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Dr. Sudip Banerjee
Library, City College of Commerce and Business Administration, Kolkata, West Bengal, India, sudipbanerjee.lib@gmail.com

Kaustuv Chakrabarti
Research Scholar, Department of Library and Information Science, University of Calcutta, Kolkata, West Bengal, India, kaustuvculis@gmail.com

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Dr. Sudip Banerjee[1] and Kaustuv Chakrabarti[2]

[1]Library, City College of Commerce and Business Administration, Kolkata, West Bengal, India.

[2]Research Scholar, Department of Library and Information Science, University of Calcutta, Kolkata, West Bengal, India.

Correspondence: Dr. Sudip Banerjee, Librarian, City College of Commerce and Business Administration, Kolkata, West Bengal, India. E-mail: sudipbanerjee.lib@gmail.com

Abstract: The present study attempted to prepare the scientometric portrait of Joan C Durrance, a respected researcher in the community focused library services and a pioneer in the field of community informatics. The study focused on the aspects like Year and age wise publication output, Authorship pattern, Document types, Ranking of Collaborative authors, Preferred journal for communication of research results, Distribution of citations, and Ranking of top cited papers. She has contributed 165 publications including 39 seminar presentations since 1977 to 2011. Year wise growth indicated that she contributed the maximum number of scholarly output in 1996 at the age of 58 years. The pattern and other measures of authorship displayed its strength upon single authored publication. Among the document types most of the documents were Books/ Book Chapters followed by Journal articles. The most preferred journal by Durrance for the publication of her research results was Public Libraries with 7 publications. The top ranked co-author of Joan C Durrance is K. E. Fisher who co-authored 40 papers in 10 years of contributing ages. 61 publications (48.41%) received 2595 citations with an average of 20.6 citations per paper, 65 publications (51.58%) still remained uncited. The most cited paper of Durrance is a journal article published in 2004 and received 434 citations till date. The findings of this study will be beneficial for the researchers of LIS and Scientometric domain.

Keywords: Bibliometrics, Biobibliometrics, Durrance, Joan C Durrance, Scientometrics, Scientometric Portrait

1. Introduction

Scientometrics is the study of quantitative analysis and statistical measuring of scholarly communications and their accompanying citation counts. It is a good indicator to check the pattern of research and publication in a particular field. Various other synonymous terms like bibliometrics, informetrics, webometrics, cybermetrics are popular for the term, 'scientometrics'. The study of Bio-bibliometrics is analysis of publications of an individual along with the biographical study of that person. The term, 'biobibliometrics' was coined, as literature suggests, by S K Sen and S K Gan (Koley & Sen, 2006). Sen and Gan (1990) defined it, "as a quantitative and analytical method for discovering and establishing functional relationships between biodata and bibliodata elements." Kalyane and Kalyane (1993) used the phrase, 'scientometric portrait' to carry out bio-bibliometric studies of scientists. This type of study is very useful to study an individual's research outcomes through which he or she has made so many impacts on society.

Professor Emerita Joan C. Durrance is one of the respected researchers in community-focused library services, information behavior, professional practice of librarians, and a pioneer in the field of community informatics. She was the first faculty member of University of Michigan who received major funding for her work in the field of community engagement. (Joan C. Durrance, n.d.). The present study has attempted to measure and analyze her research contributions through the indicators of Scientometrics study.

2. Joan C Durrance: a brief biography

Joan C Durrance was born on April 20, 1937 in Miami, Florida, United States. She was the daughter of Benjamin Aldon and Elizabeth (Burkett) Coachman. On May 4, 1961 she married Raymond E. Durrance and they have 3 children (Joan C. Durrance, n.d.[a]). She completed her

Bachelor from University Florida in 1959, MSLS from School of Library Science of University of North Carolina in 1964. In 1976 she completed a Specialist Certificate focusing on community engagement from University of Wisconsin. She obtained her Ph.D. in 1980 from University of Michigan. Her dissertation research identified the difficulties that citizen activists encountered in obtaining government and local information needed to help in solving community problems. Based on the result of her research she wrote her first book, Armed for Action, in 1984 and various journal articles.

Prof. Durrance started her career as Assistant Young Adult Librarian (Main) in the Miami Public Library, Florida in the year 1960 and worked there up to 1962. She worked as Assistant Documents Librarian in Business Administration/Social Sciences Library of University of North Carolina from 1963-1965, as Community Services Librarian in the Central Wisconsin Colony Library and Information Center from 1972-1973, as Adjunct Instructor in Community Information Specialist Program of University of Toledo from 1975-1976. She joined the School of Library Science of University of Michigan, Ann Arbor and worked there up to 2011 in different positions. She became Professor Emerita in the year 2011.

She teaches and conducts research in community information systems, access issues, information needs, and professional practices. She coordinates the Community Connector, a searchable library of useful information available to librarians and others who are attempting to build and improve the quality of life within geographic communities. In the late 1980s W.K. Kellogg Foundation choose her for analyzing approaches used by librarians and other professionals who participated in a major WKKF project—Education & Job Information Centers. She was associated with 20 Research Projects and/or grants throughout her career.

She has written numerous books and articles on community information and professional practice, and she was a frequent presenter at conferences. She was active in several professional associations and was the member of Doctoral Committee, Advisory Committee, Curriculum and many other committees in various institutes.

She was the member of different committees and task forces in a lot of professional organizations like American Society for Information Science and Technology (ASIST), Association for Community Networking (AFCN), Association of Library and Information Science Education (ALISE), American Library Association (ALA), and many others. She was the president of the Association for Library and Information Science Education (ALISE) in 1996-97 term (Association for Library and Information Science Education, n.d.).

She was the awardee of Margaret Mann Collegiate Professor of Information in the University of Michigan in 2004; ALISE Award for Professional Contribution to Library and Information Science Education in 2005, Jesse Shera Award of ALA in 2005, Who's Who in America in 2002 and many others. In 2014, the School of Information started a new award, the Joan Durrance Community Engagement Award to honour the awardees for their excellence in building partnerships with communities to develop successful, sustainable information-related projects that address societal challenges (Joan C. Durrance, n.d.).

3. Literature Review

There are a lot of works related to biobibliometrics or scientometric portraits of an eminent person in different fields that were carried out throughout the globe in the last few years. Among them few are as follows:

Kalyane and Kalyane (1993) made a scientometric profile of Vinodini Reddy, former Director of the National Institute of Nutrition, Hyderabad. Her research work was analyzed quantitatively by year, authorship pattern, collaboration coefficient, journal wise contribution and keywords from the title of articles.

Kademani, Kalyane and Kademani (1994) analyzed the publications of Nobel laureate Dr. C.V. Raman using year, domain, collaboration pattern, channel of communication used, keywords etc.

Kademani, Kalyane and Kumar (2002) analyzed 190 publications of Nobel laureate H.W. Kroto with 191 collaborators published during 1985 -2000 in different domains.

Koley and Sen (2006) carried out a biobibliometric study on B.N. Koley, an eminent physiologist based on 251 papers published during 1958-2001.

Chakrabarti and Chakrabarti (2012) presented bibliometrics analysis of the research papers on Acharya Prafulla Chandra Roy.

Banerjee (2015) presented a bibliometric analysis of Narayan Sanyal, a versatile author of Bengali literature. The study included decade wise and publisher wise distribution of published books, broader topic covered by author, and cover designer preference.

Koley and Sen (2016) presented scientometric analysis of V L Kalyane, one of the pioneers of biobibliometric study in India. 120 papers published during 1973-2009 with 338 co-authors were analyzed for this study.

Dutta (2019) presented the biobibliometrical study on B. K. Sen, Indian librarian and information scientist highlighting the major aspects of his career. Beside this, he also prepared a list of scientists with bibliometric or scientometric portraits. Academic indicators of B K Sen like h-

index, g-index, Recency index etc. were calculated on the basis of citation data available from Web of Science, Scopus and Google Scholar.

Das and Bhattacharyya (2021) attempted to measure and analyze the research publications of Nobel laureate Abhijit Vinayak Banerjee based on the data available in Google Scholar database. A total of 333 documents were published during 1987 to 2019 in which 35.74 percent were published as journal articles. He used USA based journals mostly for publication of his research works.

The review of literatures suggested that no attempt has been made to analyze the work of Joan C Durrance from the bibliometric or scientometric point of view. The present study has attempted to measure and analyze her research contributions through the indicators of Scientometrics study.

4. Scope of the study

The study is confined to 126 publication contributions of Joan C Durrance published between 1977 and 2011 and include research articles published in journals, conference proceedings, book chapters, reports, books and seminar presentations. 39 seminar presentations were also taken into consideration for the analysis of year wise output, authorship pattern and ranked list of collaborative authors.

5. Objectives of the study

The main objective of this study is to prepare the scientometric portrait of Joan C Durrance, a respected researcher in community focused library services and a pioneer in the field of community informatics. The study focuses mainly on the following aspects:

- Year and age wise publication output;
- Authorship pattern and Degree of Collaboration;

- Document types;

- Ranking of Collaborative authors;

- Preferred journal for communication of research results;

- Distribution of citations; and

- Ranking of top cited papers.

6. Methodology

The bibliographical list of scholarly publications of Durrance was compiled from her CV available in the School of Information in University of Michigan (Joan C. Durrance, n.d.). Citation data related to her publications were obtained from Google Scholar, accessed during 20th July 2021 to 26th July 2021. In total, 165 publication contributions (including 39 seminar presentations) were collected for this study. Collected data were transferred into Microsoft Excel and analyzed using different indicators of scientometric analysis.

7. Findings, Analysis and discussion

7.1 Year wise output and Authorship Pattern

The year wise output of publications and authorship pattern analysis are presented in Table 1. It was observed from table 1 that J C Durrance contributed a maximum number (12) of scholarly output at the age of fifty eight, i.e. in the year 1996, followed by17 contributions at the age of 72 and 75 in the years 2010 and 2013. In the years 1991 and 1992 (age 53 and 54) and 2002 and 2006 (age 64 and 68), he contributed 13 papers and 12 papers each respectively. Least number of papers (only one) was contributed in the years 1964 and 1967 (Age 26 and 29). During the publishing career of 35 years Durrance had no publication in two years, one in 1978 and another in 2007.

It was also observed that the single authored publications by Durrance were 104, while multi authored publications were 61. Of the 61 multi authored publications, Durrance was the first author in 28 publications, second author in 24 publications, third author in 9 publications and fourth in 1 publication.

Table- 1: Year wise output and Authorship Pattern

Year	AA	PPA	APC	CAPC	SAP	MAP	Durrance's position as author				No. of Co-authors	DC	Mean DC
							1st	2nd	3rd	>3rd			
1977	40	1	1	1	0	1	1				3	1.00	
1979	42	3	1	2	1	0						0.00	
1980	43	4	1	3	1	0						0.00	
1981	44	5	1	4	0	1	1				1	1.00	
1982	45	6	4	8	4	0						0.00	
1983	46	7	1	9	1	0						0.00	
1984	47	8	2	11	2	0						0.00	
1985	48	9	4	15	4	0						0.00	
1986	49	10	5	20	5	0						0.00	
1987	50	11	4	24	4	0						0.00	
1988	51	12	5	29	2	3	3				3	0.60	
1989	52	13	2	31	1	1	1				1	0.50	
1990	53	14	4	35	3	1		1			1	0.25	
1991	54	15	9	44	8	1	1				1	0.11	0.37
1992	55	16	4	48	3	1	1				1	0.25	
1993	56	17	6	54	5	1		1			1	0.17	
1994	57	18	8	62	6	2	1	1			2	0.25	
1995	58	19	8	70	8	0						0.00	
1996	59	20	4	74	3	1	1				1	0.25	
1997	60	21	7	81	6	1	1				1	0.14	
1998	61	22	2	83	2	0						0.00	
1999	62	23	7	90	5	2	1	1			3	0.29	
2000	63	24	11	101	7	4	2	2			4	0.36	
2001	64	25	12	113	3	9	4	5			13	0.75	
2002	65	26	12	125	3	9	5	2	2		14	0.75	
2003	66	27	11	136	7	4	2	2			5	0.36	
2004	67	28	10	146	6	4		2	3		9	0.40	
2005	68	29	7	153	2	5	2	2	1		11	0.71	

Year	AA	PPA	APC	CAPC	SA	MAP						DC
2006	69	30	4	157	0	4	1		3		16	1.00
2008	71	32	3	160	1	2		1		1	5	0.67
2009	72	33	1	161	1	0						0.00
2010	73	34	3	164	0	3		3			3	1.00
2011	74	35	1	165	0	1		1			1	1.00
Total			165		104	61	28	24	9	1		
%					63.03	36.97						

[AA = Author's Age, PPA= Publication Productivity Age, APC = Annual Publication Count, CAPC = Cumulative Annual Publication Count, SA = Single Authored Publications, MAP = Multi Authored Publications, DC = Degree of Collaboration]

7.2 Degree of Collaboration

It was found from Table 1 that most of the publications of Durrance are single authored (63.03%) while multi authored are only 36.97%. Till date total publishing career of Durrance is 35 years. Among these 35 years, the Degree of Collaboration (DC) found 0 in 11 years, below 0.5 in 11 years, 0.5 only in 1 year, above 0.5 in 5 years and 1.00 in 5 years. Mean degree of collaboration of her career calculated as 0.37. All this data related to her Degree of Collaboration clearly displays its strength upon single authored publication. DC was calculated as suggested by Subramanyam (1983):

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

Where, N_m = Number of Multi authored publications and N_s = Number of Single authored publications.

7.3 Document types

It was found from Table 2 that Joan C Durrance has published 126 publications in six different types of documents. Publication status of 39 seminar presentations was not ascertained and so kept separately. Among these all types of documents, the most published by her were Books/

Book Chapters 33 (20.00%) followed by Journal articles 32 (19.39%) and Conference papers 24 (14.55%). She has also published a few writings only on some internet sites.

Table- 2: Document types

Sl. No.	Types of Documents	No. of Publications	%
1	Journal Articles	32	19.39
2	Shorter Communications	16	9.70
3	Books/ Book Chapters	33	20.00
4	Conference Papers	24	14.55
5	Seminar presentations	39	23.64
6	Reports	17	10.30
7	Others	4	2.42
	Total	165	100.00

7.4 Ranking of Collaborative Authors

Total number of collaborative authors with Durrance during her total publishing career is 38. All these co-authors were listed and ranked according to their number of collaborations with Durrance. The ranked list of the co-authors is enumerated in Table 3. The top ranked co-author of Joan C Durrance is K. E. Fisher who co-authored 40 papers in 10 years of contributing ages (1999-2008). Karen E. Fisher was previously known as Karen E. Pettigrew (Dr. Karen E. Fisher, n.d.). In 40 collaborating papers between Durrance and Fisher, K. E. Fisher is mentioned in 17 papers, K. E. Pettigrew in 20 papers and K. E. Fisher-Pettigrew in 3 papers. The second and third ranked co-authors are K. T. Unruh and M. Souden who contributed 7 publications in 3 contributing years and 5 publications in 7 contributing years respectively. 26 authors have only one collaborating paper with Durrance.

Table- 3: Ranking of co-authors

Rank	Name of the co-author	Total publications	No. of contributing years
1	Fisher, K E	40	10

2	Unruh, K. T	7	3
3	Souden, M	5	7
4	Connie Van Fleet; Naumer, C; Walker, D; Turnet, T	3	3, 2, 2, 4
5	Turner, AT; Abrahamson JA; Christiansen, T; Stromski, L; Williams, Kate	2	2, 3, 2, 2, 2
6	Karen G. Schneider; Boyte H; Catherine Allen; Catherine Ross; Crist, Margo; Dervin, Brenda; Dianne Williams; Doris Preston; Elizabeth Lindsey; Hinton, M B; James Nelson; Jennifer Tatomir; Kelly Garrett; Mary W. George; Marian Bouch Hinton; Kua, E; Michael Jourdan; Paul Resnick; Paul Solomon; Pertti Vakkari; Preston, Doris; Rhea J. Rubin; Reijo Savolainen; Rose Vainstein; Sheryl K. Knox; Karen Scheuerer	1 each	1 each

7.5 Preferred Journal for communication

Out of 165 total publications of Joan C Durrance, 32 journal articles and 16 shorter communications were identified. She published these articles and shorter communications in 27 different journals. Out of 48 journal publications, 16 journals have only one publication each. 11 journal titles which have 2 or more publications are listed in Table 4. The most preferred journals by Durrance for the communication of her research results were *Public Libraries* with 7 publications, followed by *Collection Building, Journal of Education for Library and Information Science, Library Journal, Library Trends and Reference Librarian* with 3 publications in each journal. The table also showed that the publishers of these top channels of communication were mostly from the USA with 5 publishers followed by the UK and Netherlands with 2 publishers.

Table- 4: Ranked list of journals

Sl. No.	Name of the Journal	Publisher	Country	No. of Papers
1	*Public Libraries*	Public Library Association	USA	7
2	*Collection Building*	Emerald Publishing	UK	3
3	*Journal of Education for Library and Information Science*	Association for Library and Information Science Education (ALISE)	Canada	3
4	*Library Journal*	R R Bowker (Previously), Media Source Inc. (now)	USA	3
5	*Library Trends*	JHU Press	USA	3
6	*Reference Librarian*	Taylor & Francis	UK	3
7	*Government Information Quarterly*	Elsevier	Netherlands	2
8	*Information Research*	Prof. T . D. Wilson (previously), University of Boras	Sweden	2
9	*Journal of the American Society for Information Science & Technology*	Wiley-Blackwell on behalf of ASIS&T	USA	2
10	*Library and Information Science research*	Elsevier	Netherlands	2
11	*RQ (Now Reference & User Services Quarterly)*	Reference and Us er Services Associati on	USA	2

7.6 Distribution of papers on the basis of citations received

Table 5 enumerated the distribution of 126 published papers on the basis of citations received. It was found that a total of 61 publications (48.41%) received 2595 citations with an average of 20.6 citations per paper. 65 papers (51.58%) still remained uncited. It was also found that most of

the papers (27 in number) received citations between 1 and 10. Only one article received more than 400 citations. Almost all journal articles (30 out of 32) received citations.

Table- 5: Distribution of papers on the basis of citations received

Citation range	Books/ Book Chapters	Conference Papers	Journal articles	Shorter Communications	Other	Total	Times Cited	Average citations per paper
≥400	0	0	1	0	0	1	434	434
≥200 <400	0	0	1	0	0	1	217	217
≥100 <200	0	0	5	0	0	5	955	191
≥50 <100	4	0	3	0	0	7	451	64.43
≥20 <50	4	0	5	0	0	9	260	28.89
≥10 <20	5	0	6	0	0	11	162	14.73
≥1 <10	5	8	9	5	0	27	116	4.3
0	15	16	2	11	21	61	0	0
Total	33	24	32	16	21	126	2595	20.6

7.7 Top cited papers

A total of 126 publications were studied and ranked on the basis of their citations. Table 6 revealed the top 10 most cited papers. It was found that 8 of 10 top cited papers are journal articles and another 2 are Books/Book Chapters. The most cited paper is Information grounds and the use of need-based services by immigrants in Queens, NY: A context-based, outcome evaluation approach which received 434 citations till date. K. E. Fisher and M. B. Hinton were two cu-authors of this article and it was published in 2004. 2 of the top 10 cited papers are single authored and other 8 are multi authored. Karen E. Fisher who was previously known as Karen E. Pettigrew was co-author in 6 of top 10 cited papers.

Table- 6: Top 10 cited papers

Rank	Title of the paper	Name of the Authors(s)	Type of Documents	Publisher	Year of pub.	Times cited
1	Information grounds and the use of need-based services by immigrants in Queens, NY: A context-based, outcome evaluation approach	Fisher, K. E., Durrance, J. C., & Hinton, M. B.	Journal Article	Journal of the American Society for Information Science & Technology	2004	434
2	Social Networks and Social Capital: Rethinking Theory in Community Informatics	Williams, Kate and Durrance, Joan C.	Journal Article	Journal of Community Informatics	2008	217
3	Reference Success: Does the 55% Rule Tell The Whole Story?	Durrance, Joan C.	Journal Article	Library Journal	1989	158
4	Lay information mediary behavior uncovered: exploring how nonprofessionals seek health information for themselves and others online	Abrahamson JA, Fisher KE, Turner AT, Durrance JC, Turner T.	Journal Article	Journal of the Medical Library Association	2008	147
5	Something old, something new: preliminary findings from an exploratory study about people's information habits and information grounds	Fisher, K., Naumer, C., Durrance, J., Stromski, L. & Christiansen, T.	Journal Article	Information Research	2005	143
6	Facilitating community information-seeking using the Internet: Findings from three public library-community network systems	Pettigrew, K. E., Durrance, J. C., & Unruh, K. T.	Journal Article	Journal of the American Society for Information Science & Technology	2002	122
7	Factors That Influence Reference Success: What Makes Questioners Willing to Return?	Durrance, Joan C.	Journal Article	Reference Librarian	1995	121
8	How Libraries and Librarians Help: A Guide to Identifying User-Focused Outcomes	Durrance, J. C., & Fisher, K. E. & Hinton, M. B.	Books/ Book Chapters	ALA	2005	91
9	Determining how libraries and librarians help	Durrance, J. C., & Fisher-Pettigrew, K. E.	Journal Article	Library Trends	2003	83
10	Community Informatics	Williams, Kate and Durrance, Joan C.	Books/ Book Chapters	Routledge Press	2010	61

8. Conclusion

The present study attempted to measure and analyze the research contributions of Joan C Durrance, a respected researcher in community focused library services and a pioneer in the field of community informatics through the indicators of scientometric study. All the objectives have been studied here and collection of data and its analyses have been done according to the objectives set forth for this study. Based on the findings it is revealed from the study that Joan C Durrance published her first publication at the age of 40 in 1977 and till now her last publication was at the age of 74 in 2011. She has published a total of 165 publications in a span of 35 years publication productivity period. Year wise growth indicated that she contributed a maximum number (12) of scholarly output in 1996 at the age of 58 years. The pattern and other measures of authorship displayed its strength upon single authored publication. Among the document types most of the documents were Books/ Book Chapters followed by Journal articles and Conference or Seminar papers. She preferred mostly USA based journals for the publication of her research results and the most preferred journal was *Public Libraries* with 7 publications. The top ranked co-author of Joan C Durrance is K. E. Fisher who co-authored 40 papers in 10 years of contributing ages (1999-2008). 48.41% publications received 2595 citations with an average of 20.6 citations per paper, 51.58% publications still remained uncited. The most cited paper of Durrance is a journal article published in 2004 and received 434 citations till date.

The study concluded that all her publications are equally important for the society and its development and also for the domain that she represented. Bibliometric or scientometric studies always help to analyze the profile of individual scientists over the years. This study will also extend similar help to the global LIS and scientometric domain.

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