

Use Pattern of Researcher's Technique: "A Scientometric Analysis"

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Abstract: *References appended to six engineering courses and two postgraduate courses dissertations, submitted to the department of library, Cauvery college of engineering and technology, trichy during 2011-2013 form the base of the study. The paper identifies forms, average number of per dissertations, year wise distribution of literature, Department wise distribution of dissertations, and availability of cited website in CACET.*

Keywords: Scientometrics, engineering and technology, website

1. Introduction

Scientometrics in the branches of computer science and Engineering, Electronics Communication Engineering, Mechanical Engineering, Electrical Electronics Engineering and Information Technology. Civil engineering Scientometricians explains output in terms of science. Scientometricians explain output in terms of organizational structures and resources inputs, develops benchmarks to evaluate the quality of information sources; packages information for decision making science; defines appropriate data aggregation produces and methods for diachronic analysis; empirically describes the constant changing relationship between science and technology and forecasts productivity of scientists, so that dynamics of scientific research and technological development can be understood.

2. Objectives

1. To find out the number of per dissertation.
2. To identify the forms of reading materials used by project researchers.
3. To show subject wise distribution of the literature.
4. To identify library distribution of the literature.
5. To check the availability of cited documents in Cauvery college library.
6. To show the frequency distribution of cited website.

3. Material and Methods

First the bibliographical details of all the B.E., theses are recorded. The bibliographical elements and data in the citations are recorded separately. The counted data is used for tabulation and graphical presentation. Analyzed data is presented in the form of tables and illustrations. Since, this study is primarily statistical study, tabulated data focused much about the information usage pattern.

3.1 Scope and Coverage

The present study to find out the pattern of information used by the project researchers in the field of engineering subject. The study is based on the references appended to graduate

engineering dissertations accepted by the department of studies and researches in library and information center, Cauvery college of engineering and technology, trichy during 2011-2013.

4. Results and Discussion

Table 1: Average number of per dissertation

Sl. No.	Year	Total No. of Dissertations	%
1	2011	62	31.00
2	2012	63	31.50
3	2013	75	37.50
Total		200	100

Table 1 reveals the number of dissertations submitted during the period of 2011-2013, each and every year from 31.00 to 37.30 and average number of references per dissertations.

Table 2: Form-wise distributions of cited literature

Form of literature	Total no. citation	%
Book	2785	40.66
Website	2017	29.45
Journals	1974	28.82
Conference paper	58	0.85
Report/theses	15	0.22
Total	6849	100

Table- 2 shows the distribution of citations among different supplementary forms such as book, website, periodicals, etc. it can be observed from table 2 that 2785(40.66 %) pertained books followed by website, accounting for 2017 (29.45%) forms. Next to periodicals, accounting figure conference nature with 58(0.85%) citations. Remaining 15(0.22%) of distributions go to encyclopedia, reports, government citations etc.

Table 3: Branches wise distribution of dissertation

Sl.no.	Subject	Total no.	%
1	Computer science and engineering	68	34.00
2	Electronics communication engineering	64	32.00
3	Mechanical engineering	51	25.50
4	Information technology	12	6.00
5	Electrical electronics engineering	5	2.50
Total		200	100

Table-3 reveals that 68(34.00%) computer science and engineering dissertations. 64(32.00%) on electronics communication engineering department. The least 5 dissertations are on electrical electronics engineering departments.

Table 4: Authorship pattern Journal & book citation

No. of Authors	No. of Citations Journals %	No. of Citations books %
One	1012(51.27%)	1061(38.09%)
Two	743(37.64%)	1049(37.67%)
Three	187(9.47%)	516(18.56%)
Four	27(1.37%)	105(3.77%)
More than Five	5(0.25%)	54(1.94%)
TOTAL	1974	2785

The Table 4 reveals that the percentage of single and multiple authors. Authorship pattern of journal citation indicates that out of the total number of 1974 citations, 1012 (51.27%) are by single author. There are 743 (37.64%). Are by two authors. There are 187 (9.47%) citations by three authors. There are 27 (1.37%) citations by four authors. There are 5 (0.25%) citations were done by more than five authors.

Indicates that the authorship pattern of book citations. The finding show that highest citations are by single author. Out of 2785 total citations, 1061 (38.09%) are by single author, followed 1049 (37.67%) by two authors, 516 (18.53%) by three authors and 105 (3.77%) by four authors, and 54 (1.94%) by more than five authors.

Table 5: Ranking lists of most frequently cited website

Sl. no.	Name of the Website	No. of Citation	Cum. No. citation	%	Rank
1	ieee.org	227	227	11.25	1
2	acm.org	131	358	6.49	2
3	protocols.com	108	466	5.35	3
4	Bluetooth.com	86	552	4.26	4
5	cisco.com/cryptography.html	85	637	4.21	5
6	biometrics.org	81	718	4.01	6
7	autosophy.com	79	797	3.92	7
8	coreservlets.com	78	875	3.87	8
9	ece.utexas.edu	77	952	3.82	9
10	Microsoft.com	64	1016	3.17	10
11	aniteps.com	60	1076	2.97	11
12	cryptography.com/hardwaredevice.html	52	1128	2.58	12
13	researchmicrosoft.com	48	1176	2.38	13
14	topsim.com	40	1216	1.98	14
15	ercim.org	36	1252	1.78	15
16	broadband-internet.argospress.com	30	1282	1.49	16
17	arm.com	27	1309	1.34	17
18	cs.tornoto.edu	25	1334	1.33	18
19	counterpane.com	23	1357	1.24	19
20	biometrics.cse.msu.edu	20	1377	0.99	20
21	e-nnovationssoftware.co.uk	17	1394*	0.88	21
22	imaging-components.com	17	1411	0.84	22
23	isprs.org	15	1426	0.74	22
24	software-metrics.org	15	1441	0.74	23
25	vision_ece.ucsb.edu	15	1456	0.74	23
26	dmreview.com	15	1471	0.74	23
27	rand.org	14	1485	0.69	24
28	vip-cse.utse.edu	14	1499	0.69	24

29	java.coe.psu.ac.th.80	14	1513	0.69	24
30	hitech.co.jp	14	1527	0.69	25
31	debugmode.com	14	1541	0.69	25
32	csrc.nist.gov	14	1555	0.69	25
33	cse.ohio-state.edu	12	1567	0.59	25
34	biom.cornell.edu	12	1579	0.59	26
35	cs.uwm.edu	12	1591	0.59	26
36	e.docsbea.com	12	1603	0.59	26
37	functionx.com/vcnet	12	1615	0.59	26
38	biometricsinfo.org	12	1627	0.59	26
39	cache.ja.net	12	1639	0.59	26
40	eurecom.fr	11	1650	0.54	27
41	ing.unlp.edu.ar	11	1661	0.54	27
42	mitrek.org	11	1672	0.54	27
43	cisco.com/encryption.html	11	1683	0.54	27
44	biometricsinfo.org	11	1694	0.54	27
45	cns.nyu.edu	11	1705	0.54	27
46	biometrika.it	10	1715	0.49	27
47	cs.ualberta.ca	10	1725	0.49	28
48	deafness.about.com	10	1735	0.49	28
49	elec.qmul.ac.uk	10	1745	0.49	28
50	hcr.ca	10	1755	0.49	28
51	informationsphere.com	10	1765	0.49	28
52	groups.haas.berkeley.edu	10	1775	0.49	28
53	inquiry.net	10	1785	0.49	28
54	cooersource.net	9	1794	0.45	28
55	3.tokai.org.jp	9	1803	0.45	29
56	cs.cs.Georgetown.edu	9	1812	0.45	29
57	cs.rochester.edu	9	1821	0.45	29
58	doc.trolltech.com/3.0/tutorial.html	9	1830	0.45	29
59	hlpg.org/rpm/lipcap.html	9	1839	0.45	29
60	gts.tsc.uvigo.es/gpsc	9	1848	0.45	29
61	ib.informatik.rwth	9	1857	0.45	29
62	ii.metu.edu	9	1866	0.45	29
63	java.sun.com	9	1875	0.45	29
64	jdbc.org	9	1884	0.45	29
65	iepm.sla.stanford.edu	9	1893	0.45	29
66	nayana.eceucsb.edu	9	1902	0.45	29
67	linktionary.com/p/ppp.html	5	1907	0.25	30
68	macromedia.com	5	1912	0.25	30
69	ir.com	5	1917	0.25	30
70	itmedicine.net	5	1922	0.25	30
71	jpeg.org/fcd15444-1	5	1927	0.25	30
72	jpeg.org	5	1932	0.25	30
73	lockheedmartin.com	5	1937	0.25	30
74	me.umn.edu	5	1942	0.25	30
75	monk.ca	5	1947	0.25	30
76	networkingcomputing.com	5	1952	0.25	30
77	pdmic.com	5	1957	0.25	30
78	postgres.org	5	1962	0.25	30
79	rsasecurity.com	5	1967	0.25	30
80	oreill.com	5	1972	0.25	30
81	research.att.com	3	1975	0.15	31
82	scheier.com/blogs/archives/2006/02/face	3	1978	0.15	31
83	sharewareconnection.com	3	1981	0.15	31
84	tcpdump.org/pcap/tutorial.html	3	1984	0.15	31
85	trolltech.com/pcap/tutorial.html	3	1987	0.15	31
86	techdocs.com face-rec.org.	3	1990	0.15	31
87	pcug.org.au	3	1993	0.15	31
88	rfc1761.x42.html	3	1996	0.15	31
89	portal.acm.org	3	1999	0.15	31
90	speech.kth.se	3	2002	0.15	31
91	sun.com	3	2005	0.15	31
92	utia.cas.cz	3	2008	0.15	31

93	y.com	3	2011	0.15	31
94	vu.union education	3	2014	0.15	31
95	wayne.cs.nthu.edu	3	2017	0.15	31
TOTAL		2017		100	

5. Bradford’s law and its Application

Bradford introduced the systematic study of the distribution scientific literature in 1934. it has been in interpreted in many different ways. At this time there are two recognized formulations of Bradford’s law the verbal formulations which is derived from the verbal statement of Bradford’s conclusions, and the graphical formulation, which is an empirical expression derived from the graphical survey of the distribution of web site (journals). The consequent ambiguity resulting from these formulations has been investigated by Wilkinson and she concluded that a documentation researcher has no means to decide which formulation should be used, or which is more appropriate for identifying core web site .

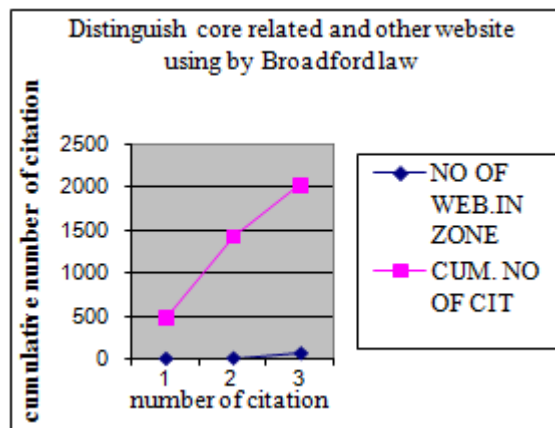
Branford’s law has been used to list the completeness of a bibliography, to describe the characteristics of various subjects and even to describe the interaction between book uses and book available for use in libraries. Librarians, generally, relate the Bradford distribution to ‘zones of productivity and appreciate the fact that nuclear zones identifies the most productive journals in a subject area. In practical term Branford’s law helps in selection and collection of development, but when we go beyond this point to discuss , there is difference between verbal and graphical formulation of this law.

The journal titles were arranged in decreasing order of productivity as the most productive web site being the one’s having maximum number of citations or references. A graph was plotted the cumulative number of citations on ‘Y’ axis and number web sites producing these citations on ‘X’ axis the resulting graph, the lines region was extended as a dished line for use in calculating the deviation from Bradford distribution. Further, the resulting graph is divided in to three zones. The first zone the nucleus zone containing the post-productive web site. Second zone, the linear portion of the curve, and third zone, often called the gross drop.

The graph is figure indicates that there are 3 web site in the Ieee.org. and these are most productive website devoted to website there are ‘core’ web site. There are 3 web site have been cited 466 times [according for 23.10 of the total citations] is one third of the total citation] the remaining 12 journals have been cited 952 times [70.30 of the total citation is two third of total citation]

Table 6: Zone analysis

No.of zone	No.of web.in zone	cum. No. of web.in zone	No.of cit.in zone	Cum.no of cit	%
1	3	3	466	466	23.10
2	9	12	952	1418	70.30
3	68	80	599	2017	100.00



6. Finding and conclusion

Listed are some of the findings of this study.

1. The average number of per dissertations is 31.00.
2. The form wise distribution pattern of citations shows that books topped the list with 40.66%
3. The number of dissertations on college libraries is found to be maximum (37.50%).
4. The website cited by the researches 29.45% was available in the college library. However, of the journal articles, 28.82% were available in the same library.

The results of this study would be of great value in the development of website collection. Such analysis will be helpful to concerned users and contributors to satisfy their information need and requirements.

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