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Authorship Pattern of Library Philosophy and Practice Journal: A Bibliometrics Analysis

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Abstract: The main purpose of the study is to identify the pattern of authorship and collaborative nature of Library Philosophy and Practice journal during 2001 to 2020. Bibliographic data were collected from 2008 articles through the Lens database, based on the key areas of authorship studies such as authorship pattern, number of authors etc. The study found that Degree of Collaboration (DC), Collaborative Coefficient (CC) and Collaborative Index (CI) of these articles were 0.63, 0.36 and 1.93 respectively, which clearly indicate that the authorship trend is towards the shared or joint authorship in Library Philosophy and Practice journal.

Keywords: Bibliometrics Analysis, Authorship Pattern, Degree of Collaboration, Collaborative Coefficient, Collaborative Index, Modified Collaborative Index.

Introduction: Authorship study is a branch of bibliometrics which investigates the different elements of authorship such as kind of authors, nature and degree of collaboration, impact of citation, and authorship collaborative trend. The various kind of authors appeared in scholarly communication are group or single author work, corporate body or anonymous publications (Mahapatra, 2002). In recent years, most of the research has been conducted jointly for the overall growth of information communication technology worldwide. This collaboration pattern may have one to multiple authors, and may involve domestic or international researchers from any organization in the country, starting with colleagues from the same organization (Kirtania & Chakrabarti, 2018). Like all other subjects, library and information science has also come to the forward in collaborative research. So the authorship trend in library and information science should be analyzed over time to time. Therefore, the current study analyzes the authorship trend of the Library Philosophy and Practice journal, as it is one of the most popular journals in the field of library and information science. Library Philosophy and Practice (LPP) (ISSN 1522-

0222) is a peer-reviewed open access electronic journal owned and published by the University Libraries of the University of Nebraska Lincoln, Lincoln, Nebraska, USA. Since 1998, the journal has published a number of important research papers in the field of library and information science, which have contributed to its overall development (Kumar, Singh, Ranjan & Rai, 2020). The present paper therefore analyzes the authorship pattern of the Library Philosophy and Practice journal.

Review of Literatures: Many research works has been conducted in the past on authorship patterns of library and information science discipline, especially on specific journals (Walia & Kaur, 2012; Thavamani & Velmurugan, 2013; Velmurugan, 2013; Thavamani, 2014; Das, 2015; Bhattacharjee, 2019; Renjith, 2019; Yadav, Singh & Verma, 2019; Das & Verma, 2021; Siwach & Thakur, 2021). It is easily understood from these works that the library and information science domain is also pointing towards joint research at the recent time. Previously, there has been a lot of research works in Library Philosophy and Practice journal on bibliometric analysis and its related areas. Library and information science professionals from around the world, such as India (Sa & Barik, 2016), Pakistan (Anwar, 2018; Muhammad & Zhiwei, 2020; Hussain & Yar, 2021), Iran (Mokhtari, Saberi, Vakilmofrad & Barkhan, 2021) and Nigeria (Muhammad & Zhiwei, 2020) have published their scholarly output in Library Philosophy and Practice journal. There has also been some comparative works ((Saini & Verma, 2018; Ahmed & Muhammad, 2020; Anwar & Zhiwei, 2020) on the contributions of the authors from these countries to this journal. Till the year 2020, some well researched bibliometric (Thanuskodi, 2010; Jayaraman, Krishnaswamy & Moorthi, 2012; Idrees & Anwar, 2013; Haq, 2015; Verma, Sonkar & Gupta, 2015; Verma, Yadav & Singh, 2018; Haque, Islam, Hasan & Akanda, 2019; Kannan & Thanuskodi, 2019; Saberi, Barkhan & Hamzehei, 2019; Anwar & Zhiwei, 2020) and scientometric analysis (Swain, 2011; Kumar, Singh, Ranjan & Rai, 2020) have been carried out by scholars on library philosophy and practice journal. There have also been two citation (Verma, Sonker & Gupta, 2016; Haq, Ahmed & Abbasi, 2021) analyses on this journal, based on the citations used in this journal. These research papers have given an in-depth analysis of important aspects of Library Philosophy and Practice journals such as year wise growth, authorship pattern, citation analysis, most productive authors, institutes and countries etc. However, in the present paper, only the authorship pattern of Library Philosophy and Practice journal and its related measurements have been studied in detail.

Objective: The main objective of this work is to analyze the authorship pattern of Library Philosophy and Practice journal.

Methodology: Bibliographic details required for the present work have been collected through the Lens database (<https://www.lens.org/>), which is an online patent and knowledge resource platform. A total of 2008 papers were retrieved with the Source Title tag and time range 2001 to 2020 of the Lens Database [Filters: Year Published = (2001 - 2020) Source Title = (Library Philosophy and Practice)]. Data is then collected from the retrieved papers based on bibliometric indicators such as year of publication, authorship pattern etc used for current work and stored in MS Excel. The stored data is then presented in Microsoft Word through tables and figures for further analysis. Based on the analysis, the final conclusion of the paper has been drawn which has completely fulfilled the objective of the study. To accomplish this work, various statistical measurements of authorship study such as Degree of Collaboration, Collaborative Coefficient, Collaborative Index, Modified Collaborative Index and co-authorship index have been used. Additionally, the VOSviewer software has also been used for sketching the authorship network visualization of the articles.

Analysis & Findings:

Publications Growth: In the twenty years from 2001 to 2020, 2008 articles have been published in the Library Philosophy and Practice journal, which is quite significant in terms of numbers. However, in the first decade, from 2001 to 2010, only one-fifth (22%) of the total articles were published. Analysis of individual years shows that the most articles were published in 2016, followed by 2019 and 2011, respectively. However, looking at the number of papers and the growing trend, it is easy to say that the growth of Library Philosophy and Practice journal has been very good. It is also clear from the linear trend line equations of the published articles that the publication is pointing in a positive direction ($R^2 = 0.48$).

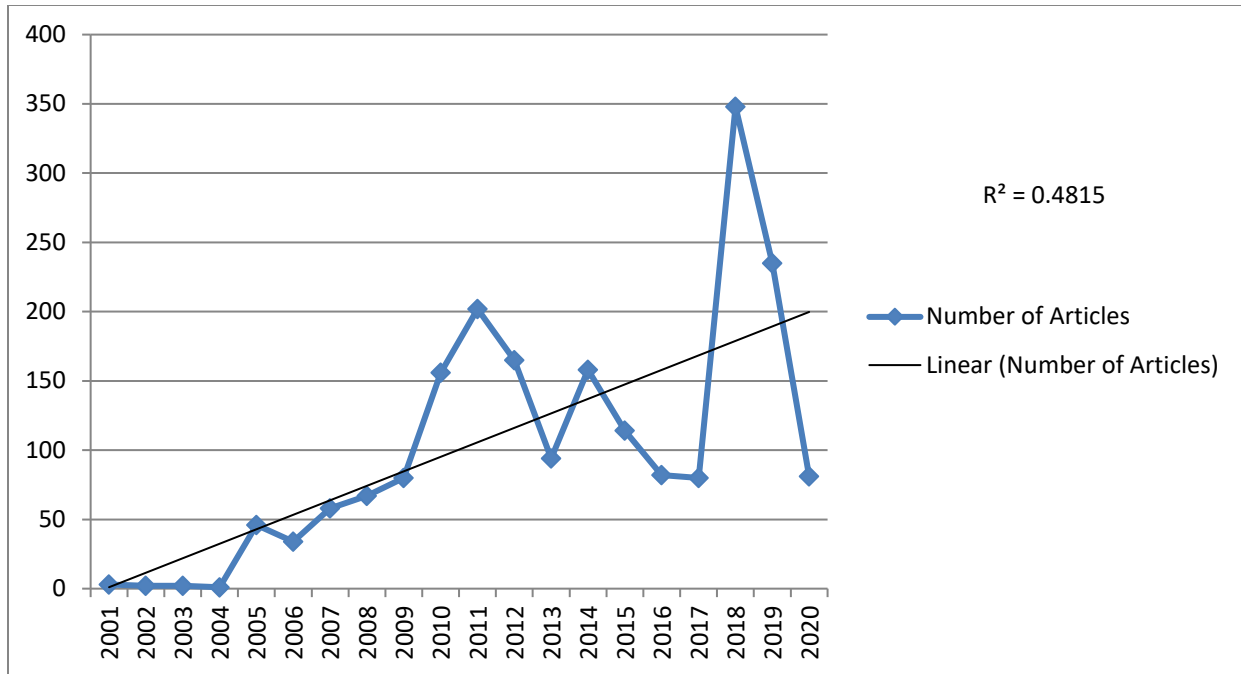


Fig 1: Year wise Distribution of the Articles

Authorship Pattern: Table 1 describes the authorship pattern of the articles. Looking at the authorship pattern, it is seen that a little over one third of the total papers have been published through single authors (37.50%) and the rest have been published in the joint authorship trend (62.50%). Most articles in the joint authorship have been published by two authors (793) and the number of papers with three authors (348) is also quite good. The number of papers published by more than three authors is 114, which is about six percent of the total papers. The authorship trend in the Library Philosophy and Practice journal shows that while published papers are dominated by joint authors, but single authors also have a good influence.

Table 1: Authorship Pattern of the Articles

Year	Authorship Pattern				Total
	One	Two	Three	> Three	
2001	3	0	0	0	3
2002	2	0	0	0	2
2003	2	0	0	0	2
2004	1	0	0	0	1
2005	34	10	1	1	46
2006	21	13	0	0	34
2007	28	22	6	2	58
2008	37	20	10	0	67
2009	49	22	6	3	80
2010	79	60	12	5	156
2011	90	80	28	4	202
2012	65	71	24	5	165
2013	36	37	19	2	94
2014	61	57	31	9	158
2015	32	49	23	10	114
2016	21	36	21	4	82
2017	18	40	14	8	80
2018	103	132	87	26	348
2019	51	111	49	24	235
2020	20	33	17	11	81
Total	753	793	348	114	2008

Table 2: Collaborative Measures and Author Productivity

Year	Collaborative Measures				Author productivity	
	DC	CC	CI	MCC	P/ A	AAPP
2001	0	0	1	0	1	1
2002	0	0	1	0	1	1
2003	0	0	1	0	1	1
2004	0	0	1	0	1	1
2005	0.26	0.14	1.35	0.14	0.74	1.35
2006	0.38	0.19	1.38	0.20	0.72	1.38
2007	0.52	0.29	1.71	0.29	0.59	1.71
2008	0.45	0.25	1.6	0.25	0.63	1.60
2009	0.39	0.22	1.54	0.22	0.65	1.54
2010	0.49	0.27	1.64	0.27	0.61	1.64
2011	0.55	0.31	1.73	0.31	0.58	1.73
2012	0.61	0.34	1.82	0.34	0.55	1.82
2013	0.62	0.35	1.86	0.35	0.54	1.86
2014	0.61	0.35	1.94	0.36	0.51	1.94
2015	0.72	0.42	2.11	0.42	0.47	2.11
2016	0.74	0.43	2.13	0.43	0.47	2.13
2017	0.78	0.44	2.18	0.45	0.46	2.18
2018	0.70	0.41	2.13	0.41	0.47	2.13
2019	0.78	0.45	2.21	0.45	0.45	2.21
2020	0.75	0.45	2.27	0.45	0.44	2.27
Total	0.63	0.36	1.93	0.36	0.52	1.93

[DC=Degree of Collaboration, CC= Collaborative Coefficient, CI= Collaborative Index, MCC=Modified Collaborative Index, P/A=Productivity per author, AAPP= Average author per Paper]

Degree of Collaboration indicates the trend of collaborative authorship pattern among the authors for publishing outputs (Subramanyam, 1983). Degree of Collaboration is calculated by simple formula i.e. $(DC) = \frac{Nm}{Nm+Ns}$ [Nm = number of multi-authored papers and Ns = number of single authored papers]. As shown in Table 2, the Degree of Collaboration value of the published articles is 0.63 which indicates the dominance of the joint authorship pattern. However, most of the papers of the first decade revealed the popularity of single authors from DC value. In case of year wise analysis, 2017, 2019 and 2016 ranked first, second and third in terms of DC value, respectively.

Collaborative Coefficient is the mean number of authors per paper (Ajiferuke, Burell & Tague, 1988) and Collaborative Index is a measure of mean number of authors (Lawani, 1986).

The mathematical formula of CC & CI is mentioned as $CC = 1 - \frac{\sum_{j=1}^k \binom{1}{j} f_j}{N}$ where f_j is Number of j authored research papers, N is total number of research papers, K is greatest number of authors per paper and $CI = \frac{\sum_{j=1}^k j f_j}{N}$. Collaborative coefficient and Collaborative Index values of published papers are 0.36 and 1.93, which is a pretty good score for a single journal.

Modified Collaborative Index (MCC) is a statistical measure for quantifying degree of research collaboration (Savanur & Srikanth, 2010). The mathematical formula of MCC is

$\frac{A}{A-1} - \left\{ 1 - \frac{\sum_{j=1}^k \binom{1}{j} f_j}{N} \right\}$. The value of MCC is proportional to the value of CC and ranges from 0 to 1. Articles published in the Library Philosophy and Practice journal has an MCC value of 0.38, which indicates collaborative research pattern.

Author productivity is defined as the number of papers an author has published within a specific time period. Total 3869 authors have contributed these 2008 research papers with 1.93 Average Author per Paper and 0.52 Productivity per Author. Mathematical formula of Author Productivity is discussed as: Average Author per Paper = $\frac{\text{No of Authors}}{\text{No of Papers}}$ and Productivity per

$$\text{Author} = \frac{\text{No of Papers}}{\text{No of Authors}}$$

Table 3: Co-Authorship Index (CAI)

Year	Authorship Pattern								Total
	One	CAI	Two	CAI	Three	CAI	>Three	CAI	
2001	3	266.67	0	0	0	0	0	0	3
2002	2	266.67	0	0	0	0	0	0	2
2003	2	266.67	0	0	0	0	0	0	2
2004	1	266.67	0	0	0	0	0	0	1
2005	34	197.10	10	57.97	1	5.80	1	5.80	46
2006	21	164.71	13	101.96	0	0	0	0	34
2007	28	128.74	22	101.15	6	27.59	2	9.20	58
2008	37	147.26	20	79.60	10	39.80	0	0	67
2009	49	163.33	22	73.33	6	20.00	3	10.00	80
2010	79	135.04	60	102.56	12	20.51	5	8.55	156
2011	90	118.81	80	105.61	28	36.96	4	5.28	202
2012	65	105.05	71	114.75	24	38.79	5	8.08	165
2013	36	102.13	37	104.96	19	53.90	2	5.67	94
2014	61	102.95	57	96.20	31	52.32	9	15.19	158
2015	32	74.85	49	114.62	23	53.80	10	23.39	114
2016	21	68.29	36	117.07	21	68.29	4	13.01	82
2017	18	60.00	40	133.33	14	46.67	8	26.67	80
2018	103	78.93	132	101.15	87	66.67	26	19.92	348
2019	51	57.87	111	125.96	49	55.60	24	27.23	235
2020	20	65.84	33	108.64	17	55.97	11	36.21	81
Total	753	100.00	793	105.31	348	46.22	114	15.14	2008

Table 3 illustrates the co-authorship index of Library Philosophy and Practice journal. The co-authorship index (CAI) can be measured by calculating proportional output of single, two, multi and mega-authored papers (Garg & Padhi, 2001). The mathematical formula has been used to determine the co-authorship pattern is $CAI = \{(N_{ij} / N_{i0}) / (N_{0j} / N_{00})\} \times 100$ Where, N_{ij} = number of papers having j authors in block i ; N_{i0} = total output of block I ; N_{0j} = number of papers

having j authors for all blocks ; N_{oo} = total number of papers for all authors and all blocks $j = 1, 2, 3, 4, \geq 5$. The value of $CAI = 100$ implies that co-authorship in a particular block for a particular type of authorship corresponds to the world average, $CAI > 100$ reflects higher than average co-authorship effort and $CAI < 100$ indicates lower than average co-authorship effort in a particular block for a particular type of authorship. It is observed that, there is discontinues or scatter trend has been seen in the value of CAI for all authorship category, however single and two author papers have contributed good CAI score.

Most Productive Authors: Fig 2 describes the distribution of most productive authors in Library Philosophy and Practice journal. Among individual authors, Rubina Bhatti topped the list by publishing the largest number of articles (26) followed by S Thanuskodi (21) and Khalid Mahmood (18). The number of authors who have published ten or more articles is seven. At the end of this area, the co-authorship network of the papers indicates a strong relationship between the authors (Fig 3).

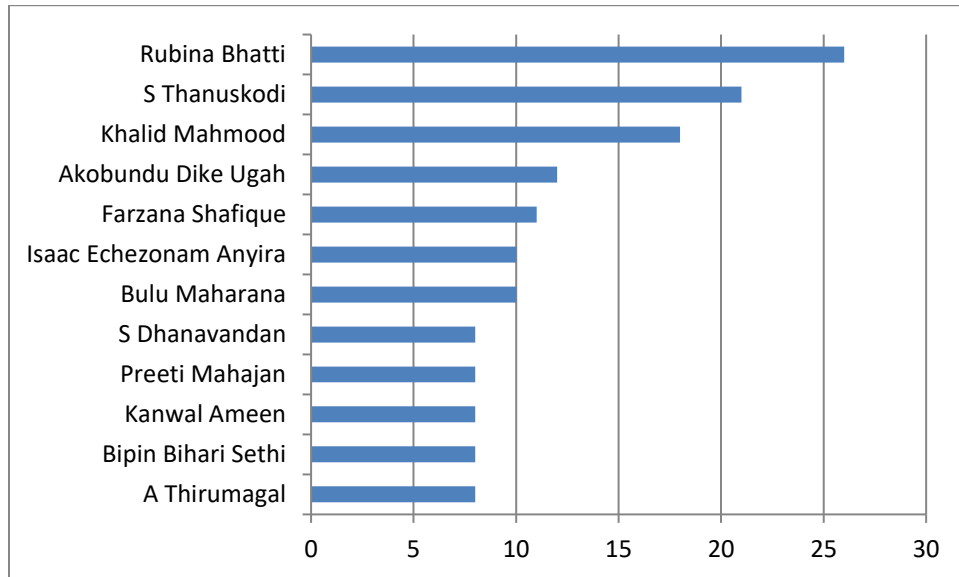


Fig 2: Highly Productive Authors

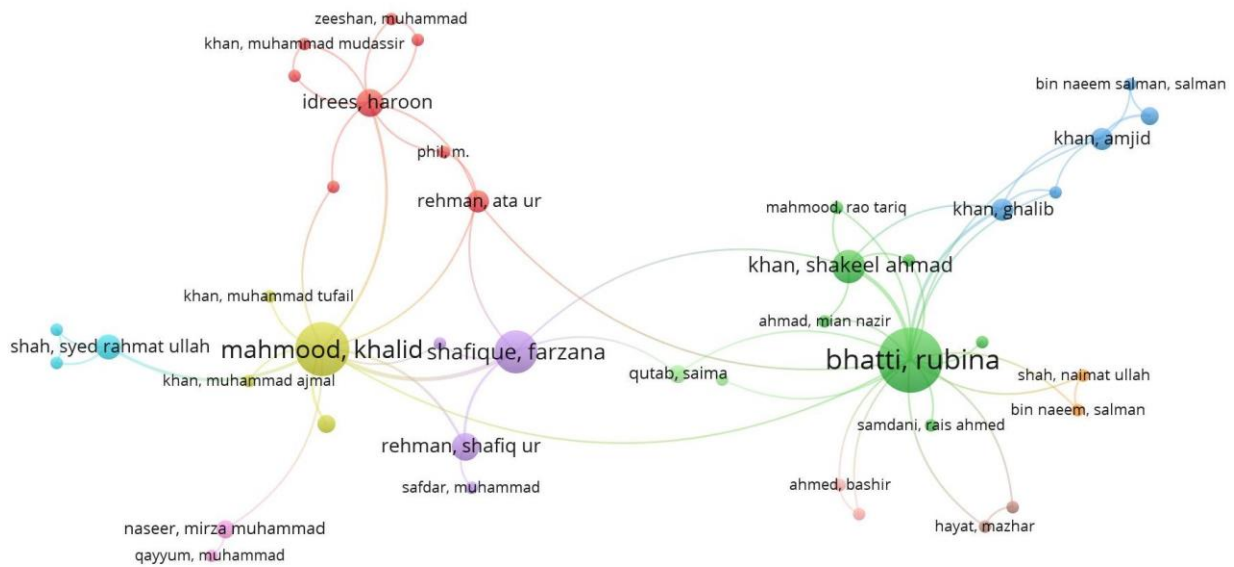


Fig 3: Co-authorship network

Conclusions: From previous works, it can be said that Library Philosophy and Practice is one of the most popular journals for library and information science professionals around the world. Library Philosophy and Practice journal has published 2008 articles in 20 years i.e. 2001 to 2020, with a positive growth rate, which is a good trend for a single journal. The present study has provided a detailed analysis of the authorship pattern and its related measurements used in this journal. The authorship pattern indicators such as Degree of Collaboration (0.63), Collaborative Coefficient (0.36), Collaborative Index (1.93), Modified Collaborative Index (0.36) and co-authorship index used in this paper show that the articles published in this journal point towards collaborative research. Also from this study a strong relationship has been found between the authors of this journal.

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