked 27th amongst 742 universities in India and 1st amongst the State Universities in Maharashtra as per the survey conducted by "Careers360" magazine, India's 100 BEST Universities 2014, (NMU Official Home page.,2014).

7. RESULT AND DISCUSSION

7.1 Form Wise distribution of Cited Literature

The Table No. 01 depicted that out of 1452 citations 1287 (88.64%) citations were from journal, so it can be said that the most of the authors or researchers depends up on the journal literature for their study, were as books 123 (8.47%), thesis 18 (1.24%), Conference 21 (1.45%) and remaining citations were collected from web sites 3 (0.21%).

Table No.: 01 Form wise distribution of Citation

Sr. No	Type of Document	Citation	%
1	Journal	1287	88.64
2	Book	123	8.47
3	Thesis	18	1.24
4	Conference	21	1.45
5	Web	3	0.21
	Total	1452	100

Hence, the study shows that Electronics researchers have used mostly Journal articles Conference proceedings, Web resources and Theses were used at minimal.

7.2 Chronological distribution of Citations

The Table No. 02 depicted that out of 2867 citations 1187 (41.40%) citations were from 1991-2000, followed by 563 (19.64%) citations from 2001 – 2010 and 542 (18.90%) citations from 1981- 1990.

Table No: 02 Chronological Distribution of citations

Sr	Year	Citation	Percentage
1	1840-1940	15	1.03
2	1941-1950	7	0.48
3	1951-1960	25	1.72
4	1961-1970	51	3.51
5	1971-1980	127	8.75
6	1981-1990	157	10.81
7	1991-2000	475	32.71
8	2001-2010	581	40.01
9	Not Available	14	0.96
Total		1452	100

It can be stated that, 83.54% of citations are from the period of 1981-2010 and remaining 16.46% of citations are from 1840 – 1980.

7.3 Country wise distribution of Citations

To explore the scattering of citations according to country the authors have used the country of publication as the basis of citation.

Analysis of the data indicates that the 1452 citations were scattered in the publications that were published from more than 12 countries. Among them USA ranked first with 47.11% of citations, followed by Netherlands (17.01%) and England (12.05%). Publications from these countries received about 67.74% of citations and 32.26% citations were from the remaining countries.

Table No.: 03 Country wise Distribution of citations

Sr	Name of Country	Rank	Citation	%
1	U S	1	684	47.11
2	Netherlands	2	247	17.01
3	England	3	175	12.05
4	India	4	85	5.85
5	China	5	33	2.27
6	Japan	6	24	1.65
7	Romania	7	23	1.58
8	Switzerland	8	18	1.24
9	Germany	9	14	0.96
10	Canada	10	11	0.76
11	Australia	11	6	0.41
12	South Africa	12	5	0.34
13	Not Available	13	127	8.75
	Total		1452	100.00

7.4 Place wise distribution of Citations

Similar to the country wise scattering of the citations, place wise distribution attempt was made to identify the top ten places of publications.

Analysis of the data indicates that the 1452 citations were scattered in the publications that were published from more than 236 places. Among them New York ranked first with 27.69% of citations, followed by Melville (11.43%) and Amsterdam (8.54%). Publications from these countries received about 47.66% of citations and 52.34% citations were from the remaining countries.

Table No.: 04 Place wise Distribution of citations

Sr	Places	Rank	Citation	Percentage
1	New York	1	402	27.69
2	Melville	2	166	11.43
3	Amsterdam	3	124	8.54
4	London	4	53	3.65
5	Beijing	5	31	2.13
6	Stevenage	6	26	1.79
7	Washington, D.C	6	26	1.79
8	Tokyo	7	24	1.65
9	Bucharest	8	23	1.58
10	Bangalore	9	20	1.38
11	California	9	20	1.38
12	Easton	9	20	1.38
13	Jalgaon	10	19	1.31
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7.5 Authorship Pattern in Electronics

Authorship pattern had been analyzed to determine the percentage of authors in single, two or more than two authors. It is clear that most of the citations (82.44%) are multi authored. This indicates that there is high collaboration amongst the authors in Electronics.

Table No.: 05 Authorship pattern in Electronics

Sr	Authorship	Total	Percent
1	Single Author	255	17.56
2	Two Authors	538	37.05
3	Three Authors	76	5.23
4	Four Authors	195	13.43
5	Five Authors	122	8.40
6	Six Authors	98	6.75
7	Seven Authors	41	2.82
8	Eight Authors	39	2.69
9	Nine Authors	17	1.17
10	Ten authors	16	1.10
11	Not Available	55	3.79
	Total	1452	100

7.6 Ranking of Core Journals in Electronics

The journals which are highly cited in document, that journal is most important to keep in the library, for that purpose journal ranking is essential for the librarian as well as researchers. The rank lists of cited journals are taken from 2307 citations from various forms of cited documents. The journals were grouped into different ranks; according to their frequency occurrence in the total number of citation ranked journals have been given in the Table No. 06.

Table No.: 06 Rank list of core journals in Electronics

Sr. No	Journal Title	Rank	Citation	Percentage
1	Applied Physics Letters	1	166	12.90
2	Journal of Applied Physics.	2	144	11.19
3	Thin Solid Films	3	69	5.36
4	IEEE Journal of Quantum Electronics	4	64	4.97
5	IEEE Transactions on Electron Devices.	5	42	3.26
6	The Journal of Vacuum Science and Technology.	6	34	2.64
7	Physics Review	7	23	1.79
8	Japanese Journal of Applied Physics: JJAP	8	18	1.40
9	Nature	8	18	1.40
10	Semiconductor Science and Technology	9	17	1.32
11	Electronics letters	10	16	1.24
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The ranked list of core journals as reflected in the citations is presented in Table 6. It is observed that researchers in Electronics have cited a total of 330 journals. From which only 11 journals, in which the frequency of occurrence is least 16, are listed in the table. The study finds that top two journals namely Applied Physics Letter with 166 (12.90 %) and Journal of Applied Physics with 144 (11.19 %), which shows that articles from these two journals are highly cited.

7.7 Indian Author Citations to Foreign Author Citations Ratio

To explore the distribution of Indian author citations to foreign author's citations the authors were classified into Indian authors and foreign author citations based on the name of the author. The study finds that 85.40 % citations are from foreign authors, while 5.85 % citations are from Indian authors.

Table No.: 07 Author Ranking in Biotechnology

Sr. No	Geographical Area	Citation	Percentage
1	Indian	85	5.85
2	Foreign	1240	85.40
3	Not available	127	8.75
	Total	1452	100

It can be stated that, foreign authored citations are more than Indian authored citations.

8. CONCLUSIONS

The study of citation analysis of 10 Ph.D. theses in Electronics shows that most cited documents in pure science literature are from Journal 1287 (88.64%) and remaining 165 (11.36%) citations were from Conference proceedings, theses and others. So it was concluded that, researchers depend more on journal literature for their investigations. The chronological distribution of citations shows that maximum number of citations are covered during the period of 1991-2000 i.e. 528 (72.73%). The authorship pattern of citations shows that the single authored citations are less in number than others that is 255 (17.56 %). Ranking of journals shows that the Applied Physics Letters cited 166 (12.90%) ranked first which was highly cited journal by researchers. The geographical distributions shows that the foreign literature is mostly used for the research by the researchers that is 1240 (85.40 %).

During the study it was found that citations are not in standard format. Researchers have not used any uniform pattern/sequence while citing the research materials. It is observed that somewhere year is missing, somewhere publisher's name and place. This kind of study will definitely help the libraries in selection of useful sources as there is explosion of information and documents in the form of books and journals. The ranking of journals can be used by librarians and researchers to select the journals of greater importance in a particular subject area.

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