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CITATION ANALYSES OF DOCTORAL DISSERTATION OF PUBLIC ADMINISTRATION: A STUDY OF PANJAB UNIVERSITY, CHANDIGARH

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ABSTRACT

The present study analysed 7490 citations appended in the 60 Ph.D. theses of Public Administration submitted to Panjab University, Chandigarh, for the award of doctoral degree during 2002-2012. The study analysed the several parameters such as authorship pattern of the citations, form of literature cited, half-life of books and journals and compiled a rank list of journals in Public Administration. The study found that the highest number of citations to research work by single authors was higher in case of both books (2782, 87.02%) and journals (1785, 87.12%). Books comprised the highest citations (3197, 42.68%) followed by journals (2049, 27.36%). Bradford's law of scattering was used to identify the core journals in the field of Public Administration.

Keywords: Citation Analysis; Authorship Pattern; Journals Ranking; Bibliographic Form; Ph.D. Theses; Panjab University; Public Administration.

1. Introduction

The growing number of scholarly publications and the exponential increase in published literature in print and non-print form such as books, journals, research reports, online databases, DVDs, CDs and floppy disks are responsible for the rising cost of acquiring relevant literature needed in any academic institution. To maintain a reasonable collection of information sources, it is necessary for the librarians, documentation officers and information managers to understand the characteristics of literature being used and cited by their respective clients. Hence, citation analysis helps in selection of information sources most relevant for ongoing research in the

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parent organization. Citation analysis examines the bibliographic data from articles, monographs, published bibliographies, theses and electronic indexes in order to understand the researchers' specific information needs and explain their trend in the library use. Citations appearing in journals provide an objective measure of the contributors of knowledge systems to the development and progress of a particular discipline (Chandy & William, 1994).

1.1. Department of Public Administration

As per Handbook of Information (2015), the Department of Public Administration was set up at Panjab University, Chandigarh in 1961. Currently, it offers M.A. and M.Phil courses and opportunities for doctoral research. The department has a total of five full time faculty members. It has produced more than 160 Ph. Ds since the inception of the department and 70 research scholars are currently working towards the award of doctoral degree. Thrust areas of research include Public Policy, Administrative theory, Human resources, Financial, Social and Economic Administration.

2. Review of Literature

Klassen (2011) in his paper entitled 'A citation study of Public Health masters' theses' analyzed 6291 references from 135 theses submitted in Southern Connecticut State University(New Heaven) during 1995-2007. He revealed that majority of the citations (65.4%) were from journal articles, followed by monographs (13.5%). The top 20% journals accounted for 68% of citations, top hundred journals accounted for 54% of citations, two journals were cited more than hundred times during 2000. Journal citations percentage varied significantly by year from 78.2% to 52%.The result of their study also reveal that impact factor is not a valuable tool to be used in building the SCSU (Southern Connecticut State University) Public Health journal collection.

Kumar and Kumar (2012) in their paper entitled 'Decay and half-life period of online citations cited in open access journals' studied four open access journals published between 2000-2009. The results of their study show that 24.58% of articles had online citations. 30.58% of online citations were not accessible and remaining 69.44% of online citations were still accessible. The 'HTTP 404 error message-page not found' was the overwhelmingly message

encountered (67.79%). The average half-life for online citations was 11.5 years and 9.07 years in Science and Social Science journal articles respectively.

Sangam and Mogali (2013) in their study entitled 'Obsolescence of literature in the field of Social Sciences' examined 1271 citations from 283 articles in three journals namely 'The Journal of Social & Economic Development', 'The Journal of Polity and Society' and 'The Journal of Social Change'. The result of their study show that half-life of literature was 9.04, annual ageing factor was 0.9262, utility factor was 13.55 and corrected obsolescence was 0.9482. **Veerabasavaiah and Padmavathi (2014)** in their study entitled 'Citation analysis of doctoral theses in Education submitted at the Bangalore University, Bangalore, during 2003-2012' carried outan analysis of 6688 citations from 42 doctoral theses. They observed that the highest number of theses (12, 28.57%) was submitted during 2009, followed by 11 theses (26.19%) in 2010 and 5 theses (11.91%) in 2004. Their study revealed that journals were the most preferred sources of information used by the researchers in the field of Education, accounting for 39.43% citations, followed by theses/dissertations (37.93%), reports (9.20%) and websites (5.05%). The single authorship was most preferred (54.04%), followed by two authors (27.08%). Their study revealed that most of the cited journals were published from U.S.A., followed by India and UK. Most cited journal was the 'Journal of the Applied Psychology' (5.20%), followed by 'Indian Education Review' (3.68%), 'Journal of Educational Research' (2.85%) and 'Child Development' (2.81%).

3. Objectives of the study

The objectives of the present study included:

1. To observe the nature of authorship pattern in literature of Public Administration.

2. To examine the half-life of books and journals in Public Administration.

3. To observe the chronological distribution of citations in Public Administration.

4. To determine the national and international coverage of citations in the Public Administration.

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 Public Administration.

4. Research questions

The present study sought answers to the following research questions:

1. What is the trend of authorship pattern in the Public Administration discipline?

2. What is the half-life of literature used in Public Administration discipline?

3. What is the average age of cited material in the Ph.D. theses submitted in Public Administration discipline at Panjab University, Chandigarh?

4. Which are the top cited journals in Public Administration discipline at Panjab University?

5. Which type of reading material is preferred by the Public Administration research scholars at Panjab University?

6. What are the most cited items in the Ph.D. theses submitted in Public Administration at Panjab University?

5. Research methodology

Keeping in view the objectives of the study, various research methods were explored. For the present study, data was collected from 60 Ph.D. theses submitted during 2002-2012 in the Department of Public Administration at Panjab University (Chandigarh). MS-Excel was used 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. Bradford's Law was applied to determine the core journals in the field of Public Administration. Further, half-life period of books and journal citations were also calculated.

6. Data analysis and interpretation

A total of 60 Ph.D. theses were submitted in the Department of Public Administration during 2002-2012, in which 7490 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.

6.1. **Year-wise submission of Ph.D. theses**

Table 1 shows the year wise submission of Ph.D. theses in the Department of Public Administration at Panjab University (Chandigarh) during 2002- 2012.

Year of submission	No of Ph.D. theses submitted	%
2002	3	5
2003	2	3.33
2004	4	6.67
2005	8	13.33
2006	7	11.67
2007	6	10
2008	5	8.33
2009	7	11.67
2010	4	6.67
2011	7	11.67
2012	7	11.67
Total Ph. D	60	100

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

Table 1 depicts that the highest number of theses in Public Administration were submitted in 2005 (8, 13.33%), whereas the least number of theses (2, 3.33%) was submitted in the Department of Public Administration during 2003.

6.2. Form of cited documents

Table 2 and figure 1 below represent the number of citations pertaining to different types of publications like journals, books, reports, reference sources, government documents, newspapers, websites/Internet, conference proceedings, etc.

Sr. no.	Form of cited documents	Count	Cumulative count	%	Cumulative %
1	Books	3197	3197	42.68	42.68
2	Journals	2049	5246	27.36	70.04
3	Reports	641	5887	8.56	78.6

4	Newspapers	630	6517	8.41	87.01
5	Websites/Internet sources	297	6814	3.97	90.98
6	Reference sources	221	7035	2.95	93.93
7	Theses/Dissertations	112	7147	1.50	95.43
8	Government documents	192	7339	2.56	97.99
9	Survey reports	64	7403	0.85	98.84
10	Conference proceedings	87	7490	1.16	100

Table 2: form of cited documents in the Ph.D. theses in Public Administration
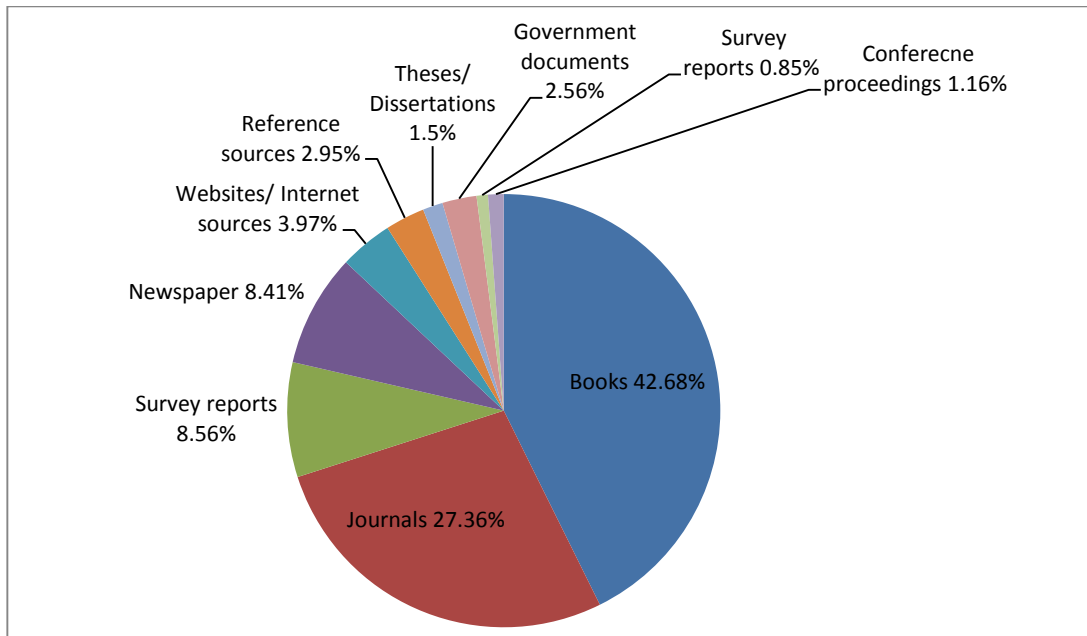

Figure 1: Form of cited documents in Public Administration

Table 2 and figure 1 describe that out of 7490 citations cited in the Ph.D. theses submitted in the Department of Public Administration, books comprised the highest citations (3197, 42.68%) followed by journals' citations (2049, 27.36%), reports (641, 8.56%), newspapers (630, 8.41%),Websites/Internet Sources (297, 3.97%),reference sources (221, 2.95%), theses/dissertation (112,1.50%), government documents (192, 2.56%), survey reports (64, 0.85%) and conference proceedings (87, 1.16%).

6.3. Authorship pattern in citations

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

T s h i p P	Books	Journals		

	Citations	Cumulative citations	%	Cumulative %	Citations	Cumulative citations	%	Cumulative %	Total citations	% of total citations
Single	2782	2782	87.02	87.02	1785	1785	87.12	87.12	4567	87.06
Two	386	3168	12.07	99.09	255	2040	12.45	99.57	641	12.22
Three	19	3187	0.59	99.68	6	2046	0.29	99.86	25	0.48
More than three	10	3197	0.31	0.32	03	2049	0.14	100	13	0.25
Total	3197	--	100	--	2049	--	100		5246	100

Table 3: Authorship pattern of citations in Public Administration

A total of 5246 citations to books and journals were analysed to ascertain the authorship pattern in the Ph.D. theses submitted in the Department of Public Administration, 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 3197citations (42.68%), while journals accounted for 2049 citations (27.36%). It is clear from the above table that citations to single authorship is higher in books (2782, 87.02%) as well as in journals (1785, 87.12%). Two authors accounted for 386 citations (12.07%) to books and255 citations (12.45%) to journals, followed by three authors with 19 citations (0.59%) to books and 6citations (0.29%) to journals. Citations to more than three authors were the least in books (10, 0.31%) and journals (3, 0.14%).

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 0.13 (Appendix 1-a) and the degree of collaboration of authors in cited journal articles were calculated as 0.13 (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 1.14 (Appendix 1-c) and Collaborative Index for journals was calculated as 1.13 (Appendix 1-d). Collaborative coefficient was calculated as per the formula given by Ajiferuke (1983). Collaborative Coefficient of authors of books was calculated as 0.06 (Appendix 1-e) and Collaborative Coefficient of authors of journal articles was calculated as 0.06 (Appendix 1-f).

6.4.Obsolescence of cited literature

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

6.4.1. Obsolescence of cited journals

Table 4 shows the obsolescence of journals as cited in 60 Ph.D. theses submitted in the Department of Public Administration at Panjab University (Chandigarh) during 2002-2012:

Age in years	No. of Citations	Cumulative Citations	%	% of cumulative citations
1	4	4	0.20	0.2
2	14	18	0.68	0.88
3	39	57	1.90	2.78
4	35	92	1.71	4.49
5	48	140	2.34	6.83
6	86	226	4.20	11.03
7	94	320	4.59	15.62
8	50	370	2.44	18.06
9	3	373	0.15	18.20
10	42	415	2.05	20.25
11	16	431	0.78	21.03
12	69	500	3.37	24.40
13	130	630	6.34	30.74
14	75	705	3.66	34.41
15	90	795	4.39	38.80
16	9	804	0.44	39.24
17	79	883	3.86	43.09
18	14	897	0.68	43.78
19	30	927	1.46	45.24
20	27	954	1.32	46.56
21	49	1003	2.39	48.95
22	15	1018	0.73	49.68
23	7	1025	0.34	50.02
24	110	1135	5.37	55.39

25	28	1163	1.37	56.76
26	2	1165	0.10	56.86
27	54	1219	2.64	59.49
28	21	1240	1.02	60.52
29	33	1273	1.61	62.13
30	4	1277	0.20	62.32
>30 <94	772	2049	37.68	100.00

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

Table 4 depicts the number of citations and their respective ages. It shows that 140 journal citations (6.83%) are 5 years old, 415 citations (20.25%) are 10 years old and 795citations (38.85%) are 15 years old. The maximum age of the citations was found to be 94 years. This shows that the researchers in the Department of Public Administration cite journal articles published even 94 years back. The table also shows that half-life of 50.02% journal citations are 23 years. Figure 2 shows the half-life of journals for cumulative frequency of citations.
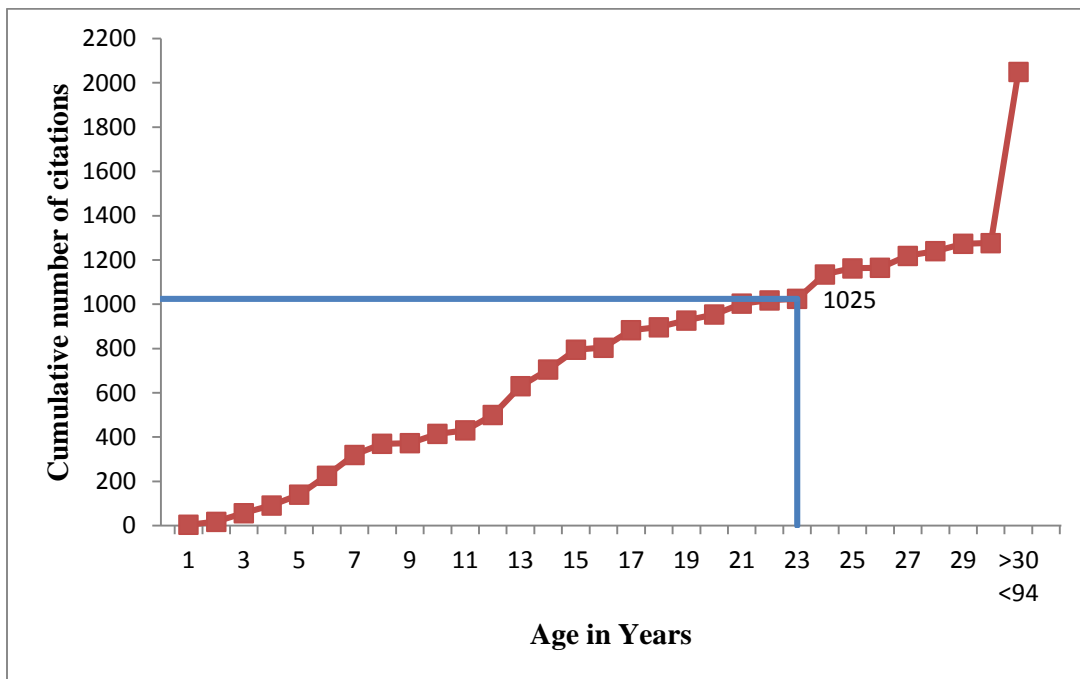
Figure 2: Bar graph showing half-life of journals for cumulative frequency of citations in Public Administration

Figure 2 above shows that the time taken to cite 2049 citations was 94 years. It can be seen that the x-coordinate for 1025 cumulative citations (half of the total citations) is 23 years. Thus, 23 years was found to be the half-life of journals cited in the theses submitted in Department of Public Administration at Panjab University (Chandigarh).

6.4.2. Obsolescence of cited books

Table 5 shows the obsolescence of books as cited in 60 Ph.D. theses submitted in the Department of Public Administration at Panjab University (Chandigarh) during 2002-2012:

Age in years	No. of Citations	Cumulative Citations	%	% of cumulative citations
1	7	7	0.22	0.22
2	61	68	1.91	2.13
3	45	113	1.41	3.54
4	83	196	2.60	6.13
5	128	324	4.00	10.14
6	141	465	4.41	14.55
7	94	559	2.94	17.49
8	22	581	0.69	18.18
9	56	637	1.75	19.93
10	32	669	1.00	20.93
11	145	814	4.54	25.46
12	184	998	5.76	31.22
13	130	1128	4.07	35.29
14	189	1317	5.91	41.20
15	13	1330	0.41	41.60
16	128	1458	4.00	45.61
17	45	1503	1.41	47.02
18	49	1552	1.53	48.55
19	41	1593	1.28	49.83
20	73	1666	2.28	52.11

21	40	1706	1.25	53.37
22	20	1726	0.63	53.99
23	175	1901	5.47	59.47
24	24	1925	0.75	60.22
25	3	1928	0.09	60.31
26	73	2001	2.28	62.59
27	35	2036	1.09	63.69
28	50	2086	1.56	65.25
29	10	2096	0.31	65.56
30	33	2129	1.03	66.60
>30 <95	1068	3197	33.41	100.00

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

Table 5 shows the number of citations and their respective ages. It shows that 324 books citations (10.14%) are 5 years old, 669 citations (20.93%) are 10 years old and 1330citations (41.60%) are 15 years old. The maximum age of the citations was found to be 95 years. This shows that the researchers in the Department of Public Administration cite books published even 95 years back. The table also shows that half-life of 49.83% books citations are 19 years. Figure 3 shows the half-life of books for cumulative frequency of citations.
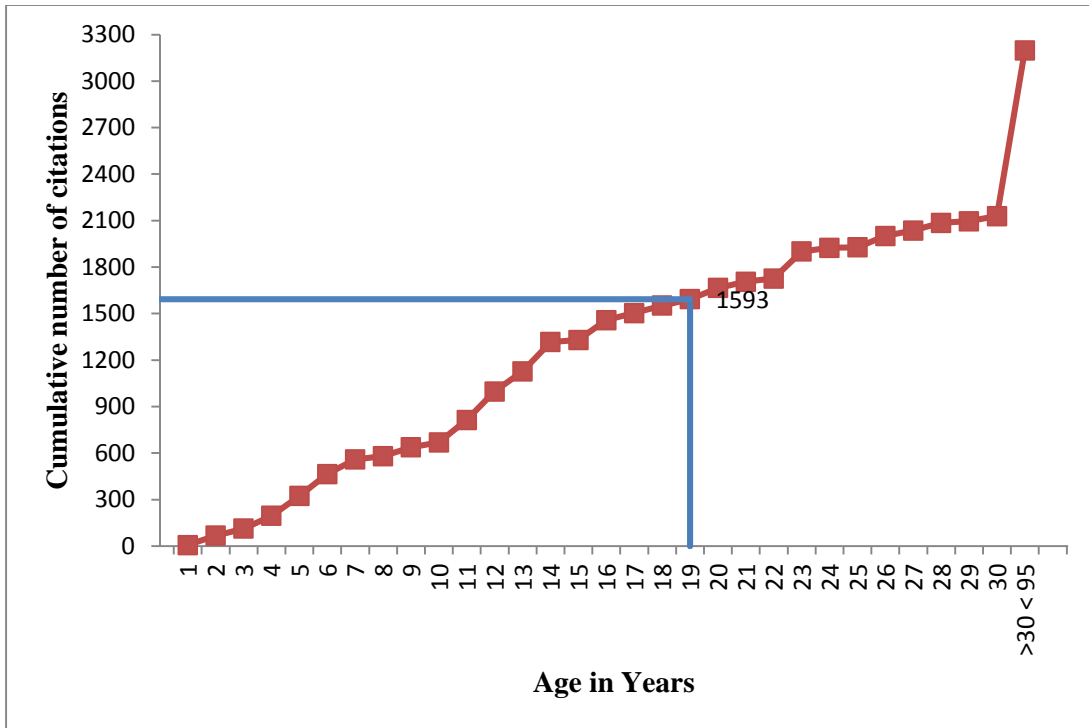
Figure 3: Bar graph showing half-life of books for cumulative frequency of citations in Public Administration

Figure 3 above shows that the time taken to cite 3197 citations was 95 years. It can be seen that the x-coordinate for 1593 cumulative citations (half of the total citations) is 19 years. Thus, 19 years was found to be the half-life of books cited in the Ph.D. theses submitted in the Department of Public Administration at Panjab University (Chandigarh) during 2002 to 2012.

6.5. 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.

6.5.1. Chronological distribution of citations to journals

Table 6 and figure 4 shows the decade-wise distribution of journals' citations used in the Ph.D. theses submitted in the Department of Public Administration at Panjab University (Chandigarh):

Sr. no.	Decade	Frequency of occurrence	Cumulative frequency	% of frequency	% of cumulative frequency
1	Before 1925	10	10	0.49	0.49
2	1926-1935	32	42	1.56	2.05
3	1936-1945	46	88	2.24	4.29
4	1946-1955	76	164	3.71	8
5	1956-1965	159	323	7.76	15.76
6	1966-1975	237	560	11.56	27.32
7	1976-1985	270	830	13.18	40.5
8	1986-1995	336	1166	16.4	56.9
9	1996-2005	563	1729	27.48	84.38
10	2006-2012	320	2049	15.62	100

Table 6: Chronological distribution of citations to journals in Public Administration

Table 6 above indicates that the highest number of journal citations belong to publications published during 1996-2005 (563, 27.48%), followed by 336 citations (16.4%)to journals published during 1986-1995, 320 citations (15.62%)to journals published during 2006-2012, 270 citations(13.18%) to journals published during 1976-1985, 237 citations (11.56%) to journals published during 1966-1975, 159 citations (7.76%) to journals published during 1956-1965, 76 citations (3.71%) to journals published during 1946-1955, 46citations (2.24%) to journals published during 1936-1945 and 32 citations (1.56%) to journals published during 1926-1935 and only 10 citations (0.49%) are to journals published before 1925.
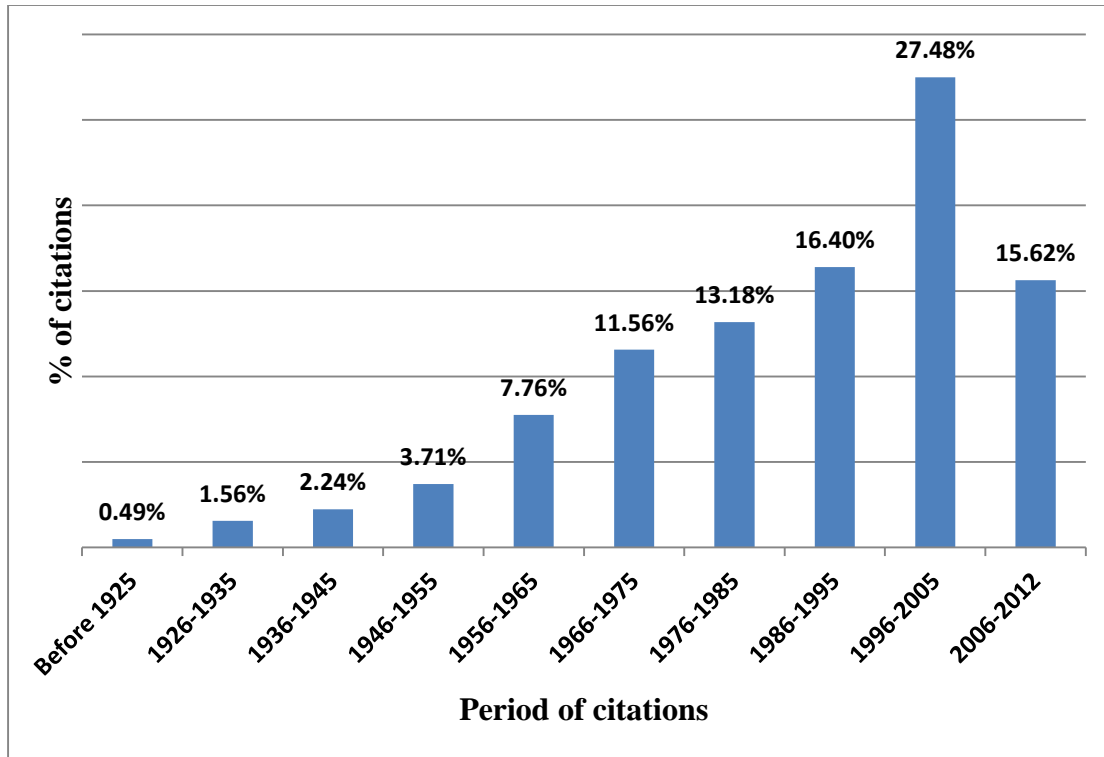
Figure 4: Chronological distribution of citations to journals in Public Administration

Figure 4 presents a pictorial representation of the chronological distribution of the citations to journals citations cited in the Ph.D. theses submitted in the Department of Public Administration at Panjab University (Chandigarh). It shows that the highest citations were gained by the journals published during 1996-2005. The figure also shows that there has been a steady growth in citations till 1976-1985. 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 journals from 1996-2005 to 2006-2012.

6.5.2. Chronological distribution of citations to books

Table 7 and figure 5 shows the decade-wise distribution of books citations used in the Ph.D. theses submitted in the Department of Public Administration at Panjab University (Chandigarh):

Sr. no.	Decade	Frequency of occurrence	Cumulative frequency	% of frequency	% of cumulative frequency
1	Before 1925	8	8	0.25	0.25

2	1926-1935	43	51	1.35	1.60
3	1936-1945	72	123	2.25	3.85
4	1946-1955	134	257	4.19	8.04
5	1956-1965	237	494	7.41	15.45
6	1966-1975	286	780	8.95	24.4
7	1976-1985	416	1196	13.01	37.41
8	1986-1995	543	1739	16.98	54.39
9	1996-2005	993	2732	31.06	85.45
10	2006-2012	465	3197	14.55	14.55

Table 7: Chronological distribution of citations to books in Public Administration

Table 7 above shows that the highest number of book citations belong to publications published during 1996-2005 (993, 31.06%), followed by 543 citations (16.98%) to books published during 1986-1995, 465 citations (14.55%) to books published during 2006-2012, 416 citations(13.01%) to books published during 1976-1985, 286 citations (8.95%) to books published during 1966-1975, 237 citations (7.41%) to books published during 1956-1965, 134 citations (4.19%) to books published during 1946-1955, 72citations (2.25%) to books published during 1936-1945 and 43 citations (1.35%) to books published during 1926-1935 and only 8 citations (0.25%) to books published before 1925.
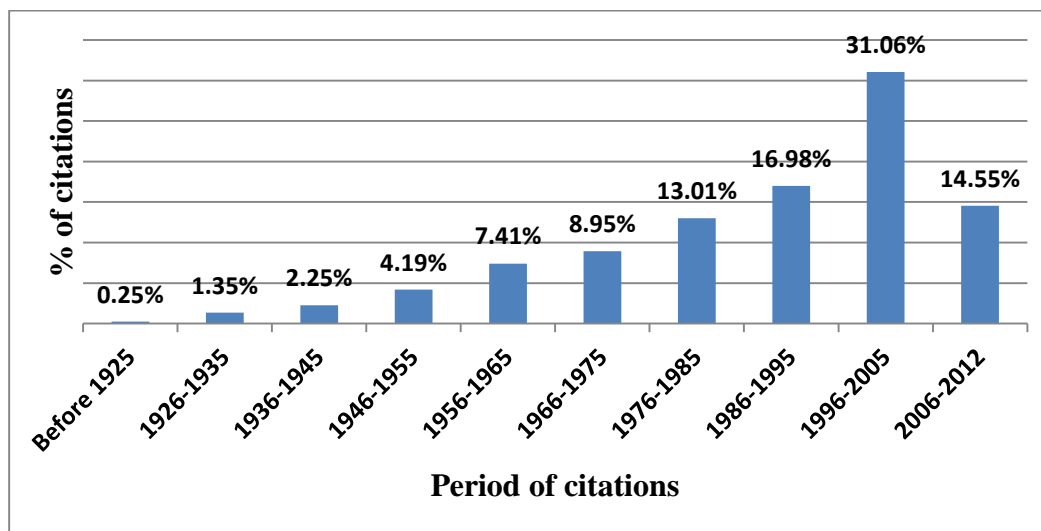

Figure 5: Chronological distributions of citations to books in Public Administration

Figure 4.30 above shows the chronological distribution of the citations to books cited in the Ph.D. theses submitted in the Department of Public Administration at Panjab University (Chandigarh). It shows that the highest citations were gained by the books published during 1996-2005. The figure also shows that there has been a steady growth in citations from 1976-1985. 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.

6.6. **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 Public Administration at Panjab University (Chandigarh).

Country	Books				Journals			
	Counts	Cumulative counts	%	Cumulative %	Counts	Cumulative Counts	%	% of cumulative counts
India	2368	2368	74.07	74.07	1672	1672	81.60	81.60
UK	370	2738	11.57	85.64	163	1835	7.96	89.56
USA	396	3134	12.39	98.03	186	2021	9.08	98.63
Singapore	61	3195	1.91	99.94	28	2049	1.37	100.00
China	2	3197	0.06	100.00	0	2049	0.00	100.00

Table 8: Geographical distribution of citations in Public Administration

Table 8 reveals that majority of the citations to books (2368, 74.07%) and journals (1672, 81.60%) are Indian publications, followed by publications from UK (370, 11.57% for books and 163, 7.96% for journals) and USA (396, 12.39% for books and 186, 9.08% for journals). It is clear from the table that there no citations of journals published from China although researchers have cited books published from this country.

6.7. Ranking of cited journals

To determine the core journals in the field of Public Administration, a rank frequency distribution of all cited journal articles is undertaken. The ranking list is a practical tool to select the cited 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 4.60 shows the rank and percentage of citations.

Sr. no.	Title	Citations	Cumulative citations	%	Cumulative %	Rank
1	Economic & Political Weekly	87	87	4.25	4.25	1
2	The Academy of Management Journal	77	164	3.76	8	2
3	Nagarlok	70	234	3.42	11.42	3
4	Journal of Marketing	62	296	3.03	14.45	4
5	Indian Journal Industrial Relations	58	354	2.83	17.28	5
6	Education Journal	45	399	2.2	19.47	6
7	The Journal of Human Resources	42	441	2.05	21.52	7
8	Journal of American Indian Education	41	482	2	23.52	8
9	Administrative Science Quarterly	40	522	1.95	25.48	9
10	Yojana	40	562	1.95	27.43	9
11	Urban India	31	593	1.51	28.94	10
12	Hastings Law Journal	28	621	1.37	30.31	11
13	Man &Development	28	649	1.37	31.67	11
14	Frontline	27	676	1.32	32.99	12
15	Indian Journal of Agriculture Economics	26	702	1.27	34.26	13
16	Reserve Bank of India Bulletin	25	727	1.22	35.48	14
17	Agricultural Situation in India	24	751	1.17	36.65	15
18	Sociological Perspectives	24	775	1.17	37.82	15
19	Indian Social Science Review	22	797	1.07	38.9	16
20	Co-operative Perspectives	21	818	1.02	39.92	17
21	MIG Journal	21	839	1.02	40.95	17
22	Social Indicators Research	21	860	1.02	41.97	17
23	Journal of Educational Psychology	20	880	0.98	42.95	18
24	Kurukshetra	19	899	0.93	43.88	19
25	Punjab Social Condition	19	918	0.93	44.8	19
26	Journal of Urban Technology	19	937	0.93	45.73	19
27	Global Governance Journal	18	955	0.88	46.61	20
28	Journal of Rural Development	18	973	0.88	47.49	20
29	The Cooperator	18	991	0.88	48.37	20

30	The Indian Economic Journal	18	1009	0.88	49.24	20

Table 9: Ranked list of highly cited journals in Public Administration

Table 4.9 shows that out of a total of 262 journal cited in the theses submitted during the study period, 'Economic & Political Weekly' was the most highly cited journal (87, 4.25%), followed by 'The Academy of Management Journal'(77, 3.76%), 'Nagarlok'(70, 3.42%), 'Journal of Marketing' (62, 3.03%),Indian Journal Industrial Relations (58, 2.83%) and 'Education Journal' (45, 2.20%), It also indicates that journals mentioned above cover 49.24% of the total citations and remaining 232 journals accounted for rest of the citations (50.76%).

6.7.1. 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 journal citations in the theses submitted in the Department of Public Administration and considered in the present study:

Number of Zone	Number of Journals	Number of Citations	Bradford's constant (k)
Core zone	07	441	---
Zone 2	40	769	5.371
Zone 3	215	839	5.370
Total	262	2049	

Table 10: Dispersion of journals in Public Administration

Table 10 shows the distribution of journals into three zones. It is evident from the ratio (7:40:215) 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 Public Administration to 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:

$$k = (1.781x \ 87)^{1/3}$$

$$k= 5.371$$

Using the value of k calculated above, Bradford groups (zones) were also calculated. The nucleus zone r_0 was calculated as: $r_0 = \dfrac{262(5.371-1)}{(5.371^3-1)}$

$$r_0 = \frac{1145.202}{153.941}$$

$$= 7.439$$

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

Nucleus zone $r_0 = r_{0*} 1 =$

$\qquad$ 7.439*1= 7.439

First zone

$\qquad$ $r_1 = r_0 * k = 7.439*5.371 = 39.957$

Second zone

$r_2 = r_0*k^2 = 7.439*5.371^2 = 214.604$

$\qquad$ The above 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 for each Bradford's group was calculated as shown in table 10. The exact number of journals in each Bradford's group was calculated using the value of k and r_o, r_1 and r_2. By dividing r_2 by r_1 and r_1 by r_o, the value of 5.371 and 5.370 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 Public Administration are in accordance with the Bradford's distribution.

7. Findings of the Study

The major findings of the study shows:

I. The highest number of theses in Public Administration were submitted in 2005 (13.33%).

II. The researchers in the discipline of Public Administration use books and journals more than other form of documents for their research work. Book citations accounted for 42.68% and journal citations accounted for 27.36%.

III. Citations to single authorship were dominant than joint authorship in both books (87.02%) and journals (87.12%).

IV. The degree of collaboration of books was calculated as 0.13 and degree of collaboration of journals was calculated as 0.13.

V. Collaborative index of books was calculated as 1.14 and collaborated index of journals was calculated as 1.13.

VI. Collaborative coefficient for books was calculated as 0.06 and collaborated coefficient for journals was calculated as 0.06.

VII. The half life period of journals citations was found to be 23 years and the half life period of book citations was found to be 19 years.

VIII. Maximum number of citations to journals (27.48%) and books (31.06%) belong to publications published during 1996-2005.

IX. Majority of citation to books (74.07%) and journals (81.60%) were of Indian origin, followed by U.K. and U.S.A.

X. Out of 262 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 Public Administration satisfy the formulation of Bradford's law of scattering.

8. Conclusion

Citation analysis here comes to their help as it provides an insight into the information seeking behavior of the users and ultimately helps in planning the collection development policy of the library. Hence, the study entitled 'Citation analysis of Ph.D. theses in Public Administration: A study of Panjab University (Chandigarh)'has been carried out. Majority of the citations were to publications authored by single authored, followed by two authors, three authors and more than three authors. Citations to books were observed more in the field of Public Administration in comparision to journals. Bradford's law was applied to identify the core journals in the field of Public Administration This type of research study will help the library in

acquisition policy as there is explosion of information and documents in the form of books and journals. The highly cited ranked list of journals also can be used by librarian and researchers to select the journals of greater importance in a particular subject area.

9. 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.

10. Recommendation

From the analysis and findings of the present research, the following recommendations for future research are given as below:

I.   Future research may be carried out on the citation pattern of researchers in the discipline of sciences in various universities.

II. Study may be undertaken to test the validity of Lotka's law (finding out the productivity of authors).

III. Scientometric, Webometric and Altmetric studies may be carried out.

References

Chandy, P.R., & Williams, T.G.E. (1994). The impact of journals and authors on international business research: a citation analysis of JIBS articles. *Journal of International Business*

Studies, *25*(4), 715-728. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1814807

Handbook of Information. (2015). Panjab university, Chandigarh

Klassen, T. W. (2011). A citation study of Public Health masters' theses. *Collection Building, 30*(4), 153-159.Retrieved from www.emerldinsight.com/0160-4953.htm

Kumar, B. T. S., & Kumar, K. S. M. (2012). Decay and half-life period of online citations cited in open access journals. *The International Information & Library Review*, *44*, 202-211. Retrieved from www.sciencedirect.com

Sangam, S. L., &Mogali, S. S. (2013). Obsolescence of literature in the field of Social Sciences.*PEARL-A Journal of Library and Information Science,7*(3), 162-168.

Veerabasavaiah, M., &Padmavathi, N. (2014). Citation analysis of doctoral theses in Education submitted at the Bangalore University, Bangalore, during 2003-2012. *PEARL-A Journal of Library and Information Science, 8*(2), 114-123.

Appendix 1

1.0 Degree of collaboration, collaborative index and collaborative coefficient in the discipline of Public Administration

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

$$Nm= 415$$

$$Ns= 2782$$

$$C= \frac{415}{415+2782} = \mathbf{0.13}$$

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

$$Nm= 264$$

$$Ns= 1785$$

$$C = \frac{264}{264 + 1785} = \mathbf{0.13}$$

1-c) Collaborative index for books

$$CI = \frac{(2782 + 2 \times 386 + 3 \times 19 + 5 \times 10)}{3197}$$

CI=1.14

1-d) Collaborative index for journals

$$CI = \frac{(1785 + 2 \times 255 + 3 \times 6 + 5 \times 3)}{2049}$$

CI=1.13

1-e) Collaborative coefficient (books)

$$CC = 1 - \frac{\left(2782 + \frac{1}{2}386 + \frac{1}{3}19 + \frac{1}{5}10\right)}{3197}$$

$$1 - \frac{44750}{15} * \frac{1}{3197}$$

$$CC = 1 - \frac{44750}{47955}$$

CC=0.06

1-f) Collaborative coefficient (journals)

$$CC = 1 - \frac{\left(1785 + \frac{1}{2}255 + \frac{1}{3}6 + \frac{1}{5}3\right)}{2049}$$

$$1 - \frac{57453}{30} * \frac{1}{2049}$$

$$CC = 1 - \frac{57453}{61470}$$

CC=0.06