CITATION ANALYSIS OF PH.D. THESES IN BOTANY SUBMITTED TO MARATHWADA AGRICULTURAL UNIVERSITY, PARBHANI DURING 2003 TO 2012

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Abstract

The paper presents citation analysis of Ph.D. theses submitted in the subject Botany during 2003 to 2012. The study is based on the 2478 citations. The study present analysis of citations on the basis of forms of literature, country wise scattering, authorship pattern and chronological distribution . the study revealed that journals are the dominant source of information and joint authorship prevails in the citations

Introduction

Citation analysis is an activity of analyzing the citations or references. It is one of the popular method employed in recent days for identification of core documents in particular subject field or for a specific scientific community in a geographical proximity. In fact citation study is one of the effective and indirect method to understand the information requirement of users

Review of Literature

Martyn J.[1] (1975) defined citation analysis as analysis of citations and emphasized that this technique is used for putting things in some kind of rank or order. Shokeen A. and Kaushik S.K.[2](2003) in their research paper reports the finding of citation study. The study reveals that journal articles are predominant, trend of solo authorship and majority of documents cited were published not more than 20 years ago. Citation study made by Biswas C. B. and Haque M.D.H.[3](2008) of Ph.D. theses in Veterinary Science reveals that journal is the preferred source of information. Scholars preferred to cite documents published from India ,USA &UK. Singh K.P. and Bebi M.S.[4](2013) carried out a citation study of doctoral dissertation . Findings of the study indicates that highest number of citations are single authored (83.94%) ,67.23% citations from books and country wise analysis of citations shows that 45.52 % citations are from India.

Objectives of the Study

The objectives of the present study are

1. To identify the forms of documents mostly cited by researchers.
2. To study the country wise distribution of citation.
3. To study the authorship pattern
4. To study the chronological distribution of citation to determine the productive period of literature.

Research Methodology

The source of the data for present study is the 11 Ph.D. theses submitted to Marathwada Agricultural University, Parbhani during 2003 to 2012 in the subject Botany. Footnotes, references given in these theses were collected and recorded on data sheet. In all 2478 citations were found. As per objectives of the study citations were analysed and conclusions were drawn.

Data Analysis and Interpretation

Table No.- 1 : Form wise Distribution of Citations

Sr. No.	Source of Documents	No. of Citations	Percentage	Cumulative Citations	Cumulative Percentage
1	Journals	1842	74.33	1842	74.33
2	Books	176	7.10	2018	81.44
3	Reports	144	5.81	2162	87.25
4	Theses	73	2.95	2235	90.19
5	Conference Papers	61	2.46	2296	92.66
6	Websites	14	0.56	2310	93.22
7	Other	168	6.78	2478	100.00
	Total	**2478**	**100.00**	**2478**	**100.00**

Data presented in above table shows the distribution of citations on the basis of bibliographic form. It is observed from the above table that the journals contributes the highest number of citations i.e. 1842 (74.33%) of the total citations. Books with 176(7.10%) citations is the second most cited source of information, followed by reports have 144(5.81%) citations, theses 73(2.95%), conference papers 61(2.46%) and website 14(0.56%) citations.

Hence from the study it is revealed that information published in the form of journals is the most preferred source of information. In present study 74.33% citations are of journals.

Country wise Distribution of Citations

Data presented in table no. 2 shows the country wise distribution of citations

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Table No.- 2 : Country wise Distribution of Citations

Sr. No.	Name of Country	No. of Citations	Percentage	Cumulative Citations	Cumulative Percentage
1	India	1792	72.32	1792	72.32
2	U.S.A.	524	21.15	2316	93.46
3	U.K.	147	5.93	2463	99.39
4	Pakistan	10	0.40	2473	99.80
5	Australia	3	0.12	2476	99.92
6	China	1	0.04	2477	99.96
7	Italy	1	0.04	2478	100.00
	Total	**2478**	**100.00**	**2478**	**100.00**

From the data presented in above table, it is found that information sources published form 07 countries have been cited by researchers.

It is observed form the above table that out of total 2478 citations, 1792(72.32%) citations were from India followed by USA with 524(21.15%) citations and UK with 147(5.93%) citations. Information published from remaining 04 countries have contributed only 15(0.61%) citations.

Hence from the study it can be conclude that information sources of Indian origin are preferred by researchers in the subject Botany.

The reason for the popularity of information published in India may be due to the fact that information published in India is

available in ample as compare to the information published in overseas.

Obsolescence of Journal Citations

Obsolescence is defined as the 'decline over time in validity or utility of information'. The same applies to documents. Half –life denotes the time during which half of the currently active literature was published. This period of citations of the Journal articles is referred to as half life of journals or often quoted as obsolescence of the literature.

Following table gives information about obsolescence of journal citations.

Table No.- 3 : Obsolescence of Journal Citations

Sr. No.	Age old	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Citations	Percentage	Cumulative Citations	Cumulative Percentag
1	0	4	1	6	1	3	0	0	9	0	0	24	1.30	24	1.30
2	1	8	2	14	4	2	0	0	8	0	0	38	2.06	62	3.37
3	2	3	0	21	4	8	0	0	10	0	0	46	2.50	108	5.86
4	3	4	7	37	12	7	0	0	5	0	0	72	3.91	180	9.77
5	4	11	4	26	10	10	0	0	9	0	0	70	3.80	250	13.57
6	5	9	3	37	7	6	0	0	11	0	0	73	3.96	323	17.54
7	6	9	4	40	17	4	0	0	6	0	0	80	4.34	403	21.88
8	7	14	7	45	6	12	0	0	7	0	0	91	4.94	494	26.82
9	8	11	7	46	12	14	0	0	3	0	0	93	5.05	587	31.87
10	9	9	6	37	7	12	0	0	6	0	0	77	4.18	664	36.05
11	10	8	5	32	7	15	0	0	5	0	0	72	3.91	736	39.96
12	11	12	4	45	13	10	0	0	4	0	0	88	4.78	824	44.73
13	12	2	6	32	8	10	0	0	7	0	0	65	3.53	889	48.26
14	13	4	3	39	6	9	0	0	3	0	0	64	3.47	953	51.74
15	14	5	7	11	7	10	0	0	5	0	0	45	2.44	998	54.18
16	15	10	6	24	5	8	0	0	4	0	0	57	3.09	1055	57.27
17	16	4	2	17	7	1	0	0	2	0	0	33	1.79	1088	59.07
18	17	6	1	14	2	6	0	0	3	0	0	32	1.74	1120	60.80
19	18	3	1	13	2	4	0	0	8	0	0	31	1.68	1151	62.49
20	19	0	1	10	1	6	0	0	4	0	0	22	1.19	1173	63.68
21	20	2	4	13	5	3	0	0	4	0	0	31	1.68	1204	65.36
22	21	1	0	12	8	3	0	0	4	0	0	28	1.52	1232	66.88
23	22	5	3	24	6	12	0	0	1	0	0	51	2.77	1283	69.65
24	23 to 84	40	69	167	71	128	0	0	84	0	0	559	30.35	1842	100
Total		**184**	**153**	**762**	**228**	**303**	**0**	**0**	**212**	**0**	**0**	**1842**	**100**	**1842**	**100.00**

From the data presented in above table it is observed that out of 1842 total citations, nearly half of it i.e. 953(51.74)% are 13 year old.

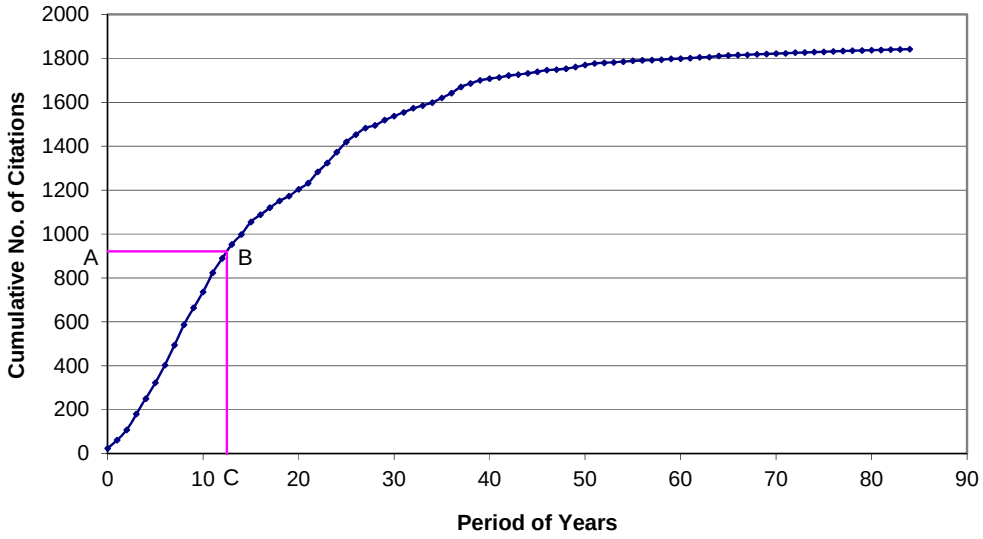

Figure No.- 1 : Half Life Period of Journal Citations

To calculate the exact half life period of journals citations in the present study a graph is plotted based on the data given in above table. Taking the period of years on x-axis and cumulative number of citations on y-axis. A parallel line from y-axis is drawn from the point A (representing the half the number of total citations) to meet the curve at point B, a perpendicular BC is drawn to the x-axis.

The line OA represents the half of total citations i.e. 921 and the line OC represents the half life period of journals citations in the subject Botany which is 12.5 years.

Hence from the analysis it is revealed that half life period of journal citation in the subject Botany is 12.5 years.

Authorship Pattern of Journal Citations

Following table shows the authorship pattern of the Journal citations.

Table No.- 4 : Authorship Pattern of Journal Citations

Sr. No.	No. of Author	Citations	Percentage	Cumulative Citations	Cumulative Percentage
1	1	305	16.56	305	16.56
2	2	574	31.16	879	47.71
3	3	435	23.62	1314	71.33
4	4	299	16.23	1613	87.56
5	5	122	6.62	1735	94.19
6	6	80	4.34	1815	98.53
7	7	27	1.47	1842	100.00
Total		**1842**	**100.00**	**1842.00**	**100.00**

It is observed from the data presented in above table that the highest number of citations are of two authors, out of total 1842 journal citations, 574 citations are of two authors and the percentage is 31.16%.

Out of 1842 citations only 305 citations are from single author with percentage 16.56%

and 435 citations are from three authors with percentage 23.62%, 299(16.23%) citations are from four authors, 122(6.62%) citations from five authors, 80(4.34%) citations are from six authors and at last 27(1.47%) citations are from seven authors.

From the study it is revealed that maximum numbers of i.e. 83.44% citations are being contributed under joint authorship whereas only 16.56% citations are of single authors.

Hence, from the study it can be said that in the subject Botany trend towards joint authorship is found

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Degree of Author Collaboration (Single Vs Multiple Authors)

Table No. - 4A: Single Vs Multi Authored Citations

Sr. No.	No. of Authors	No. of Citations	Percentage
1	Single	305	16.56
2	Multiple	1537	83.44
Total		**1842**	**100.00**

The extent of collaboration in research can be measured with the help of multi-authored papers. To determine the degree of collaboration in quantitative terms the formula given by Subramaneyam has been used.

The formula is as $C = \frac{Nm}{Nm + Ns}$

Where C = Degree of collaboration in a discipline.
Nm = Number of multi authored paper.
Ns = Number of single authored papers

$$C = \frac{1537}{1537 + 305}$$

$$= \frac{1537}{1842}$$

$$= 0.834$$

The rate of collaboration is 0.834. This reflects the degree of prevalence of multiple authored publications in Botany, which reflects higher level of collaboration. Figure no. 2 illustrates the authorship pattern of journal citations.

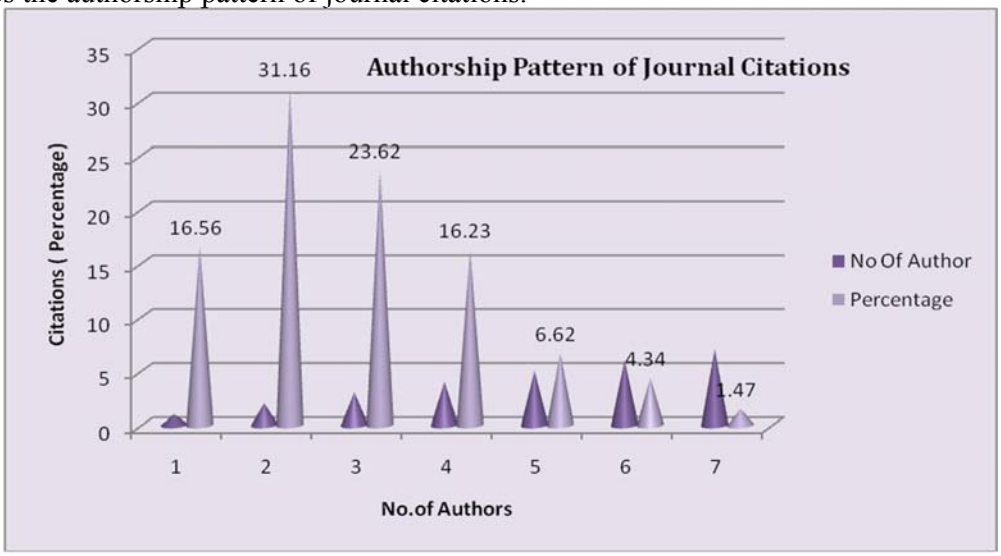

Figure No.- 2 : Authorship Pattern of Journal Citations

Chronological Distribution of Journal Citations (Time Dispersion)

Year wise distribution of citations helps to test the recency in citation. Following table presents the year wise distribution of citations.

Table No.- 5 : Chronological Distribution of Journal Citations

Sr. No.	Period	Citations	Percentage	Cumulative Citations	Cumulative Percentage
1	2003-2012	164	8.90	164	8.90
2	1993-2002	747	40.55	911	49.46
3	1983-1992	411	22.31	1322	71.77
4	1973-1982	266	14.44	1588	86.21
5	1963-1972	138	7.49	1726	93.70
6	1953-1962	56	3.04	1782	96.74
7	1943-1952	19	1.03	1801	97.77
8	1933-1942	27	1.46	1828	99.23
9	1923-1932	14	0.76	1842	100.00
Total		**1842**	**100.00**	**1842**	**100.00**

Table no. 5 examines the time dispersion of citations in Botany. Here 1842 citations were analyzed for determining the age of utility of the publications. The analysis of citations reveals that time span of years 1993-2002 is the most productive time span. Journal articles published during this period received highest number of i.e. 747 (40.55%) citations, followed by journal articles published during 1983-1992 received second highest i.e. 411(22.31%) citations.

Further from the study it is also observed that almost half of citations i.e. 49.46% citations are of the journals articles which are published before 1993.

Conclusion

11 theses were submitted in the subject botany during study period . Research scholars cited 2478 information sources in all these theses .On the basis of study it is evident that information published in the form of journals is the most preferred source of information , scholars cite 74.33% journal papers out of total citations. The documents published from India are preferred by scholars. Obsolescence study reveals that research scholars go back to 84 years for their study in relation to journals and Half - life of information published in form of journals is 12.5 years. The analysis of authorship pattern of journal citations reveals that 83.44% citations were to paper written by two or more than two author papers.

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