REFLECTIONS TO RESEARCH PRODUCTIVITY OF KURKSHETRA UNIVERSITY KURUKSHETRA, HARYANA (INDIA) FROM 2011-2020: A BIBLIOMETRIC ANALYSIS

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ABSTRACT

Introduction. *The present study reflects the research output of Kurukshetra University, Kurukshetra, Haryana, India made from 2011 to 2020 by using data from Scopus database.*
Results and Discussion. *The study shows the total research output produced by the scientific scholars of the university, most prolific authors, International collaborations and the preferred sources for publications during the decade.*
Conclusion. *The study concludes that KUK's research output in terms of publications was more than three thousand (3167) during a span of 10 years; Maximum growth rate was marked in the year 2019; Highest Citations was recorded in the year 2011 (5012) while the lowest citations in 2020 (739); More than seventy percent of total publications appeared in the top ten subjects; Highest publications were contributed the subject category chemistry (590) followed by Biochemistry, Genetics and Molecular Biology (445); KUK at International Level had highest collaboration with United States in publication of research output papers (51 papers); Top ten productive authors of KUK contributed 24.53 % share of cumulative total research output made during ten years; and Highest contribution was made by Kumar, R (194 Papers) followed by Pal A (93 papers)*

Keywords: Research output; Bibliometric; Citation profile.

1. INTRODUCTION

Today's society is the information society and there is a great and urgent need for easy access and information availability. Already established information or knowledge leads to generate new knowledge, theories, information, etc. Information is a vibrant and endless resource which has impact on all arena of life.

The literature growth, interdisciplinary subjective approach and specializations in research have posed many problems in front of researchers and as well as librarians to recognize the useful collection of literature and other materials. It has become a mandate for librarians to recognize the nature of any subject content used by the researchers.

Bibliometric studies help the LIS professionals to showcase the latest trends of any subject or literature. These kinds of studies are useful for many universities and academic institutions to appear in top list of research rankings based on their record of research output. Not the benefit of these studies goes to merely the institutions but students, teachers, researchers, stakeholders and government too. To assess

the scientific performance of any Institution, individual or source, bibliometric or scientometric methods are among the most important measurements of scientific literature.

2. OBJECTIVES

The main objective of this study is to reflect the research performance of Kurukshetra University Kurrukshetra (KUK) during 2011-2020 based on its publications output as indexed in Scopus database. In particular, the study is carried out with following objectives:

- To reflect the total research output of KUK;
- To assess the number of cited articles out of total published articles of KUK;
- To recognize the authors who contributed more in research output;
- To be familiar with the top subject categories for publications; and
- To make out the preferred journals for publications.

3. REVIEW OF LITERATURE

Many studies have been undertaken to assess the research productivity of institutions. Here few have been mentioned:

Khanna et al (2017) conducted a scientometric analysis of the research output of physics and astronomy of Guru Nanak Dev University (GNDU) during 2006-15 and found that GNDU in India at 23rd rank in term of publications output (652) and h-index (29), 16th rank in ACPP (7.01 per cent) and 18th rank in share of high cited papers (1 per cent) and 19th rank in terms of international collaborative papers (27.45 per cent) during 2006-15.

Pradhan and Ramesh (2017) in their scientometric study of IIT, Madras and IIT, Bombay found that around 19.66 percent papers published by IITM and 26.54 percent papers published by IITB scientists were not cited during 2006-2015 and more authors from IIT Bombay were cited than IITM.

Bansal, etal (2015) in their scientometric study of Panjab University found that PU total publications in mathematics was increased at an average growth rate of 17.15 percent. 43.91 percent publications were remained uncited. PU stood at rank 10th in terms of publication output (230) and, at rank 12 in average citation per paper and share of international collaborative paper.

Nagarkar (2015) et al in their study of faculty of Life Science Department Savitribai Phule Pune University during 1999-2013 found that research productivity of faculty of life science department was enhanced in terms of publications and citations. Out of total 690 publications of life science, 18 percent publications were written with foreign authors.

Siwach and Parmar (2018) in their study of CCSHAU, Hisar found that a total of 2649 paper were published from 2001-2015 receiving 15282 citation. Nearly 47% of the university research were published in ten journals and collaborated with many institutions at national and international level in its research publication.

4. METHODOLOGY

The present study is restricted to Research productivity of Kurukshetra University, Haryana State of India only. For the present study data was extracted from Scopus database -a popular largest abstracting and citation database of peer-reviewed scientific literature. Various filters have been applied before extraction and entering data in a MS-excel sheet and then analyzed to obtain relevant findings.

5. ANALYSIS AND RESULTS

Table 1. Type of documents produced Research output in KUK

Doc Type	Total Publication (TP)	Percentage (%)
Article	2390	75.47
Conference Paper	517	16.32
Review	129	4.07
Book Chapter	82	2.59
Book	12	0.38
Editorial	10	0.32
Erratum	9	0.28
Letter	6	0.19
Note	6	0.19
Data Paper	3	0.09
Short Survey	1	0.03
Undefined	2	0.06
Total	**3167**	**100.00**

5.1 Type of publications preferred by authors of CCSHAU

In Table 1 Research contribution of KUK appears in eleven different document types and a few papers are found unidentified. This output consists of 2390 Research Articles (75.47 % share), 517 Conference Paper (16.32 % share), 129 Review (4.07 % share), 82 Book Chapter (2.59 % share), 12 books (0.38 %) 10 editorials (0.32%) 9 erratum (0.28%), etc.

Table 2. Year-wise research contribution of KUK

Year	TP	%	Growth Rate	TC	ACPP
2011	334	10.55		5012	15.01
2012	343	10.83	9	3886	11.33
2013	315	9.95	-28	4155	13.19
2014	275	8.68	-40	2908	10.57

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2015	302	9.54	27	2795	9.25
2016	301	9.5	-1	2521	8.38
2017	283	8.94	-18	1902	6.72
2018	280	8.84	-3	1386	4.95
2019	398	12.57	118	1172	2.94
2020	336	10.61	-62	739	2.20
Total	3167	100.00		26476	8.36

5.2 Research output of KUK during 2011-2020

Table 2 shows the year wise research contribution of KUK. The university's research output in terms of publications was more than three thousand (3167) during a span of 10 years. It is very apparent from the table that not more increase and decrease in publications during the decade. The research output is almost similar with a little increase and decrease. Publication output range falls between 8 percent and 12 percent every year. Maximum growth rate was marked in the year 2019 thus it can be said that more research productivity was made in the year 2019 (398 articles).It was followed by 2012 (343 papers) while less productivity can be seen in the year 2014 (275 papers. Highest growth rate can be seen in the year 2019 (118 articles) very distantly followed by 2015 (27 articles).

Highest Citations received to the year 2011 (5012) while the lowest citations to the year 2020 (739) that is very much logical. Citations from the latest year to start year can be seen increasing by every year except the year 2012.

Table 3. Subject-wise distribution of research output of KUK

S. No.	Subject-Categories	TP
1.	Chemistry	590
2.	Biochemistry, Genetics and Molecular Biology	445
3.	Computer Science	382
4.	Agricultural and Biological Sciences	338
5.	Chemical Engineering	196
6.	Earth and Planetary Sciences	168
7.	Business, Management and Accounting	96
8.	Economics, Econometrics and Finance	42

9.	Decision Sciences	30
10.	Arts and Humanities	28
	Total	2315 (73.09%)

5.3 Subject wise contribution of CCSHAU

"Scopus classifies the different subject categories for the indexed articles. The papers published by KUK can be divided into different subject categories as shown in Table 3. A paper may appear in more than one subject category so the total number of articles exceeds in all subject categories".

More than seventy percent of total publications appeared in the top ten subjects during the decade. Highest publications were contributed in the subject category chemistry (590) followed by Biochemistry, Genetics and Molecular Biology (445). In Computer Science and Agricultural and Biological Sciences, more than 300 publications were contributed while in Chemical Engineering and Earth and Planetary Sciences more than 100 publications were contributed.

Table 4. Top collaborating countries with KUK

S. No.	Country	TP (N=3167)	% of collaboration
2	United States	51	1.61
3	Malaysia	42	1.33
4	Saudi Arabia	33	1.04
5	Egypt	28	0.88
6	Denmark	27	0.85
7	Italy	26	0.82
8	Spain	21	0.66
9	Czech Republic	19	0.60
10	South Africa	16	0.51
11	South Korea	16	0.51

5.4 Collaboration at National and International Level

It is clear from the table that KUK at International Level had highest collaboration with United States in publication of research output papers (51 papers) followed by Malaysia (42) and Saudi Arabia (33). With Egypt 28 papers, Denmark (27), Italy (26), Spain (21) were contributed. More than 16 papers were produced with Czech Republic, South Africa and South Korea.

Table 5. Top Sources for Publication

S. No.	Name of Journal	TP	% (N=448)	% (N=3167)
1	Aip Conference Proceedings	167	37.28	5.27
2	Journal of Molecular Liquids	44	9.82	1.39
3	Annals Of Biology	40	8.93	1.26
4	Medicinal Chemistry Research	38	8.48	1.20
5	Advances In Intelligent Systems And Computing	32	7.14	1.01
6	Materials Physics And Mechanics	31	6.92	0.98
7	Journal Of Solid Mechanics	29	6.47	0.92
8	European Journal Of Medicinal Chemistry	23	5.13	0.73
9	International Journal Of Pharmacy And Pharmaceutical Sciences	23	5.13	0.73
10	Natural Hazards	21	4.69	0.66
		448		14.15

5.5 Top journals preferred for publications

Table 5 presents the status of top 10 journals which had published 14.15% % share of total publications of CCSHAU (3167 papers) during 10 years. Aip Conference Proceedings were most preferred source for publications from KUK during a span of 10 years as it shares of publication of top ten journals is 37.28 %. It was distantly followed by Journal of Molecular Liquids with share of 9.82 publications of total top journals. Two journals published more than 8 percent share of publications while other five journals among top ten contributed more than 5% publications of KUK. One journal namely Natural Hazards contributed little less than 5 percent of share among top ten journals.

Table 6. Most prolific authors of CCSHAU

S.	Author	TP	TC	Total	Cited by	h-index

No.		(N=3167)		Contribution of all years	documents	
1	Kumar, R.	194	3199	388	1617	25
2	Pal, A.	93	4246	232	2271	33
3	Kashyap, M.K.	77	515	82	407	12
4	Sharma, P.K.	65	2161	112	1590	26
5	Tripathi, C.C.	63	512	76	431	13
6	Kumar, D.	59	4086	472	3249	31
7	Aggarwal, S.	58	723	72	557	14
8	Sharma, A.	57	800	122	577	15
9	Sharma, C.	56	1793	83	1611	22
10	Kumar, D.	55	816	109	748	14
	Total	777 (24.53%)	18851	1748		

Table 4.6 presents the list of top ten productive authors of KUK and their citation impact during period of ten years. These 10 authors contributed 777 papers which is 24.53 % share of cumulative total research output made during ten years. More research output was contributed by Kumar, R (194 Papers) followed by Pal A (93 papers) and Kashyap, M.K. (77 papers). Sharma, P.K. and Tripathi, C.C. contributed more than 60 papers each while other five authors contributed more than 50 papers each. Among all top ten authors, PAL, A had highest H-Index followed by Kumar D.

6. SUMMARY AND CONCLUSION

Research output of an institute indicates towards its excellence. In the present study research contribution of KUK one of the leading and oldest university of Haryana state has been demonstrated in terms of number of publications and citations, subject categories of publications, preferred journals for publication and most prolific authors. Research output of KUK in terms of publications has been more than three thousand (3167) during a span of 10 years; Maximum growth rate was marked in the year 2019; Highest Citations was recorded in the year 2011 (5012) while the lowest citations in 2020 (739); More than seventy percent of total publications appeared in the top ten subjects; Highest publications were contributed the subject category chemistry (590) followed by Biochemistry, Genetics and Molecular Biology (445);

REFERENCES

CCS Haryana Agricultural University, Hisar. from www.hau.ernet.in

ICAR ranking status of Agricultural Universities for the year 2016-17. (2017) http://www.icar.org.in/files/071715062804 _0au-ranking-2017.pdf

Indian Citation Index (ICI). http://www.indiancitationindex.com/

Indian Council of Agricultural Research (ICAR). from www.icar.org

Khanna, S., Singh, N. K., Tewari, D., & Saini, H. S. (2017). Scientometric Analysis of the Research Output of Physics and Astronomy of Guru Nanak Dev University during 2006-15. *DESIDOC Journal of Library & Information Technology*, 37(5), 337. doi:10.14429/djlit.37.5.10683

Bansal, M. (2015) Contribution and citation impact of Panjab University in mathematics research during 2005-14. *Library Philosophy and Practice*. http://digitalcommons.unl.edu/libphilprac/1325

Nagarkar, S., Veer, C., & Kumbhar, R. (2015). Bibliometric Analysis of Papers Published by Faculty of Life Science Departments of Savitribai Phule Pune University during 1999-2013. *DESIDOC Journal of Library and Information Technology*, 35(5), 368-375. doi:10.14429/djlit.35.5.8429

Pradhan, B., & Ramesh, D. (2017). Scientometrics of Engineering Research at Indian Institutes of Technology Madras and Bombay during 2006-2015. *DESIDOC Journal of Library & Information Technology*, 37(3), 213-220. doi:10.14429/djlit.37.3.10967

Singh, N. K.(2016). Contribution and citation impact of Panjab University in Chemistry research during 2008-15. *Int. J. Inf. Dissemination Technology*, 6(1), 583-587.

Siwach, & Parmar (2018). Research Contributions of CCS Haryana Agricultural University, Hisar : A Bibliometric Analysis. *DESIDOC Journal of Library & Information Technology*, 38, (5), 334-341, doi : 10.14429/djlit.38.5.13188

Vasishta, S. (2011). Assessment of Academic Research Output during 1996-2009: A Case Study of PEC University of Technology, Chandigarh. *DESIDOC Journal of Library & Information Technology*, 31(2), 136-142. doi:10.14429/djlit.31.2.865