



Scientometric Portrait of
Dr. B. S. Kademani
A Scientometrician Par Excellence



Ganesh Surwase
Priya Girap

2018



Dedicated to Dr. B. S. Kademani on his 60th Birthday

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Scientometric Portrait of Dr. B. S. Kademani: A Scientometrician Par Excellence

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1.0 Introduction

Bibliometrics is a method used to analyse and quantify the bibliographic data. It offers a powerful set of methods and measures for studying the structure and process of scholarly communication. Scientometrics is the application of these methods and measure, which are dealing with the analysis of science.

Bio-bibliometrics deals with the biographical study of the individual careers of scientists and researchers and correlating bibliographic analysis of papers or academic and scientific achievements.

It is now realised that the individuals are the source of ideas. The institutions are built by the individuals and around individuals. Institutions are not a group of buildings but they constitute a group of people working and creating novel and innovative ideas in those buildings. Individuals are the basic foundations of any institution. By studying the individuals who have reached the top positions in academic and research life will highlight their works and also stimulates the younger generation to emulate their careers. 'Biobibliometrics' the term was first coined by Sen and Gan (1990) to mean as the quantitative and analytical method for discovering and establishing functional relationships between bio-data and biblio-data elements.

Research is a complicated process involving very often a large number of intricate issues, and evaluation of scientific activity is still more

complicated. Evaluation is a very important component of any research and development activity in an institution. Results of evolution of science have become major parameter for those dealing with decision making for the management of science. One of the first writers to suggest number of research papers as a scientific measure of research productivity was Nobel laureate William Shockley (1957). Martin and Irvin (1983) have thoroughly reviewed about the basic research inputs and outputs and various possible assessment methods. They also considered the count of scientific publications and citations, and peer evaluation methods providing characteristic indicators. Publication and citation counting techniques have been used in the assessment of scientific activity for at least fifty years. During the half-century of this activity the main thrust of interest seems to flow along two connected but parallel paths: the bibliometric path of publication and citation counts as tools for the librarian, and an evaluative path using these same tools to illuminate the mosaic of scientific activity (Narin, 1976). Laharia and Singh (1987) have discussed various approaches used to measure the scientific productivity and Lancaster (1991) has suggested bibliometric measures of productivity and impact in research. Scholars use all kinds of signals to distill the value of a book or an article. To name a few: the reputation of the publisher or the editorial board of a journal, the author's institution and the number of citations the article has received (Van Dalen and Henkens, 2005).

Citation brings out the connection between two documents; the one which cites and the other which is cited. The act of citing in general, an expression of the importance of the material cited, as authors often refer to previous material to support, illustrate or elaborate on a particular point (Garfield, 1978, 1994a). A highly cited work, naturally, is the one that has been found to be useful by relatively large number of authors, or in relatively large number of experiments. Citation count is, therefore, a measure of scientific activity, utility and impact of scientific work. However, citation counts do not say anything about the nature, utility or impact of the work (Garfield, 1979a).

Citation analysis constitutes an important tool in quantitative studies of science and technology. To assess the quality of a given publication, the number of times it has been cited in the literature can be counted. Similarly, the number of times a person has been cited in the literature can be taken as a measure of the quality of that person's work (Garfield, 1979b, 1994b; Lawani, 1977; Moravcsik, 1976; Narin, Carpenter and Woolf, 1983; Smith, 1981; Wallmark and Sedig, 1986). Citation analysis is a more complex task than is often recognized in the sense that it requires careful identification of exactly what is being analysed. Every citation represents a decision of the author to draw attention to the work of another as being relevant to his theme at a particular point in the document he is writing (Sandison, 1989). Citation counts not only help a research administrator to assess the quality of each individual scientist but also that of his organization as a whole. A few scientometric studies on Nobel laureates (Cawkell and Garfield, 1980; Gupta, 1983a & 1983b; Kragh, 1990; Kademani, Kalyane and Kademani, 1994; Kademani, Kalyane and Kademani, 1996; Kalyane and Sen, 1996; Sri Kantha, 1996; Kalyane and Kademani, 1997; Kademani, Kalyane and Jange, 1999; Brittain, 2000; Kademani, Kalyane and Vijai Kumar 2001; Kademani, Kalyane and Vijai Kumar, 2002a; Kademani, Kalyane and Vijai Kumar, 2002b; Angadi, et al., 2004; Koganuramath, et al., 2004; Kademani et al., 2005; Angadi, et al., 2006; Angadi, et al., 2007, Munnolli et al., 2011) and eminent scientists (Gupta, 1978; Ruff, 1979; Gupta, 1983a & 1983b; Gupta and Gupta, 1983; Dieks and Slooten, 1986; Goldstein, 1990; Todorov and Winterhager, 1991; Lancaster et al., 1992; Lancaster, Bushur, and Man Low, 1993; Kademani, Kalyane and Balakrishnan, 1994; Kademani, Kalyane and Kademani, 1994; Kalyane and Kademani, 1995; Kademani and Kalyane, 1996a; Kademani and Kalyane, 1996b; Kademani, Kalyane and Kademani, 1996; Kademani and Kalyane, 1998; Tiew and Wai Sin, 1999; Kademani, Kalyane and Vijai Kumar, 2000; Kalyane, Madan and Vijai Kumar, 2001; Rushton, 2001; Mabe and Amin, 2002; Kalyane and Sen, 2003; Muddiman, 2003; Kademani and Sagar, 2007; Kademani, Kumbar and Surwase, 2008; Swarna et al., 2009) have been conducted all over the world. These studies have indicated that it is possible to develop a model on the

performance of a 'Role Model' scientist of a country that has a direct bearing on the identification of promising scientists and human resource development in developing countries. Individual scientist, including Nobel laureate, is the current focus of scientometric studies.

The unit of study in citation analysis can be any form of written communication or an author, an organization or a nation (Small and Greenlee, 1979). However, citation counts cannot be taken as the sole measure of quality, because numerous other factors affect scientists' work and the impact of their publications is only a measure of their overall influence. For instance, a scientist who spends most of his time on teaching may contribute in an indirect way to the future achievements of his institution. Sometimes a scientist may require years of background work to prepare a paper and that single paper itself would be a vital contribution having more value than that of publications of other prolific authors. Nevertheless, scientists themselves are almost invariably keen to see this kind of information (Martyn, 1975; Cronin, 1984; Mac Roberts and Mac Roberts, 1989; Brown, 1993). One should be very careful while collecting and carrying out citation analysis as it may contain some discrepancies (Garfield, 1977; Moed and Vriens, 1989). Liu (1993) reviewed on the citation studies that have dealt with citation functions, quality, concept and motivation. Citation analysis as a subject remains controversial (Taube, 1993). Rousseau (1995) proposed a framework within which citations can be used for evaluation purposes.

Kalyane and Kalyane (1993) first used the phrase 'Scientometric Portrait' to carry out bio-bibliometric studies on scientists rather than academicians or researchers from other disciplines such as arts, humanities and social studies. Later on Kademani and Kalyane since 1994 used the phrase 'Scientometric Portrait' consistently in their publications.

1.1 Biographical Account of Dr. B.S. Kademani

Dr. Basavaraj Shivappa Kademani was born on 6th June 1958 in a village in Haveri District of Karnataka. He is a renowned professional with over 36 years of experience and multifaceted personality. He obtained his B.Sc. (1979), B.L.I.Sc. (1980), and M.A. in Political Science (1984) from Karnatak University, Dharwad, and M.L.I.Sc. (1987) from Osmania University, Hyderabad. He did his Ph.D. (2008) in Library & Information Science from Karnatak University Dharwad. He also undertook training in preservation and conservation from National Archives of India, New Delhi and of Library Automation and Computer Application to Information Processing from DRTC, Bangalore.

Dr. Kademani started his career from Mangalore University, Mangalagangothri, Karnataka in 1982 and joined Centre for Cellular and Molecular Biology (CCMB), Hyderabad in 1984 where he worked for more than four years. He organized a special collection of Prof. J.B.S. Haldane, a renowned geneticist while working at CCMB, Hyderabad. He joined Scientific Information Resource Division (SIRD), Bhabha Atomic Research Centre (BARC), Mumbai on 26th October 1988. Presently, he is working as Head, Periodicals and Library Administration Section, Scientific Information Resource Division (SIRD), BARC, Mumbai.

As Head, Periodicals & Library Administration Section, Scientific Information Resource Division, Dr. Kademani introduced several unique concepts and services such as Computerization, RFID systems, etc., including the supervision of acquisition of periodicals and providing access to digital resources to scientists and engineers at their desk top across BARC, smooth functioning of Circulation activities, Inter-library Loan services, BARC Publications, Self-operating photocopy facility with 10 photocopiers, retrieving publications of BARC scientists and Engineers from various databases and making full texts available for institutional repository at *Saraswati* - the Library Intranet, Reference service and managing over all functioning of the Central Library. He is also a guiding force behind

establishing a dynamic Resource Sharing programme with local libraries like IIT-B, Mumbai, TIFR, Mumbai and other national and international institutes on reciprocal basis.

Dr. Kademani took keen interest in making the proposal for additional space for the library and executing it successfully which resulted in the creation of the New Library wing for housing 'Digital Library' facility and 'Bound Periodicals' etc. His efforts in creating various facilities such as new furniture for staff, users and housing books and other items in the library are widely appreciated by the scientific community.

Dr. Kademani is a coordinator for XIIth Plan Project: Enhancement of Digital Resources for Central Library under the XIIth Plan. He is also a coordinator for training CAT-II Trainees in Library and Information Science and Work Assistants in the 'Office Equipment Operator' trade. So far, he has successfully trained 11 CAT-II trainees and absorbed them as technicians in SIRD. He is also a Standing Selection Committee Member of SSC No.2.7 (Library and Techniques).

Dr. Kademani compiled the report on the 'Scientometric Analysis of HBNI and Constituent Institutions (2010-2014) for NAAC Committee from UGC on 23.04.2015 and 'Publication Productivity and Citations of DAE Institutions' submitted during XII plan period. A report on 'Policy guidelines for paying publication charges or page charges for various journals' was prepared by him. He carried out the Citation Analysis of research papers of Nominees (DAE scientists and Engineers) for 'DAE Young Scientist Award' and other awards and honours. He has carried out an extensive study on the 'Usage of Science Direct Online Journals by BARC Scientists and Engineers'.

Dr. Kademani was actively involved in organizing exhibitions on themes like 'Thorium Technologies' (2010), 'Fusion Engineering' (2011) to disseminate nascent information on these subjects for the benefit of scientists and engineers, students and general public. This activity attracted the attention of the top management of BARC and the scope

of the exhibitions also widened which led to the involvement of various groups of BARC based on the theme of exhibition. Exhibition on *'Radioactive Waste Management'* (2012) was organized in collaboration with Nuclear Recycle Group, BARC *'Agriculture and Food Security'* (2013) in collaboration with Bio-medical Group, BARC and exhibition on *'Chemical Sciences'* (2014) was organized with various Groups working in the areas related to Chemical Sciences. These exhibitions were conducted every year to commemorate the National Technology Day.

In addition to the above regular activities, he is actively involved in R&D activities. He has over 140 research papers published in the field of scientometrics related to Nuclear Science and Technology in national and international journals, edited eleven books, one monograph and many compilations. According to Google Scholar as on today he has received *1838 citations to his publications* and *his H-index is 25*. He has been recognized as one of the most prolific contributors in the field of scientometrics in India. He has collaborated with as many as 35 authors.

His book entitled *'Scientometric Portrait of Homi Jehangir Bhabha: The Father of Indian Nuclear Research Programme'* was released by Dr. Srikumar Banerjee, Director, Bhabha Atomic Research Centre, Mumbai on 30th October 2009 to mark Homi Bhabha Centenary Year Celebrations. This book has been widely appreciated by the Scientific Community. He is responsible for bringing out the *'Periodicals and Online Journals Holdings of BARC Library'* and *'Scientific Information Resource Bulletin'* on a regular basis.

He is also a referee to many national and international professional journals. He has chaired sessions, acted as Rapporteur General in many conferences and directed conferences/workshops. *He was the director for the 58th Indian Library Association International Conference on Next Generation Libraries: New Insights and Universal Access to Knowledge (ILANGL-2013) 24-27 February, 2013 held at Karnatak University, Dharwad.*

Dr. Kademani has been associated with *Bombay Science Librarians' Association (BOSLA)* since 1988 and served BOSLA in many capacities as an Executive Member, Editor, *BOSLA Newsletter* and Vice-Chairman, BOSLA. Presently, he is the *Chairman, Bombay Science Librarians' Association (BOSLA)*. During his tenure (1988-2018) as Chairman, BOSLA organised many conferences, seminars and lecture series. These programmes were well attended and appreciated by many professionals across the country. Under the leadership of Dr. Kademani, BOSLA has metamorphosed into one of the most active and premier professional associations in India. Under his guidance publications like *BOSLA Newsletter*, conference proceedings were brought out very meticulously on a regular basis. A well designed and organized BOSLA website has been appreciated by many professionals across the country. He has standardized many rules and set a new bench mark for running the association very successfully. He is also responsible for instituting the 'BOSLA-Koganuramath Best Librarian Award' and framing the rules for the purpose. His commitment and dedication for the profession and professional development is unparalleled.

Dr. Kademani is the recipient of the *International Atomic Energy Agency (IAEA) Fellowship* in 'Library and Scientific Documentation' in 1991 at the Fachinformationszentrum (FIZ), Karlsruhe, Germany and Vienna International Centre (VIC), Vienna, Austria. Dr. Kademani he is the recipient of '*ILA-Kaula Best Librarian Award-2008*', '*SIS Fellowship Award-2009*', and '*SATKAL National Librarian Award-2012*' in recognition of his outstanding contribution to the Library and Information Science field, for the last 36 years Dr. Kademani is a life member of ILA, SIS, IATLIS, ALSD and BOSLA. *He was a standing Committee Member of IFLA's (International Federation of Library Associations and Institutions) Science and Technology Libraries Section from India for the term 2005-2009.*

Dr. Kademani and V.L. Kalyane have created an altogether new field in scientometrics called 'Biobibliometrics'. Their scientometric portraits of Nobel laureates and noted Indian scientists are very well received and

appreciated by the scientific community as well as Library and Information Science professionals. Their aim of creating 'Scientometric Portraits' of eminent scientists is to motivate and create scientific temper among the younger generation to emulate.

According B.K. Sen (2003) biobibliometrics is one of the branches of bibliometrics that studies the contributions of scientists and others and the citations received by the contributions made by them. The field is comparatively new and contributors to this field are not many. Of course, two of the greatest contributors in this field from India are V.L. Kalyane and B. S. Kademani who are continuously working on this field for years. Their biobibliometric studies have already covered such renowned scientists as C.V. Raman, S. Chandrasekhar, D.C. Hodgkin, Vikram Sarabhai, R. Chidambaram and others.

Dr. Kademani mentored hundreds of young librarians and expanded their vision. He always acted as a 'role model' for all aspiring young professionals to emulate in our country. And above all he is very kind, generous and very nice human being and a best administrator who always stood like a light house for the professionals.

To sum up, we would call Dr. Kademani a remarkable person with exceptional qualities: highly committed to profession, easily approachable, unfailing memory, willingness to accept any job coming on the way, good leadership qualities, friendly with junior colleagues, a caring and kind-hearted person.

2. Objectives

The main objective of this study is to analyse the papers of a successful Library and Information professional and create 'Role Model' for the younger generation to follow. This study highlights Dr. Kademani's:

1. Year-wise distribution of papers and citations,
2. Domain-wise distribution of papers
3. Authorship and collaboration pattern
4. Prominent collaborators and collaboration Network

5. Journals preferred for publication
6. Highly cited papers
7. Indicators to evaluate individual scientists: H-Index and G-Index

3. Materials and Methods

The present study is limited to the 115 papers of Dr. Kademani published in journals and conferences during 1994-2017 in the field of Library & Information Science which were readily available at the time of writing this article. The bibliographic fields are analysed by Normal Count Procedure for domains, authorships, journals. *Google Scholar* is used to collect citations received to his papers during 1994-2017.

4. Results and Discussions

4.1 Year-wise Distribution of Papers and Citations

During twenty-four years (1994-2017) of long span of his professional career, Dr. Kademani has published 115 papers. All of his papers are collaborative in nature. The highest number of papers (13) are published in 2007. The average number of papers published per year was five. The year-wise publication productivity of Dr. Kademani is given in Figure-1. The highest number of collaborators found in his papers are nine. During 1994-2017 Dr. Kademani has received a total of 1746 citations. The highest number of citations 276 are in 1996. The average number of citations per paper was 116.4. Figure 2 shows that there are highest number of papers in the five-year block of 1994-1998 and the highest number of citations in the five-year block 2009-20013.

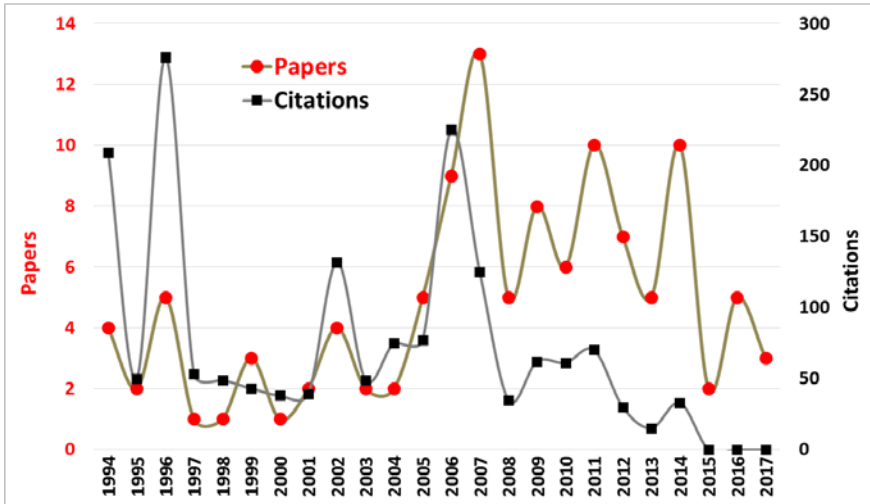


Figure-1: Year-wise number of papers published and citations received

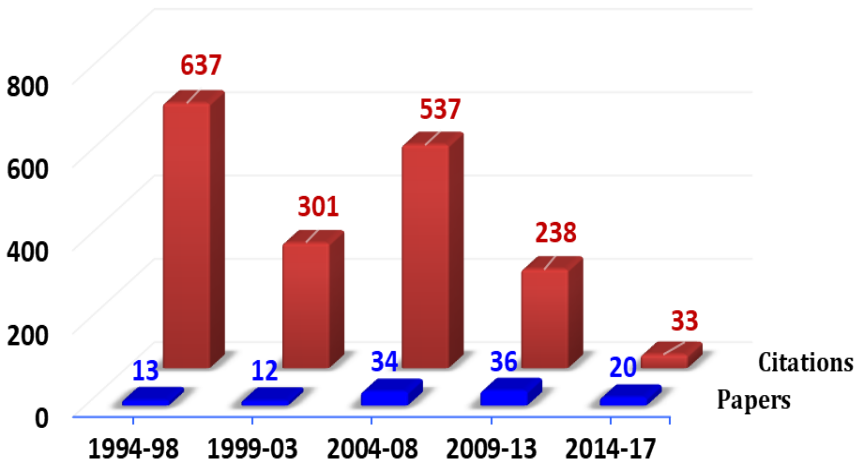


Figure-2: Number of papers published and citations received in various 5-year blocks

4.2 Domain-wise Distribution of Papers

During his research career, he has contributed many research papers, mostly applications of scientometrics to different fields such as *Biobibliometrics*, *Institutional Studies*, *Nuclear Science & technology*, *Studies on Various Subjects and Library Science in General*. Figure 3 shows that the highest number of papers were published in the domain *Nuclear Science & Technology* and the highest number of citations received in the domain *Biobibliometrics*.

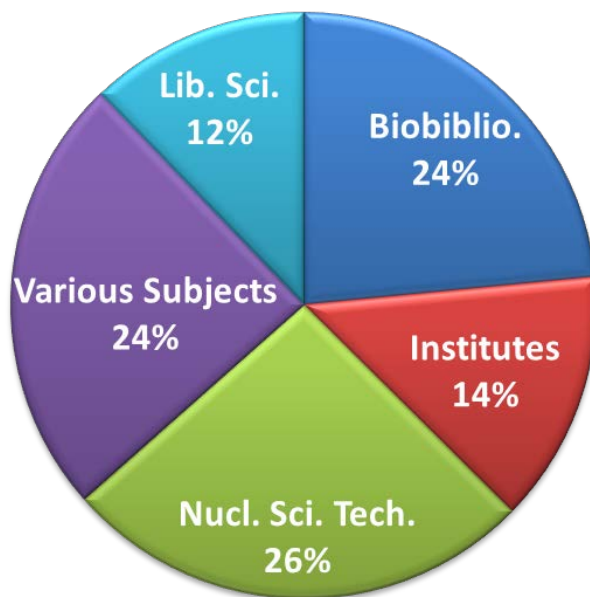


Figure 3: Domain-wise distribution of research papers.

The domain *Biobibliometrics* has the highest number of papers published and the highest number of citations received in the year 1996 (fig 3.1).

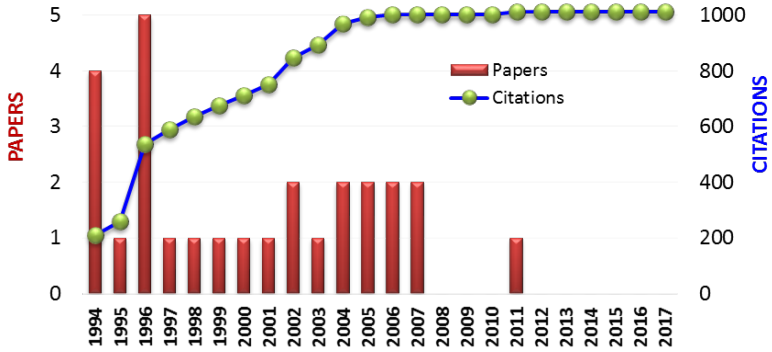


Figure 3.1: Year-wise scattering of papers and citations in the domain 'Biobibliometrics'

The domain *Institutional Studies* has the highest number of papers published in the year 2009 and the highest number of citations received in the year 2005 (fig. 3.2).

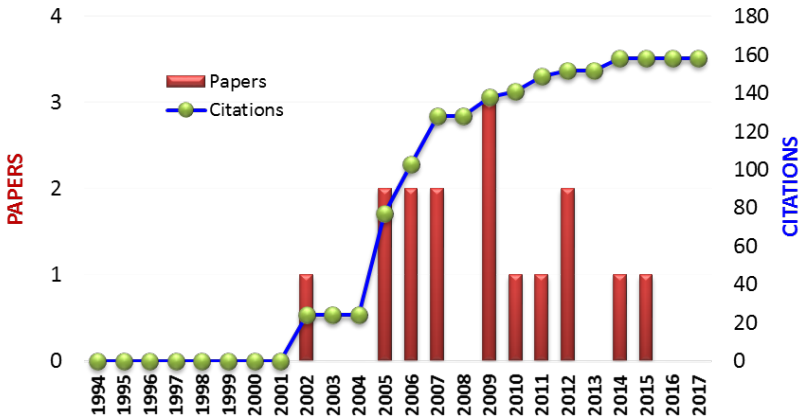


Figure 3.2: Year-wise scattering of papers and citations in the domain 'Institutional Studies'

The domain *Library Science* has the highest number of publications in the year 2012 and highest number of citations received in the year 2002 (fig. 3.3).

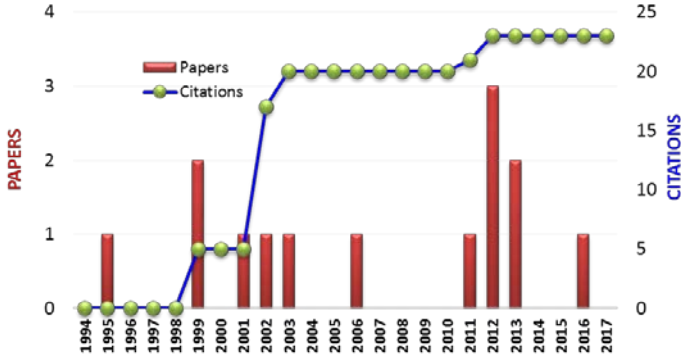


Figure 3.3: Year-wise scattering of papers and citations in the domain ‘Library Science’

The domain *Nuclear Science & Technology* has the highest number of papers published in the year 2011 and the highest number of citations received in the year 2006 (fig. 3.4).

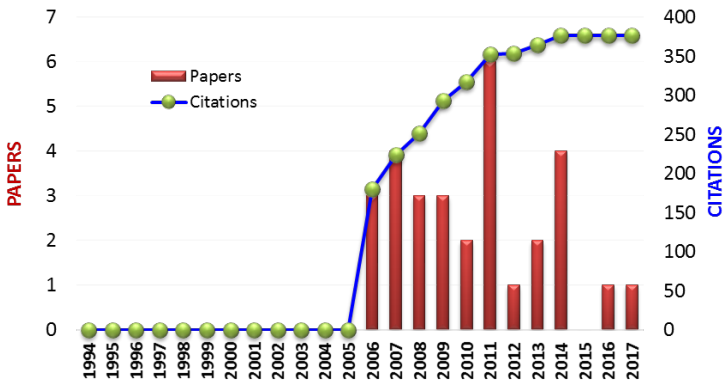


Figure 3.4: Year-wise scattering of papers and citations in the domain ‘Nuclear Science & Technology’

The domain ‘Various Subjects’ has the highest number of papers published in the year 2007 and 2014 and the highest number of citations received in the year 2007 (fig. 3.5).

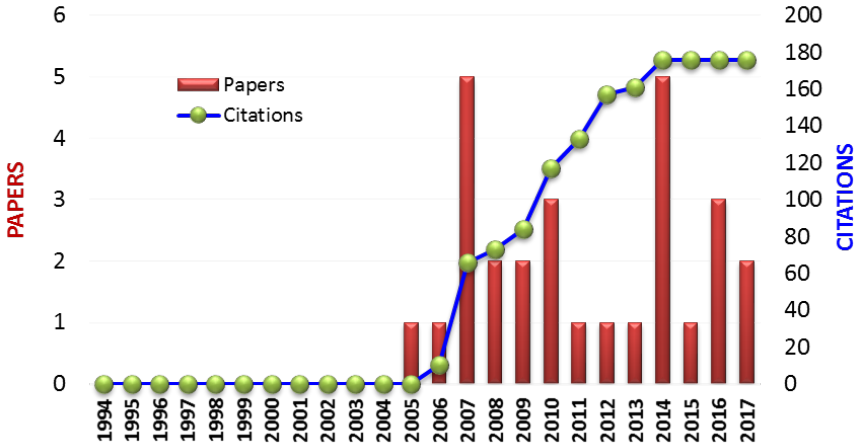


Figure 3.5: Year-wise scattering of papers and citations in the domain ‘Various Subjects’

4.3 Authorship and Collaboration Pattern

Authorship pattern is widely used as an indicator to assess the quality of scientific papers with an assumption that the more number of authors involved in producing a paper indicates its quality. Dr. Kademani had 112 (97.39%) multi-authored papers and 3 single authored papers. There were 41(35.65%) papers with three authorships followed by 25(21.74%) papers with four authorships, and 18 (15.65%) papers with five authorships. There was a paper with nine authorships. The authorship and collaboration pattern are given in Figure 4.

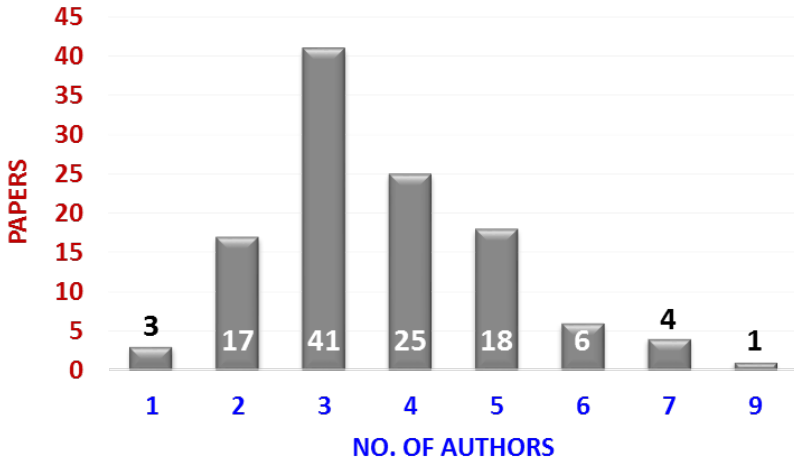


Figure 4: Authorship and collaboration pattern

4.4 Prominent Collaborators

There were 35 researchers with whom Dr. Kademani has collaborated. The most active researchers who collaborated with Dr. Kademani are: Vijai Kumar (2000-2010) and Ganesh Surwase (2005-2017), both had authored 42 papers each followed by Anil Sagar (2005-2017) with 38 papers, K. Bhanumurthy (2010-2017) with 28 papers, V.L. Kalyane (1996-2009) with 25 papers, Anil Kumar (2005-2016) with 23 papers and Lalit Mohan (2005-2016) with 22 papers. Kalyane and Angadi had the longest association (14 years) for research activity with Dr. Kademani followed by Sagar and Surwase of 13 years each. The researchers and their authorships with Dr. Kademani is depicted in Table-2 and Figure 5-6.

Table-2: Research collaborators of Dr. Kademani and their period of association

RN	Collaborator	Papers	FPY	LPY	Total Years
1	Vijai Kumar	42	2000	2010	11
2	Ganesh Surwase	42	2005	2017	13
3	Anil Sagar	38	2005	2017	13
4	K. Bhanumurthy	28	2010	2017	8
5	V.L. Kalyane	25	1996	2009	14
6	Anil Kumar	23	2005	2016	12
7	Lalit Mohan	22	2005	2016	12
8	M.M. Koganuramath	10	2001	2007	7
9	Mallikarjun Angadi	11	2001	2013	14
10	Suresh Jange	9	1999	2007	9
11	E.R. Prakasan	9	2005	2016	12
12	Priya Girap	6	2009	2014	6
13	C.R. Gaderao	5	2005	2007	3
14	G. Ravikumar	4	2016	2016	1
15	B.D. Kumbar	5	2005	2007	3
16	T. Swarna	3	2009	2016	8
17	Rekha Upadhye	3	2009	2012	4
18	Aruna Kademani	3	1994	1996	3
19	Nita Bhaskar	2	2011	2016	6
20	R.G. Garg	2	2010	2010	1
21	N. Ramamoorthy	2	2014	2014	1
22	T.L. Prasad	1	2017	2017	1
23	Shalini Tewari	1	2011	2011	1
24	Sandeep Kadam	1	2016	2016	1
25	Satish Munnolli	1	2011	2011	1
26	S.M. Pujar	1	2011	2011	1
27	B.M. Gupta	1	2006	2006	1
28	Edoardo Magnone	1	2015	2015	1
29	R.S. Devarai	1	1995	1995	1
30	T. Damodaram	1	1995	1995	1
31	M.R. Balakrishnan	1	1994	1994	1
32	B.K. Sen	1	2004	2004	1
33	Amita Sanhotra	1	2007	2007	1
34	Shekappa Bandi	1	2013	2013	1
35	Anjali Prabhu	1	2017	2017	1

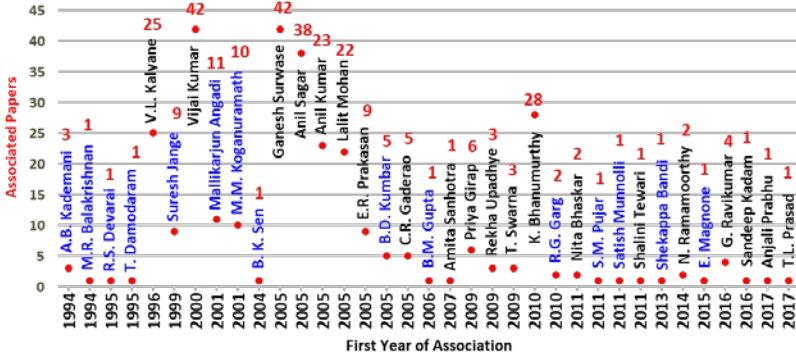


Figure 5: Collaborators of Dr. Kademani and their first year of association

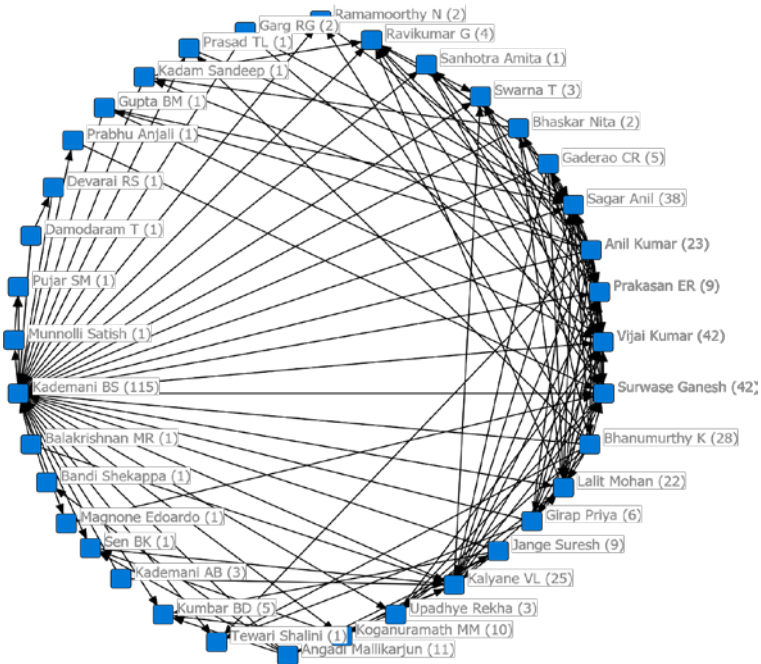


Figure 6: Collaboration network of Dr. Kademani with number of research papers

4.5 Journals Preferred for Publication

Dr. Kademani has published his 71 papers in various national and international journals (fig. 7). The highly preferred journals are: *Malaysian Journal of Library and Information Science* with 12 papers followed by *DESIDOC Journal of Library and Information Technology* with 10 papers, *International Journal of Nuclear Knowledge Management* and *SRELS Journal of Information Management* with 9 papers each.

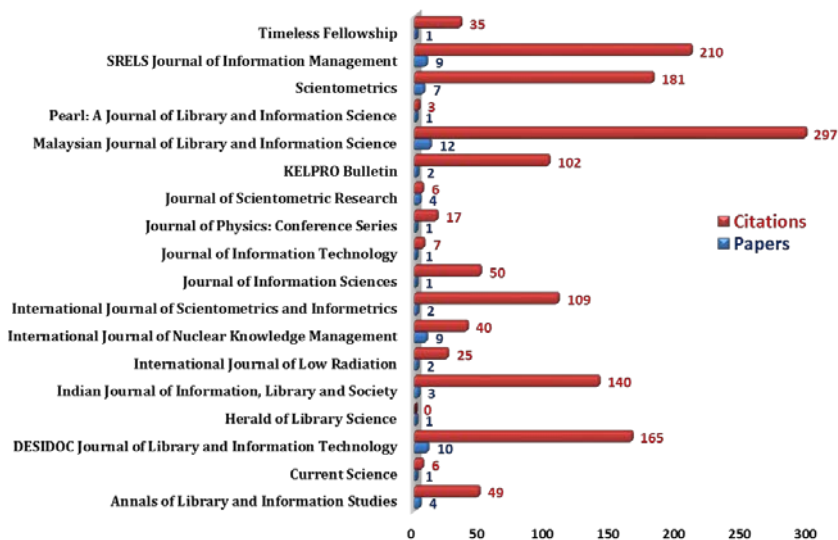


Figure 7: Journals preferred by Dr. Kademani for publishing his research articles

4.6 Highly Cited Papers

Table 3 lists Dr. Kademani’s papers which have received more than 10 citations each. Out of 71 journals papers, 11 papers have received more than 50 citations. His paper ‘Scientometric Portrait of Nobel laureate Dr. C. V. Raman’ has received the highest number of citations

(81) followed by ‘Scientometric Portrait of Nobel laureate Harold W. Kroto’ with 75 citations, ‘Scientometric Dimensions of Nuclear Science and Technology research in India : a study based on INIS (1970- 2002) database’ with 70 citations, ‘Scientometric Portrait of Nobel Laureate S. Chandrasekhar’ with 60 citations and ‘Outstandingly Cited and Most Significant Publications of R. Chidambaram, A Nuclear Physicist’ and ‘Scientometric Portrait of Sir K. S. Krishnan ‘with 59 citations each.

Table 3: Highly cited papers of Dr. Kademani

Sr#	Papers	Citations
1	Scientometric Portrait of Nobel laureate Dr. C.V. Raman. (1994). Indian Journal of Information, Library and Society. Vol. 7 (3-4). pp. 215-249.	81
2	Scientometric Portrait of Nobel laureate Harold W. Kroto. (2002). SRELS Journal of Information Management. Vol. 39 (4). pp. 409-434.	75
3	Scientometric Dimensions of Nuclear Science and Technology research in India: a study based on INIS (1970-2002) database. (2006). Malaysian Journal of Library and Information Science. Vol. 11 (1). pp. 21-46.	70
4	Scientometric Portrait of Nobel Laureate S. Chandrasekhar. (1996). International Journal of Scientometrics and Informetrics. Vol. 2 (2-3). pp. 119 -135.	60
5	Outstandingly Cited and Most Significant Publications of R. Chidambaram, A Nuclear Physicist. (1996). Malaysian Journal of Library and Information Science. Vol. 1 (1). pp. 21-36.	59
6	Scientometric Portrait of Sir K. S. Krishnan. (1996). Indian Journal of Information, Library and Society. Vol. 9 (1-2). pp. 125-150.	59
7	Scientometric Portrait of P. K. Iyengar. (1994). Library Science with a Slant to Documentation and Information Studies. Vol. 31 (4). pp. 155-176.	58
8	World Literature on Thorium Research: A study Based on Science Citation Index. (2006). Scientometrics. Vol. 69 (2). pp. 347-364.	55

Sr#	Papers	Citations
9	Scientometric Dimensions of Thorium Research in India. (2006). DESIDOC Bulletin of Information Technology. Vol. 26 (3). pp. 9-25.	55
10	Scientometric Portrait of Barbara McClintock: The Nobel Laureate in Physiology. (1997). KELPRO Bulletin. Vol. 1 (1). pp. 3-14.	53
11	Scientometric Portrait of Nobel Laureate Leland Hartwell. (2004). International Workshop on Webometrics, Informetrics and Scientometrics, IIT, Roorkee (India). 2-5 March 2004. pp. 10-30.	52
12	Scientometric Portrait of R. Chidambaram: A Publication Productivity Analysis. (1995). Journal of Information Sciences. Vol. 5 (3). pp. 101-140.	50
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4.7 Indicators to Evaluate Individual Scientist

4.7.1 h-Index of Dr. Kademani

The *h-index* is an index that quantifies scientific productivity of a scientist based on the number of papers published by the scientist and on how often these papers are cited in papers written by other scientists. It can also apply to the productivity of a group of scientists, such as a department or university or country. The index was suggested in 2005 by Jorge E. Hirsch as a tool for determining theoretical physicists’ productivity and is sometimes called the Hirsch index or Hirsch number.

The index is calculated based on the distribution of citations received by a given researcher’s publications. Hirsch writes:

A scientist has index h if h of his Np papers has at least h citations each, and the other (Np-h) papers have at most h citations each.

In other words, a scholar with an index of h has published h papers with at least h citations each. Thus, the h-index is the result of the balance between the number of papers and the number of citations per paper. The index is designed to improve upon simpler measures such as the total number of citations or papers, to distinguish truly influential scientists from those who simply publish many papers. The index is also not affected by single papers that have many citations.

The index works properly only for comparing scientists working in the same field; citation conventions differ widely among different fields.

The graphical representation of h-index is given in Figure 8. Dr. Kademani’s h-index is 24 this means that out of 115 papers, 24 papers have received at least 24 citations each.

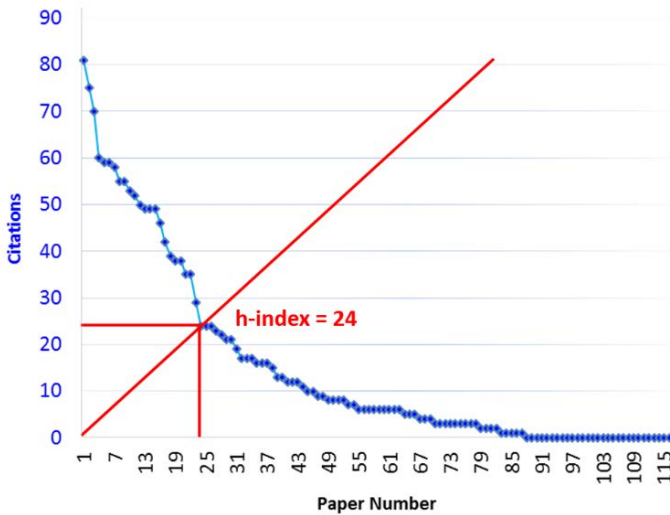


Figure 8: *h-Index* of Dr. Kademani

4.7.2 *g-Index* of Dr. Kademani

The *g-index* is an index for quantifying scientific productivity of scientists based on the distribution of citations received by a given researcher’s publications. The *g-index* aims to improve over *h-index* by giving more weightage to highly cited article. It was suggested by Egghe (2006) and states that: *Given a set of articles ranked in decreasing order of the number of citations that they received, the g-index is the (unique) largest number such that the top g articles received (together) at least g² citations.* The *g-index* of Dr. Kademani is 38. Calculations of *h-Index* and *g-index* of Dr. Kademani are given in Table-7.

Table-7: Calculation of *h-Index* and *g-index* of Dr. Kademani

R (Rank of Paper)	Citations Received	R²	Cumulative Citations
1	81	1	81
2	75	4	156
3	70	9	226
4	60	16	286
5	59	25	345
6	59	36	404
7	58	49	462
8	55	64	517
9	55	81	572
10	53	100	625
11	52	121	677
12	50	144	727
13	49	169	776
14	49	196	825
15	49	225	874
16	46	256	920
17	42	289	962
18	39	324	1001
19	38	361	1039
20	38	400	1077
21	35	441	1112
22	35	484	1147
23	29	529	1176
24 (<i>h-index</i>)	24	576	1200

R (Rank of Paper)	Citations Received	R²	Cumulative Citations
25	24	625	1224
26	24	676	1248
27	23	729	1271
28	22	784	1293
29	21	841	1314
30	21	900	1335
31	19	961	1354
32	17	1024	1371
33	17	1089	1388
34	17	1156	1405
35	16	1225	1421
36	16	1296	1437
37	16	1369	1453
38 (g-index)	15	1444	1468
39	13	1521	1481
40	13	1600	1494
41	12	1681	1506
42	12	1764	1518
43	12	1849	1530
44	11	1936	1541
45	10	2025	1551
46	10	2116	1561
47	9	2209	1570
48	9	2304	1579
49	8	2401	1587
50	8	2500	1595

5. Conclusion

Quantitative and qualitative analysis with graphic representation of the publications provides quick understanding and clear perception about various dimensions and multifocal contribution of an individual scientist.

Dr. Kademani's publication productivity under study for 24 years (1994-2017) during which he has published 115 papers. The percentage of collaborative work of Dr. Kademani is found to be very high as he had as many as 35 collaborators. Most of his research papers are in the domain of Scientometrics studying individual scientists and highly specialised areas of Nuclear Science.

Dr. Kademani's papers have been cited by the authors working in various diverse fields like nuclear science & technology, physics, engineering, chemistry, materials science, and library science indicates a very diverse influence and impact of Dr. Kademani's papers. In addition, his papers have been scattered in as many as 18 scientific journals which is a clear indication of his high quality and diversity in research.

It is further suggested that a thorough study may be conducted to know the reasons for which Dr. Kademani's papers received citations.

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Collaborators of Dr. B. S. Kademani and Their Period of Association

(Figures in parenthesis indicate the number of papers collaborated)



VIJAI KUMAR (42)
2000-2010 = 11 years.



GANESH SURWASE(42)
2005-2017 = 13 years.



ANIL SAGAR (38)
2005-2017 = 13 years.



K. BHANUMURTHY (28)
2010-2017 = 8 years.



V.L. KALYANE (25)
1996-2009 = 14 years.



ANIL KUMAR (23)
2005-2016 = 12 years.



LALIT MOHAN (22)
2005-2016 = 12 years.



MALLIKARJUN ANGADI (11)
2001-2007 = 7 years.



M.M. KOGANURAMATH (10)
2001-2007 = 7 years.



SURESH JANGE (9)
1999-2007 = 9 years.



ER PRAKASAN (9)
2005-2016 = 12 years.



PRIYA GIRAP (6)
2009-2014 = 6 years.



C.R. GADERAO (5)
2005-2007 = 3 years.



B.D. KUMBAR (5)
2005-2007 = 3 years.



G. RAVIKUMAR (4)
2016-2016 = 1 year



ARUNA KADEMANI (3)
1994-1996 = 3 years.



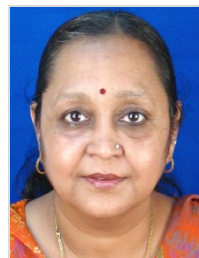
T. SWARNA (3)
2009-2016 = 8 years.



REKHA UPADHYE (3)
2009-2012 = 4 years.



R.G. GARG (2)
2010-2010 = 1 year.



NITA BHASKAR (2)
2011-2016 = 6 years.



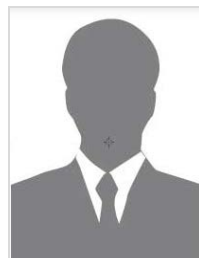
N. RAMAMOORTHY (2)
2014-2014 = 1 year.



M.R. BALAKRISHNAN (1)
1994-1994 = 1 year.



R.S. DEVARAI (1)
1995-1995 = 1 year.



T. DAMODARAM (1)
1995-1995 = 1 year.



B.K. SEN (1)
2004-2004 = 1 year.



B.M. GUPTA (1)
2006-2006 = 1 year.



AMITA SANHOTRA (1)
2007-2007 = 1 year.



SHALINI TEWARI (1)
2011-2014 = 4 years.



SATISH MUNNOLLI (1)
2011-2011 = 1 year.



S.M. PUJAR (1)
2011-2011 = 1 year.



EDOARDO MAGNONE (1)
2015-2015 = 1 year.



SANDEEP KADAM (1)
2016-2016 = 1 year.



T.L. PRASAD (1)
2017-2017 = 1 year.



ANJALI PRABHU (1)
2017-2017 = 1 year.



Ganesh Surwase completed his B.Sc., B.L.I.Sc. from BA Marathwada University, Aurangabad and M.Sc.(IT), M.L.I.Sc. from Annamalai University, Tamilnadu. He started his career as Librarian of Vivekanand Institute of Advanced Studies in Management and Communications Library, Aurangabad and later on joined Scientific Information Resource Division of Bhabha Atomic Research Centre, Mumbai in 2002. He is a life member of Bombay Science Librarians' Association (BOSLA). His research areas includes

Library Science, Knowledge Management, Information Technology and Citation Analysis. He has published more than 50 research papers in various National and International Conferences and Journals.



Smt. Priya Girap obtained his B.Sc., M.L.I.Sc. from Mumbai University, Mumbai. Since July 2002 she is working as Technical Officer-D at Scientific Information Resource Division, Bhabha Atomic Research Centre (BARC), Mumbai. She has 8 research papers to her credit published in journals and conferences.

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