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CITATION ANALYSIS OF GEOGRAPHY PH.D THESES AWARDED BY SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI

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ABSTRACT:

Citation analysis of 2542 citation drawn from 21 Ph.D theses of Geography of Sant Gadge Baba Amravati University, Amravati during 1983-2010 shows that books were the most cited form of scientist in Geography. Bradford's Law of Scattering is testified by the application of Leimkuhler Model and it was found that the percentage of error is very negligible i.e. 0.017%. English language was most preferred i.e. (95.71%) language by the scientist. Most of the citations in books and journals were contributed by single author i.e. (75.55%) and (77.71%) respectively.

KEYWORDS: *Citation analysis, Bibliometrics, Bradford's Law, Sant Gadge Baba Amravati University,*

INTRODUCTION:

Geography is the science that studies the lands, the features, the inhabitants, and the phenomena of the Earth. A literal translation would be "to describe or write about the Earth". The first person to use the word "geography" was Eratosthenes (276-194 BC). Four historical traditions in geographical research are the spatial analysis of the natural and the human

phenomena (geography as the study of distribution), the area studies (places and regions), the study of the man-land relationship, and the research in the earth sciences. Nonetheless, modern geography is an all-encompassing discipline that foremost seeks to understand the Earth and all of its human and natural complexities - not merely where objects are, but how they have changed and come to be. Geography has been called "the world discipline" and "the bridge between the human and the physical science".

REVIEW OF LITERATURE:

Citation analysis is one of the popular methods employed in recent days for the identification of core documents for a particular scientific community in a geographical proximity. Citation method is used in the present study to understand the information needs, use pattern and use behavior of geography scientists.

John Martyn (1975) citation analysis is defined as the analysis of the citations or references which form part of the scholarly apparatus of primary communication. The technique is largely used for putting things in some kind of rank or order, whether journals, papers or authors. The frequency of citation of a document is in some sense an indication of the importance of that document. The appearance of Science Citation Index gave citation analysis a considerable stimulus, since before this it had been confined to producing citation counts to rank journals. Important studies in citation analysis before the introduction of SCI are those by Brown, Raisig and Westbrook; each is briefly discussed. Techniques of citation analysis involve counting or mapping citations, bibliographic coupling and co-citation studies and these are described. **O'Conner (1979)** in her doctoral dissertation assessed the

extent to which library science dissertations were disseminated and used by authors in library science journals. A search was made of 1206 library science dissertations from 1925 to 1975 in social sciences citation index volumes for 1970-1976. The study was done considering the following (i) citation which published the article or item was located from journal. (ii) physical form of the source item was noted, viz, book review, article. The main findings were 789 citations were located from 132 dissertations, library science journals contributed for 88.6 percent citations, articles alone provided 43.3 percent citations, and 69.6 percent citations indicated the use of dissertation in their content which formed a considerable part of the total contribution of the source material. Jessy John (1997) the Ph.D theses in social science accepted by the Kerala University, Thiruvananthapuram during 1980-1991 are taken as the source data for the present study. Citation approach is the methodology choosen for the study which is based on the analysis of the bibliographic references appended to the theses. For this study, 37 Ph.D theses were selected from various disciplines in social science. 6260 citations were collected from 37 theses. The study based on the analysis of bibliographic references appended to the theses, will provide an apparent view of information needs and use pattern of social scientist. It will also provide guidelines in the decision making process with regard to the acquisition and organization of documents in the social science libraries.

OBJECTIVES OF THE STUDY:

1. To identify the different type of forms of document used by the researchers in Gepgraphy of Sant Gadge Baba Amravati University, Amravati.
2. The distribution of citations according to subject, language and country of origin has to be derived.
3. The researchers use pattern of journals in Geography has to be examined by applying Bradford's law of Scattering.
4. To observe authorship pattern in Geography.
5. To study the growth of knowledge and research trends in Geography.

SCOPE AND LIMITATIONS:

The analytical study was limited to the Ph.D theses of Geography awarded by Sant Gadge Baba Amravati University, Amravati (Maharashtra, India) during the year 1983-2010. Twenty one Ph.D theses were analyzed for the present study.

METHODOLOGY:

The present study was based on the analysis of bibliographic units, which include the foot notes and the bibliographic references. The information on foot notes cited in the text and the data on the bibliographic entries listed only at the end of each theses collected and their form, place of publication and year of appearance noted on a worksheet designed for this purpose. The present study concerned with the sources referred in Ph.D theses. Citation

analysis technique was used and statistical software like MS-Excel and SPSS was used for analyzing the data.

ANALYSIS AND RESULTS:

To study the pattern of literature in all 2542 citations were analyzed drawn from 21 Ph.D theses submitted and awarded during 1983 – 2010.The average number of citation per theses was 121.04.

Table No. 1

Chronological Growth of Ph.D Theses

Sr. No	Year	No of Theses	No of Citatios	Percentage
1	1998	1	261	10.27
2	2002	1	141	5.55
3	2003	1	239	9.4
4	2004	2	347	13.65
5	2006	4	365	14.36
6	2007	2	178	7
7	2008	3	228	8.97
8	2009	1	73	2.87
9	2010	6	710	27.93
	Total	**21**	**2542**	**100**

Table no. 1 explains the number of doctoral degree awarded in the field of Geography starting from the 1983-2010. It was clear from the table that research at doctoral level was quite unsatisfactory till 2003. But after 2003 the research productivity has been increased.

Table No. 2

Formwise Distribution of Citations

Sr. No	Type of Documents	No of Citations		Total	Cumulative	Percentage	Cumulative Percentage
		1991-2000	2001-2010				
1	Journal	79	854	933	933	36.7	36.7
2	Book	149	943	1092	2025	42.96	79.66
3	Govt Doc / Report	22	90	112	2137	4.41	84.07
4	Newspaper	-	4	4	2141	0.16	84.23
5	Conf Paper / Seminar	-	29	29	2170	1.14	85.37
6	Magazine	9	28	37	2207	1.46	86.83
7	Dissertation / Theses	1	22	23	2230	0.9	87.73
8	Other	1	311	312	2542	12.27	100
	Total	**261**	**2281**	**2542**		**100**	

In the analysis of 8 special categories formed on the basis of type of cited documents as shows in table no. 2, books were found to be the most preferred source of information with 1092 (42.96%) citations, followed by journal with 933(36.70%) citations. Government Document/ Report shared 112 (4.41%) of the total citations. While Magazine like India today, Lokprabha, Navabharat and others are represented by 37 (1.46%). Conference Paper, Dissertation/ Theses and Newspaper were cited with 29 (1.14%), 23 (0.90%) and 4 (0.16%) respectively. Others mentioned in the table includes pamphlets, personnel communication (discussion paper), lectures, etc. which comes to 311 citations i.e. 12.27% of the total.

Table No. 3

Ranking and Scattering of Journals

Sr. No	Name of Journal	Country	Rank	No of Citation	Cumulative	%	Cumulative Percentage
1	National Geographical Journal of India	India	I	114	114	12.22	12.22
2	Geographical Review of India	India	II	106	220	11.36	23.58
3	Economic Geography	U.S.	III	73	293	7.82	31.4
4	The Geographical Review	U.S.	IV	63	356	6.75	38.15
5	The Indian Geographical Journal	India	V	40	396	4.29	42.44
6	National Geographer	U.S.	VI	35	431	3.75	46.19
7	Annals of the Association of American Geographers	U.S.	VII	34	465	3.64	49.83
8	The Geographer	India	VIII	27	492	2.89	52.72
9	The Deccan Geographer	India	IX	25	517	2.68	55.4
10	Indian Journal of agricultural Economics	India	X	22	539	2.36	57.76
11	Chinese Journal of Population Science	China	XI	18	557	1.93	59.69
12	Journal of the Geographical Association	U.K.	XII	17	574	1.82	61.51
13	Maharashtra Bhugolshastra Sanshodhan Patrika	India	XIII	16	590	1.71	63.22
14	Geographical Journal of India	India	XIV	15	605	1.61	64.83
15	Journal of Geography	U.K.	XIV	15	620	1.61	66.44
16	The Indian Journal of Marketing Geography	India	XV	12	632	1.29	67.73
17	Transactions Institute of Indian Geographers	India	XVI	11	643	1.18	68.91
18	Transactions of India Council of Geographers	India	XVI	11	654	1.18	70.09
19	National Geography		XVII	10	664	1.08	71.17
20	Urban Geography	U.S.	XVII	10	674	1.08	72.25

21	National Geographic Society	U.S.	XVIII	9	683	0.97	73.22
22	Population Research	U.S.	XIX	8	691	0.86	74.08
23	Rural Sociology		XIX	8	699	0.86	74.94
24	The Geographical Journal	U.K.	XIX	8	707	0.86	75.8
25	Annals of the National Association of Geographers	India	XX	7	714	0.75	76.55
26	Geografiska Annaler	Sweden	XX	7	721	0.75	77.3
27	Indian Journal of Landscape System and Ecological Studies	India	XX	7	728	0.75	78.05
28	The Professional Geographer	U.S.	XX	7	735	0.75	78.8
29	Transactions Institute of British Geographer	U.K.	XX	7	742	0.75	79.55
30	China Quarterly	China	XXI	6	748	0.64	80.19
31	Geology		XXI	6	754	0.64	80.83
32	Journal of Agricultural Economics	U.S.	XXI	6	760	0.64	81.47
33	National Geographic Journal		XXI	6	766	0.64	82.11
34	The Deccan Geographical Journal	India	XXII	5	771	0.54	82.65
35	Human Geography		XXII	5	776	0.54	83.19
36	Indian Geography	India	XXIII	4	780	0.43	83.62
37	Journal of Population Science		XXIII	4	784	0.43	84.05
38	Kurukshetra	India	XXIII	4	788	0.43	84.48
39	National Geographer Journal of India	India	XXIII	4	792	0.43	84.91
40	Social Science in China	China	XXIII	4	796	0.43	85.34
41	The Journal of Tropical Geography		XXIII	4	800	0.43	85.77
42	American Journal of Science	U.S.	XXIV	3	803	0.32	86.09
43	American Sociological Review	U.S.	XXIV	3	806	0.32	86.41
44	Annala of the Association of Rajasthan Geographer	India	XXIV	3	809	0.32	86.73
45	Geographical Outlook	U.S.	XXIV	3	812	0.32	87.05

46	Geography of Annual Review of Anthropology		XXIV	3	815	0.32	87.37
47	Indian Geographical Studies	India	XXIV	3	818	0.32	87.69
48	International Geography	U.S.	XXIV	3	821	0.32	88.01
49	Journal of African History	Africa	XXIV	3	824	0.32	88.33
50	Journal of India History	India	XXIV	3	827	0.32	88.65
51	Journal of Madras Geographical Association	India	XXIV	3	830	0.32	88.97
52	Journal of Rural Development	India	XXIV	3	833	0.32	89.29
53	Landscope System and Ecological Studies		XXIV	3	836	0.32	89.61
54	Management and Labour Studies	U.S.	XXIV	3	839	0.32	89.93
55	Pacific Viewpoint	U.K.	XXIV	3	842	0.32	90.25
56	Population Geography	U.S.	XXIV	3	845	0.32	90.57
57	Professional Geographer	U.S.	XXIV	3	848	0.32	90.89
58	30 Journals having Two Citations each		XXV	60	908	6.43	97.32
59	25 Journals having One Citation each		XXVI	25	933	2.68	100
	Total			**933**		**100**	

Table no. 3 clearly shows that, the 'National Geographical Journal of India' was the most productive journal in respect of citations. 'Geographical Review of India' ranks second whereas 'Economic Geography' goes to third position.

Application of Leimkuhler Model

In the present study of Journal Citations, for application of Bradford's Law the citation distribution were divided in three zones (p=3 where p denote the Number of zones) then by using the mathematical formula,

$k = (e^y y_m)^{1/p}$

$e^y = (1.781)$

The value of Bradford's multiplier k is calculated as follows:

In the present case y_m= number of items in the most productive source = 114 and hence

$k = (1.781 \text{ X } 114)^{1/3} = 5.87$

$y_0 = A/P$

where, A denotes the total number of citations = 933

and, p denotes the number of zones = 3

$y_0 = 933/3 = 311$

and r_0 = number of journals in the nucleus of Bradford is calculated as

$r_0 = T (k-1) / (k^p-1)$ where T = Total number of journals

$r_0 = 112 (5.87-1) / (5.87^3-1)$

$r_0 = 2.71$

$a = y_0 / \log k$

Log of 5.87 = 0.7686

a = 311 / 0.7686

a = 404.63

$b = k-1/r_0$

b = 5.87 -1 / 2.71

b = 1.79

The Bradford groups thus formed were shown in table 4

Table No. 4

Scattering of Journals and Citations over Bradford's Zones

Zone	Number of Journals	Percentage of Journals	Number of Citations
1	3	2.68	293
2	16	14.29	371
3	93	83.03	269
Total	**112**	**100**	**933**

Table no. 4 shows that, the number of journals in the nucleus was 2.71 and the mean value of the Bradford multiplier was 5.87. Therefore the Bradford's distribution is written as:

$2.71 : 2.71 \text{ X } 5.87 : 2.71 \text{ X } (5.87)^2 = 1 : n : n^2$

i:e 2.71 : 15.90 : 93.37 = 111.98

Percentage of error = 112 – 111.98 / 112 X 100 = 0.017 %

Here the percentage of error is negligible. It was observed that, the number of journals contributing references to each zone increases by multiplier of 5.87. The data of the zonal analysis shows that the first zone containing 3 journals contributed 293 citations, 16 journals of second zone produced 371 and the 93 journals of third zone produced 269 citations. Here the mean value of the Bradford Multiplier (BM) is large i.e. two digits. The larger the Bradford Multiplier, presumably, the higher is the scatter. Although the value of Bradford Multiplier also depends on the size of the data, smaller the data, smaller the value of Bradford Multiplier.

Since the percentage of error is very much negligible the Bradford's law fits very well in this data set. The study identifies 3 journals as the nucleus journals that were most cited by

the researcher of Geography, out of the total of 112 journals, 31.40 percent of the total citations of researchers of Geography, 16 journals i.e. 39.77 percent and the remaining 93 journals i.e 28.83 percent of the total citations appended in journals. The three zones are not exactly the one third of the total citations as proved by Bradford. There is no exact match in the proportion of number of journals and the number of papers of each group.

Table No. 5

Subject wise Distribution of Citations

Sr. No	Name of Subject	No of Citation	Cumulative	Percentage	Cumulative Percentage
1	Geography	323	323	12.71	12.71
2	Research Methodology	210	533	8.26	20.97
3	Population Geography	133	666	5.23	26.2
4	Social Geography	125	791	4.92	31.12
5	Geogeaphical Development	110	901	4.33	35.45
6	Tourism Geography	105	1006	4.13	39.58
7	Agriculture	102	1108	4.01	43.59
8	Marketing Geography	98	1206	3.86	47.45
9	Geology	77	1283	3.03	50.48
10	Geographical History	69	1352	2.71	53.19
11	Environmental Pollution	68	1420	2.68	55.87
12	Medical Science	62	1482	2.44	58.31
13	Trade	55	1537	2.16	60.47
14	Industrialization	53	1590	2.08	62.55
15	Education	51	1641	2.00	64.55
16	Maps and Atlas	49	1690	1.93	66.48
17	Administration	47	1737	1.85	68.33
18	Regional Geography	42	1779	1.65	69.98
19	Statistical Geography	41	1820	1.61	71.59
20	Geographical Problem	40	1860	1.57	73.16

21	Water	37	1897	1.45	74.61
22	Geomorphology	35	1932	1.38	75.99
23	Green Revolution	33	1965	1.3	77.29
24	Geographical Management	32	1997	1.26	78.55
25	Urban Geography	30	2027	1.18	79.73
26	Rural Geography	30	2057	1.18	80.91
27	Human Geography	29	2086	1.14	82.05
28	watershed	26	2112	1.02	83.07
29	Physical Geography	25	2137	0.98	84.05
30	Regional Geography	25	2162	0.98	85.03
31	Economic Geography	24	2186	0.94	85.97
32	Food	24	2210	0.94	86.91
33	Community Development	23	2233	0.90	87.81
34	Morphology	19	2252	0.75	88.56
35	Encyclopedia	15	2267	0.59	89.15
36	Geographical Planning	15	2282	0.59	89.74
37	Spatial Geography	14	2296	0.55	90.29
38	Farming	14	2310	0.55	90.84
39	Rivers	14	2324	0.55	91.39
40	Consumer	13	2337	0.51	91.9
41	Social Services	13	2350	0.51	92.41
42	Directory	10	2360	0.39	92.8
43	Dictionary	9	2369	0.35	93.15
44	Law	9	2378	0.35	93.5
45	Scientific Geography	9	2387	0.35	93.85
46	Handbook	7	2394	0.28	94.13
47	Cartography	6	2400	0.24	94.37
48	Demography	5	2405	0.2	94.57
49	Cultural Geography	5	2410	0.2	94.77
50	Tribal Geography	5	2415	0.2	94.97
51	Ecology	3	2418	0.13	95.1
52	Globalization	3	2421	0.13	95.23
53	Civilization	2	2423	0.08	95.31
54	Topography	2	2425	0.08	95.39
55	Behavioral Geography	1	2426	0.04	95.43

56	Erosion	1	2427	0.04	95.47
57	Life Science	1	2428	0.04	95.51
58	Micro geomorphology	1	2429	0.04	95.55
59	Quantative Geography	1	2430	0.04	95.59
60	Govt. Publication	112	2542	4.41	100
	Total	**2542**		**100**	

Subject wise distribution of citations as given in the table no. 5 shows that, Geography occupied the first rank with 323 (12.71%) citations. The second and third rank goes to Research Methodology 210 (8.26%) and third rank goes to Population Geography 133 (5.23%) respectively. There were 112 (4.41%) citations were from Government Publications.

Table No. 6

Language Wise Distribution of Citations

Sr. No	Language	No of Citations		Total	Cumulative	Percentage	Cumulative Percentage
		1991-2000	2001-2010				
1	English	261	2172	2433	2433	95.71	95.71
2	Marathi	-	97	97	2530	3.82	99.53
3	Hindi	-	12	12	2542	0.47	100
	Total	**261**	**2281**	**2542**		**100**	

Table no. 6 shows the distribution of citations according to language. As the table shows that out of a total 2542 citations, 2433 of them were in English language forming 95.71% of the total. The second place was occupied by Marathi language with 97 (3.82%) citations. The third rank goes to Hindi with 12 i.e. 0.47% of the total.

Table No. 7

Country Wise Distribution of Citations

Sr. No	Name of Country	No of Citations		Total	Cumulative	Percentage	Cumulative Percentage
		1991-2000	2001-2010				
1	India	176	1284	1460	1460	57.43	57.43
2	United State of America	34	508	542	2002	21.32	78.75
3	United Kingdom	27	305	332	2334	13.06	91.81
4	China	-	47	47	2381	1.84	93.65
5	Netherland	5	10	15	2396	0.59	94.24
6	United Nation	2	8	10	2406	0.39	94.63
7	Scotland	-	8	8	2414	0.31	94.94
8	Ghana	2	4	6	2420	0.24	95.18
9	Japan	1	5	6	2426	0.24	95.42
10	Germany	1	4	5	2431	0.2	95.62
11	Sweden	-	5	5	2436	0.2	95.82
12	Australia	1	3	4	2440	0.16	95.98
13	Canada	2	2	4	2444	0.16	96.14
14	Africa	1	2	3	2447	0.12	96.26
15	Russia	-	3	3	2450	0.12	96.38
16	California	-	2	2	2452	0.08	96.46
17	Argentina	-	1	1	2453	0.04	96.5
18	Egypt	-	1	1	2454	0.04	96.54
19	Not Mention	9	79	88	2542	3.46	100
	Total	**261**	**2281**	**2542**		**100**	

Table no. 7 gives the Country Wise Distribution Citations. The data reveals that India rank first with 1460 (57.43%) citations. It was followed by United State of America

contributing 542 (21.32%) citations. United Kingdom ranks next to United State of America with 332 (13.06%) citations. This was followed by China, Netherland and United Nation sharing IV, V and VI ranks respectively with 47 (1.84%), 15 (0.59%) and 10 (0.39%) respectively. There were 88 (3.46%) citations which didn't mention their country.

Table No. 8

Authorship Pattern of Book Citations

Sr. No	Authorship Trend	No of Citations		Total	Cumulative	Percentage	Cumulative Percentage
		1991-2000	2001-2010				
1	Single	113	712	825	825	75.55	75.55
2	Double	27	190	217	1042	19.87	95.42
3	Three	6	25	31	1073	2.84	98.26
4	More than Three	3	15	18	1091	1.65	99.91
5	Corporate Body Authorship	-	1	1	1092	0.09	100
	Total	**149**	**943**	**1092**		**100**	

Table no. 8 depicts the distribution of authorship pattern of book citations. The highest contribution is of single author with 825 (75.55%) citations. Followed by Double author with 217 (19.87%) citations. Three and more than three author with 31 (2.84%) and 18 (1.65%) citations respectively. Corporate body authorship with 1 (0.09%) citation.

Table No 9

Authorship Pattern of Journal Citations

Sr. No	Authorship Trend	No of Citations		Total	Cumulative	Percentage	Cumulative Percentage
		1991-2000	2001-2010				
1	Single	193	532	725	725	77.71	77.71
2	Double	60	109	169	894	18.11	95.82
3	Three	4	21	25	919	2.68	98.5
4	More than Three	4	9	13	932	1.39	99.89
5	Corporate Body Authorship	-	1	1	933	0.11	100
	Total	**261**	**672**	**933**		**100**	

Table no. 9 depicts the distribution of authorship pattern of journal citations. The highest contribution was of single author with 725 (77.71%) citations. Followed by double author with 169 (18.11%) citations. Three and more than three author with 25 (2.68%) and 13 (1.39%) citations. Corporate body authorship having 1 (0.11%) citations.

CONCLUSION:

The citation analysis of the Geography Ph.D theses awarded by Sant Gadge Baba Amravati University, Amravati indicates that books are highly preferred as information sources. From this analysis it is cleared that single authorship pattern is more popular than other pattern. Geography itself is the most highly cited subject in Geography. The researcher preferred mostly literature from India, US and UK as it is available in local and university libraries.

This citation analysis of the Ph.D theses in Geography reveals that the researchers under this study mainly depend on books for their information use. It is evident from this study that the researchers largely use the literature published in books during recent period. This study confirms that the researchers used literature from only few countries, mainly India, US and UK for recent information. Results of this study will be useful to the librarians and documentalists in acquiring more useful journals and books as well as in circulating their contents for use by potential readers and researchers.

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