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Information use pattern on sub-subjects of Political Science research: a citation analysis

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Abstract

The paper presents citation analysis of PhD theses awarded during the period 1986-2015 in five sub- subjects of Political Science under the University of Burdwan. The study is based on the 7711 citations collected from 56 PhD theses of five specific subjects' viz. Administration, Indian Politics, Political Sociology, International Relation and Political Thought under Political Science. This paper carefully analyses the bibliographic details of all 56 doctoral theses against different predefined criteria such as bibliographic forms, journal ranking, authorship pattern, authorship collaboration and degree of collaboration. After carefully analyzing all the theses against said criteria mentioned above, results have been presented with statistical tables and graphs. The bibliographic data required for the study have been collected from the research section of The University of Burdwan. In addition, Shodhganga (http://shodhganga.inflibnet.ac.in/), has also been consulted. All the references have been analysed using the dBaseIII+ programmes. It was found that, out 56 PhD theses, the maximum contribution was in Public Administration (31 theses). The study confirmed that, Books was found to be most cited materials (51.51%) followed by journal articles with 28.14%. It was also found that, the majority of citations were contributed by single author.

Keywords: Age of references, Authorship collaboration, Bibliometrics, Citation analysis, Journal ranking, authorship trend, Political Science.

1. Introduction

Bibliometrics as a tool is mostly used in Library and Information Science (LIS) field to measure the quantitative and qualitative outputs of research activities. Kogamuramath & Pothare (2001) reported that the term 'Bibliometric' was coined by Alan Pritchard in 1969, who denoted that it as a quantitative method for analyzing various aspect of written documents. The objectives of the bibliometric study are to find out authorship pattern, productivity of authors, prolific authors, core journals in subject area, indexing terms frequency, Bradford distribution of articles, year-wise distribution of articles, language-wise distribution of articles and country-wise distribution of journals (Singh, 2007).

The paper is to analyse the citation pattern of the references used in the PhD theses under the five specific subjects viz. '*Public Administration*', '*Indian Politics*', '*Political Sociology*', '*International Relation*' and '*Political Thought*' against pre-defined parameters.

2. Literature review

Bibliometric study have already been carried out in different subjects such as Biotechnology (Banateppanvar, Biradar & Kannappanavar, 2013); Physics (Natter, 2009; Guraraj, Kumbar & Amrut, 2009); Zoology (Banateppanvar, Biradar & Kannappanavar, 2013); Economics (Trayambakrao & Sonwane, 2012); Philosophy (Rayudu & Surendra, 2014); Sociology (Singh & Bebi, 2013; Baughman,1974) etc to show the growth and present trends of the subjects. Citation analysis is one branch of bibliometrics study where the unit of analysis is a document, which is being cited as a bibliographic reference or as a footnote in a citing document" (Paul & Roy, 1983). Journal ranking is essential for selecting core journals on a particular area (Gross & Gross, 1927; Singleton, 1976; Bandyopadhyay, 2000; Haridasan, 2007). Bandyopadhyay & Goswami (2001) conducted a user survey in Political Science to show the highest rank position of journals. On the other hands, Obsolescence study has also been conducted by various authors (Burton & Kebler, 1996; Buckland, 1972; Line & Sandison, 1974) to identify the documents that are frequently used by the researchers.

Authorship study is conducted to know the kind of authors, degree of collaboration among them as well as collaborative trend of authors. Various study have already been carried out to know the authorship collaboration in different disciplines such as Zoology (Vimla & Pulla, 1996); Veterinary Medicine (Chanda, 2012); Chemical Science (Goyal, Gupta & Kumar, 2013) etc. Bandyopadhyay (2004) have analysed authorship collaboration in three subjects viz. Physics, Philosophy and Political Science and concluded that the majority of articles were single authored (95.92%) whereas multi authored articles were only 4.08%.

Bandyopadhyay (1999), after reviewing PhD theses of five different disciplines, reported the same results where books was the most popular form of document (51.16%) followed by periodicals (39%). Another two studies are in support (Bandyopadhyay & Nandi, 2001; Bandyopadhyay & Mondal, 2016).

3. Objectives

The objectives of the present study are to determine the following:

- To find the bibliographic forms of literature in the sub- subjects of political science;

- To prepare a ranked list of core journals in the sub- subjects;

- To study the age of reference and to know the half life period in these subjects and

- To study the pattern of authorship collaboration and degree of collaboration in sub subjects of Political Science.

4. Scope and limitation of the study

The present study considers only five specific subjects covering 7711 citations over 56 PhD theses of Political Science awarded under the University of Burdwan during 1986 to 2015. Theses awarded in 2016 have not been considered because these are not available in public view.

5. Methodology

All the references have been noted first in 5'X3'' cards under the following parameters namely name of source document, type of document, year, number of author, self citation. Then all the entries are analysed using the 'dbaseIII+' software using these parameters and the results are presented under different heads such as bibliographic forms used, preparing ranked list of journals, age-wise distribution of references, authorship collaboration, degree of collaboration through suitable charts, and figures.

6. Data analysis and interpretation of result

This section analyses all the references under the parameters mentioned in methodology section. Finally, data are presented using tables and graphs.

6.1. Theses and references used in the subjects under study

To fulfil the purposes, this study has covered five sub subjects of Political Science (Table 1). This table shows that Public Administration gets the first rank with 31 theses and 3988 references. Whereas international relation and political thought gets 4th position according to total number of theses (Fig. 1) and political thought gets 5th position according to total number of references (Fig. 2)

Sl no	Rank		Name	Total no of theses	Percentage	Total no of references	Percentage
	Theses	References					
1	1	1	Public Administration	31	55.35	3988	51.71
2	2	2	Indian Politics	8	14.28	1317	17.07
3	2	3	Political Sociology	8	14.28	1085	14.07
4	4	4	International Relation	5	8.92	983	12.74
5	4	5	Political Thought	4	7.14	338	4.38
			TOTAL	56		7711	

Table 1: Theses and references used in specific subjects

So, it is found that public administration gets highest percentage with 55.35% of theses and 51.71% of references.
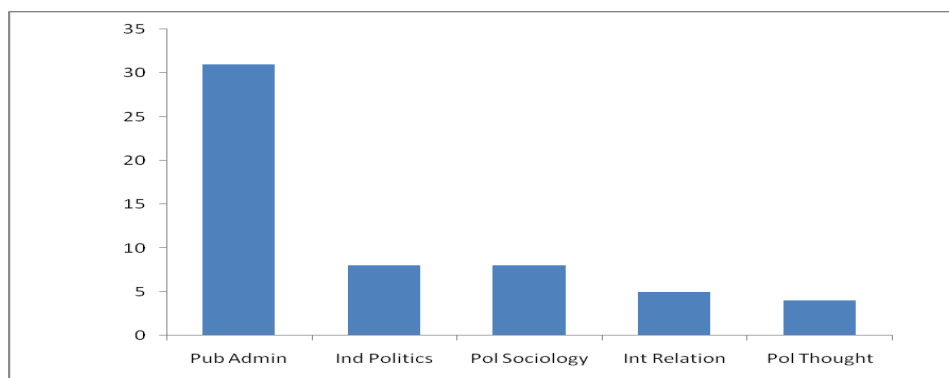
Fig. 1: Theses used in specific subjects

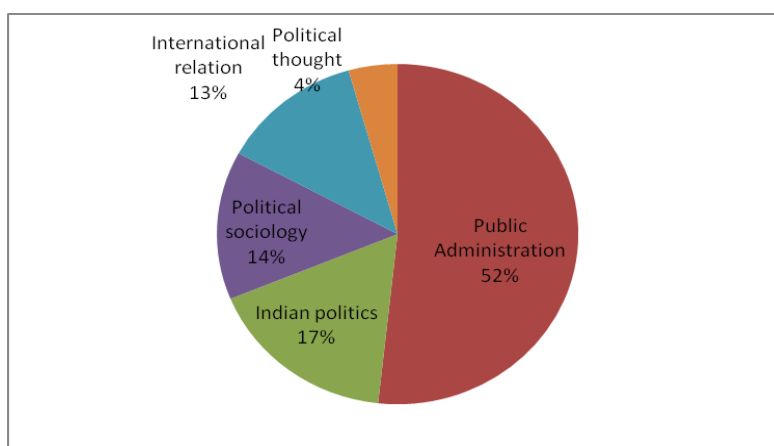Fig. 2 represents the graphical representation of the references used in specific subjects

Fig. 2: References used in specific subjects

6.2. Decade-wise Distribution

Table 2 shows the number of theses awarded (Decade-wise) during the period, 1986-2015. Here, the total period (e.g. 30 years) has been divided into three decades viz. 1986-1995, 1996-2005 and 2006-2015. It is clear from the table that the highest numbers of theses were awarded during 2006-2015 (27 theses) and the least number of theses were awarded during 1996-2005 (13 theses) (Fig.3).

Subject	Decade-wise			Total
	1986-1995	1996-2005	2006-2015	
Public Administration	8	8	15	31
International Relation	-	1	4	5
Political Sociology	5	-	3	8
Indian Politics	3	3	2	8
Political Thought	-	1	3	4
Total	16	13	27	56

Table 2: Distribution of theses (Decade-wise)

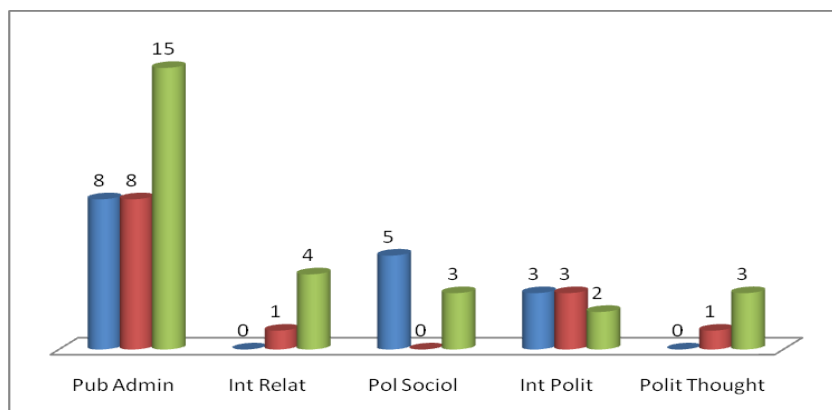Fig. 3 shows the graphical representation of the theses awarded during the period under the three decade.

Fig.3: Distribution of theses (Decade-wise)

6.3 Contribution of Supervisors

A total of 56 PhD theses (included individual and joint supervisors) were awarded during the period under the following five subjects and were supervised by 14 supervisors (Table 3). It is also clear that Harihar Bhattacharyya had supervised the highest number of PhD theses (12 PhD) and occupies 1st position followed by Shyamal Kr. Ray who had supervised 11 theses. Apurba Kumar Mukhopadhyay holds 3rd position by guiding 7 theses only (Fig.4).

Guide Name	Number of theses					Rank	Total
	Public Admin	Ind Polit	Polit Sociol	Inter Relat	Polit Thought		
Harihar Bhattacharyya	8	-	2	1	1	I	12
Shyamal Kr. Ray (Joint 1)	5	2	1	1	2	II	11
Apurba Kumar Mukhopadhyay	6	1	-	-	-	III	7
Nimai Chand Pramanik(Joint 1)	2	2	1	-	-	IV	5
Anil Baran Roy	2		2	1		IV	5
Abhijit Ghosh	1		1	1	1	V	4
Shibnath Banerjee	4			-		V	4
Rabindranath Bhattacharyay(Joint 2)	2		1	-	-	VI	3
Bholanath Banerjee (Joint 1)	1	2	-	-	-	VI	3

Sobhanath Datta Gupta (Joint 1)	1	-	1	-	-	VII	2
Sukanta Bhattacharya,	1			-	-	VIII	1
B.N.Datta	1	-	-	-	-	VIII	1
Amal Kr Mukhopadhyay	-	-	-	-	1	VIII	1
Radharaman Chakraborty	-	1	-	-	-	VIII	1

Table 3: Contribution of Supervisors

Fig.4 represents the graphical representation of contribution of supervisors in terms of number of theses supervised.
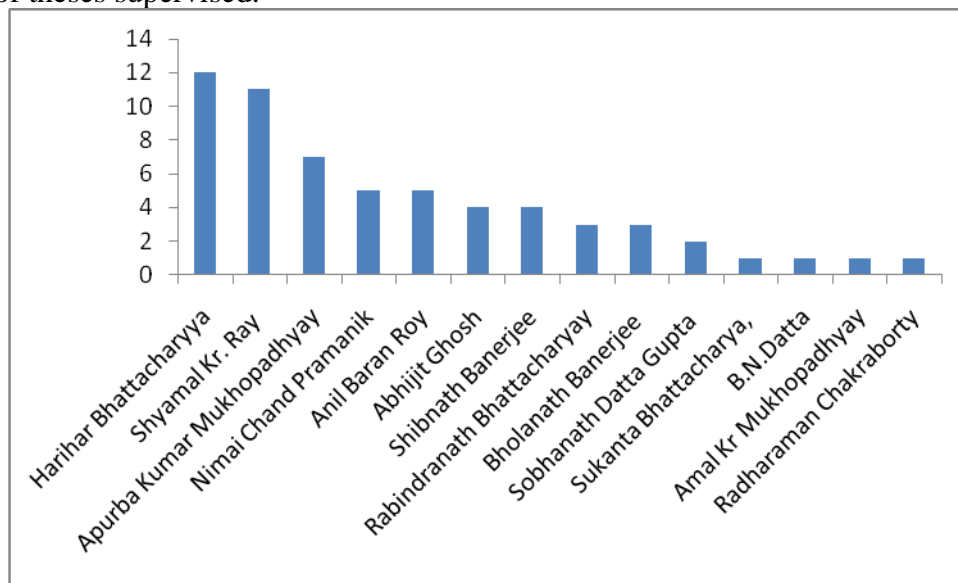

Fig.4: Contribution of Supervisors

6.4 Literature use pattern

Literature use pattern covers different form of sources used like books, journals, conference proceedings, thesis etc. This information is helpful to know the most dominant form in which the information is cited.

The table (Table 2) shows that maximum numbers of books have been used in Public Administration whereas journal articles are mostly used in Indian Politics and International Relation. But as a whole, books have been mostly used (51.51%) followed by journals (28.14%). Though, a total of 22 online books have been used and no online journals are reported in this area. So it may be concluded that books are the popular form of literature to the researchers.

Forms	Public Administration		Political Thought		Indian Politics		Political Sociology		International Relation		Total	
	No.of citation	%	No.of citation	%	No.of citation	%	No.of citation	%	No.of citation	%	No.of citation	%
Books	2148	53.86	290	85.80	570	43.28	576	53.09	419	42.62	4003	51.51
Journals	865	21.69	9	2.66	608	46.17	265	24.42	440	44.76	2187	28.14
Reports	333	8.35	-	-	26	1.97	72	6.64	13	1.32	444	5.71
Conference/ seminar etc	82	2.06	7	2.07	4	0.30	44	4.06	11	1.12	148	1.90
Thesis	7	0.18	-	-	-	-	-	-	2	0.20	9	0.11
Unpublished	80	2.01	1	0.30	7	0.53	63	5.81	-	-	151	1.94
Acts	88	2.21	-	-	16	1.21	1	0.09	-	-	105	1.35
Others	135	3.39	30	8.88	41	3.11	42	3.87	93	9.46	341	4.38
Online books	13	0.33	-	-	-	-	5	0.46	4	0.41	22	0.28
Online journals	-	-	-	-	-	-	-	-	1	0.10	1	0.01
Personal interview	237	5.94	1	0.30	45	3.42	17	1.57	-	-	300	3.86
Total	3988		338		1317		1085		983		7771	

Table 4: Type of documents used

6.5 Ranking of Journals

Journals ranking is conducted to establish a list of journals which are mostly cited by the authors (Sharif, 2004). It is useful for the librarians as well as researchers to know the core journals for the further study in a particular area (Haridasan, 2007).

Here, only 20 top journals having more than 25 citations have been shortlisted (Table 3). Though, a total of 308 journals have been used and almost 2187 citations have been appended to these journals. It is observed that EPW ranks 1st position in Political Science as well as in

another two subject's viz. Public Administration and Political Sociology. But it gets 3rd and 14th position in Indian Politics and International Relation respectively. The Statesman stands 2nd position in Political Science and occupies 1st and 2nd position in International Relation and Political Thought.

	Broad Subject			Specific subjects									
	Political Science			Pub Admin		Pol Thought		Ind Polit		Polit Social		Inter Relation	
Sl no	Jl name	Rank	Citation	Rank	Citation	Rank	Citation	Rank	Citation	Rank	Citation	Rank	Citation
1	EPW	1	307	1	227	-	-	3	47	1	23	14	10
2	THE STATESMAN	2	224	4	24	2	1	11	120	4	16	1	63
3	ANANDA BAZAR PATRIKA	3	95	6	19	2	1	2	55	3	19	44	1
4	NEW AGE	4	78	-	-	-	-	1	75	17	3	-	-
5	IJPA	5	57	2	54	-	-	23	3		-	-	-
6	THE HINDU	6	54	32	4	-	-	-	-	22	2	-	-
7	KURUKSHETRA	6	54	2	54	-	-	-	-	-	-	-	-
8	TIMES OF INDIA	8	49	20	7			13	12	36	1	4	29
9	THE HINDUSTAN TIMES	9	45	32	4	-	-	-	-	12	5	3	36
10	CROSSROADS	10	38	-	-	-	-	5	38	-	-	-	-
11	HARIJAN	11	33	10	13	-	-	10	20	-	-	-	-
12	AMRITA BAZAR PATRIKA	12	32	20	7	-	-	-	-	2	22	29	3
13	ASIAN SURVEY	13	31	8	15	-	-	23	3	36	1	8	12
14	PEOPLE DEMOCRACY	13	31	41	3	-	-	6	28		-	-	-
15	GANASHAKTI	15	29	41	3	-	-	8	25	36	1	-	-
16	SOC SCIENTIST	15	29	10	13	-	-	18	5	6	11	-	-
17	THE SUNDAY STATESMAN	15	29	5	23			-	-	10	6	-	-
18	NATIONAL FRONT	18	28	-	-	-	-	6	28	-	-	-	-
19	INDIAN EXPRESS	18	28	60	2	-	-	23	3	-	-	5	23
20	THE TELEGRAPH	20	26	16	8	-	-	36	1	36	1	6	16

Table 5: Rank list of journals

6.6 Age Study

Aging is considered to be an important factor in researchers' creativity, productivity, and collaborative behaviour (Sugimoto et al, 2016). The percentage of references in four specific subjects of Political Science with 0-4 years of age is given below (Table 4).

It may be said that Political Sociology has used more recent documents (18.06%) whereas in case of Indian Politics, the rate is (5.32%).

Specific Subject	Age Study (0-4 years)
Political Sociology	18.06%
Public Administration	15.17%
International Relation	8.04%
Political Thought	6.80%
Political Thought	5.32%

Table 6: Age study

6.6.1 Half-Life

Table 5 shows the half-life period of the five specific subjects of Political Science. It covers 50% of age of references.

It is found that Political Sociology has taken nearly 11.08 years to cover 50% of age of references whereas in case of Public Administration, it is 14.6. International Relation has taken16.6 years whereas Indian Politics has taken 18.9 years to cover 50% of age of references. And, Political Thought has taken maximum time e.g. 25.4 years to cover the same (Fig.5).

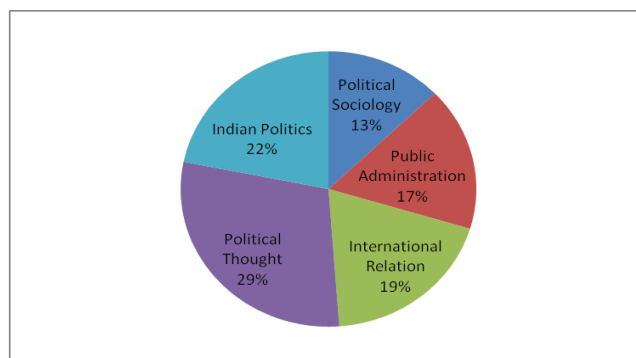| Specific Subject	50% of References
Political Sociology	11.08
Public Administration	14.6
International Relation	16.6
Political Thought	25.4
Political Thought	18.09

Table 7: Half-Life period

Fig. 5: Half-Life period

6.7 Authorship Pattern

This section shows the authorship pattern of documents cited. "The distribution of the citations according to the number of authors, in the particular discipline, that means authorship pattern" (Doreswamy, 2001). Some experts opined that majority of the articles are single and double authored, and multi authored articles are less in number (Sharif, 2004; Barroah & Sharma, 1999).

This study concludes that the trend is towards the single authorship pattern (Fig. 6) and Political Thought ranks top position (99.11%). And, Public Administration occupies top position in the list of multi authored paper (6.32%) (Table 6 & 7).

Specific subjects	Number of authors			
	1	2	3	4
Public Administration	93.61	5.72	0.55	0.05
Political Thought	99.11	0.89	-	-
Indian Politics	98.79	1.06	0.15	-
Political Sociology	97.60	1.94	0.28	0.18
International Relation	96.64	3.05	0.31	-

Table 8: Authorship pattern

Specific subject	% of single authored of article	% of multiple authored article
Public Administration	93.61	6.32
Political Thought	99.11	0.89
Indian Politics	98.79	1.21
Political Sociology	97.60	2.4
International Relation	96.64	3.36

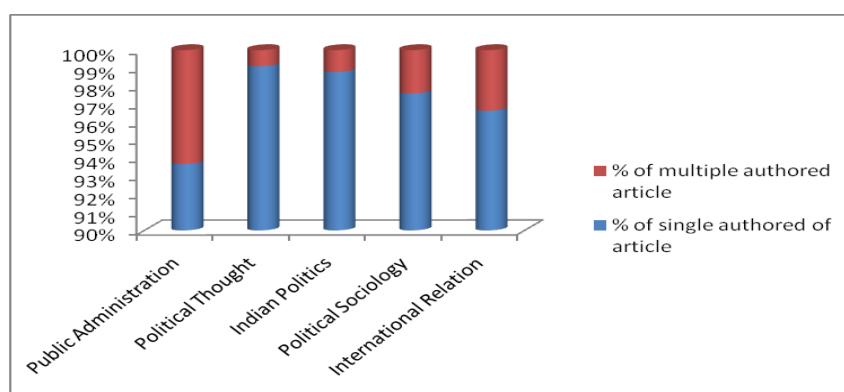Table 9: Proportion of Single & Multi-authored papers

Fig 6: Proportion of Single & Multi-authored papers

6.8 Average Author per Reference

It is found that average number of authors per article varies among the subjects. The average number of authors per reference is 1.07 in Public Administration. It is also true in other four subjects (Table 8). So, it may be concluded that trends is towards collaborative research.

Subjects	Average number of Authors per Article
Public Administration	1.07
Political Thought	1.01
Indian Politics	1.01
Political Sociology	1.03
International Relation	1.04

Table 8: Average number of Authors per Article

6.9   Degree of Authorship Collaboration

Degree of collaboration is the ratio of multi-authored papers published during a year and the total number of papers published during the year. The formula as suggested by K. Subramanyam (Subramanyam, 1983) has been used for calculating degree of collaboration.

C=Nm/ Nm+Ns

C= Degree of collaboration, Nm= Number of multi authored papers, Ns= Number of single authored papers.

It is found that the Degree of Collaboration (e.g. multi authored articles) is highest in Public Administration (0.06) (Table 9).

Subject	Degree of Authorship Collaboration
Public Administration	0.06
International Relation	0.03
Political Sociology	0.02
Indian Politics	0.01
Political Thought	0.01

Table-9: Degree of Authorship Collaboration

7   Conclusion

From the observation, it may be said that Public Administration, out of five sub-subjects, is the top most popular subject as most of the theses and references were appended to it. It shows the major differences among sub-disciplines of Political Science in terms of sources used, literature obsolescence etc. Books have been the most preferred sources followed by journals, conferences etc. Journal 'EPW' gets 1st position in two specific subjects (Public Administration and Political Sociology) followed by 'The Statesman' and these two journals e.g. EPW & The Statesman, out of 2187 total ranked journals, altogether cover 24.3% of total citations. The results give an overview of the core journals in this domain and indicate that researchers are very much aware in selecting such core journals in publishing their research outputs. The single authorship appeared most in the citations under study. It may mean that doctoral students of Political Science mostly prefer to cite single-authored literature.

Acknowledgement

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