Winter 12-1-2019

Bibliometric Analysis of the Research Output of Kuvempu University's Publication in ISI Web of Science during 1990 – 2019

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Abstract

The present study is a bibliometric assessment of scientific research output of the Kuvempu University, Shankaraghatta, Shivamogga, Karnataka (1990 – 2019). The data collected from the Web of Science. The analysis includes yearly output of research productivity. The study focuses on Author Productivity pattern, types of documents/records, individual author's research productivity, geographical collaboration of authors (countries of contributing authors) and distribution of research output by language.

Keywords

Research Productivity, Kuvempu University, Web of Science, Bibliometric analysis, Scientific publications

1. Introduction

In the fastest growing technological world of information communication technology and scientific research and development, a devastating amount of information / data in various formats is generated directly or indirectly. As far as academic and scientific community is concerned, research scholars and academician are publishing a large number of scholarly communications on daily basis across the world. Bibliometrics is the study of the quantitative aspects of science as a discipline or economic activity. It is part of the sociology of science and has application to science policymaking. The researchers in scientific disciplines form the greater, but also the most diverse, interest group in Bibliometrics. Due to their primary scientific orientation, their interests are strongly related to their specialty. Researcher tries to

find out the scientific productivity of Kuvempu University taken from the Web of Science database. In spite of the fact that Kuvempu University was established in 1987, but our scientific outcomes turned out in 1989. 1318 outcomes were discovered from 1990 to 30 October 2019.

2. Study Area

Kuvempu University was established in 1987. It is a State University recognized by UGC under 2(f) and 12(b). The University has been named after great Kannada writer Shri Kuvempu and has achieved a distinctive academic profile and a cultural identity of its own. Interestingly, the features of its identity seem to have emerged out of the multifaceted personality of Kuvempu, the great doyen of Kannada literature, a Jnanapitha awardee and one among the most significant cultural figures of modern India.

It is a university with a distinctive academic profile, blending in itself commitment to rural ethos in modern spirit. The university offers under-graduate, post- graduate and Ph.D programmes in a wide range of disciplines. It has 35 Post-graduate Departments in the Faculties of Arts, Commerce, Education, and Science and Technology.

3. Literature Review

Singh (2015) analyzed the Research output of Indian Institute of Technology Mandi (IIT Mandi) and focused on the collaboration at different levels such as author, institution and status of collaboration at National/international level. Banshal et al. (2017) analyzed the research performance of 16 older Indian Institutes of Technology of India, shows that there is a substantial difference in research performance levels of old IITs vis-à-vis the new IITs. Chaman et al. (2017) discussed about the growth and contribution of research carried out by the scientists of Tumkur University. The study shows that there was a gradual growth of publications during 2011 - 2016. The annual average research output of Tumkur Univeisity was 261 records and the research output of the scientists is fairly collaborative.

Nabi Hasan (2015) reported, “The paper attempts to evaluate the trend of research output of five top ranked Indian Institutes of Technology (IITs) on the basis of research papers/articles indexed in Web of Science online database for the five years’ period of 2009-13. 215,019 records were retrieved for India, which are 2.72% of the global records for the period 2009-13”. Bid (2016) “analysed publications of Indian Institute of Technology Kharagpur for the

period 2000 to 2015 and emphasized the growth and development of research activity of this institution".

Bibliometric techniques have been used to measure scientific advancement in many disciplines of science and engineering and are a joint research instrument for systematic analysis (Van Raan, 2005). Since Narin et al. (1976) first suggested the concept of "evaluative bibliometrics", many scientists have tried to evaluate the research trend in the publication outputs of countries, research institutes, journals and subject category. Jeevan and Gupta have studied the contribution and impact of Indian Institute of Technology, Kharagpur by suggesting a methodology the quantitative profile of a research cum teaching institute, with their opinion to get idea about its performance an impact. Similarly, Singh et.al. studied the research contribution and impact of Indian Institute of Technology, Roorkee from 1993 to 2001. Employing a variety of bibliometric methods, including publication and citation analyses, Bonnevie (2003) examined a multifaceted portrait of the Journal of Information Science, focused on the last quarter of the 20th century. The areas of study included the reflectivity of the journal in databases, the pattern of authorship, and the pattern of self-citation, internalization and scientific impact. The study revealed that 2,140 JIS publications in the SSCI and LISA, with 1,228 (57.4%) in SSCI and 912 (42.6%) in LISA, respectively.

Swain (2011) in his scientometric analysis of Library Philosophy and Practice from 2004 to 2009 found that the degree of collaboration in LPP ranged from 0.222 to 0.52 and the highest numbers of contributors hailed from Nigeria, followed by USA, India, and Iran. Hussain and Fatima (2011) in their study a bibliometric analysis of the Chinese Librarianship: An International Electronic Journal (2006-2010) found that USA is the most prolific country; highest papers cite the journal Inter lending and Document Supply; single authors contributed the majority of papers.

4. Objectives of the Study

a) To observe the Kuvempu University's yearly research output from 1990 to October 2019.
b) Subject wise Research Productivity.
c) Authorship Pattern.
d) Types of Documents Published.
e) Geographical Country Collaboration.
f) Language wise research output.
g) To find out H-index and citations score of core contributors based on author rankings.

5. Methodology

The Web of Science scientific citation indexing (WoS) database is utilized for this study. WoS is the first multidisciplinary bibliographic index of journal publications designed. It is considered a standard data source for bibliometrics. The data for this study has been extracted from WoS publications are from the year 1989. Therefore, the data span of this study is from 1990 to 2019. The query used in the search engine of WoS was "OO = Kuvempu University". Each record of the data retrieved from WoS comprises a number of fields such as author, author affiliation, title, abstract, citations record, and so on.

a) Year Wise Research Output

Kuvempu University started to publish their research outlook in the year 1992.The publication rate is slowly increasing with ups and downs. The largest publication is in the year 2012. The year-wise distribution of literature is shown below in Table 1 and Diagram 1 shows the research productivity of each year.

Table 1

Sl No	Publication Years	Records	% of 1318
1	2019	65	4.932
2	2018	78	5.918
3	2017	98	7.436
4	2016	74	5.615
5	2015	64	4.856
6	2014	104	7.891
7	2013	107	8.118
8	2012	136	10.319
9	2011	100	7.587
10	2010	90	6.829
11	2009	101	7.663
12	2008	81	6.146
13	2007	52	3.945
14	2006	40	3.035
15	2005	30	2.276
16	2004	11	0.835
17	2003	13	0.986
18	2002	25	1.897
19	2001	17	1.29
20	2000	13	0.986
21	1999	6	0.455
22	1998	5	0.379
23	1997	3	0.228
24	1996	1	0.076
25	1994	3	0.228
26	1992	1	0.076

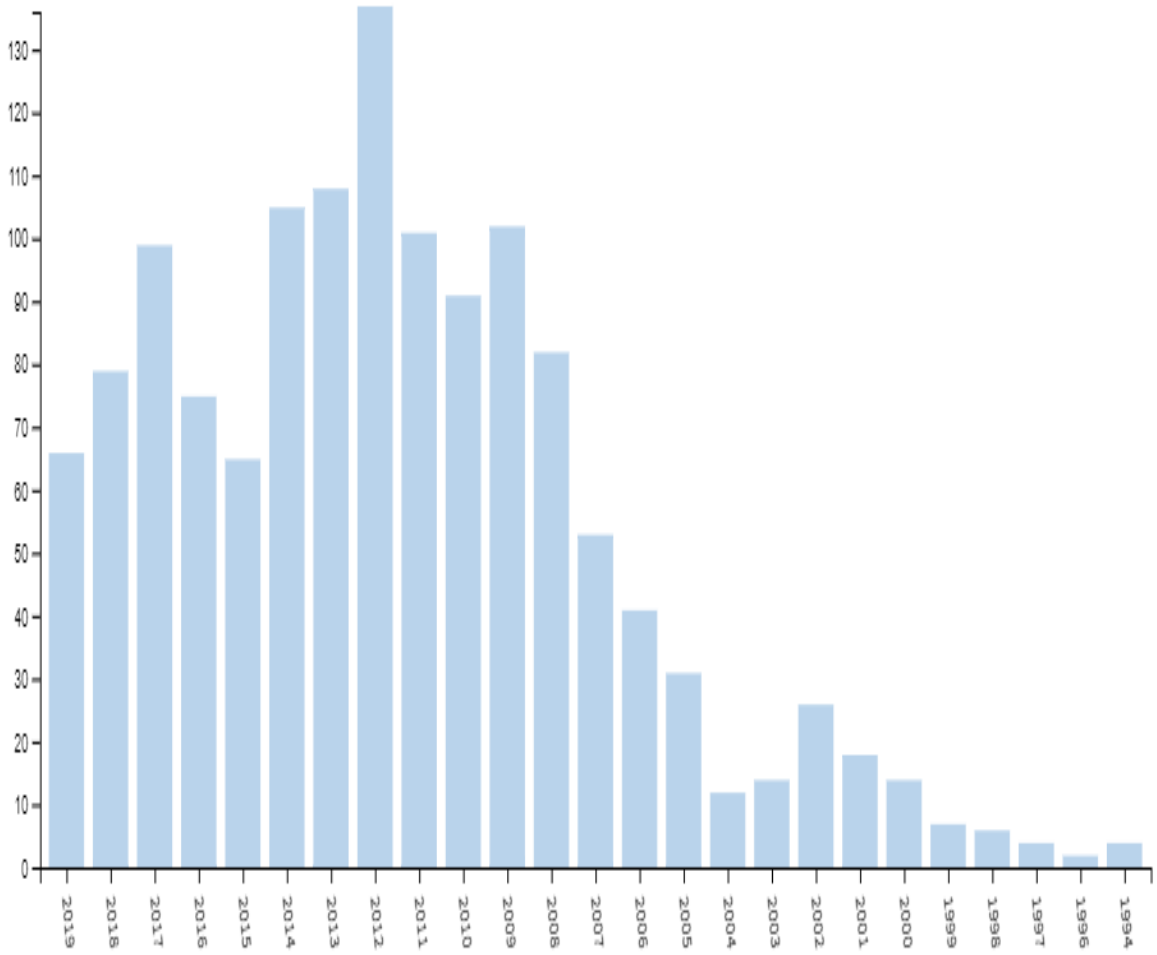

Diagram 1

b) Subject Wise Research Trend

Table 2 and Diagram 2 shows Subject-wise research trend. Electrochemistry is at the top in research yield of Kuvempu University, it covers 10.167% of all the research output. Chemistry Organic and Chemistry Multidisciplinary are at second and third in research yield with 09.636% and 09.484% respectively.

Table 2

Sl No	Subject	Records	Percentage
1	Electrochemistry	134	10.167
2	Chemistry Organic	127	9.636
3	Chemistry Multidisciplinary	125	9.484
4	Materials Science Multidisciplinary	115	8.725
5	Chemistry Medicinal	97	7.36
6	Chemistry Physical	83	6.297
7	Chemistry Analytical	67	5.083
8	Chemistry Inorganic Nuclear	66	5.008
9	Biochemistry Molecular Biology	64	4.856
10	Environmental Sciences	62	4.704
11	Pharmacology Pharmacy	62	4.704
12	Engineering Chemical	51	3.869
13	Physics Multidisciplinary	46	3.49
14	Biotechnology Applied Microbiology	40	3.035
15	Chemistry Applied	40	3.035
16	Physics Condensed Matter	40	3.035
17	Polymer Science	37	2.807
18	Metallurgy Metallurgical Engineering	34	2.58
19	Physics Atomic Molecular Chemical	34	2.58
20	Plant Sciences	31	2.352
21	Physics Applied	30	2.276
22	Entomology	26	1.973
23	Nanoscience Nanotechnology	26	1.973
24	Food Science Technology	23	1.745
25	Biochemical Research Methods	22	1.669

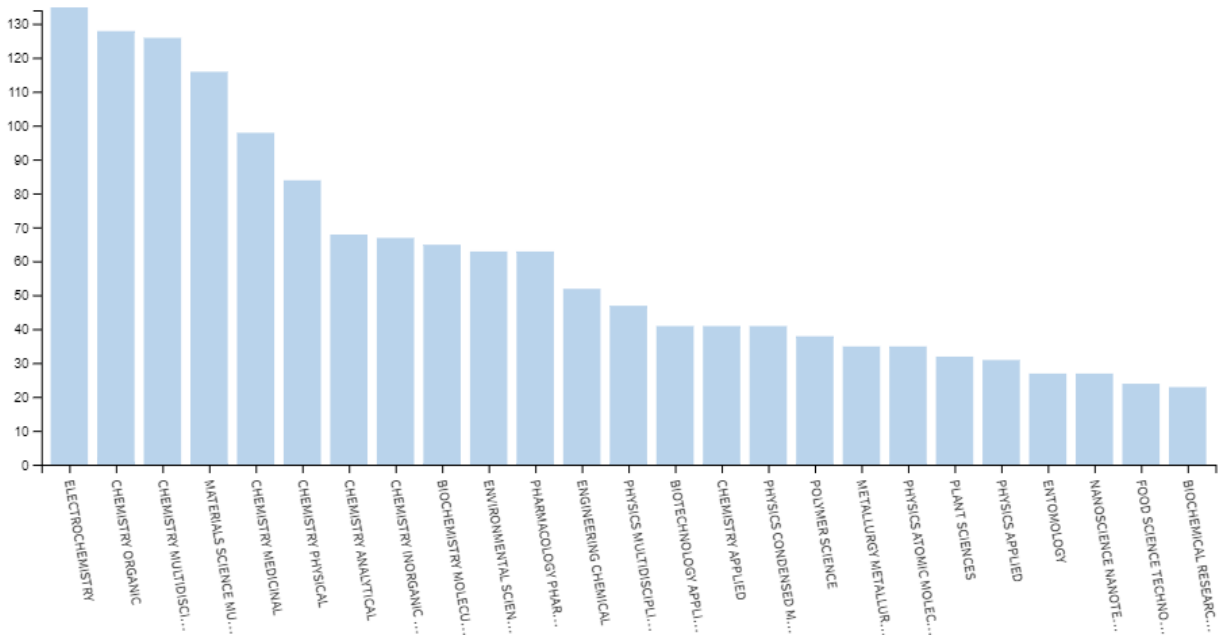

Diagram 2

c) Authorship Productivity Pattern:

Table 3 and Diagram 3 show authorship productivity patterns. Collaboration of research is evident in the field of scientific research. Only 08 records/research outputs were produced by single authors. 173 and 249 research outputs were produced by two and three authors. The highest research outputs were produced by four authors i.e. 302. It is clear that 0.61% of research was done by single author, 13.13% by two, 18.89% by three and 22.91% by four authors of scientific publications.

Table 3

Sl No	No. of Authors	No. of Records	Percentage
1	Single	8	0.61
2	Joint	173	13.13
3	Three	249	18.89
4	Four	302	22.91
5	Five	258	19.58
6	Six	179	13.58
7	Seven	59	4.48
8	Eight	34	2.58
9	Nine	13	0.99
10	Ten and More	43	3.26
	Total	**1318**	**100**

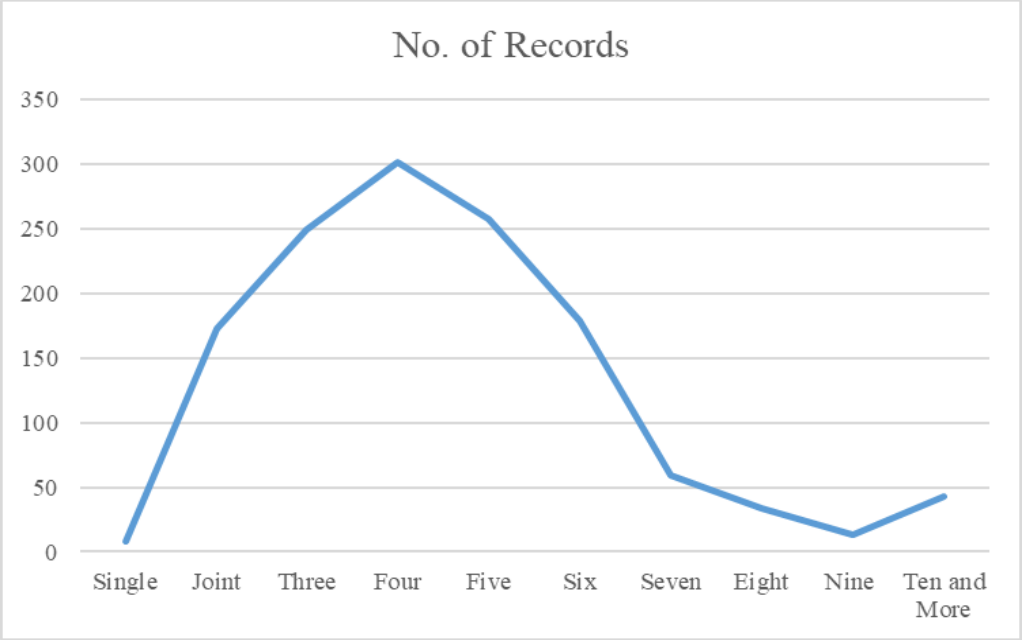

Diagram 3

d) Types of Documents Published:

Document type indicates the type of publication in which the researchers published their research outputs. Most of them published in a form of articles. Table 4 and diagram 4 reveals the distribution of the research output according to document type. It is an accepted fact that most of the scholarly communication of scientific research is published in journals as articles and sometimes presented in review and proceedings papers.

Table 4

Sl No	Document Types	Records	% Of 1318
1	Article	1279	97.041
2	Proceedings Paper	17	1.29
3	Review	14	1.062
4	Meeting Abstract	13	0.986
5	Letter	6	0.455
6	Correction	3	0.228
7	Early Access	3	0.228
8	Editorial Material	2	0.152
9	Note	1	0.076

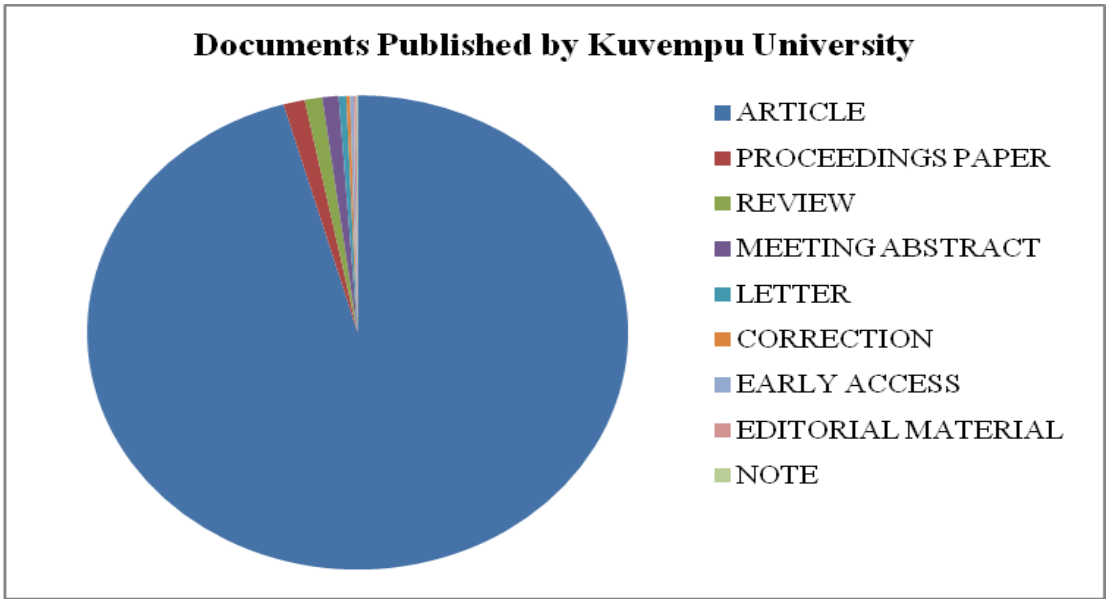

Diagram 4

e) Geographical Country Collaboration

Table 5 and Diagram 5 show the country-collaboration of research productivity. Most scientists published their results in India, followed by USA, Pakistan and Canada.

Table 5

Sl No	Countries/Regions	Records	% Of 1318
1	India	1318	100
2	USA	124	9.408
3	Pakistan	20	1.517
4	Canada	16	1.214
5	Japan	13	0.986
6	Peoples R China	12	0.91
7	South Korea	12	0.91
8	Saudi Arabia	11	0.835
9	Malaysia	10	0.759
10	South Africa	10	0.759
11	England	9	0.683
12	Belgium	6	0.455
13	Taiwan	6	0.455
14	Australia	5	0.379
15	France	5	0.379
16	Mexico	5	0.379
17	Finland	4	0.303
18	Yemen	4	0.303
19	Ethiopia	3	0.228
20	Germany	3	0.228
21	Kuwait	3	0.228
22	Nigeria	3	0.228
23	Singapore	3	0.228
24	Thailand	3	0.228
25	Israel	2	0.152

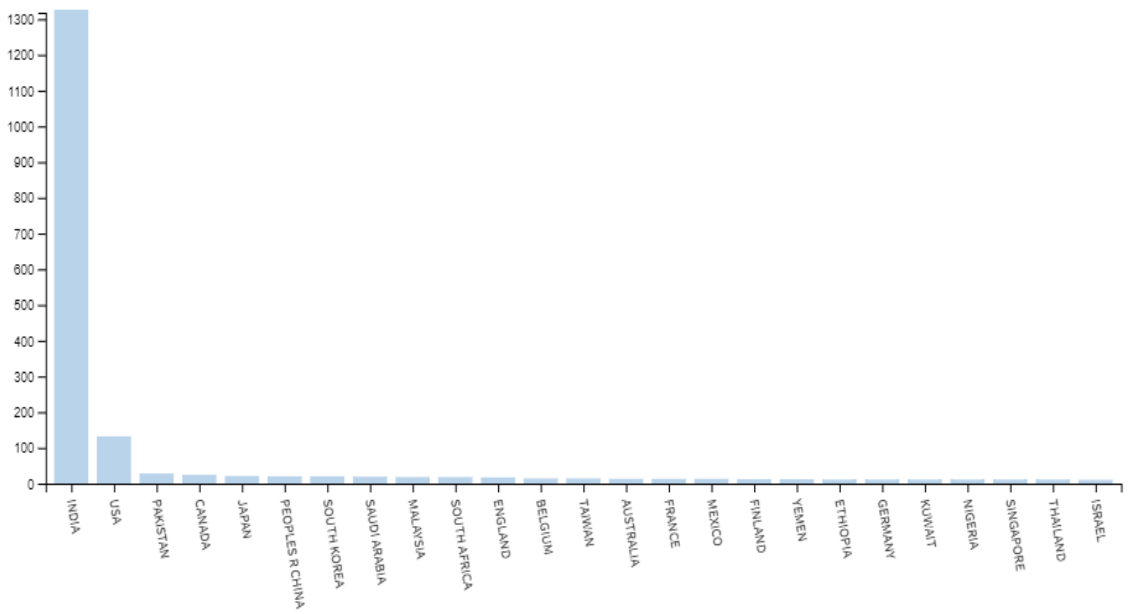

Diagram 5

f) Language wise research output.

The distribution of research by language is presented in Table 6. All the research results are published in English. Following table conveys that very scientific communications are published in English as it is International language of communication.

Table 6

Sl No	Languages	Records	% of 1318
1	English	1318	100.000

6. Findings:

1. The highest number of publication in the year 2012 i.e. was 136.
2. Electrochemistry is at the top in research yield of Kuvempu University it covers 10.167% of all the research output.
3. Only 0.61% authors have published their research individually. 99.39% of research was done by collaboration.
4. The study shows 97.041% records are published as journal articles. So journal articles are termed as primary medium of research communication.
5. Kuvempu University scientists present papers with the collaboration of other countries like USA, the Pakistan and Canada. Though scientists produced 1318 research outputs in India, they got Local Citation Scores and Global Citation Scores.
6. The English language is dominating in learned communication. All of the publications are published in English only.

7. Conclusion

Bibliometrics is a study to evaluate the performance of the researcher as well as research publications, now a days; it has become an important field of study to monitor the progress in scientific performance of a research group, an organization, and a university etc. The study examines the performance based research output and develops benchmark to evaluate the quality of research endeavour &information output of Kuvempu University.

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