THE H INDEX OF UNIVERSITIES OF KARNATAKA: A REFLECTION OF WEB OF SCIENCE CITATION REPORT.
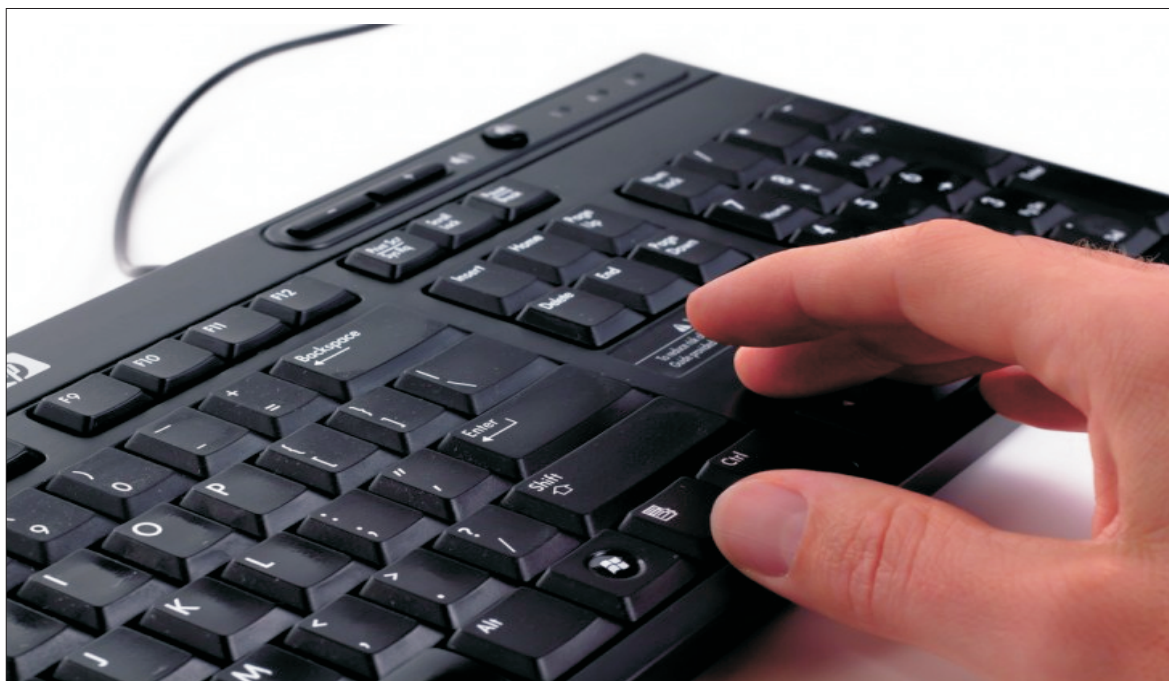
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ABSTRACT:

The technological development changed the librarian's activity. This paper examines the research contribution of Universities of Karnataka and h index, h index calculations, Research Publication. Researcher limited to study only General Universities of Karnataka h index. The h index studied based on citation report of web of science database. The data covers from 1980 to 2015. It also stated that citations, average citation, highly cited article, Authors and University.

KEYWORDS : Web of Science, Citation report, h Index, Universities of Karnataka, Citations, Publications, Productivity.

1.INTRODUCTION:

The scientific publications are the embodiments of intellectual discoveries expressed explicitly aiming to transmit new ideas or information for further advancement in knowledge. Karnataka is one of the best Knowledge center in India. From the historical background in Karnataka several administrators and other gave lot of importance to education. The higher education is considerable progress has been made in Karnataka with the establishment of more than twenty universities and a large number of undergraduate colleges. Karnataka has been a pioneer in establishing science and technology institutions that have international standards. Karnataka has now been globally acclaimed for its achievement in the high technology manufacturing service sector, particularly its IT sector, which has been recognized as the second largest in the world. Given this status, Karnataka should now emerge as a global centre of excellence in education.

The Universities of Karnataka researcher published different forms that are research papers, Books, Book Chapters, Conference proceedings, Reviews and journals. These publications are published in International and national peer reviewed journals. Web of science cover all most all International Journals, and very few national journals. Today the impact of technological development, the research publications are published anywhere in any time that are indexed in world famous databases like Web of Science, Scopus, and other subject databases. This database information is avoiding the plagiarism, duplicating or copying the articles. This study based on web of science citation report and web of science generated h index report.

2. OBJECTIVES OF THE STUDY

The main objectives of the study are
a.To explain the h index
b.To determine the h index calculation
c.To analyze the h index of General Universities of Karnataka based on web of science data base citation report of each University Institutional address.
d.To explain the merits and demerits of h index

3. THE H INDEX

The h-index was developed by Professor Jorge E. Hirsch (2005) of the Department of Physics at the University of San Diego. He was published a paper in Proceedings of the National Academies of Science. He explained and determining a tool for quality assessment in theoretical physicists. Hirsch meant the h-index to estimate the lifetime cumulative impact of a researcher, not just the combination of his or her productivity and cited in journals and other publications in the past decade. After that it called as Hirsch index or Hirsch number. Hirsch has demonstrated that h has high predictive value for whether a scientist has won honors like National Academy membership or the Nobel Prize.

Hirsch summarized the essence of h index in is paper "propose the index h, defined as the number of papers with citation number h, as a useful index to characterize the scientific output of a researcher. He then explains that "A scientist has index h if h is his or her Np papers have at least h citations each and the other (Np – h) papers have h citations each." This means that an author with h=16 has 16 publications each of which received 16 or more citations. The h-index varies widely from discipline to discipline and even within disciplines and research areas. In library and information science, for example, an h-index of 16 is a high value, but in, astronomy and retro virology, it is considered to be a relatively low value.

4. THE H- INDEX CALCULATION

The h-index can be manually determined using citation databases or using automatic tools. Professor Jorge Hirsch's (2007) "H-factor" measures research output by citations. The higher the H-factor is more often the academic community based on cited the scientist's papers. An "H" factor of 1 means one paper has been cited once while 2 means two have each been cited twice and 20 means 20 papers have each been cited 20 times. The H-factor ignores the individual citations' significance and context. According to Hirsch, an H-factor of 18 merits full professorship. Upwards of 20 may merit a fellowship with the American Physical Society, while 45 may grant you entry to the National Academy of Sciences.

For example, if we have a researcher with 5 publications A, B, C, D, and E with 10, 8, 5, 4, and 3 citations, respectively, the h index is equal to 4 because the 4th publication has 4 citations and the 5th has only 3. In contrast, if the same publications have 25, 8, 5, 3, and 3, then the index is 3 because the fourth paper has only 3 citations.

$$f(A)=10, f(B)=8, f(C)=5, f(D)=4, f(E)=3 \qquad \text{h-index}=4$$
$$f(A)=25, f(B)=8, f(C)=5, f(D)=3, f(E)=3 \qquad \text{h-index}=3$$

If we have the function f ordered in decreasing order from the largest value to the lowest one, we can compute the h index as follows:

$$\text{h-index}(f) = \max_i \min(f(i), i)$$

Know days some of the software programs are available it calculate the h –index, which is the one Harzing's Publish or Perish program calculates the h-index based on Google Scholar entries.

5. ABOUT WEB OF SCIENCE DATA BASE

Web of Science, provides access to the world's leading citation databases. It searches over 10,000 journals from over 45 different languages across the sciences, social sciences, and arts and humanities with back files to 1900. The citations (or footnotes) allow one to navigate forward, backward, and through journal articles and both journal and book-based proceedings. Its Analyze Tool also helps in finding hidden trends and patterns, gain insight into emerging fields of research, identify leading researchers, institutions, and journals, and trace the history of a particular field of study. The access to Web of Science is provided to 100 universities of the consortium through the N-LIST Programme funded by MHRD.

The Web of Science Core Collection consists of nine indexes containing information gathered from thousands of scholarly journals, books, book series, reports, conferences, and more. The first three citation indexes contain the references cited by the authors of the articles. You can use these references to do cite reference searching. This type of search allows you to find articles that cite a previously published work. It fully covers over 12,000 highly acclaimed impact journal worldwide.

6. METHODOLOGY AND LITERATURE REVIEW

The study focused at deriving quantitative and qualitative analysis based on citations report of Universities of Karnataka. The data collect from web of science data base citation report. The data sheet covered from 1980 -2015.

Various studied have been conducted in the past analyzing the contributions and impact of

individual organizations. Jeevan and Gupta (2002) have analyzed the contribution and impact of Indian Institution of Technology, Kharagapur by suggesting a methodology for studying the quantitative profile a research cum teaching institute with a view to get idea about the its performance and impact. Further Mallinath Kumbar, Gupta and Dhawan (2008) studied Growth ad impact of research output of University of Mysore (1996-2006). They pointed out the research activity in University of Mysore in science and technology is on a growing path, growing with an average rate of 23% per annum. The university has indeed progressed in terms of quality of research. Its average citations per paper have risen from 1.53in 1996 to 2.62in 2003. Hadagali G.S. (2014) studied Scientific productivity of Karnataka State during 1999-2011, in this study researcher pointed out that the Indian Institute of Science (IISc), Bangalore topped the list (with 14868) among the productive institutions. The University of Mysore has 2467 publications to its credit and ranked second. Considering this, there is a huge gap of publications between IIsc and UOM .

7. THE H INDEX OF UNIVERSITIES OF KARNATAKA

Universities of Karnataka researcher's publication are published in different type of documents. Those are articles, Books, Conference proceedings, Seminars and other formats. The Web of science data base covers all most all International and national published journals and almost all forms of documents. This paper examined only general universities of Karnataka research publication.

7.1. The General Universities of Karnataka

Karnataka is one of the Knowledge powerhouses center in India and Asia. Karnataka has one of the most highly educated populations in India. The state has a large number of schools and educational institutions, nearly half of which are managed by the government, the remainders are operated by local boards and private bodies. Compulsory free primary education is provided in most towns and villages. Higher education system in Karnataka comprises of degree colleges, technical and vocational colleges, universities, institutions, deemed to be Universities and institutions of higher education having national importance. The general Universities are listed below

Table - 3.1: General Universities of Karnataka

Sl. No	Name of University	Year of establishment	Location
General Universities			
1	University of Mysore	1916	Mysuru
2	Karnatak University	1949	Dharwad
3	Bangalore University	1964	Bangalore
4	Mangalore University	1980	Mangalore
5	Gulbarga University	1980	Gulbarga
6	Kuvempu University	1987	Shimoga
7	Karnataka State Women's University	2003	Bijapur
8	Tumkur University	2004	Tumkur
9	Davangere University	2009	Davanagere
10	Vijayanagra Sri Krishnadevaraya University	2010	Bellary
11	Ranichennama University	2010	Belgaum

7.2. Research Publication of Universities of Karnataka

Research publication is most important for any Institution or Research organization. General

Universities of Karnataka Research publication are published in the form of Journal Article, Letter, Meeting, Abstracts, Reviews, Editorial Materials and other document. This study studied based on the result of key word author's institutional address in web of science database (1980-2015). Presently web of science database result shows basis of Institutional address (each Universities of Karnataka) shows 118397 publications during 1980- 2015 years.

Table 2: Research Publication of Universities of Karnataka (1980-2015)

Sl. No.	Universities	Publication	CF Publication	Percentage	CF %
1	University of Mysore	4076	4076	28.86	28.86
2	Karntak University	2662	6738	18.85	47.70
3	Mangalore University	2653	9391	18.78	66.48
4	Bangalore University	2300	11691	16.28	82.77
5	Gulbarga University	1176	12867	8.33	91.09
6	Kuvempu University	1006	13873	7.12	98.22
7	Tumkur University	233	14106	1.65	99.87
8	Davangere University	19	14125	0.13	100.00
	Total	118397		100.00	

Figure 1: Research Publication of Universities of Karnataka (1980-2015)

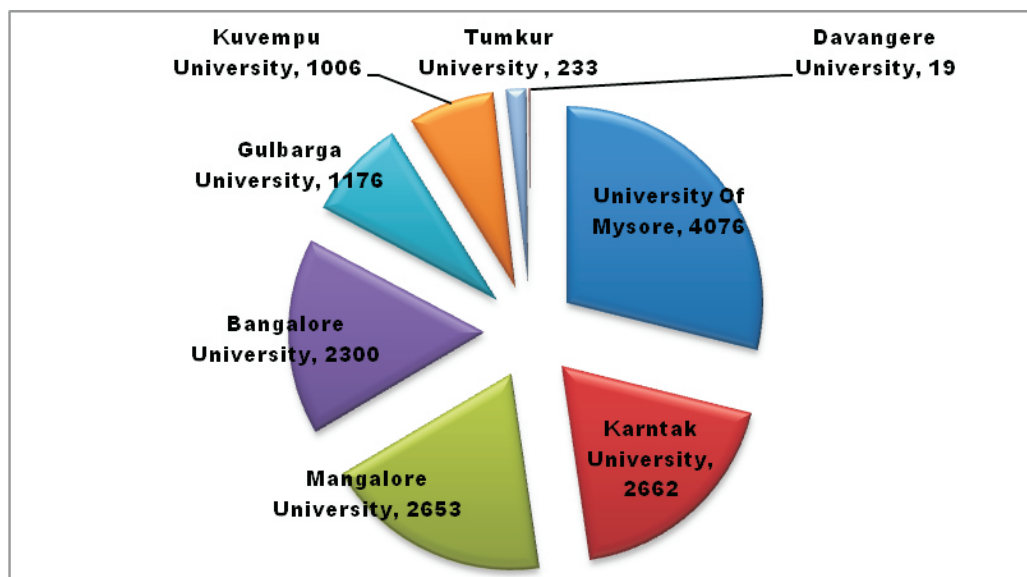Figure 1: Research Publication of Universities of Karnataka (1980-2015)

Table 2 and Figure 1, reveal that the highest publication produced from University of Mysore 4076 (28.86%), the second one followed by Karnatak University 2662 (18.85%) and Mangalore University 2653 (18.76%), Bangalore University (16.28%), Gulbarga University (8.33%). The first two

universities published 48% of publication. compare to other General Universities of Karnataka.

7.3. Total Cited times of Universities of Karnataka Publications

Universities of Karnataka Research publication are published in different formats. The publications are cited in different research writings. Web of science covers all most all cited document sources and it generated the citation report (1999 to 2015) of each university citation report. Basis of this table three explained the details of cited citations.

Table -3 Total Cited times of Universities of Karnataka Publications

Sl. No.	Universities	Citations	CF Citations	Percentage	CF %
1	University of Mysore	27045	27045	22.84	22.84
2	Karntak University	32320	59365	27.30	50.14
3	Mangalore University	18323	77688	15.48	65.62
4	Bangalore University	19699	97387	16.64	82.25
5	Gulbarga University	10166	107553	8.59	90.84
6	Kuvempu University	9509	117062	8.03	98.87
7	Tumkur University	1281	118343	1.08	99.95
8	Davangere University	54	118397	0.05	100.00
	Total	118397		100.00	
	Mean	**14799.63**			
	Standard deviation	**11606.52**			
	Co-efficient variance	**78.4244**			

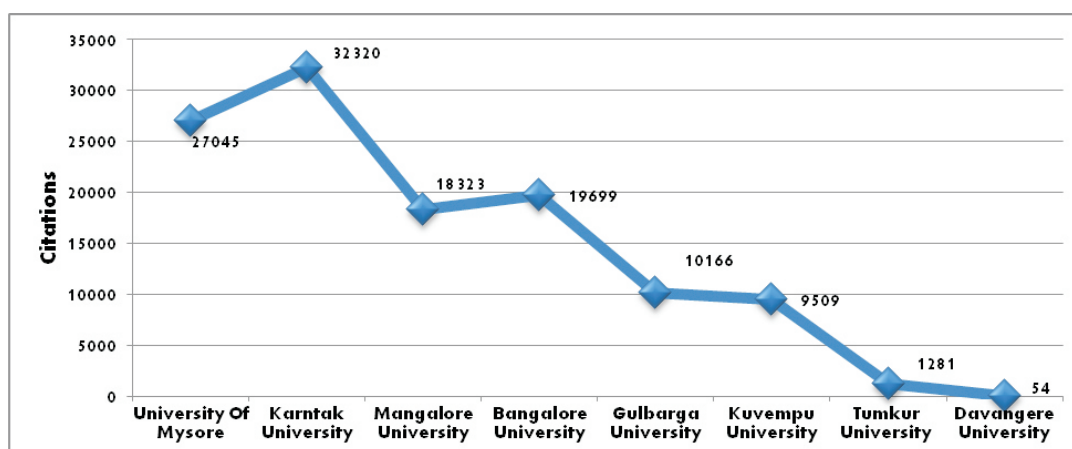**Figure -2: Total Cited times of Universities of Karnataka Publications**

Table 3 and Figure 2, reveal that the highest cited citations cited from Karnatak University 32320 (27.30%) the second one followed by University of Mysore 19699 (22.84%), and, Bangalore University

(16.64%), Mangalore University 18323 (15.48%), Gulbarga University 10166 (8.59%). The Mean of Universities of Karnataka publication citation is 14799.63, Standard deviation is 11606.52 and Co-efficient variance is 78.4244. In total University of Mysore Publication are highest but citation are 22.84%. Karnatak University research publication is 2662 but citations are 27.30%. It shows the quality of research work come from Karnatak University publication.

7.4. Total Citing Articles of Universities of Karnataka.

General Universities of Karnataka Research publication are published in different source. The web of science citation counts from across all product databases within the Web of Science platform. This count is seen from wherever you are in the world web of science keep this value consistent across all our citation indexes. Web of Science count the citations from the reference list in journals, conference proceedings, book series, data sets, and other papers that are indexed. The details are explained in table -4.

Table -4 Total Citable Articles of Universities of Karnataka

Serial No.	Universities	Citable Articles	CF	Percentage	CF
1	University of Mysore	20142	20142	24.09	24.09
2	Karntak University	20885	41027	24.97	49.06
3	Mangalore University	11975	53002	14.32	63.38
4	Bangalore University	14492	67494	17.33	80.71
5	Gulbarga University	7796	75290	9.32	90.03
6	Kuvempu University	7532	82822	9.01	99.04
7	Tumkur University	754	83576	0.90	99.94
8	Davangere University	51	83627	0.06	100.00
	Total	83627		100.00	
	Mean	**10453.38**			
	Standard deviation	**7921.016**			
	Co-efficient variance	**75.77472**			

Table-4 stated that the highest citable Articles published from Karnatak University 20885 (24.97%) next followed by University of Mysore 20142 (24.09%), Bangalore University (17.33%), Mangalore University (14.32%), Gulbarga University 10166 (9.32%), Kuvempu University (9.01%), Tumkur University (0.90%). The Mean of General Universities of Karnataka publication Citing Articles is 10453.38, Standard deviation is 7921.016 and Co-efficient variance is 75.77472. It also identified that Karnatak University Citing Articles is 20885 but citations are 27.30%. It shows the quality of research works came from Karnatak University.

7.5. Average Citations of Universities of Karnataka Publications

Universities of Karnataka Research publication are cited by different researcher in different mode of document. The average citation of each university research publications are analyzed based on web of science database report. The details of each university publications average citation is displayed in table -5.

Table -5: Average Citations of Universities of Karnataka Publications

Serial No.	Universities	Average Citations
1	University Of Mysore	6.64
2	Karntak University	12.10
3	Mangalore University	6.91
4	Bangalore University	8.56
5	Gulbarga University	8.64
6	Kuvempu University	9.45
7	Tumkur University	5.50
8	Davangere University	2.84

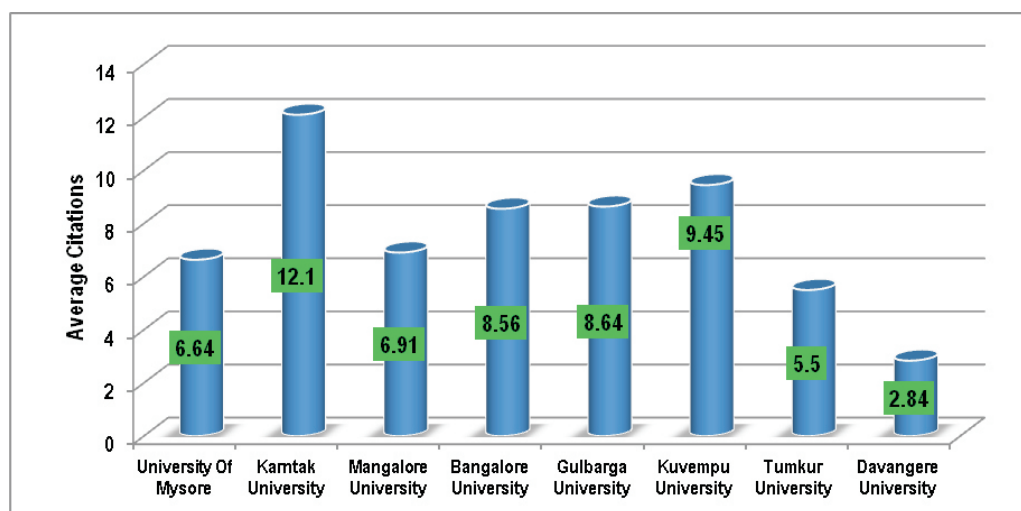**Figure- 3: Average Citations of Universities of Karnataka Publications**

Table 3 and Figure 3; reveal that the highest average citation from Karnatak University (12.1) publication the second one followed by Kuvempu University (9.45%), Gulbarga University (8.64), Bangalore University (8.56), Mangalore University (6.91%) and University of Mysore (6.64), this table shows the quality of the research paper.

7.6. The h index of General Universities of Karnataka

The h-index is indicated by an orange horizontal line going through the Year / Total Year columns. The h-index of 20 means there are 20 items that have 20 citations or more. This metric is useful because it discounts the disproportionate weight of highly cited papers or papers that have not yet been cited. Calculating the h-index Value - The h-index factor is based on the depth of years of your product subscription and your selected time span. Items that do not appear on the Results page will not

be factored into the calculation. If your subscription depth is 10 years, then the h-index value is based on this depth even though a particular author may have published articles more than 10 years ago. Moreover, the calculation only includes items in your product - books and articles in non-covered journals are not included. The each universities of Karnataka h index is stated in table -6.

Table -6: The h index of General Universities of Karnataka

Serial No.	Universities	h index
1	University of Mysore	57
2	Karntak University	65
3	Mangalore University	49
4	Bangalore University	54
5	Gulbarga University	39
6	Kuvempu University	39
7	Tumkur University	17
8	Davangere University	4

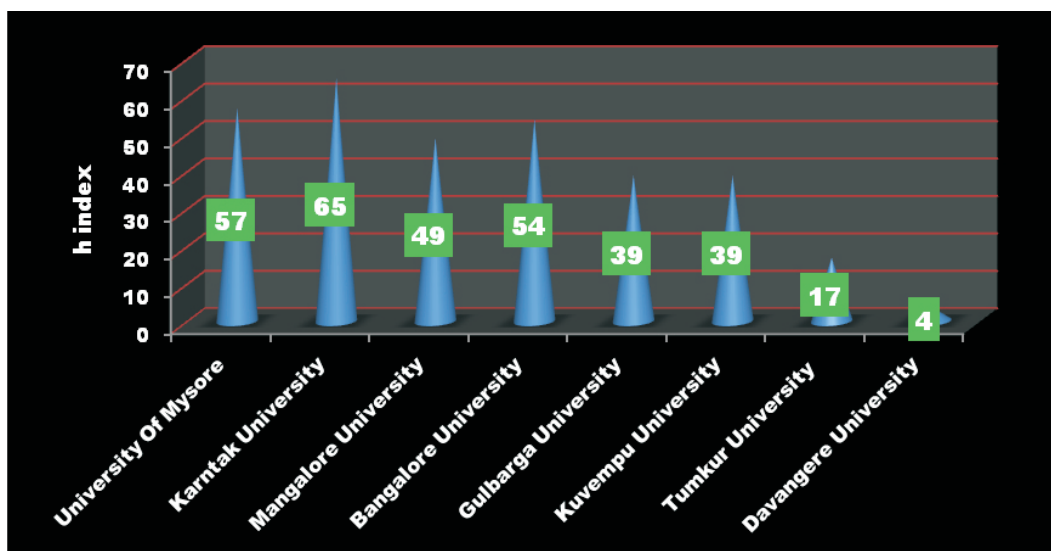**Figure - 4: the h index of General Universities of Karnataka**

Table 6 and Figure-4 stated that, the highest h index university is Karnatak University (65) followed by University of Mysore (57), Bangalore University (54), and Mangalore University (49) Kuvempu University & Gulbarga University (39), and Tumkar University (17) and Davanagere University (4). The table shows that the highly qualitative and citable documents are published from Karntak University researcher.

7.7. The highest times cited article of Universities of Karnataka

Universities of Karnataka Research publication are cited from different researcher. The highest citation of each university researcher publications details are explained in table -7.

Table -7: The highest times cited articles of Universities of Karnataka

Serial No.	Universities	Author Name	Cited Times
1	University of Mysore	Syed AA	326
2	Karntak University	Soppinamath K S & Others	1452
3	Mangalore University	Karthikeyan & Others	277
4	Bangalore University	Kumar SG & Others	393
5	Gulbarga University	Kishore PBK	359
6	Kuvempu University	Prasad TSK	859
7	Tumkur University	Jaganath Redddy A	73
8	Davangere University	Aditya NP	18

Table 7 reveals that the highest cited paper published by Soppinamath K S & Others he is from Karnatak University (1452), followed by Prasad TSK (859) from Kuvempu University, Kumar SG & Others from Bangalore University (393), Kishore PBK from Gulbarga University (359), Syed AA & Others from University of Mysore (326), Mangalore University researcher Karthikeyan & Others (277). The result shows that Karnatak University researcher published very much qualitative and highly reliable research works, but all university author publications is collaborative works, they may collaborate with foreign and other reputed research institutions.

8. FINDINGS

The main findings of the study are:

a)The highest publications published from University of Mysore (4076) compare to other Universities.

b)The highest average citation of per document published from Karnatak University (12.1) publication.

c)The highest cited document published by Karnatak University 32320 (27.30%) publication.

d)The highest h index procured Karnatak University (65) research publication.

e)The highest cited paper published by Soppinamath K S & Others. This researcher from Karnatak University (1452).

f)Karnatak University researcher Publication is qualitative, informative and citable document compare to other university research publication.

9.SUGGESTIONS

Based on the result every University build and provide a good Infrastructure to research community. It also provides current technological lab facility and specialized, dedicated research centers. The present study enables to the policy makers and University administrators

1.There should be some arrangement and provisions to motivate faculty and researcher to engage in the area of research I the current trends with a team of dedicated researcher.

2.Motivate authors for writing and publish in open access journals to scale it on larger and longer readers and usability.

3.Encourage the faculties and researcher to maintain professional social contacts with others in pertinent research area.

4.To build effective communications for scholarly publication should be implemented.

5.Librarian may guide the authors and researchers to publish their research work in highest impact factor journals.

10. CONCLUSIONS

The research activity in Universities o f Karnataka in science is on a growing path. This analysis based on publication data and Citation report of each Universities of Karnataka during 2980 -2015. The Universities has indeed progressed in terms of quality of research. The H index of Universities of Karnataka, Dharwad University is the highest (65) next followed by University of Mysore (57). Research activity in the university seems to be highly skewed. The h-index is intended to measure simultaneously it evolve the quality and quantity of scientific output. The quantity of publications is taken into account when calculating the h-index. The h-index and g-index better capture both productivity and impact in a single metric. The present study enables to policy makers and administrators to take necessary steps and appropriate measures for the overall development of the institution or university research productivity, and qualitative research activity.

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