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Authorship patterns and degree of collaboration of Sri Lankan scientific publications in Social sciences and Humanities – a picture from SCOPUS

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Abstract

[The purpose of this study is to identify the authorship patterns and degree of collaboration of Sri Lanka in humanities and social science research with a total of 1795 records of publications authored by 3521 authors during the period 1960 – 2012 (inclusive) derived from SCOPUS database. The research method of this study was Bibliometric analytical method. Findings of the analysis revealed that the majority of the publications are contributed by multiple authors. Degree of collaboration was progressively increased over the study span. Remarkable collaborative contributors are from United States with 15.93%.]

Keywords: Bibliometrics; Sri Lanka; Social sciences; Authorship pattern

I. INTRODUCTION

Studies on evaluation of academic productivity and quality have led to development of research productivity of a specific nation. Bibliometric studies may be broadly classified into two main groups-descriptive and behavioral studies. Descriptive studies are those which confine themselves to describing the characteristics or the features of a document or literature [1].

Authorship studies also descriptive bibliometric studies focused on authorship patterns. They describe author characteristics and authorship of articles and degree of collaboration of a specific group of authors. The starting point in an authorship study was to select a group of publications. This selection of publications forms the unit of analysis based on a research group. This study especially focuses on the authorship patterns and degree of collaboration of Sri Lanka in humanities and social science research with the records of publications derived from SCOPUS database. A total of 1795 records of publications authored by 3521 authors during the period 1960 – 2012 were analyzed in this study.

II. OBJECTIVES

The principal objective of this study is to identify authorship patterns and degree of collaboration of Sri Lanka in social science research

The specific objectives of the study are:

- to identify the proportion of single vs. multi-authored papers
- to determine the degree of collaboration and average number of authors per paper.

III. HYPOTHESES

The following hypotheses were tested with appropriate statistical tools:

H₁ - There has been an increasing trend in collaborative research and Degree of collaboration.

IV. RESEARCH PROBLEM

Need of determining the authorship characteristics of research articles published by Sri Lankan authors in the field of social sciences with particular reference to what are the characteristics and patterns in authorship of research articles published by Sri Lankan social scientists. Therefore, it is interesting to find out the authorship trend and degree of collaboration of authors in this study area for the benefit of the nation.

V. SIGNIFICANCE

When encouraging and developing the process of bibliometric study, it eventually supports for the evaluation of research performance and output of a particular field in a country. In recent years there has been a resurgence of interest of both in scholarly communications as a research area and the application of bibliometrics as a research method. In Sri Lanka, few bibliometric studies have been done especially by some Library and Information Science professionals. This study persuades library and information science professionals of Sri Lanka to conduct more authorship studies.

VI. REVIEW OF LITERATURE

Various Bibliometric studies focused on authorship patterns were conducted to analyze the authorship characteristics of a group of authors. Selection of group of authors could be different in these studies.

Some of them focused on group of authors of a specific country [2]; [3]; some others focused on a particular subject area [4]; [5]; some more focused on a particular type of publication or Journals [6]; [7]; [8].

VII. METHODOLOGY

The research method of this study was Bibliometric analytical method. In this study Bibliometric analytical software namely Bibexcel, developed by Olle Persson [9], was used to identify authorship patterns and degree of collaboration of Sri Lanka in social science research. Each record of publications were checked, examined and tabulated for necessary authorship data in to separate sheets and

analyzed using this software. Further application soft wares such as MS excel, Notepad++ are also used in view of necessity. Findings were interpreted with tabulated and graphical display.

The required data for the analysis of this study was collected from SCOPUS database, considering the availability and reliability of data. The process of selection of population of publications was as follows: Affiliation - 'Sri Lanka' or 'Srilanka' or 'Ceylon', Publication year - '1960-2012' Document type – 'ALL' and the subject areas "Social sciences and Humanities". It can be seen that, a total of 1795 bibliographic records of publications in Social sciences and Humanities research output of Sri Lanka during the period 1960 – 2012 (inclusive) were downloaded. Collected data was exported in RIS format with complete bibliographic records for analysis using bibexcel soft ware.

VIII. RESULTS AND DISCUSSION

Analysis of distribution of publications

The analysis of publications of the total 1795 records reveals that journal articles occupy predominant position sharing 77% (1383) percent of total study data. Other ranked sources are Conference papers (7.2%), reviews (6.3%), letters (3.1%), notes (1.6%) and others (4.7%). (Table -1)

Table 1: Type of document – wise distribution of publications

Document Type	Numbers	%
Article	1383	77.0
Conference Paper	130	7.2
Review	113	6.3
Letter	56	3.1
Note	28	1.6
Book Chapter	15	0.8
Short Survey	14	0.8
Editorial	11	0.6
Article in Press	5	0.3
Book	2	0.1
Others	38	2.1
Total	1795	100.0

Following table- 2 gives chronological distribution of publications of study span. Out of 1795 publications published during the period 1960 - 2012, maximum number of 169 (9.42%) were published in 2010 followed by 2012 (9.30%); 2011(8.41%) and 2009 (8.36%) respectively. The range of publications published per year during the period under study is in between 1-169.

It is observed that 50% of entire publications output brought from 1961 to 2006, and the balance (50%) were published between 2007 and 2012. It is also observed that there is an increase in the number of publications were published in 1961 (0.11 %) and in 2012 (9.3 %). However

equal contributions were occurred during the periods 1971 and 1972 (0.11%); 1977 and 1978(0.22%); 1981 and 1982 (0.39%). It is also observed that there are less than 50% of publications brought from 1961 to 2005 and 50% to 100 % of publications were published between 2006 and 2012.

Table 2- Year wise distribution of publications

Year	Number of Publications	(%)	Cumulative (%)
1961	2	0.11	0.11
1962	3	0.17	0.28
1963	8	0.45	0.72
1964	0	0	0
1965	3	0.17	0.89
1966	4	0.22	1.11
1967	7	0.39	1.5
1968	2	0.11	1.62
1969	1	0.06	1.67
1970	6	0.33	2.01
1971	2	0.11	2.12
1972	2	0.11	2.23
1973	7	0.39	2.62
1974	5	0.28	2.9
1975	4	0.22	3.12
1976	8	0.45	3.57
1977	4	0.22	3.79
1978	4	0.22	4.01
1979	6	0.33	4.35
1980	5	0.28	4.62
1981	7	0.39	5.01
1982	7	0.39	5.4
1983	13	0.72	6.13
1984	6	0.33	6.46
1985	8	0.45	6.91
1986	14	0.78	7.69
1987	11	0.61	8.3
1988	22	1.23	9.53
1989	16	0.89	10.42
1990	15	0.84	11.25
1991	9	0.5	11.75
1992	14	0.78	12.53
1993	13	0.72	13.26
1994	4	0.22	13.48
1995	10	0.56	14.04
1996	34	1.89	15.93
1997	46	2.56	18.5
1998	44	2.45	20.95
1999	42	2.34	23.29

2000	55	3.06	26.35
2001	50	2.79	29.14
2002	68	3.79	32.92
2003	44	2.45	35.38
2004	66	3.68	39.05
2005	79	4.4	43.45
2006	133	7.41	50.86
2007	101	5.63	56.49
2008	144	8.02	64.51
2009	150	8.36	72.87
2010	169	9.42	82.28
2011	151	8.41	90.7
2012	167	9.3	100
Total	1795	100	

ANALYSIS OF AUTHORSHIP PATTERNS

a. DISTRIBUTION OF CO-AUTHORSHIP

Figure 1 shows the authorship patterns of research publications. It could be noted that Single authored papers rank first in order sharing 30%. The next place is recorded by two authored papers sharing 22% of the total research contributions. Three authored contributions take that third position in order occupying 19% of the total research output during the study period followed by between Five to ten authored (10%). The least percentage was recorded by more than ten authored publications with 6%. A significant note of the study is that the majority of the publications are contributed by multiple authors. It indicates that the single authored work is less than that of the multiple authored contributions. (Figure -1)

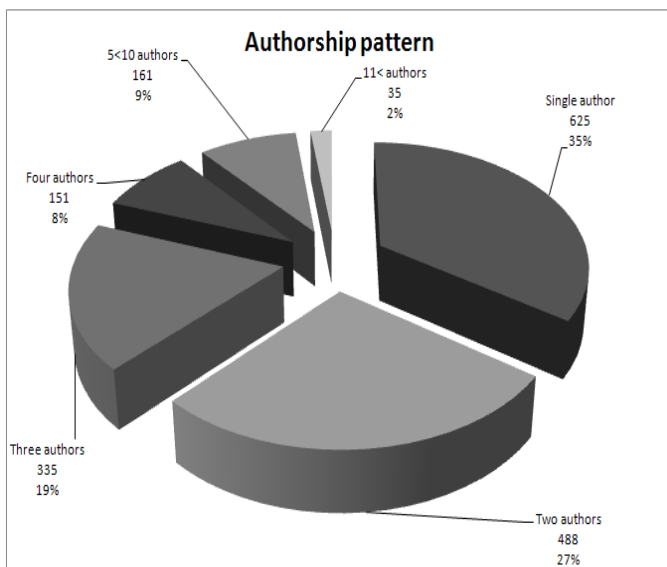


Figure 1- Authorship patterns of publications

b. GEOGRAPHICAL DISTRIBUTION OF COLLABORATIONS

Distribution of research output by geographical regions illustrates the collaboration of other countries with the researchers/ scholars of humanities and social sciences of Sri Lanka. A rank list of contributing countries has been prepared on the basis of affiliations of the contributions from various countries.

Among the whole 1795 publications other than contributors belonging to Sri Lanka, the remarkable collaborative contributors are from United States with (15.93%), United Kingdom (7.41%), Australia (4.23%), India (3.68%), Canada (2.51%), and Japan (2.40%). 15 countries were contributed with at least 18 publications (1%).(Table-3)

Table-3 - Geographical distribution of publications

S.No.	Country	No. of	%
1	Sri Lanka	1795	100.00
2	United States	286	15.93
3	United Kingdom	133	7.41
4	Australia	76	4.23
5	India	66	3.68
6	Canada	45	2.51
7	Japan	43	2.40
8	Thailand	27	1.50
9	Switzerland	25	1.39
10	Netherlands	25	1.39
11	Sweden	21	1.17
12	Germany	21	1.17
13	China	19	1.06
14	Malaysia	19	1.06
15	Pakistan	17	0.95

C. DEGREE OF COLLABORATION

The degree of collaboration is defined as the ratio of the number of collaborative research papers to the total number of research papers in the discipline during a certain period of time. The formula suggested by Subramanyam [10] is used in this study. It is expressed as where;

$$C = \frac{N_m}{N_m + N_s}$$

C is the degree of collaboration in a discipline. N_m is the number of multi-authored research papers in the discipline published during a year. N_s is the number of single authored research papers in the discipline published during a year. Table - 4 reveals that the value of the Degree of Collaboration was 0.33 in the year 1962 and 0.80 in the year 2012.

Table- 4 Year wise degree of collaboration

S.No.	Year	Total	1 (Sin.)	2	3	4	5<10	11<	(Mul.)	Degree of Collaboration
1	1961	2	2						0	0.00
2	1962	3	2	1					1	0.33
3	1963	8	5	1	2				3	0.38
4	1964	0							0	0.00
5	1965	3		1	2				3	1.00
6	1966	4	3			1			1	0.25
7	1967	7	6	1					1	0.14
8	1968	2	2						0	0.00
9	1969	1	1						0	0.00
10	1970	6	3	2	1				3	0.50
11	1971	2	1	1					1	0.50
12	1972	2	1	1					1	0.50
13	1973	7	2	3	1		1		5	0.71
14	1974	5	2	3					3	0.60
15	1975	4	3	1					1	0.25
16	1976	8	5	1	1		1		3	0.38
17	1977	4	2	1	1				2	0.50
18	1978	4	3	1					1	0.25
19	1979	6	5	1					1	0.17
20	1980	5	5						0	0.00
21	1981	7	2	3	1	1			5	0.71
22	1982	7	5	1	1				2	0.29
23	1983	13	10	2		1			3	0.23
24	1984	6	3	2	1				3	0.50
25	1985	8	5	3					3	0.38
26	1986	14	10	2	2				4	0.29
27	1987	11	8	2	1				3	0.27
28	1988	22	10	2	8		2		12	0.55
29	1989	16	5	7	1		3		11	0.69
30	1990	15	9	4	2				6	0.40
31	1991	9	5	2	1	1			4	0.44
32	1992	14	9	1	2	1	1		5	0.36
33	1993	13	5	5	2		1		8	0.62
34	1994	4	2	1		1			2	0.50
35	1995	10	4	2	2	1	1		6	0.60
36	1996	34	18	9	7				16	0.47
37	1997	46	15	18	9	3	1		31	0.67
38	1998	44	20	8	9	6	1		24	0.55
39	1999	42	13	16	7	4	2		29	0.69
40	2000	55	21	15	8	4	7		34	0.62
41	2001	50	15	18	12	3	2		35	0.70
42	2002	68	29	19	10	4	6		39	0.57
43	2003	44	19	13	7	5			25	0.57
44	2004	66	24	21	9	6	5	1	42	0.64
45	2005	79	31	20	11	8	5	4	48	0.61
46	2006	133	42	37	28	11	10	5	91	0.68
47	2007	101	28	23	25	6	14	5	73	0.72
48	2008	144	45	42	33	12	7	5	99	0.69
49	2009	150	44	38	30	22	14	2	106	0.71
50	2010	169	48	42	29	14	27	9	121	0.72
51	2011	151	35	43	35	16	20	2	116	0.77
52	2012	167	33	48	34	20	30	2	134	0.80
	Total	1795	625	488	335	151	161	35	1170	0.65

It was observed that it was increased over the years and the highest was recorded in the year 1965 with 1.0. Even though there were fluctuations in degree of collaboration, in recent times it was progressively increased.

The reason for this increase is because of the collaborative efforts among the researchers. (Figure - 2)

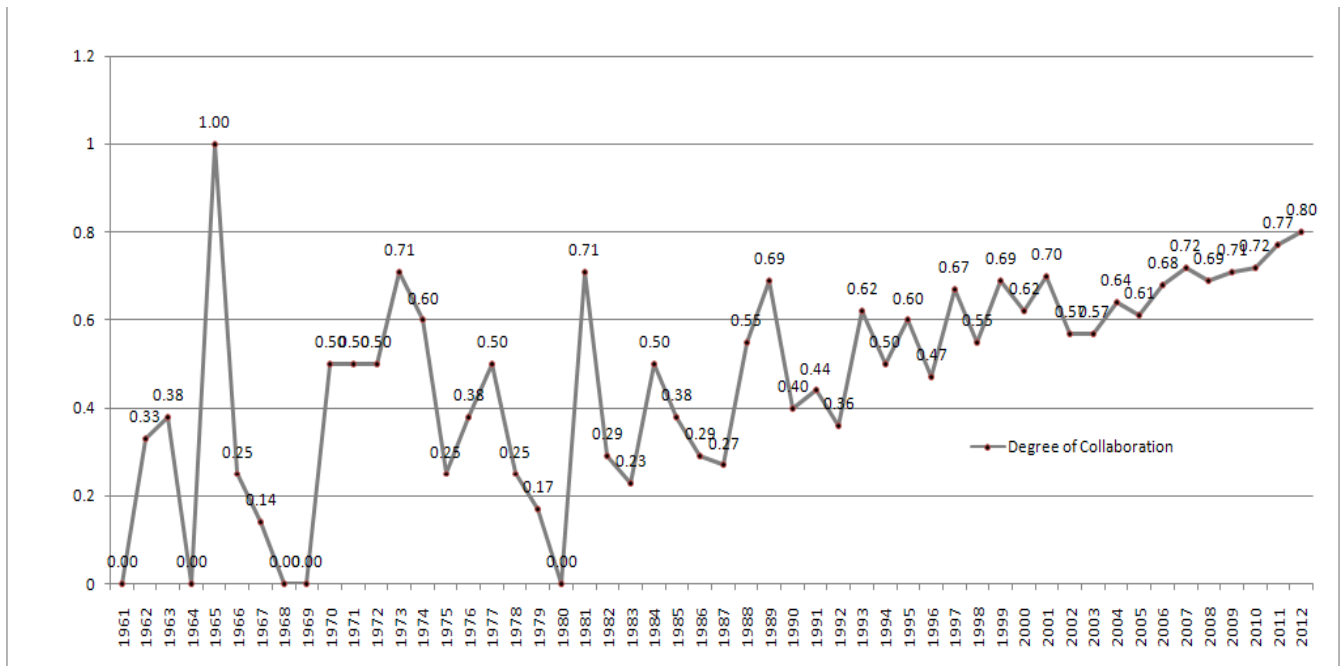


Figure-2: Trend of Degree of collaboration of publications

IX. CONCLUSION

Overview of important findings of the analysis revealed that Out of 1795 publications published during the period 1960 - 2012, maximum number of 169 (9.42%) were published in 2010. Majority of the publications are contributed by multiple authors. Remarkable collaborative contributors are from United States with 15.93%. Degree of collaboration was progressively increased over the study span.

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