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# Citation Analysis of Doctoral Theses in the field of Sociology submitted to Panjab University, Chandigarh (India) during 2002-2012

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# **Citation Analysis of Doctoral Theses in the field of Sociology submitted to Panjab University, Chandigarh (India) during 2002-2012**

## **Abstract**

This paper determines the materials cited in Ph.D. theses of Sociology, submitted to the Panjab University, Chandigarh during the years 2002-2012 to improve the existing collection development policy of University library. The study reveals that Books are the most preferred sources of information used by the researchers in the field of Sociology, accounting for 57.65% of the total citations, although citations from journals, proceedings, internet resources and reports are also found. It is also observed those researchers are not taking much advantage of internet resources. Bradford's law of scattering was applied. More cited materials were contributed by single authors and degree of collaboration of books was calculated as 0.28 and the degree of collaboration of authors in cited journal articles were calculated as 0.35.

**Keywords:** Panjab University, Sociology, Citation analysis, books, journals, authorship pattern, journal ranking

## **Department of Sociology (Panjab University, Chandigarh)**

As per Handbook of Information (2015), the Department of Sociology was established in 1960. The University Grants Commission recognized it for Special Assistance Program (SAP) in 1977. The department also earned the honor of being the 'first' department from among the Social Science departments of Panjab University, Chandigarh to be selected by the UGC under the Assistance for Strengthening the Infrastructure of the Humanities & Social Sciences (ASIHSS) programme, w.e.f. April 2004. More recently, the department after successfully completing four phases of 'Special Assistance Programme' in March 2006, has been the "First" among the Sociology departments of the country during the last three decades and the Social Sciences departments of Panjab University, Chandigarh to be upgraded as "Centre for Advanced Studies' (CAS) by University Grants Commission, New Delhi. Currently, the department offers

teaching and research programs for M.A., M. Phil. and Ph.D. degree. The department has a total of seven full time faculty members. 135 research scholars have already been awarded the doctoral degree since the inception of the department and 85 research scholars are currently pursuing their research work for the award of doctoral degree. Thrust areas include Sustainable Development, Family and Gender Studies, Population, Health and Ageing, Terrorism and Cyber Crimes, etc.

## **Review of Literature**

**Berman and Eaglstein (1994)** in their paper entitled ‘The knowledge base of social work: a citation analysis’ analyzed the extent of differential use of the social work knowledge. Their study indicated that social work as a mature profession does not demand a unique, inward searching knowledge base. Instead, it seeks an integration of knowledge not only from social work but also from a plethora of other behavioral professions. A total of 5,129 citations were recorded from five social work journals for the year 1992. The most frequently cited category was books (34.3%), followed by citations from non social work journals (29.6%), grey documentation accounted for 19.3% of all citations. Social work journals contributed 16.8% of the total literature. The result of their study also indicated that governmental priorities in research funding may be a factor in use of grey documentation as a social work knowledge source in the United States. **Kaushik (2003)** in his research paper entitled ‘Citation pattern of Sociologist’ analyzed the citations of ‘American Journal of Sociology’. He analyzed 1447 citations featuring 2247 authors. His study indicated that universities contributed almost ninety percent of the total articles published during July 2002 to May 2003. The results of his study show that majority of citations were of single authors and journal articles and books were almost equally cited sources. The ratio of author self citation to total citations was 1:29.53 and ratio of journal self citation was 1:22.26. He also highlighted that 630 citations were up to 10 years old, whereas 423 citations were more than 10 years but less than 20 years old. **Singh and Bebi (2013)** in their study entitled ‘Citation analysis of Ph.D. theses in Sociology submitted to University of Delhi during 1995-2010’ analyzed 5766 citations from 25 theses during 1995-2010. Their study indicated that majority of the citations (83.94%) were single authored. The highest number of citations were from books, followed by journal articles, book chapters, encyclopedias and reports. The result of their study also show that Indian literature received highest citations (45.9%), followed by USA

(26.8% citations) and UK (22.4% citations). They also revealed that most cited authors were from foreign countries, followed by Indian authors. 'Economic & Political Weekly' occupied the first rank, followed by 'Indian Journal of Psychiatry' **Tunga (2014)** in his paper entitled 'Authorship pattern and degree of collaboration in journal articles: a citation study of doctoral dissertations 1991-2010' analyzed 8437 journal articles and 1327 books appended in 80 doctoral dissertations submitted to Bidhan Chandra Krishi Viswavidyalaya and Utter Banga Krishi Viswavidyalaya (West Bengal) during 1991-2010. He indicated that horticulture scientists mainly used journal articles (77.96%). Majority of the authorship pattern was found to multi-authored (78.99%), followed by single authored papers (20.69%). The highest number of citations was cited in 2005. The degree of collaboration in Horticulture was found to be 0.79.

### **Objectives of the study:**

The objectives of the present study included:

1. To observe the nature of authorship pattern in the field of Sociology.
2. To examine the half-life of books and journals in Sociology.
3. To observe the chronological distribution of citations in Sociology.
4. To determine the national and international coverage of citations in the Sociology discipline.
5. To study the distribution of citations of different information sources and their formats.
6. To determine the ranking of most cited journals in Ph.D. theses in Sociology.

### **Research questions**

The present study sought answers to the following questions:

1. What is the trend of authorship pattern in Sociology discipline?
2. What is the half-life of literature used in Sociology?
3. What is the average age of cited material in the Ph.D. theses submitted in Sociology department at Panjab University?
4. Which are the top cited journals in Sociology discipline at Panjab University?

5. Which type of reading material is preferred by the Sociology researchers at Panjab University?
6. What is the average number of citations per thesis submitted in Social Sciences at Panjab University?

## **Research methodology**

Keeping in view the objectives of the study, various research methods were explored. For the present study, data was collected from 33 Ph.D. theses submitted during 2002-2012 in Sociology department at Panjab University (Chandigarh). The first step of this study was to select the theses (i.e., the source document) from which the data was collected. Citation/Bibliography of each thesis was recorded manually on a standardized card and then empirically analyzed. MS-Excel was also used wherever appropriate to store and analyse the data. The collected data was tabulated in terms of ranked list of journals, authorship pattern of books and journals, chronological pattern of cited sources, geographical pattern of cited sources, etc. The data was analysed by applying appropriate techniques and bibliometric laws. The simple counting citation technique and Bradford's Law was applied to determine the core journals in the field of Sociology. Further, half-life period of books and journal citations were also calculated.

## **Data analysis techniques**

The data collected from the citations in 33 Ph.D. theses was analysed by applying appropriate techniques and bibliometric laws. The simple counting citation technique and Bradford's law was applied to determine the core journals in the field of Sociology. MS-Excel was used for the analysis of the data and also its graphical representations wherever required.

## Data Analysis and interpretation

As shown in table no.1, a total of 33 Ph.D. theses were submitted in the Department of Sociology during 2002-2012, in which 3721 sources were cited by the researchers. The following section analyses the citations of such theses on the basis of various dimensions like year of submission, form of cited documents, authorship pattern, etc.

### Year- wise submission of Ph.D. theses

Table 1 shows the year wise submission of Ph.D. theses in the Department of Sociology at Panjab University during 2002- 2012.

Year of submission	No. of Ph.D. theses submitted	%
2002	3	9.09
2003	2	6.06
2004	3	9.09
2005	2	6.06
2006	3	9.09
2007	4	12.12
2008	2	6.06
2009	2	6.06
2010	1	3.03
2011	8	24.25
2012	3	9.09
Total	33	100

**Table 1: Year-wise submission of Ph.D. theses submitted in the Department of Sociology**

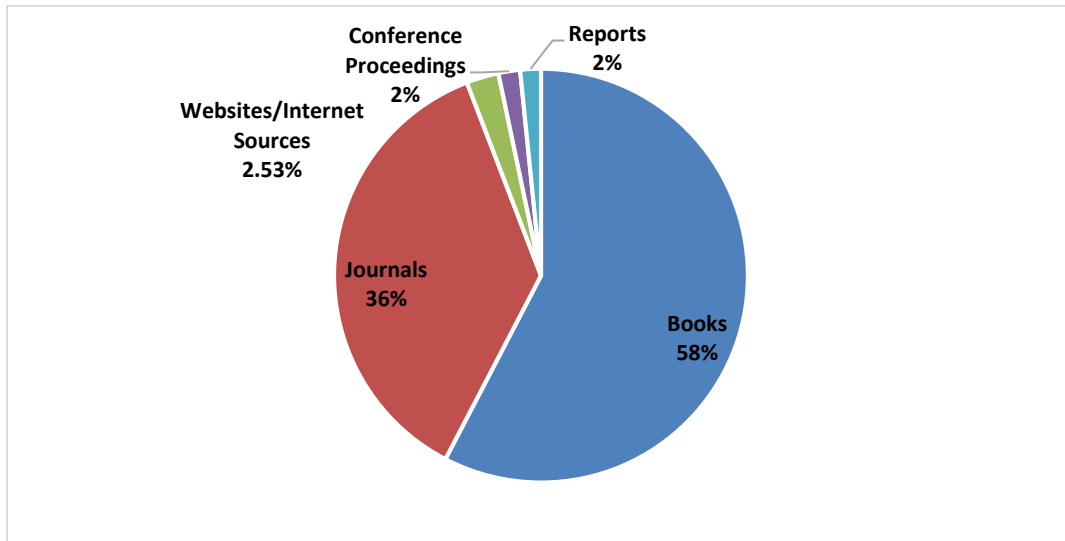
Table 1 indicates that the highest number of these were submitted in 2011 (8, 24.25%), whereas the least number of these (1, 3.03%) were submitted in the Department of Sociology during 2010.

### Form of cited documents

Table 2 and figure 1 below depicts the number of citations pertaining to different types of publications like journals, books, websites/Internet sources, conference proceedings and reports.

Sr. no.	Form of cited documents	Count	Cumulative count	%	% of cumulative count
1	Books	2145	2145	57.65	57.65
2	Journals	1359	3504	36.52	94.17
3	Websites/Internet sources	94	3598	2.53	96.70
4	Conference proceedings	63	3661	1.69	98.39
5	Reports	60	3721	1.61	100.00

**Table 2: Form of cited documents in the Ph.D. theses in Sociology**



**Figure 1: Form of cited documents in Sociology**

Table 2 and figure 1 reveals that out of 3721 citations cited in the Ph.D. theses submitted in the Department of Sociology, books comprised the highest citations (2145, 57.65%) followed by journals' citations (1359, 36.52%), websites/Internet sources (94, 2.53%), conference proceedings (63, 1.69%) and reports (60, 1.61%). Since books and journals together accounted

for 94.17% citations, authorship pattern, half-life, etc. were calculated for such documents only. A similar study carried out by Singh & Bebi in 2013 also found that researchers in the discipline of Sociology cite more books, followed by journals articles.

### Authorship pattern in citations

Table 3 below shows the authorship pattern of citations in the Ph.D. theses submitted in the Department of Sociology:

Authorship Pattern	Books				Journals				Total citations	% of total citations
	Citations	Cumulative citations	%	Cumulative %	Citations	Cumulative citations	%	Cumulative %		
Single	1528	1528	71.24	71.24	883	883	64.97	64.97	2411	68.81
Two	540	2068	25.17	96.41	421	1304	30.98	95.95	961	27.43
Three	60	2128	2.80	99.21	32	1336	2.36	98.31	92	2.63
More than three	17	2145	0.79	100	23	1359	1.69	100	40	1.14
Total	2145	--	100		1359	--	100	--	3504	100

**Table 3: Authorship pattern of citations in Sociology**

A total of 3504 citations to books and journals were analysed to ascertain the authorship pattern in the Ph.D theses submitted in the Department of Sociology, Panjab University (Chandigarh) during the study period. Table 3 depicts the authorship pattern of the cited books and journals. Out of the total citations, books accounted for 2145 citations (61.22%), while journals accounted for 1359 citations(38.78%). It is clear from the table that citation to single authorship is higher in books (1528, 71.24%) as well as in journals (883, 64.97%). Two authors accounted for 540 citations (25.17%) to books and 421 citations (30.98%) to journals, followed by three authors with 60 citations (2.80%) to books and 32 citations (2.36%) to journals. Citations to more than three authors were the least in books(17, 0.79 %) and journals (23, 1.69%). A similar study carried out by Singh & Bebi in the same field in 2013 also found that single authorship pattern is higher in journals articles followed by two authorship pattern.

In order to find out the degree of research collaboration a formula proposed by Subramanyam (1983) was applied to the data. The degree of collaboration of books was



calculated as 0.28 (Appendix 1-a) and the degree of collaboration of authors in cited journal articles were calculated as 0.35 (Appendix 1-b). Collaborative index, which is the number of authors per paper, was calculated using the formula given by Lawani (1986). Collaborative Index for books was calculated as 1.33 (Appendix 1-c) and Collaborative Index for journals was calculated as 1.42 (Appendix 1-d). Collaborative coefficient was calculated as per the formula given by Ajiferuke (1983). Collaborative Coefficient of authors of books was calculated as 0.15 (Appendix 1-e) and collaborative coefficient of authors of journal articles was calculated as 0.18 (Appendix 1-f).

### **Obsolescence of cited literature**

‘Half-life’ or ‘Obsolescence rate’ of the documents cited in the theses submitted in the Department of Sociology were also calculated by analyzing the age of the cited documents. The obsolescence of journals and books cited in the theses is shown below:

### **Obsolescence of cited journals**

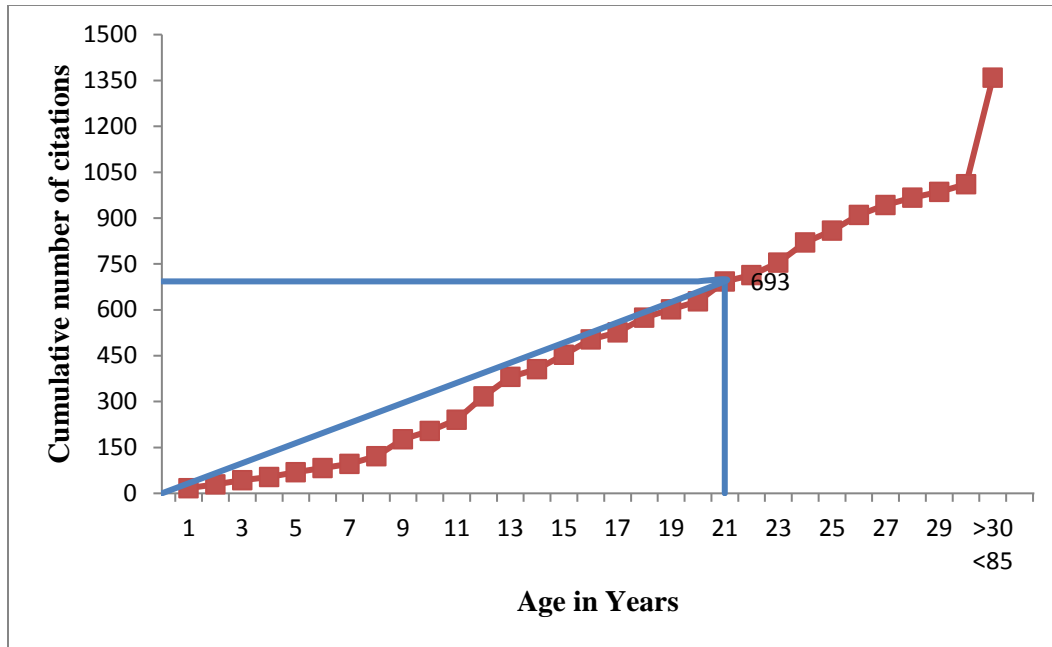
Table 4 and figure 2 shows the obsolescence of journals as cited in 33 Ph.D. theses submitted in the Department of Sociology at Panjab University (Chandigarh) during 2002-2012:

<b>Age in years</b>	<b>No. of Citations</b>	<b>Cumulative citations</b>	<b>%</b>	<b>% of cumulative citations</b>
1	17	17	1.25	1.25
2	12	29	0.88	2.13
3	14	43	1.03	3.16
4	10	53	0.74	3.90
5	16	69	1.18	5.08
6	14	83	1.03	6.11
7	13	96	0.96	7.06
8	25	121	1.84	8.90
9	56	177	4.12	13.02
10	27	204	1.99	15.01
11	37	241	2.72	17.73
12	76	317	5.59	23.33
13	64	381	4.71	28.04
14	25	406	1.84	29.87
15	47	453	3.46	33.33

16	50	503	3.68	37.01
17	23	526	1.69	38.70
18	49	575	3.61	42.31
19	27	602	1.99	44.30
20	26	628	1.91	46.21
21	65	693	4.78	50.99
22	21	714	1.55	52.54
23	41	755	3.02	55.56
24	65	820	4.78	60.34
25	39	859	2.87	63.21
26	51	910	3.75	66.96
27	33	943	2.43	69.39
28	24	967	1.77	71.16
29	19	986	1.40	72.55
30	25	1011	1.84	74.39
>30 <85	348	1359	25.61	100.00

**Table 4: Half-life of journal articles cited in the Ph.D. theses submitted in the Department of Sociology**

Table 4 presents the number of citations and their respective ages. It indicates that 69 journal citations (5.08%) are 5 years old, 204 citations (15.01%) are 10 years old and 453 citations (33.33%) are 15 years old. The maximum age of the citations was found to be 85 years. This shows that the researchers in the Department of Sociology cite journal articles published even 84 years back. The table also shows that half-life of 50.99% journal citations are 21 years. Figure 4.32 shows the half-life of journals for cumulative frequency of citations.



**Figure 2: Bar graph showing half-life of journals for cumulative frequency of citations in Sociology**

Figure 2 above shows that the time taken to cite 1359 citations was 85 years. It can be seen that the x-coordinate for 693 cumulative citations (half of the total citations) is 21 years. Thus, 21 years was found to be the half-life of journals cited in the theses submitted in Department of Sociology at Panjab University (Chandigarh).

### Obsolescence of cited books

Table 5 shows the obsolescence of books as cited in 33 Ph.D. theses submitted in the Department of Sociology at Panjab University (Chandigarh) during 2002-2012:

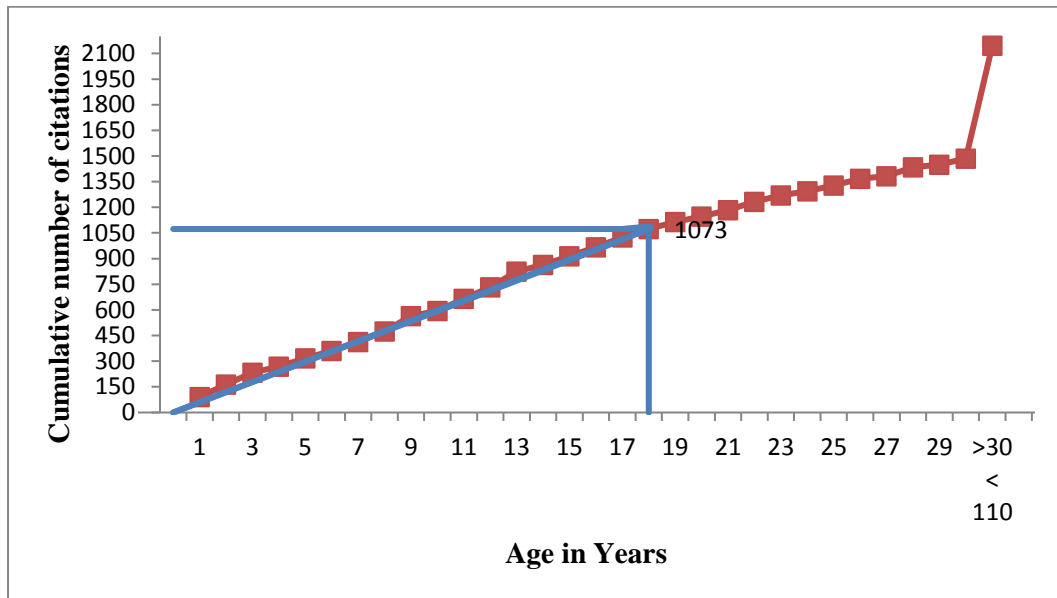
Age in years	No. of Citations	Cumulative citations	%	% of cumulative citations
1	91	91	4.24	4.24
2	73	164	3.40	7.65
3	70	234	3.26	10.91
4	35	269	1.63	12.54
5	48	317	2.24	14.78
6	43	360	2.00	16.78

7	53	413	2.47	19.25
8	61	474	2.84	22.10
9	90	564	4.20	26.29
10	31	595	1.45	27.74
11	70	665	3.26	31.00
12	68	733	3.17	34.17
13	91	824	4.24	38.41
14	40	864	1.86	40.28
15	51	915	2.38	42.66
16	52	967	2.42	45.08
17	58	1025	2.70	47.79
18	48	1073	2.24	50.02
19	42	1115	1.96	51.98
20	31	1146	1.45	53.43
21	37	1183	1.72	55.15
22	49	1232	2.28	57.44
23	37	1269	1.72	59.16
24	25	1294	1.17	60.33
25	34	1328	1.59	61.91
26	39	1367	1.82	63.73
27	15	1382	0.70	64.43
28	53	1435	2.47	66.90
29	14	1449	0.65	67.55
30	36	1485	1.68	69.23
>30 < 110	660	2145	30.77	100.00

**Table 5: Half-life of books cited in the Ph.D. theses submitted in the Department of Sociology**

Table 5 represents the number of citations and their respective ages. It indicates that 317 book citations (14.78%) are 5 years old, 595 citations (27.74%) are 10 years old and 915 citations (42.66%) are 15 years old. The maximum age of the citations were found to be 110 years. The table also indicates that the researchers in the Department of Sociology cite books

published even 110 years back. The table also shows that half-life of 50.02% books citations are 18 years. Figure 4.33 shows the half-life of books for cumulative frequency of citations.



**Figure 3: Bar graph showing half-life of books for cumulative frequency of citations in Sociology**

Figure 3 above shows that the time taken to cite 2145 citations was 110 years. It can be seen that the x-coordinate for 1073 cumulative citations (half of the total citations) is 18 years. Thus, 18 years was found to be the half-life of books cited in the theses submitted in Department of Sociology at Panjab University (Chandigarh) during 2002-2012.

### Chronological distribution of citations

Chronological distribution of citations in the Ph.D. theses in a particular field indicates whether the research carried out is up to date with the latest research taking place in that area or not. The citations analysed in the present study were distributed into groups of ten years each to know their chronological distribution.

### Chronological distribution of citations to journals

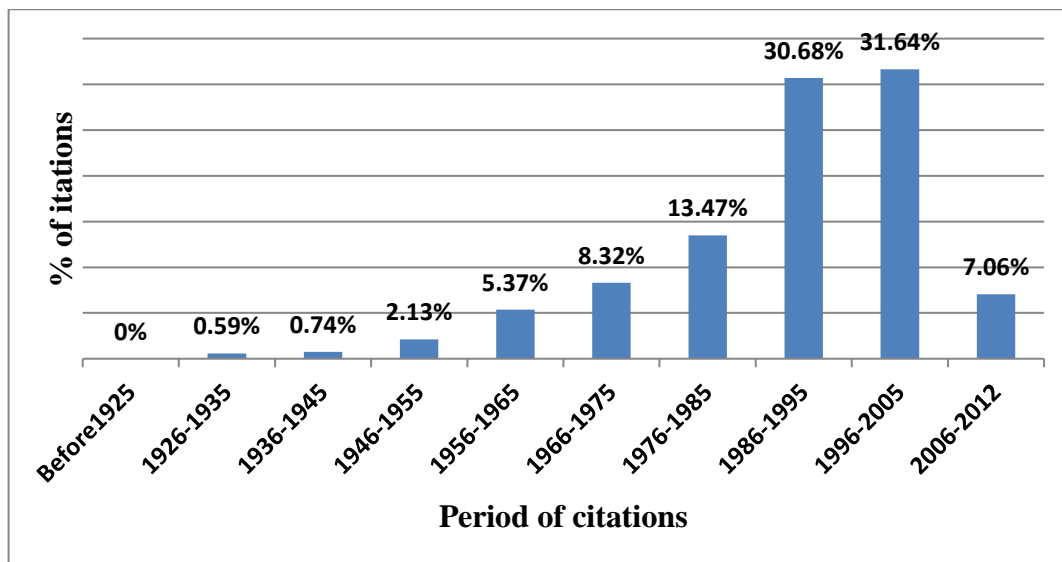
Table 6 and figure 4 show the decade-wise distribution of journal citations used in the Ph.D. theses submitted in the Department of Sociology at Panjab University (Chandigarh):

Sr. no.	Period	Frequency of occurrence	Cumulative frequency	% of frequency	% of cumulative frequency
1	Before 1925	0	0	0	0
2	1926-1935	8	8	0.59	0.59

3	1936-1945	10	18	0.74	1.33
4	1946-1955	29	47	2.13	3.46
5	1956-1965	73	120	5.37	8.83
6	1966-1975	113	233	8.32	17.15
7	1976-1985	183	416	13.47	30.62
8	1986-1995	417	833	30.68	61.3
9	1996-2005	430	1263	31.64	92.94
10	2006-2012	96	1359	7.06	<b>100</b>

**Table 6: Chronological distribution of citations to journals in Sociology**

Table 6 above clearly highlights that the highest number of journal citations belong to publications published during 1996-2005 (430, 31.64%), followed by 417 citations (30.68%) to journals that were published during 1986-1995, 183 citations (13.47%) to journals published during 1976-1985, 113 citations (8.32%) to journals published during 1966-1975, 96 citations (7.06%) to journals published during 2006-2012, 73 citations (5.37%) to journals published during 1956-1965, 29 citations (2.13%) to journals published during 1946-1955, 10 citations (0.74%) to journals published during 1936-1945 and only 8 citations (0.59%) are to journals published during 1926-1935.



**Figure 4: Chronological distribution of citations to journals in Sociology**

Figure 4 gives a pictorial representation of the chronological distribution of the citations to journal articles cited in the Ph.D. theses submitted in the Department of Sociology at Panjab University (Chandigarh). It shows that the highest citations were gained by the journal articles

published during 1996-2005. The figure also shows that there has been a steady growth in citations till the time period of 1966-1975. After that, there has been a steep growth in the citations for the period 1986-1995 and 1996-2005. It can be also seen from the figure that there has been a steep decline in citations to journal articles from 1996-2005 to 2006-2012.

#### 4.7.5.2 Chronological distribution of citations to books

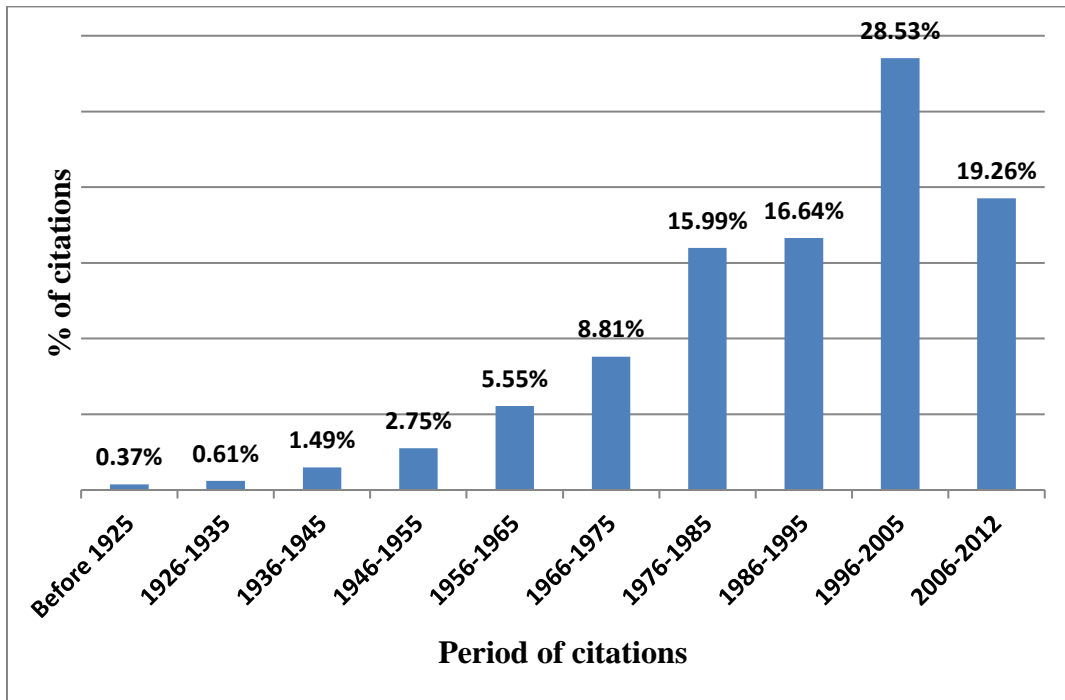
Table 7 show the decade-wise distribution of book citations used in the Ph.D. theses submitted in the Department of Sociology at Panjab University (Chandigarh).

Sr. no.	Decade	Frequency of occurrence	Cumulative frequency	% of frequency	% of cumulative frequency
1	Before1925	8	8	0.37	0.37
2	1926-1935	13	21	0.61	0.98
3	1936-1945	32	53	1.49	2.47
4	1946-1955	59	112	2.75	5.22
5	1956-1965	119	231	5.55	10.77
6	1966-1975	189	420	8.81	19.58
7	1976-1985	343	763	15.99	35.57
8	1986-1995	357	1120	16.64	52.21
9	1996-2005	612	1732	28.53	80.74
10	2006-2012	413	2145	19.26	<b>100</b>

**Table 7: Chronological distribution of citations to books in Sociology**

Table 7 above shows that the highest number of books citations belong to books published during 1996-2005 (612, 28.53%), followed by 413 citations (19.26%) to books that were published during 2006-2012, 357 citations (16.64%) to books published during 1986-1995, 343 citations (15.99%) to books published during 1976-1985, 189 citations (8.81%) to books published during 1966-1975, 119 citations (5.55%) to books published during 1956-1965, 59 citations (2.75%) to books published during 1946-1955, 32 citations (1.49%) to books published

during 1936-1945,13 citations (0.61%)to books published during 1926-1935 and only 8 citations (0.37%) to books published before 1925.



**Figure 5: Chronological distribution of citations to books in Sociology**

Figure 5 above shows the chronological distribution of the citations to books cited in the Ph.D. theses submitted in the Department of Sociology at Panjab University (Chandigarh). It shows that there has been a steady growth in citations from 1966-1975. After that, there has been a steep growth in the citations for the period 1986-1995 and 1996-2005. It can be also seen from the figure that there has been a steep decline in citations to books from 1996-2005 to 2006-2012.



## Geographical distribution of citations

Table 8 shows the geographical distribution of books and journals' citations used in the Ph.D. theses submitted in the Department of Sociology at Panjab University (Chandigarh).

Country	Books				Journals			
	Counts	Cumulative counts	%	Cumulative %	Counts	Cumulative Counts	%	Cumulative %
India	1660	1660	77.39	77.39	1094	1094	80.50	80.50
UK	238	1898	11.10	88.48	107	1201	7.87	88.37
USA	221	2119	10.30	98.79	129	1330	9.49	97.87
Pakistan	12	2131	0.56	99.35	2	1332	0.15	98.01
China	2	2133	0.09	99.44	0	1332	0.00	98.01
Canada	5	2138	0.23	99.67	5	1337	0.37	98.38
Ethiopia	0	2138	0.00	99.67	6	1343	0.44	98.82
South Africa	0	2138	0.00	99.67	5	1348	0.37	99.19
Japan	7	2145	0.33	100.00	11	1359	0.81	100.00

**Table 8: Geographical distribution of citations in Sociology**

Table 8 reveals that majority of the citations to books (1660, 77.39%) and journals (1094, 80.50%) are Indian publications, followed by publications from UK (238, 11.10% for books and 107, 7.87% for journals) and USA (221, 10.30% for books and 129, 9.49% for journals). It is clear from the table that there are no citations of books published from Ethiopia and South Africa, although researchers have cited journals published from such countries. Similarly, there are no citations to journal articles published from China, whereas book citations were seen from this country. A similar study carried out by Singh & Bebi in 2013 also found that India ranked first, followed by USA and UK.

## Ranking of cited journals

To determine the core journals in the field of Sociology, a rank frequency distribution of all cited journal articles is undertaken. The ranking list is a practical tool to select the journals of maximum utility in relation to their coverage of literature in a particular subject area. The title of the cited journal was recorded against each journal article in the work sheet. The distribution was

ranked in order of journals that are most frequently cited. Ranking of the cited journals was prepared on the basis of the total citation frequency received by each journal. The titles have been arranged in a decreasing order of the number of citations. Table 4.70 shows their rank and percentage of citations.

Sr. no.	Title	Citations	Cumulative citations	%	Cumulative %	Rank
1	Economic & Political Weekly	91	91	6.70	6.70	1
2	Journal of Applied Psychology	76	167	5.59	12.29	2
3	Social Action	48	215	3.53	15.82	3
4	Preventive Medicine	37	252	2.72	18.54	4
5	Journal of Visual Impairment and Blindness	30	282	2.21	20.75	5
6	American Anthropologist	23	305	1.69	22.44	6
7	Journal of American Medical Association	23	328	1.69	24.14	6
8	Journal of Gerontology	18	346	1.32	25.46	7
9	American Sociological Review	17	363	1.25	26.71	8
10	Employee Responsibilities & Rights Journal	16	379	1.18	27.89	9
11	Indian Heart Journal	14	393	1.03	28.92	10
12	Rural Sociology in India	14	407	1.03	29.95	10
13	Indian Journal of Politics	14	421	1.03	30.98	10
14	The Indian Journal of Labour Economics	14	435	1.03	32.01	10
15	The Indian Journal of Social Work	14	449	1.03	33.04	10
16	Journal of Rural Development	14	463	1.03	34.07	10
17	Sociology Inquiry	13	476	0.96	35.03	11
18	Annual Review of Anthropology	13	489	0.96	35.98	11
19	American Economic Review	13	502	0.96	36.94	11
20	Journal of Vocational Behaviour	13	515	0.96	37.90	11
21	Journal of Psychological Research	12	527	0.88	38.78	12
22	Personnel Psychology	12	539	0.88	39.66	12
23	Rehabilitation Psychology	12	551	0.88	40.54	12
24	Sex roles: A Journal of Research	12	563	0.88	41.43	12
25	Aggression and Violent Behaviour	11	574	0.81	42.24	13
26	Annals of Child Development	11	585	0.81	43.05	13

27	Public Health Journal	11	596	0.81	43.86	13
28	Journal of Cardiology and Clinical Research	11	607	0.81	44.67	13
29	Comparative Studies in Society and History	11	618	0.81	45.47	13
30	Medical Aspects & Human Sexuality	11	629	0.81	46.28	13

**Table 9: Ranked list of highly cited journals in Sociology**

Table 9 highlights that out of a total of 233 journal cited in the theses submitted during the study period, 'Economic & Political Weekly' was the most highly cited journal (91, 6.70%), followed by 'Journal of Applied Psychology' (76, 5.59%), 'Social Action' (48, 3.53%), 'Preventive Medicine' (37, 2.72%), 'Journal of Visual Impairment and Blindness' (30, 2.21%) and 'American Anthropologist' (23, 1.69%). It indicates that journals mentioned above cover 46.28% of the total citations and remaining 203 journals accounted for rest of the citations (53.72%). A similar study carried out by Singh & Bebi in 2013 also found that journal entitled 'Economic & Political Weekly' was the most highly cited journal.

#### **Application of Bradford's law to cited journals**

Table 10 indicates the verbal formulation of the Bradford's law of scattering as applied to the citations in the theses submitted in the Department of Sociology considered in the present study:

<b>Number of Zone</b>	<b>Number of Journals</b>	<b>Number of Citations</b>	<b>Bradford's constant (k)</b>
Core zone	7	328	--
Zone 2	35	417	5.451
Zone 3	191	614	5.451
Total	233	1359	

**Table 10: Dispersion of journals in Sociology**

Table 10 shows the distribution of journals into three zones. It is evident from the ratio (7:35:191) that the number of journals in the three zones is in geometric progression. Hence, it can be concluded that the dispersion of journals in the field of Economics satisfy the verbal formulation of Bradford's law of scattering.

The mathematical formulation was also applied to check the validity of the verbal formulation using the formula of Egghe (1986, 1990) where k was calculated as:

$$k = (1.781 \times 91)^{1/3}$$

$$k = 5.452$$

Using the value of k calculated above, Bradford groups (zones) were also calculated. The

nucleus zone  $r_0$  was calculated as:  $r_0 = \frac{233(5.452-1)}{(5.452^3-1)}$

$$r_0 = \frac{1037.316}{161.057}$$

$$= 6.441$$

With  $r_0$  and k, different Bradford zones were calculated as below:

Nucleus zone  $r_0 = r_0 * 1 =$

$$6.441 * 1 = 6.441$$

First zone

$$r_1 = r_0 * k = 6.441 * 5.452 = 35.115$$

Second zone

$$r_2 = r_0 * k^2 = 6.441 * 5.452^2 = 191.440$$

This theoretical distribution of Bradford's law enabled the testing of the exact fit of Bradford's law to the data in the present study. Using this distribution, the number of citations from each Bradford's group was calculated as shown in table 10. The exact number of each Bradford' group were calculated using the value of k and  $r_0$ ,  $r_1$  and  $r_2$ . By dividing  $r_2$  by  $r_1$  and  $r_1$  by  $r_0$ , the value of 5.451 and 5.451 respectively were calculated which is equivalent to the value of k as calculated using the formula of Egghe (1986, 1990). This shows that in the present study, the journals cited in the theses submitted in the Department of Sociology are in accordance with Bradford's distribution.

### **Findings of the study:**

To study the citation analysis of Ph.D. theses in the field of Sociology, 3721 citations from 33 Ph.D. theses submitted in the Department of Sociology during 2001-2012 were analysed. The major findings of their analysis show:

- I. The highest numbers of theses in Sociology were submitted in 2011(24.25%).
- II. The researchers in the discipline of Sociology use books and journals more than other form of documents for their research work. Book citations accounted for 57.65% and journal citations accounted for 36.52%.
- III. Citations to single authorship were dominant than joint authorship in both books (71.24%) and journals (64.97%).
- IV. The degree of collaboration of books was calculated as 0.28 and degree of collaboration of journals was calculated as 0.35.
- V. Collaborative index of books was calculated as 1.33 and collaborated index of journals was calculated as 1.42.
- VI. Collaborative coefficient for books was calculated as 0.15 and collaborated coefficient for journals was calculated as 0.18.
- VII. The half life period of journals citations was found to be 21 years and the half life period of book citations was found to be 18 years.
- VIII. Maximum number of citations to journals (31.64%) and books (28.53%) belong to publications published during 1996-2005.
- IX. Majority of citation to books (77.39%) and journals (80.50%) were of Indian origin, followed by U.K. and U.S.A.
- X. Out of 233 journals cited in the Ph.D. theses, Economic & Political Weekly was found to be the most cited journal.
- XI. The dispersion of journals in the field of Sociology satisfy the formulation of Bradford's law of scattering.

### **Conclusion**

Citation analysis is regarded as a tool for determining the impact of a scholarly work. The exponential growth of literature, interdisciplinary nature of research, specializations in different subjects and on top of it the budgetary constraints of libraries has created many problems for the information managers, documentation officers, information scientists and librarians. It provides an insight into the information seeking behavior of the users and ultimately helps in planning the collection development policy of the library. Citations to books were observed more in the Sociology discipline. The Bradford's law of scattering was found to be fit as far as the dispersion of journals is concerned in the discipline under study. This indicates that the journals used by the researchers are also the core journals of their respective discipline. This shall further be useful information for the university librarian in devising the list of core journals.

### **Suggestions**

The following suggestions are recommended:

- I. While citing the work of others, the researchers should cite the complete bibliographical information in a standard reference style so as to avoid the inaccurate and incomplete citation.
- II. University library should organize orientation programmes for the research scholars so as to make them aware about the available resources in the library and also to sensitize them as to how to cite the information sources.
- III. University librarians should evaluate the library's acquisition as well as well as weeding out policy on the basis of the researchers' information needs as cited in their research work.

### **Reference**

- Berman, Y., & Eaglstein, A. S. (1994). The knowledge base of social work: A citation analysis. *ASLIB Proceedings*, 46(9), 225-230.
- Kaushik, S. K. (2003). Citation pattern of Sociologist. *ILA Bulletin*, 39(4), 30-33.

Singh, K. P., & Bebi (2013). Citation analysis of Ph.D. theses in Sociology submitted to university of Delhi during 1995-2010. *DESIDOC Journal of Library & Information Technology*, 33 (6), 489-493.

Tunga, S. K. (2014). Authorship pattern and degree of collaboration in journal articles: a citation study of doctoral dissertations 1991-2010. *Information Studies*, 20(2), 85-96.

## **Appendix 1**

### **1.0 Degree of collaboration, collaborative index and collaborative coefficient in the discipline of Sociology**

#### **1-a) Degree of collaboration of authorship (books)**

$$N_m = 617$$

$$N_s = 1528$$

$$C = \frac{617}{617 + 1528} = \mathbf{0.28}$$

#### **1-b) Degree of collaboration of authorship (journals)**

$$N_m = 476$$

$$N_s = 883$$

$$C = \frac{476}{476 + 883} = \mathbf{0.35}$$

#### **1-c) Collaborative index for books**

$$CI = \frac{(1528 + 2 \times 540 + 3 \times 60 + 5 \times 17)}{2145}$$

$$CI = \mathbf{1.33}$$

#### **1-d) Collaborative index for journals**

$$CI = \frac{(883 + 2 \times 421 + 3 \times 32 + 5 \times 23)}{1359}$$

$$CI=1.42$$

**1-e) Collaborative coefficient (books)**

$$CC = 1 - \frac{\left(1528 + \frac{1}{2}540 + \frac{1}{3}60 + \frac{1}{5}17\right)}{2145}$$

$$1 - \frac{9107}{05} * \frac{1}{2145}$$

$$CC = 1 - \frac{9107}{10725}$$

$$CC=0.15$$

**1-f) Collaborative coefficient (journals)**

$$CC = 1 - \frac{\left(883 + \frac{1}{2}421 + \frac{1}{3}32 + \frac{1}{5}23\right)}{1359}$$

$$1 - \frac{33266}{30} * \frac{1}{1359}$$

$$CC = 1 - \frac{33266}{40770}$$

$$CC=0.18$$



