

Publication Productivity of Social Scientists in the Centre for Development Studies, Thiruvananthapuram: A Bibliometric Analysis

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Abstract

The study analysed the research productivity of social scientists at the Centre for Development Studies (CDS), Thiruvananthapuram, during 19998-2008. The paper gives a summary and review of the various research evaluation studies of institutions and disciplines. There were 599 research articles published by the CDS researchers, including 38.23% journal articles, 23.54% chapters in books and 15.03% working papers. The highest number of publications was in the year 2008. Kerala's developmental issues (32%) and industry, technology & development (26%) were the leading areas of research during the period of study. Authorship pattern revealed that majority of the contributions were single-authored (56.59%) and the remaining were multi author contributions (43.41%). The degree of authorship collaboration is found to be 0.43. More than 66% of journal articles published are in Indian journals and 33.19% are published in foreign journals. Economic and Political Weekly, contributes the highest number of articles, 79 (34.50%) followed by Indian journal of Labour Economics with 7 (3.06%). The journal distribution pattern of the CDS publications does not fit the Bradford's distribution pattern.

Keywords: Bibliometrics, Centre for Development Studies, Social Scientists, Publication Productivity, Authorship Pattern, Bradford's law of Scattering

1. Introduction

Publication productivity is the measure of the relationship between the output of research and inputs. Evaluating the productivity of an institutional research and development activities highlights the contribution of the institution and the individual scientists engaged in research. It also provides some insights into the complex dynamics of research activity and enables policy makers and administrators to provide adequate facilities and gauge the research activities in a proper direction. A well known productivity indicator is the number of publications produced by scientists, institutions, or research groups. Over the years, scientometric and bibliometric techniques have become tools to evaluate the productivity of research institutes and individual researcher, as well as to map the growth of the research area.

Bibliometrics is emerged as a research front in its own right in information science. It is now being vigorously pursued and with the result, it has been found that one-fourth of all the articles published in Library and Information Science periodicals are on bibliometrics and its related topics. It has also been found that many of the Social Science and Science periodicals are also carrying a large number of articles on bibliometrics (Maheswarappa, 1997). Bibliometrics is a set of methods used to study or measure texts and information. Citation analysis and content analysis are commonly used

bibliometric methods. While bibliometric methods are most often used in the field of library and information science, bibliometrics have wide applications in other areas. In fact, many research fields use bibliometric methods to explore the impact of their field, the impact of a set of researchers, or the impact of a particular paper. Bibliometrics are now used in quantitative research assessment exercises of academic output which is starting to threaten practice based research.

Publication productivity is expressed by the number of papers published by a selected unit in a given time. The publication activity may be at three levels. They include: i. publication output of individuals and research groups, ii. studies of scientific journals, iii. studies of regions and countries; supra-national aggregations.

Research publications are clearly one of the quantitative measures of the basic research activity in a country or an institution. The institution, which generates a good number of the research papers in a particular field, is considered as a frontier institution in that field. Such studies help decision makers and policy planners in the respective field to make available adequate facilities and direct the research activities in proper direction. Analysis of the publication output can be a valuable tool in mapping existing situation. Moreover, such a study aimed at analyzing the research productivity of social scientists in Centre for Development Studies (CDS) has not been conducted so far.

It is a quantitative study of the publication productivity of CDS, during the ten years period from 1999 to 2008, taken from the annual reports.

2. Centre for Development Studies

The Centre for Development Studies (CDS) is an autonomous social science research and teaching founded in 1971 by the noted economist Professor K. N. Raj. It is considered to be one of the foremost development economic research centres in the country supported by the Government of Kerala and the Indian Council of Social Science Research (ICSSR), Government of India.

The teaching programmes of the Centre include an M. Phil Programme in Applied Economics affiliated to the Jawaharlal Nehru University (JNU), New Delhi, and Ph. D Programme affiliated to JNU and the Kerala University. There are 50- 60 research students pursuing M Phil and PhD programmes affiliated to the JNU. It is located in a residential area in the northern outskirts of Thiruvananthapuram, Kerala. The CDS campus and buildings, designed by the world-renowned architect, Dr. Laurie Baker, exemplify the cost-effective techniques in construction.

The K. N. Raj Library (CDS Library) is one of the well- stocked social science research libraries in the country with an impressive collection of books, professional journals, working papers, microform documents and digital databases on various branches of social sciences and development studies. The current stock of books is over 1.5lakhs. The catalogue is available online from anywhere through the Virtual Private Network (VPN). The library's collection of professional journals is equally impressive with subscriptions for 245 journals including 125 published abroad. It receives about 160 periodicals on gift/exchange basis from India and abroad. There are about 21,000 bound back volumes of journals, including complete sets of back runs of journals like the Journal of Political Economy and

the Economic and Political Weekly. Library has online access to the JSTOR archive of journals, UN comtrade and indiastat.com. It is worth mentioning here that the collection of the complete run of Census of India volumes (1872-2001) is available in the library.

3. Objectives of the Study

The main purpose of the study was to examine the publication productivity of social scientists in CDS, Thiruvananthapuram during the period 1999-2008 as indicated in the Annual Reports of CDS.

The study is mainly aimed at the following objectives:

1. To examine the growth of research productivity of social scientists of CDS, during 1999-2008
2. To identify the form-wise distribution of publications.
3. To study the subject-wise breakup of publications.
4. To ascertain the year-wise break up of articles in Indian and Foreign journals.
5. To determine the authorship pattern among social scientists.
6. To identify the most productive authors.
7. To prepare a rank list of Indian and foreign journals.
8. To identify the country-wise distribution of journals.
9. To study the applicability of Bradford's Law.

4. Previous Studies

A number of quantitative studies based on bibliometric/scientometric techniques have been reported to evaluate the research productivity of individuals, institutions, countries etc. In the area of social science research and institutions, scarcity of such studies is felt.

Kaur and Aggrawal (2010) brought out the results of a bibliometric study of research publications of department of Chemistry, Gurunanak Dev University, Amritsar for the period 2002-2006. Bhatia (2010) studied quantitatively research publications published by the scientists of National Institute of Occupational Health (ICMR) Ahmedabad, India during 2002-2006. Sudhier (2010) analysed the publications of Physics researchers of the Indian Institute of Science (IISc), Bangalore.

Maheswaran, Sathishkumar, and Sridharan (2009) conducted a study based on the research publications generated by Structural Engineering Research Centre (SERC) during the year 2002-2006. Sharma (2009) analysed a total of 2603 research articles published from the annual reports of CPRI and Journal of the Indian Potato Association by the scientists of Central Potato Research Institute (CPRI) during 1991-2007. Girap et al. (2009) analysed the publications of Technical Physics and Prototype Engineering Division at Bhabha Atomic Research Centre (BARC). Benamer, Bredan, and Bakoush (2009) studied and analysed the publication record of Libyan medical schools in

international journals indexed in PubMed between 1988 and 2007. Akakandelwa (2009) did an informetric analysis of 220 papers published by academic faculty at the University of Zambia from 2002 to June 2007.

The other studies include: Gupta and Dhawan (2008), Sevukan and Sharma (2008), Aaltojärvi et. al. (2008), Kademani et. al. (2007), Sevukan, Nagarajan and Sharma (2007), Angadi et. al. (2006), Rajendiran (2006), Kademani, et. al. (2006), Kademani, et. al. (2005a), Kademani et. al. (2005b) and Mehta (2005)

5. Data Analysis And Interpretations

5.1 Year-wise Distribution of Publications

The total productivity of social scientists of CDS for the ten year period (1999-2008) under study is given chronologically in Table 1.

Table 1: Year-wise Distribution of Publications

Year	No. of Publications	Percentage
1999	44	7.35
2000	41	6.84
2001	46	7.68
2002	55	9.18
2003	43	7.18
2004	52	8.68
2005	70	11.69
2006	55	9.18
2007	81	13.52
2008	112	18.70
Total	599	100.00

It can be observed that the total published literature of the CDS social scientists for the 10 year period amounts to 599. It includes journal articles, books, chapters in books, working papers and other publications. The study indicates that 2008 is the most productive year with 112 publications (18.70 %) followed by 2007 with 81 publications (13.52 %) and 2005 with 70 publications (11.69 %). The analysis shows that there is a growth of publications during the period of study.

Represents the growth of publication trend of social scientists of CDS.

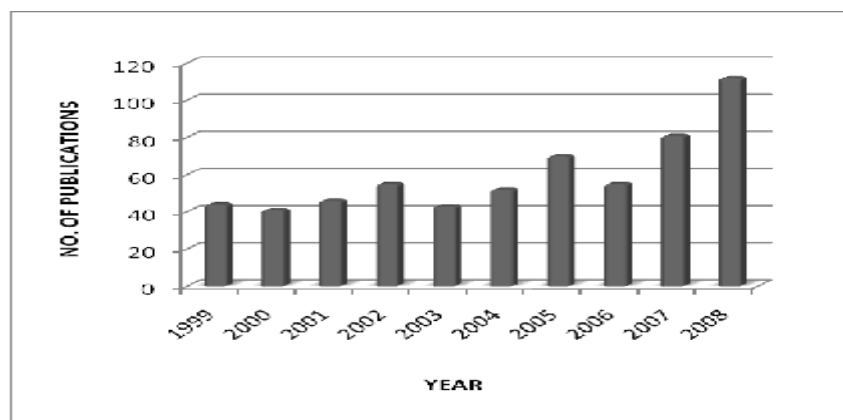


Figure 1: Growth of Publications

The bar diagram clearly shows that, the year 2008 is the most productive year, during the last 10 years.

5.2 Bibliographic Forms

The productivity of social scientists of CDS are spread over variety of publication media like journal articles, books, chapters in books, working papers and other publications.

Table 2: Bibliographic Form-wise distribution of Publications

Sl. No.	Forms	No. of Publications	Percentage	Cumulative percentage
1	Journal Articles	229	38.23	-
2	Books	46	7.68	45.91
3	Book Chapters	141	23.54	69.45
4	CDS Working Papers	90	15.03	84.48
5	Other Working papers	25	4.17	88.65
6	Reviews	22	3.67	92.32
7	Newspaper Articles	15	2.50	94.82
8	Book Reviews	9	1.50	96.32
9	CDS Monograph Series	5	0.83	97.15
10	Reports	7	1.17	98.32
11	Others	10	1.67	99.99
	Total	599	100.00	99.99

It is clear from the analysis that the share of journal articles are the most prominent bibliographic form of publication and it occupies 38.23% (229) of total publications. Chapters in books with 141 (23.54%) contributions and working papers 90 (15.03%) occupy the next two positions.

5.3 Gender-wise Distribution of contributions

Table 3 shows the gender-wise distribution of publications of social scientists of CDS.

Table 3: Gender-wise Distribution of Publications

Sl. No.	Gender	No. of Publications	Percentage
1	Male	478	79.80
2	Female	121	20.20
	Total	599	100.00

Majority of the publications of CDS scientists are males with 478 (79.80%). publications The female authors have contributed only 121 publications (20.20%). It indicates that, there are more number of male social scientists in the CDS.

5.4 Subject-Wise Distribution

The subject-wise productivity of social scientists of CDS during the period under study is given in the Table 4.

Table 4: Subject-wise Distribution of Publications

Sl.No.	Subject	Total	Percentage
1	Globalisation & Development	25	4 %
2	Industry, Technology & Development	155	26 %
3	Agriculture, Water & Natural Resources In Sustainable Development	21	4 %
4	Population & Human Development	84	14%
5	Poverty, Vulnerability & Social Security	38	6%
6	Gender & Development	48	8%
7	Kerala's Developmental Issues	192	32%
8	Comparative Studies Of India's Development With Other Countries	36	6%
	Total	599	100%

Kerala's Developmental Issues (32%) is the area under which the scientists published more number of works followed by the subject, Industry, Technology & Development which constitutes about 26 % of the total productivity. The least productive areas include Globalisation & Development; and Agriculture, both constitute only 4 % of each of the total productivity.

5.5 Most Productive Authors

The Table 5 shows the list of 20 most productive authors in CDS. The study reveals that S. Irudaya Rajan is the most productive author contributing 65 publications, followed by J. Devika (37) and K. J. Joseph (31).

Table 5: Rank-list of most productive Authors

Sl. No.	Author	No. of Publications	Percentage	Rank
1.	Irudaya Rajan S.	65	10.85	1
2.	Devika J.	37	6.18	2
3.	Joseph K. J.	31	5.18	3
4.	N. Vijayamohan Pillai	29	4.84	4
5.	Zachariah K. C.	24	4.01	5
6.	Mridul Eapen	20	3.34	6
7.	Kannan K. P.	20	3.34	6
8.	K. N. Nair	20	3.34	6
9.	Sunil Mani	18	3.01	7
10.	Lekha Chakraborty	16	2.67	8
11.	Harilal K. N.	16	2.67	8
12.	Praveena Kodoth	15	2.50	9
13.	Narayana D.	14	2.34	10
14.	John Kurien	13	2.17	11
15.	U. S. Mishra	13	2.17	11
16.	Navaneetham K.	13	2.17	11
17.	Pushpangadan K.	13	2.17	11
18.	Beena P. L.	12	2.00	12
19.	P. Mohanan Pillai	12	2.00	12
20.	Shanta N.	12	2.00	12

5.6 Authorship Pattern

Table 6 shows the authorship pattern of publications of social scientists.

Table 6 Authorship Pattern of Publications

Sl. No.	No. of Authors	No. of Articles	Percentage
1	Single Authors	339	56.59%
2	Two Authors	174	29.05%
3	Three Authors	66	11.02%
4	Four Authors	12	2.00%
5	More than Four Authors	8	1.34%
	Total	599	100.00%

From the table it is clear that 56.59% (339) of publications are single authored and only 29.05% (174) are two authored. Three, four and more than four authored publications together contribute remaining 14.36% (86). It indicates that the multi authored works are less than that of the single authored contributions.

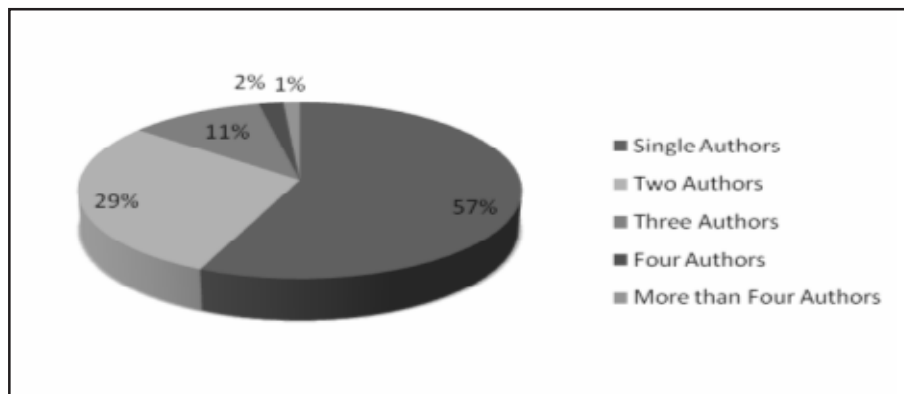


Figure 2: Authorship Pattern of Publications

The study reveals that unlike science and technology publications, most of the social science publications are single authored.

5.7 Degree of Collaboration

Extend of collaboration can be measured with the help of multi- authored papers. To measure the collaborative research pattern a simple indicator called collaboration coefficient is used. Collaboration

co-efficient is the ratio of the number of collaborative research papers during a certain period of time. As per the formula given by Subramanyan (1983), for determining the degree of collaboration in a discipline, the value of collaboration will be between 0 and 1.

To determine the degree of collaboration of publications of CDS, the number of single authored and multi-authored publications is calculated and is applied to the formula: $C = N_m / (N_m + N_s)$

C= Degree of Collaboration

N_m = Number of multi authored works

N_s = Number of single authored works

Here $C = 260/599 = 0.43$. Hence the Degree of Collaboration of publications of the CDS scientists is 0.43.

5.8 Analysis of Journal Articles

Journals are the most important primary information sources where the results of the researches conducted are get published. In the case of analyzing the productivity of the social scientists of CDS, the journal articles constitute the most important form of publication.

5.8.1 Year-wise Distribution of Journal Articles

The year-wise distribution of articles of Foreign and Indian Journal are shown in the Table 7

Table 7 Year-wise Distribution of Foreign and Indian Journals

Year	Articles in Foreign Journals	Articles in Indian Journals	Total number of articles
1999	1	16	17
2000	5	12	17
2001	10	14	24
2002	8	15	23
2003	4	13	17
2004	7	19	26
2005	8	16	24
2006	13	10	23
2007	8	16	24
2008	12	22	34
TOTAL	76 (33.19%)	153 (66.81%)	229 (100.00%)

The Analysis of Authorship of articles in journals reveals that 76 (33.19%) are published in foreign journals. Most of the articles published by the social scientists of CDS are in the Indian journals, and it accounts for 153 articles (66.81). 2008 is the most productive year. Out of the 34 total articles published in 2008, only 12 are in the foreign journals and 22 are published in the Indian journals. The trend shows that more than 66% of journal articles published by the social scientists are in Indian journals.

Figure 3: Year-wise Break up of Foreign and Indian Journals

From the figure, it is clear that, in the year 2006, the articles in the foreign journals are more than that of Indian journals. In the year, 1999, only one article appeared in a foreign journal while in 2008, it increases to 12.

5.8.2 Authorship Pattern-Journal articles

The authorship pattern of journal articles is provided in Table 8.

Table 8: Authorship pattern of Journal Articles

Sl. No.	No. of Authors	No. of Articles	%
1.	Single Author	116	50.66
2.	2 Authors	77	33.62
3.	3 Authors	26	11.35
4.	4 Authors	9	3.93
5.	More than 4 Authors	1	0.44
Total		229	100.00

5.8.3 Degree of Collaboration of Journal Articles

To determine the degree of collaboration of journal articles, the number of single authored and multi-authored are calculated, and the values are shown in the Table 9.

Table 9: Degree of Collaboration of Journal Articles

Year	No. of single authored articles	No. of multi-authored articles	Total	Degree of collaboration $C = Nm / (Nm + Ns)$
1999	9	8	17	0.47
2000	8	9	17	0.53
2001	12	12	24	0.50
2002	15	8	23	0.35
2003	9	8	17	0.47
2004	13	13	26	0.50
2005	13	11	24	0.46
2006	8	15	23	0.65
2007	10	14	24	0.58
2008	19	15	34	0.44
Total	116	113	229	0.49

collaboration of journal article is 0.49.

The degree of collaboration over the years from 1999 – 2008 is calculated and it varies from 0.35 to 0.65. The mean value is found to be 0.49. The single v/s multi authored papers are also seen in the Table 9.

5.8.4 Ranked Authors of Journals

Out of the total authors, 10 most productive authors are listed in the Table 11

Table 10: Rank List of Authors - Journals

Sl.No.	Author	No. of Journal Articles	Rank
1	Irudaya Rajan S.	30	1
2	Devika J.	14	2
3	U. S. Mishra	12	3
4	Joseph K. J.	10	4
5	N. Vijayamohan Pillai	8	5
6	Praveena Kodoth	7	6
7	Hrushikesh Mallick	7	6
8	Sunil Mani	7	6
9	Ravi Raman K.	7	6
10	Zachariah K. C.	7	6

Devika with 14 articles and U.S.Mishra with 12 articles.

The Table 8 depicts the productivity of authors during the period of study. S. Irudaya Rajan is the most productive author who published 30 papers. J. Devika with 14 articles comes second followed by and U. S. Mishra with 12 articles.

5.8.5 Ranking of Journals

Journals are the formal primary medium of communication for researchers. A list of top ranked journals are given in the Table 11 according to their frequencies.

Table 11: Rank List of Journals

Sl. No.	Journals	Publisher	Country	No. of Articles	Rank	Percentage
1	Economic and Political Weekly	Sameeksha Trust	India	79	1	34.50
2	Indian Journal of Labour Economics	Indian Society of labour Economics	India	7	2	3.06
3	Demography India	Indian Association for the Study of Population	India	5	3	2.18

4	Samyukta	Centre for Women Studies	India	5	3	2.18
5	Development and Change	Wiley Blackwell	Britain	4	4	1.75
6	Indian Economic Review	Department of Economics, University of Delhi	India	4	4	1.75
7	Asia Pacific Migration Journal	Scalabrini Migration Centre	Philippines	3	5	1.31
8	Indian Journal of Gerontology	Indian Gerontological Association	India	3	5	1.31
9	Indian Journal of Gender Studies	Sage Publications	India	3	5	1.31
10	International Migration	Wiley Blackwell	Britain	3	5	1.31

Samyukta trust top the list with the highest number of articles - 75 (37.50%). It is followed by Indian Journal of Labour Economics with a share of 7 (3.06%). Demography India and Samyuktha occupy the third position with 5 publications each. It is interesting to see that, all the 3 top ranked journals are Indian journals.

5.8.6 Rank List of Foreign Journals

Table 12 lists the top ranking foreign journals.

Table 12: Rank List of Foreign Journals

Sl.No.	Name of Journals	Publisher	Country	No. of Articles	Rank
1	Development and Change	Wiley Blackwell	Britain	4	1
2	Asia Pacific Migration Journal	Scalabrini Migration Centre	Philippines	3	2
3	International Migration	Wiley Blackwell	Britain	3	2
4	Applied Economic Letters	Routledge	Britain	2	3
5	British Medical Journal	BMJ Group	Britain	2	3
6	Environment and Development Economics	Cambridge University Press	Britain	2	3
7	Health Policy and Planning	Oxford	Britain	2	3
8	Inter-Asia Cultural Studies	Routledge	Britain	2	3
9	Journal of Aging and Social Policy	Springer	US	2	3
10	Modern Asian Studies	Cambridge University Press	Britain	2	3
11	Social Indicators Research	Springer	Netherlands	2	3

articles each. From the analysis, it can be seen that, most of the top ranked journals are published from UK and there is only one journal from US and Philippines.

5.8.7 Rank List of Indian Journals

An analysis has been made to identify the list of Indian Journals preferred by the researchers of CDS and the results are shown in the Table 13.

Table 13: Rank List of Indian Journals

It is observed from the table that, the journal Economic and Political Weekly is the most preferred Indian journal of CDS social scientists with 79 articles. Indian Journal of Labour Economics with 7 articles and Demography India and Samyukta with 5 articles each are the second and third positions respectively.

5.8.8 Geographical Distribution of Journals

The journals are analysed according to their country of origin and the result are shown in the Table 14.

Table 14: Geographical Distribution of Journals

Sl. No.	Country	No. of Journals	Rank	Percentage
1	India	44	1	42.70%
2	UK	27	2	26.20%
3	USA	18	3	17.48%
4	Netherlands	6	4	5.83%
5	Bangladesh	1	5	0.97%
6	Canada	1	5	0.97%
7	China	1	5	0.97%
8	France	1	5	0.97%
9	Japan	1	5	0.97%
10	Korea	1	5	0.97%
11	Philippines	1	5	0.97%
12	Singapore	1	5	0.97%

5.8.9 Periodicity of Journals

The analysis of periodicity of journals is shown in Table 15.

Table 15: Periodicity of Journals

Sl.No.	Frequency/Year	No. of Journals	Rank	Percentage
1	4	54	1	52.43%
2	2	18	2	17.48%
3	6	8	3	7.77%
4	12	6	4	5.82%
5	3	5	5	4.85%
6	1	3	6	2.91%
7	52	3	6	2.91%
8	8	2	7	1.94%
9	10	2	7	1.94%
10	5	1	8	0.97%
11	18	1	8	0.97%

Social scientists of CDS prefer to publish their papers in quarterly journals and it amounts for 54 (52.43%) articles. It is followed by half yearly (17.48%) and journals with frequency 6 issues per year. The study revealed that, quarterly journals are the most preferred journals for publication and monthlies and weeklies are rarely used.

5.8.10 Applicability of Bradford's Law of Scattering

Samuel Clement Bradford in 1934 points out that, if scientific journals are arranged in order of decreasing productivity of articles on a given subject, they may be divided into a nucleus of periodicals more particularly devoted to the subject and several groups and zones containing the same number of articles as the nucleus when the number of periodicals in the nucleus and succeeding zones will be 1: n: n².

For testing the algebraic interpretation of the law, 103 journal titles are divided into three zones. The Bradford's multiplier factor was arrived at by dividing periodical titles of a zone by its preceding zone.

The distribution of journals and corresponding number of articles in the three zones along with the value of Bradford multipliers are shown in Table 16.

Table 16: Scattering of journals and articles over Bradford zone

Zones	No. of Journals	Percentage of Journals	No. of Articles	Percentage of Articles	Multiplier
1	1	0.97	79	34.50	-
2	27	26.21	75	32.75	27
3	75	72.82	75	32.75	2.78
Total	103	100.00	229	100.00	14.89

In the present data set, 1 journal covers 79 articles, next 27 journals covers 75 articles and remaining 75 journals covers 75 articles. In other words 1/3rd of the total articles have been covered by each group of the journals.

According to Bradford, the zones, thus identified will form an approximately geometric series in the form 1: n: n². But it is found that the relationship of each zone in the present study is 1: 27: 75. This does not fit into the Bradford's distribution.

5.9 Conclusion

Evaluation of the productivity of institutional research and developmental activities highlights the contribution of the institution and the individuals engaged in research. The analysis shows that the social scientists of CDS are publishing their research outputs in various forms like journal articles, books, book chapters, working papers and other publications.

Journal articles are the most preferred form of publication of CDS social scientists and it amounts 1/3rd of the total publications. The social scientists of CDS prefer mostly Indian journals to publish their articles. The Indian journal Economic and Political Weekly contributes the highest number of articles. Among the subjects, Kerala's Developmental Issues ranks the top which shows thrust given by the social scientists in this subject division. Single author contributions predominate which shows degree of collaboration is less in the social science field. The productivity of the social scientists of CDS shows substantial growth both quantitatively and qualitatively with the development of the institution.

Measuring research productivity of an institution reflects its scientific and technological developments and progress. Evaluating the productivity of institutional research and developmental activities highlights the contribution of the institution and the individual scientists engaged in research. It also provides some insights into the complex dynamics of research activity and directs the research activities in a proper direction.

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