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Research Article

Measuring the Trends of Authorship Patterns in PhD Theses of Political Science: A Citation Analysis

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Abstract

This paper discusses a bibliometric study of the data collected from 68 Doctoral Dissertations in Political Science presented at the University of Burdwan from 1996 to 2025. This study examines authorship over time within defined categories like single-authored papers, multi-authored papers, average density of authors, and the Degree of Collaboration (DC). Based on empirical results, single-authored articles are still the dominant format in political science literature. Only 4.32% of citations are in multi-authored works, and 95.68% of citations are single-authored. It reveals that the degree of collaboration of the subjects under study has increased from the period 1996-2005 to 2016-2025 except for 'Political Thought'. The overall degree of collaboration (DC = 0.04) is low, with a mean number of authors for a citation of 1.05 over the 30 years. It also shows that Research collaboration is steadily improving over time. The study finds that the discipline is still dominated by single-scholarship, but an incremental trend towards a team-based approach to research is developing.

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KEYWORDS: Bibliometrics, Citation analysis, Degree of collaboration (DC), Authorship dynamics, Political science and thesis research.

1. INTRODUCTION

Authorship pattern is one of the important aspects in citation analysis (Zafrunnisha & Pulla Reddy, 2009). Research trends are essential to understanding the intellectual trajectory and evolution of a discipline, as researchers and information scientists need to understand both. Scholarly communication is more and more oriented towards collaborative research in the current research situation. Derek J de Solla Price (1963) pointed out this trend in bibliometrics, saying that if it continues at its current pace, single-authored papers will be "extinct by 1980". Though traditionally single-authored works have preponderated in Political Science, the rise of multi-authorship and multidisciplinary collaboration indicates the increasing professionalisation and methodologisation of the field (Arora and Pawan, 1995). The purpose of the present study is to analyse trends in authorship patterns in political science PhD theses from 1996 to 2025.

2. LITERATURE REVIEW

A number of studies have been carried out based on authorship pattern like Psychology (Karisidappa, Maheswarappa & Shirol, 1990); Zoological Science (Khaiser & Rajendra, 1990); Agricultural Science (Mujoo-Munshi, Vashishth & Gautam, 1993); Science and technology (Joshi & Maheswarappa, 1994). There are many studies based on multi-authored trends like Agricultural Science (Balog, 1979; Krishna & Kumar, 2004); Physical Science (Mahapatra & Mathias, 1987); Genetics and Plant breeding (Kumbar & Kumar, 2011). Degree of collaboration is the ratio of multi-authored papers published during a year and the total number of papers published during the year in a discipline (Subramanyam, 1983). Vimla & Reddy (1996) analyzed the doctoral theses on Zoology and reported that the ratio of single- and multi-authored papers was 1:3. multi-authored papers (74.85%) were higher than single-authored papers (25.15%), and the degree of collaboration was 0.75. After analyzing 92 doctoral theses of different disciplines, Bandyopadhyay (2001) reported that the multi-authorship trend increased during the period 1981-1990, except in Political Science (2.96%) and Philosophy, excluding Psychology (4.02%). Zafrunnisha & Pullareddy (2009) traced that multi-authored papers (52.88) were higher than single-authored papers (47.12%). This study indicates collaborative research. Another two studies (Pillai, 2007; Biradar & Tadasad, 2015) are in support. After analyzing the authorship pattern in Veterinary Science during the period, Arya & Sharma (2011) observed that the single-authored accounts were 16079 papers (16.45%) out

of 97740 papers, and the degree of collaboration was 0.84. It also indicates that the collaboration research trend has increased. In another study, Arya (2012) also supported this view. Khaparde & Pawar (2013) analyzed the authorship pattern in the field of Information Technology and reported that single-authored articles (52.04%) were higher than multi-authored articles (45.11%). This study indicates that single-authored articles are predominant than multi authors. The present study also supported this view.

3. OBJECTIVES

The objectives of the present study are:

- To study the decade-wise distribution of authorship pattern of Political Science and its subfields;
- To determine the overall **authorship patterns** (single vs. joint/multi-authored) in cited references;
- To know the decade-wise average number of authors per article;
- To compute bibliometric metrics such as the **Degree of Collaboration (DC)** in political science research; and
- To observe temporal changes in collaboration levels across different sub-fields of political science over time.

4. Scope of the study

A total of 7711 citations appended to 68 PhD theses of five major sub-fields of Political Science viz., Public Administration, Indian Politics, International Relation, Political Sociology and Political Thought have been analyzed to show the trend of authorship pattern.

5. METHODOLOGY

A total of 7711 citations were collected from Shodhganga (<http://shodhganga.inflibnet.ac.in/>), a repository for Indian PhD theses, and the theses section of the University of Burdwan. Then all these references (bibliographic form, authorship pattern) are analysed through dBaseIII plus programmers.

6. DATA ANALYSIS

This section analyzes the trend of authorship pattern of 7711 citations from 68 PhD theses of Political Science subject and its sub-fields during the period 1996-2025 through various tables and charts. The results of the analysis are discussed below.

a. Decade-wise authorship pattern in Political Science and subfields

Table 1: shows the authorship pattern in Political Science and its subfields (decade-wise) during the period 1996-2025.

Year	Pol. Science		Pub Admin		Indian Politics		International Relation		Political Sociology		Political Thought	
	Single author %	Multi authors %	Single author %	Multi authors %	Single author %	Multi authors %	Single author %	Multi authors %	Single author %	Multi authors %	Single author %	Multi authors %
1996-2005	98.39	1.61	97.62	2.38	99.45	0.55	-	-	98.29	1.71	100	0.00
2006-2015	96.86	3.14	94.55	5.45	98.32	1.68	100	0.00	99.53	0.47	98.06	1.94
2016-2025	93.22	6.78	91.67	8.33	-	-	95.92	4.08	93.89	6.11	99.40	0.60

Total	95.68	4.32	93.61	6.39	98.79	1.21	96.64	3.36	97.60	2.4	99.11	0.89
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Table 1: Decade-wise authorship pattern in Political Science and subfields

From this table, it is noticed that the single-authored papers have shown a declining trend, and multi-authored papers have increased in the entire subject from **1996-2005** to **2016-2025** except Political Thought. There were no papers cited in Indian Politics (2016-2025) and International Relations (1996-2025). This indicates the trend towards collaborative research.

b. Single Vs multiple authorship trend

Table 2 shows the single and multiple authored trends of major sub-fields of Political Science. It is found that the percentage of multi-authored papers in Public Administration is high (6.39%), followed by other subfields. It is also found that single-authored papers (99.11%) in Political Thought are more compared to multi-authored papers (0.89%).

Table 2: Single Vs multiple authorship trend

Authorship	Pol. Science	Pub Admin	Indian Politics	International Relation	Political Sociology	Political Thought
Single author %	95.68	93.61	98.79	96.64	97.60	99.11
Multi-author %	4.32	6.39	1.21	3.36	2.4	0.89

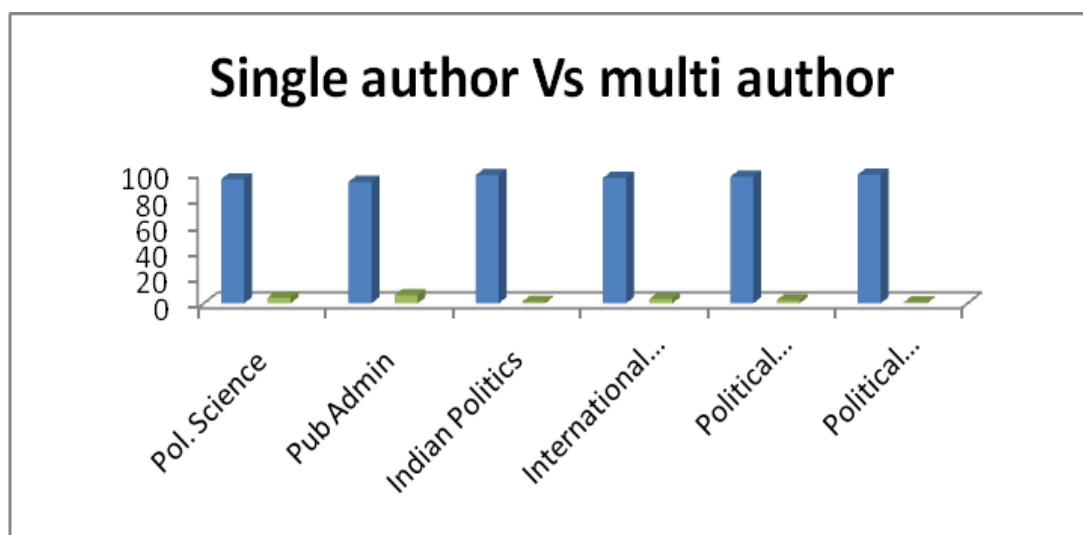
**Fig. 1: Single Vs multiple authorship trend****c. Decade-wise distribution of average number of authors**

Table 3 and Fig. 2 show the growth of the average number of authors per citation in different subfields. It is found that the average number of authors in the field of Political Science as a

whole is 1.05, and its subfields, viz., Public Administration is 1.07, Indian Politics is 1.01, International Relations is 1.04, Political Sociology is 1.03, and Political Thought is 1.01.

Table 3: Average number of authors per citation (Decade-wise)

Year	Pol. Science	Pub Admin	Indian Politics	International Relation	Political Sociology	Political Thought
1996-2005	1.02	1.03	1.01	-	1.02	1.00
2006-2015	1.03	1.06	1.02	1.00	1.00	1.02
2016-2025	1.08	1.10	-	1.04	1.08	1.01
Total	1.05	1.07	1.01	1.04	1.03	1.01

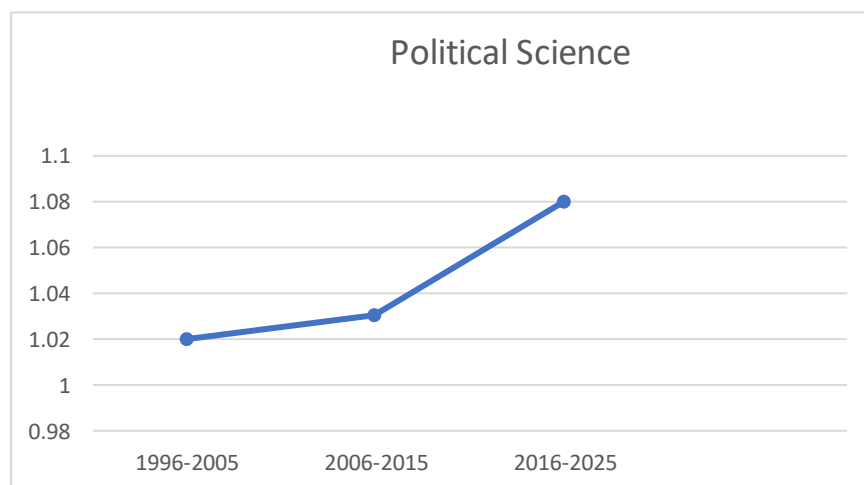


Fig.2: Average number of authors per citation (Decade-wise)

It is observed from this table that the average number of authors per paper has increased in all subjects from **1996-2005** to **2016-2025** except Political Thought. It is also found that the average number of authors in Political Sociology has increased from the period **1996-2005** (1.00) to **2016-2025** (1.08), and it decreased during the period **2006-2015** (1.00). It indicates the changing trend of research.

d. Decade-wise distribution of degree of collaboration

Trends of degree of authorship (Decade-wise) in Political Science and its sub-fields are given in Table 4 and Fig. 3. The degree of collaboration is calculated by using the following formula (Subramanyam, 1983). It is noticed that the degree of authorship in the field of Political Science as a whole is 0.04, and its subfields, viz., Pubic Administration is 1.06, Indian Politics is 0.01, International Relations is 0.03, Political Sociology is 1.02, and Political Thought is 0.01, have been presented in various years.

Table 4: Degree of collaboration (Decade-wise)

Year	Pol. Science	Pub Admin	Indian Politics	International Relation	Political Sociology	Political Thought
1996-2005	0.03	0.02	0.01	-	0.02	0.00
2006-2015	0.03	0.05	0.02	0.00	0.00	0.02
2016-2025	0.07	0.08	-	0.04	0.06	0.01
Total	0.04	0.06	0.01	0.03	0.02	0.01

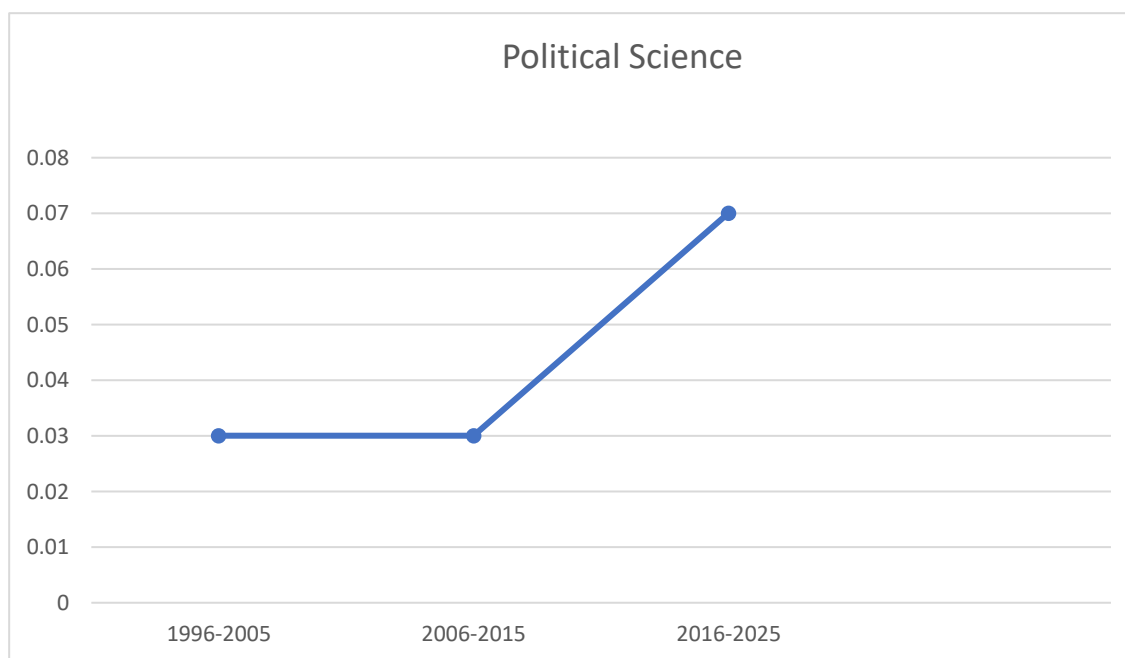


Fig.3: Degree of collaboration (Decade-wise)

It is clearly observed from the table that the degree of collaboration of the subjects under study has increased from the period 1996-2005 to 2016-2025 except 'Political Thought'. It is also observed that the degree of collaboration in Political Sociology has decreased from the period 1996-2005 (0.02) to 2006-2015 (0.00) and again it has increased during the period 2016-2025 (0.06). It indicates that the multi-authorship trend is steadily increasing. It is also said that the increase in the number of multi-authored papers may be due to the collaboration of specialists, leading to enhanced quality of research.

7. Findings

- Political Science and its subfields share virtually identical authorship patterns.
- **Subfield Uniformity:** The distribution of authorship is almost entirely single-authored (95.68%) and only a small fraction of papers are multi-authored (4.32%).
- **Collaborative Trend:** Research collaboration is steadily improving over time.
- **Average number of authors** per publication: Mean Authorship = 1.05 authors.
- **The degree of collaboration** in Political Science as a whole is 0.04.

8. CONCLUSION

The present study reveals that the typical scientific article is not a collaborative but rather an individual publication. But this trend of authorship change is only a trend that you can see through time. So, overall, the extent of collaboration in the discipline remains low, but it is clearly headed in the direction of greater collaboration. This change may be due to the growing sophistication of research methods, interdisciplinary collaboration, and a greater desire of political scientists to work with other political scientists.

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