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An Exponential trend and Mapping of Research in Web 2.0

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ABSTRACT

The study analyses the research paper on the publications of Web 2.0 during 2000-2019 and total no. 7123 publications recorded over the period of study. A maximum 825 (12.08%) of the publications appeared in 2016, followed by 793(11.61%),745(10.91%), and 730(10.69%) of the publications that appeared in the year 2015,2017 and 2018. Relative Growth Rate (RGR) and Doubling Time (Dt) of the publications on Web 2.0 global data during 2000-2019. The analysis made on the records based on Web of Science (WoS). The majority of 5743 (84.12%) of the publications appeared in Journals. The study dictates that the majority 134 (1.96%) of the publications contributed by the researchers from the University of California systems. Zhang Y was the top author has contributed 16(0.23%) of the publications in the field of Web 2.0, subsequently, Kolt GS, Li Q, Vandelantte C, Zhang J, the publications equally appears 13(0.19%) of the publications. The USA has the highest Domestic and International collaborative papers 840 and 905 respectively out of 1745 publications whereas, the Domestic and International Collaborative Index 1.43 and 1.38 respectively.

Keywords: *Web of Science, Web 2.0, Mapping, Relative Growth Rate, Doubling time, Domestic Collaboration and Collaborative Index*

INTRODUCTION

A Web 2.0 website allows users to interact and collaborate with each other through social media dialogue as creators of user-generated content in a virtual community. This contrasts the first generation of Web 1.0-era websites where people were limited to viewing content in a passive manner. Examples of Web 2.0 features include social networking sites or social media sites (e.g., Facebook), blogs, wikis, folksonomies ("tagging" keywords on websites and links), video sharing sites (e.g., YouTube), hosted services, Web applications ("apps"), collaborative consumption platforms, and mash up applications. The Web 2.0 framework only specifies the

design and use of websites and does not place any technical demands or specifications on designers.[1]

Adobe Flash, Microsoft Silverlight and JavaScript are used as rich web technologies in delivering web 2.0 in addition to Ajax, RSS and Eclipse. Its applications are based on the reorganized download methodology that made BitTorrent so fruitful that each downloader of content is also a server, sharing the workload and making the content more accessible. It can be a powerful lure for an enterprise; with interactivity promising to fetch more employees into daily contact at a lower cost. The use of web 2.0 technologies and tools aids greater participation in projects and idea sharing, thus ideally leading to better thought out design and more efficient production, strengthening bonds with customers and improving communications with partners.

Scientometrics is the science of measuring and analyzing science. In practice, scientometrics often uses bibliometrics, which is a measurement of the impact of (scientific) publications. Modern scientometrics is based on the work of Derek J. de Solla Price and Eugene Garfield. The latter founded the Institute for Scientific Information, which heavily used scientometric analysis. Methods of research include qualitative, quantitative and computational approaches. However, new algorithmic methods in search, machine learning, and data mining show that is not the case for many information retrieval and extraction-based problems. Related fields are the history of science and technology, philosophy of science and sociology of scientific knowledge. The definition of Scientometrics is focused on the study of scientific information given by Barun et.al. (1985). `Scientometrics analyses the quantitative aspects of the generation, propagation, and utilization of the mechanism of scientific research activities[2].'

LITERATURE REVIEW

Glänzel et.al (2006)[3] have discussed the evolution of publication activity and citation impact in Brazil is studied for the period 1991-2003. Besides the analysis of trends in publication and citation patterns and of national publication profiles, an attempt is made to find statistical evidences of the relation between international co-authorship and both research profile and citation impact in the Latin American region. John N. Parker (2010)[4] has explored the information on this understudied subject by examining the social characteristics and opinions of the 0.1% most cited environmental scientists and ecologists. Overall, the social characteristics of these researchers tend to reflect broader patterns of inequality in the global scientific community. However, while the social characteristics of these researchers mirror those of other scientific elites in important ways, they differ in others, revealing findings which are both novel and surprising, perhaps indicating multiple pathways to becoming highly cited. Alejandro M. Aragón, (2013)[5] studied the measure builds from a published manuscript, the literature's most basic building block. The *impact* of an article is defined as the number of lead authors that have been influenced by it. Thus, the measure aims at quantifying the manuscript's reach, putting emphasis on

scientists rather than on raw citations. The measure is then extrapolated to researchers and institutions. Baskaran, C (2013) [6] has analysed the Relative growth rate (RGR) was found to be fluctuating trend during the study period. The doubling time (DT) was found to be increased and decreased trend in this study. Degree of collaboration and its' mean value is found to be 0.963. The top three institutions with Alagappa University are Central Electro Chemical Research Institute, National Cheng King University, and Anna University. Liu, N. & Guan, (2015) [7] have discussed Science Citation Index Expanded. Specifically, we mainly focus on two dimensions of ego network changes: network growth and diversity. Results demonstrate the recent remarkable growth of inter-organizational collaborative networks in the nano-energy field and empirically prove that the subsequent growth and diversity of ego networks are caused by three coexisting driving forces (collaborative capacity, network status position and cohesion) that act collectively. Saravanan and Baskaran (2018)[8] have discussed the number of publications, growth rate and doubling time, scattering of publication over journals, and its impact on publication output, authorship patterns and Global citation score of bioremediation research publication in India using the HistCite, VOSviewer software. Indian Institute of technology, Baba atomic research centre and CSIR are the major producers of research output in the area of bioremediation. Baskaran, (2018)[9] has analysed the majority of publications 44.15% representing by the two authors in the analysis BM. Guptha was published 18 papers in DJLIT, who is a ranked 1 author. It followed by Chenupathi K. Ramiah shored second his publications 11. University of Delhi, which is the top ranked institution. It is followed by NISTADS (24), DRDO (22), Pondicherry University (13), Banaras Hindu University (11), Indian Institute of technology (11) and University of Kashmir (10). Botao Zhong (2018)[10] analysed the top co-occurring keywords were "project management" at which ontology facilitates knowledge management and information retrieval. When the time factor was taken into consideration, keywords naturally evolved from "project management" and "knowledge management to "building information modelling", and "compliance control" with the successful adoption of information techniques in the construction industry. Four research themes were identified with the combination of cluster analysis and critical review: "Domain ontology", "Industry foundation classes", "Automated compliance is checking", and "Building information modelling". Liang Wang, et.al. (2018)[11] analysed that numerous studies in urban resilience have been published in the past decade. However, only a few publications have tracked the evolution trends of urban resilience research, the findings of which can serve as a useful guide for scholars to foresee worth-effort research areas and make the best use of precious time and resources. In order to fill the research gap, this study performed a Scientometric analysis on the evolution trends of urban resilience research using a versatile software package-Cite Space. Baskaran and Rameshbabu (2019)[12] have studied the growth of the publications, RGR and Dt of the research output, Collaboration of authors, Collaborative co-efficient etc. in the study. The result of the study found that publications growth rate between 11 (0.26%) in 1989 and 447 (10.76%) in 201. The largest output in was found 447

publications in 2013. It is found the DC between 0.64 and 0.94 and overall DC measured to be 23.08 throughout study period. The study could be found DC was an increased and a decreased trend appeared in the whole study period. Saravanan and Baskaran (2019) analysed the Scientometric analysis of thirty years publication on 'Bioleaching'. The records are collected from Web of Science Databases for the period of 1989–2018. A total of 2477 papers were identified in the Web of Science database. The study reveals that most of the researchers preferred to publish their research results in the form of journals articles and 82.8%of articles were published in journals. More numbers of articles were published in the year 2015.Theauthorship trend shows that, out of total 2477 publication published, 95% of the publications were published under the joint authorship. Senthilkumar and Baskaran (2018) examined that Out of the 2594 articles, the majority of the articles 421 (16.23%) were published in the year 2017. The RGR in the year 2009 found to be 2.05and in the end year 2017 found to be 0.12. This shows that the RGR declining trend is linear. Among the Authorship patterns, the major contribution of articles were from three authors 534 (20.59%). The Journal named" Advanced Materials Research" ranked in the top position in contributing articles 59 (2.28%) in this field. The highly prolific author is Monteiro S.N who has contributed 41 articles 0.47 %.

OBJECTIVES OF THE STUDY

1. To analyse the Research Quantity and Counties Collaboration on Web 2.0 during 2000-2019
2. To examine the Relative Growth Rate (RGR) and Doubling time (Dt) of the publications
3. To find out the Sources wise distributions of the Web 2.0 Publications
4. To measure the Ranked author, Institutions and Journals wise distributions of the Web 2.0 Publications
5. To analyse the Domestics and International Collaboration of the Countries
6. To observe the Block year-wise Domestic and International Collaboration of the Countries.

RESEARCH DESIGN AND METHODOLOGY

The present study on data analysed the research publications of the web 2.0 during 2000-2019. The data retrieved from Web of Science database on the selected are of the research during period of study. The Global data searched key term ''Web 2.0'' using for retrieved data. Total no. 7213 records based on the search term for extracted data on the field. The data retrieved and exported in the Excel sheet for tabulation to draft for using various analyses. The analyses made on the data in respect of year-wise, author-wise, Source wise, Institutions wise and Journal wise during specifies time period. The study provides to show VOS

viewer network visualization on counties and Institutions made the contribution in the field of Web 2.0.

RESULTS AND DISCUSSIONS

Table 1 presents data on year wise publication of the Web 2.0 research during 2000-2019, total no. 7123 publications appeared over period of study. The study analyzed that maximum 825 (12.08%) of the publications appeared in 2016, it followed by 793(11.61%),745(10.91%) and 730(10.69%) of the publications appeared in the year 2015,2017 and 2018. Further, it is analyzed that lessthan 10% of the publications have brought out during 2000-2014 and 2018. The publications growth found to be slowly an increasing trend appeared during period of study. The study witnessed that lessthan 1% and below 100 publications an each year recorded from 2000 to 2006.

Table 1. Research Quantity and Counties Collaboration on Web 2.0

Year	**No.of records**	**Percent**
2000	98	0.264
2001	89	0.293
2002	73	0.483
2003	89	0.469
2004	81	0.542
2005	59	0.776
2006	70	1.025
2007	145	2.124
2008	245	3.589
2009	396	5.8
2010	458	6.709
2011	500	7.324
2012	537	7.866
2013	536	7.851
2014	529	7.749
2015	793	11.616
2016	825	12.084
2017	745	10.913
2018	730	10.693
2019	125	1.831
Total	**7123**	

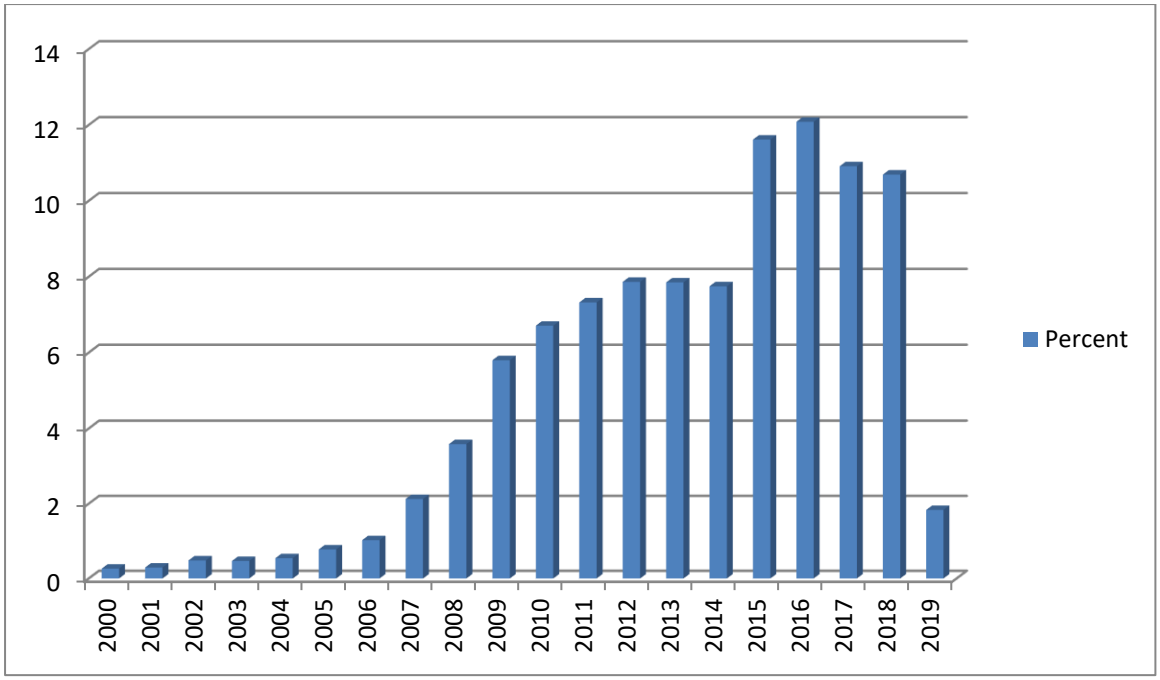


Fig.1- Research Quantity and Counties Collaboration on Web 2.0

Table 2. Relative Growth Rate (RGR) and Doubling time (Dt)

Year	No.of records	Percent	W1	W2	RGR (W2-W1)	Dt
2000	18	0.264	0	2.890	0	0
2001	20	0.293	2.890	2.995	0.105	1.594
2002	33	0.483	2.995	3.496	0.501	0.722
2003	32	0.469	3.496	3.465	0.031	0.044
2004	37	0.542	3.465	3.610	0.145	0.209
2005	53	0.776	3.610	3.970	0.36	0.519
2006	70	1.025	3.970	4.248	0.278	0.401
2007	145	2.124	4.248	4.976	0.728	1.050
2008	245	3.589	4.976	5.501	0.525	0.757
2009	396	5.8	5.501	5.981	0.48	0.692
2010	458	6.709	5.981	6.126	0.145	0.209
2011	500	7.324	6.126	6.214	0.088	1.269
2012	537	7.866	6.214	6.285	0.071	1.269
2013	536	7.851	6.285	6.284	0.07	0.102
2014	529	7.749	6.284	6.270	0.014	0.101
2015	793	11.616	6.270	6.675	0.405	0.020
2016	825	12.084	6.675	6.613	0.062	0.584

2017	745	10.913	6.613	6.715	0.102	0.955
2018	730	10.693	6.715	6.593	0.122	0.147
2019	125	1.831	6.593	4.28	2.313	0.176
Total	**6827**			**Mean**	**0.327**	**0.541**

Relative Growth Rate (RGR) The mean Relative Growth Rate (R) over the specific period of interval can be calculated from the following equation by Mahapatra (1985),[13]

$$1\text{-}2\,\bar{R} = \frac{\log_e {}_2W - \log_e {}_1W}{{}_2T - {}_1T}$$

Whereas, 1-2`R= mean relative growth rate over the specific period of interval

$\log_e {}_1W$= log of initial number of articles/pages

$\log_e {}_2W$ = log of final number of articles/pages after a specific period of interval

${}_2T - {}_1T$ = the unit difference between the initial time and the final time,

The year can be taken here as the unit of time. The RGR for both articles and pages can be calculated separately.

Therefore

1- 2 R(aa -1 year -1) can represent the mean relative growth rate per unit of articles per unit of year over a specific period of interval and

1 - 2 R (pp -1 year -1) can represent the mean relative growth rate per unit of pages per unit of year over a specific period of interval,

Doubling time

There exists a direct equivalence between the relative growth rate and the doubling time. If the number of articles/pages of a subject doubles during a given period then the difference between the logarithms of numbers at the beginning and end of this period must be the logarithms of number 2.

If natural logarithm is used this difference has a value of 0.693. Thus the corresponding doubling time for each specific period of interval and for both articles and pages can be calculated by the following formula:

$$\text{Doubling Time (Dt)} = \frac{0.693}{\bar{R}}$$

Therefore

Doubling time for articles Dt (a)= 0 .693

$$\frac{}{1\text{-}2\ R\ (aa\text{-}1\ Year\text{-}1)}$$

and

$$\text{Doubling time for papers } Dt(P) = \frac{0.693}{1\text{-}2\ R(pp\text{-}1\ Year\text{-}1)}$$

Table 2 presents on the data in the study, Relative Growth Rate (RGR) and Doubling time (Dt) of the publications on Web 2.0 global data during 2000-2019. The analysis made on the records based on Web of Science (WoS), the quantum of records witnessed the RGR an increased and suddenly decreased trend appears overall study period and the study finds average mean score of RGR was 0.327. Similarly, Dt of the publications observe that a fluctuate trend throughout the period of study, the mean value for dt was 0.541.

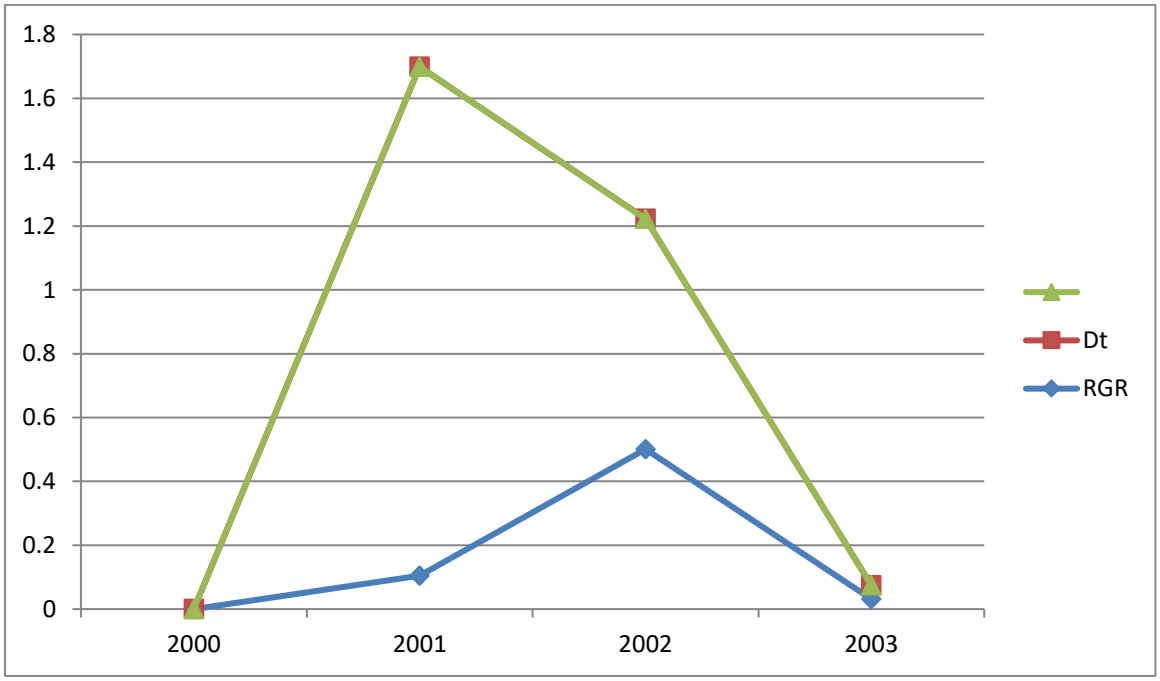


Fig. 2 Relative Growth Rate (RGR) and Doubling time (Dt)

Table 3. Sources wise distributions of the Web 2.0

S.No	Type of source	No.of records	Percent
1	ARTICLE	5743	84.122
2	REVIEW	719	10.532
3	EDITORIAL MATERIAL	159	2.329
4	PROCEEDINGS PAPER	158	2.314

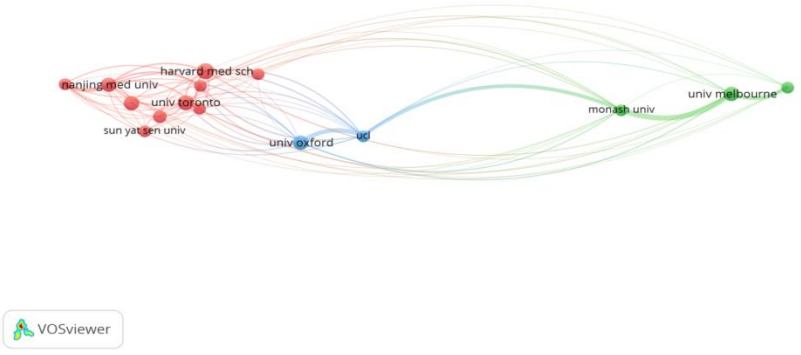
5	BOOK REVIEW	130	1.904
6	MEETING ABSTRACT	48	0.703
7	SOFTWARE REVIEW	10	0.146
8	CORRECTION	7	0.103
9	NEWS ITEM	7	0.103
10	BOOK CHAPTER	5	0.073
11	LETTER	3	0.044
12	DATA PAPER	2	0.029
13	REPRINT	1	0.015

Table 3 presents the sources –wise distribution of the publications in the field of Web 2.0 during the period of study. It is observed that there are thirteen sources listed in the study, of those majority of 5743 (84.12%) of the publications appeared in Journals, it seems that most of the researchers prefer to bring their research outcome publishing through journals. The study finds that 73.5% of the publications appeared as reviews holding the next position to Journals articles. Further, the web 2.0 publications brought out 7.76% of the records hold the share less than 10 % by each source out of eleven during period of study.

Table 4. Institutions wise distributions of the Web 2.0 Publications

S.No	**Name of the institution**	**No.of records**	**percent**
1	UNIVERSITY OF CALIFORNIA SYSTEM	134	1.963
2	UNIVERSITY OF LONDON	108	1.582
3	HARVARD UNIVERSITY	83	1.216
4	STATE UNIVERSITY SYSTEM OF FLORIDA	79	1.157
5	UNIVERSITY OF TORONTO	73	1.069
6	CHINESE ACADEMY OF SCIENCES	62	0.908
7	PENNSYLVANIA COMMONWEALTH SYSTEM OF HIGHER EDUCATION PCSHE	62	0.908
8	UNIVERSITY OF TEXAS SYSTEM	61	0.894
9	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS	56	0.82
10	CITY UNIVERSITY OF HONG KONG	56	0.82
11	UNIVERSITY OF BRITISH COLUMBIA	53	0.776
12	UNIVERSITY OF GRANADA	53	0.776

13	UNIVERSITY SYSTEM OF GEORGIA	52	0.762
14	UNIVERSITY OF MELBOURNE	51	0.747
15	UNIVERSITY OF ALBERTA	50	0.732
16	UNIVERSITY COLLEGE LONDON	49	0.718
17	UNIVERSITY OF OXFORD	49	0.718
18	UNIVERSITY OF MANCHESTER	48	0.703
19	UNIVERSITY OF SYDNEY	48	0.703
20	STATE UNIVERSITY OF NEW YORK SUNY SYSTEM	42	0.615
21	UNIVERSITY OF NORTH CAROLINA	42	0.615
22	UNIVERSITY OF COPENHAGEN	41	0.601
23	UNIVERSITY OF MURCIA	40	0.586
24	INDIANA UNIVERSITY SYSTEM	39	0.571
25	MONASH UNIVERSITY	39	0.571
26	Other Institutions	5357	78.46



Network visualization of the institutions

Table 4 describes the data on Web 2.0 publications were contributed by totally 5196 institutions around the world. The study dictates that majority 134 (1.96%) of the publications contributed by the researchers from University of California systems. It followed by University of London, Harvard University, State University System of Florida and University of Toronto recorded second, third ,fourth and fifth places with 1.58, 1.21, 1.15 and 1.06 percent of the publications respectively. Further, the study could be analysed that residue 5191 institutions witnesses below 1% of the publications share 93 % in the field of Web 2.0 displays Network visualization of the institutions

Table 5. Ranking of authors of the Web 2.0 Publications

S. No	Name of the author	No. of records	Percent
1	ZHANG Y	16	0.23
2	KOLT GS	13	0.19
3	LI Q	13	0.19
4	VANDELANOTTE C	13	0.19
5	ZHANG J	13	0.19
6	CAPERCHIONE CM	12	0.17
7	DUNCAN MJ	12	0.17
8	LI J	12	0.17
9	ANONYMOUS	11	0.16
10	LI Y	11	0.16
11	LIU J	11	0.16
12	SINGH S	11	0.16
13	WANG J	11	0.16
14	WANG W	11	0.16
15	LI W	10	0.14
16	ROSENKRANZ RR	10	0.14
17	SAVAGE TN	10	0.14
18	WANG P	10	0.14
19	XU Y	10	0.14
20	YANG Y	10	0.14
21	GARCIA-PENALVO FJ	9	0.13
22	KIM J	9	0.13
23	LIU Y	9	0.13
24	MAEDER AJ	9	0.13
25	MUMMERY WK	9	0.13

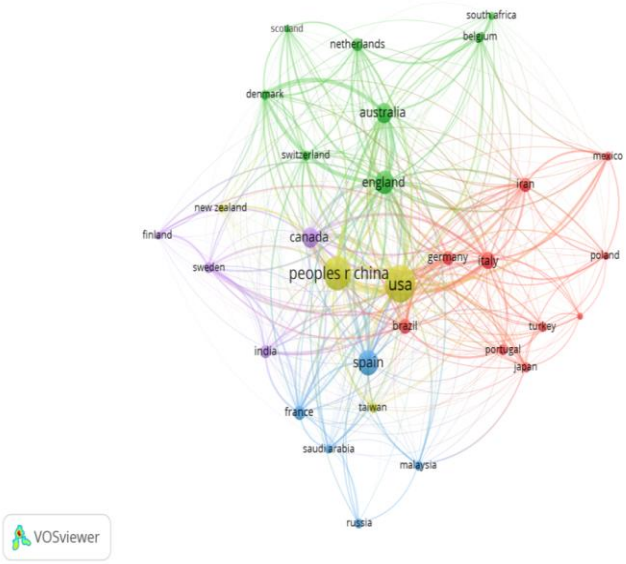
Researchers always update the research expertise in irrespective of the area. The authors should know the position on publications and metrics counts on the productivity in the field of research. Table 5 describes the ranking of author for top twenty five listed in the study on research accomplished in the area of Web 2.0. The study can be found that range of publications between above 10 and 16 publications for each. Zhang Y was top author has contributed 16(0.23%) of the publications in the field of Web 2.0, subsequently, Kolt GS, Li Q, Vandelantte C, Zhang J, the publications equally appears 13(0.19%) of the publications. There are three authors contributed 12, each six authors brought them 11 and 10 publications out of twenty five authors. Further, 96% of authors out of 2975 only contributed single digit paper less than ten publications in the field of Web 2.0.

Table 6. Domestics and International Collaboration of the Countries

S.No	Name of the country	DCP	ICP	TCP	DCI	ICI
1	USA	840	905	1745	1.433	1.383
2	SPAIN	352	414	766	1.368	1.442
3	PEOPLES R CHINA	312	424	736	1.262	1.537
4	ENGLAND	391	261	652	1.785	1.068
5	CANADA	236	229	465	1.511	1.313
6	AUSTRALIA	192	207	399	1.432	1.384
7	GERMANY	161	169	330	1.452	1.366
8	ITALY	117	172	289	1.658	1.587
9	NETHERLANDS	98	106	204	1.430	1.386
10	FRANCE	89	104	193	1.511	1.437
11	TAIWAN	73	103	176	1.234	1.561
12	BRAZIL	89	60	146	1.815	1.096
13	SOUTH KOREA	81	62	143	1.686	1.156
14	INDIA	59	62	121	1.451	1.367
15	DENMARK	63	41	104	1.803	1.051
16	JAPAN	57	45	102	1.663	1.177
17	SWEDEN	51	49	100	1.518	1.307
18	SWITZERLAND	38	61	99	1.172	1.643
19	TURKEY	33	59	92	1.172	1.711
20	BELGIUM	29	58	87	1.068	1.718
21	GREECE	26	61	87	9.925	1.870
22	PORTUGAL	21	63	84	8.898	2.001
23	AUSTRIA	23	60	83	7.743	1.928
24	SCOTLAND	19	63	82	8.250	2.049
25	NEW ZEALAND	31	49	80	6.899	1.634
26	MALAYSIA	28	49	77	1.153	1.697
27	FINLAND	31	44	75	1.082	1.565
28	SOUTH AFRICA	28	42	70	1.230	1.600
29	IRAN	24	45	69	1.191	1.740
30	NORWAY	28	40	68	1.035	2.668
31	SINGAPORE	21	35	56	1.226	1.667
32	IRELAND	24	31	55	1.116	1.476
33	MEXICO	19	34	53	1.299	1.711
34	POLAND	24	28	52	1.067	1.436
35	ISRAEL	23	25	48	1.374	1.389
36	RUSSIA	19	29	48	1.426	3.714
37	SAUDI ARABIA	17	23	40	1.178	1.534
38	PAKISTAN	18	20	38	1.410	1.404
39	WALES	21	13	33	8.954	1.144
40	COLOMBIA	17	15	32	1.632	1.250
41	CHILE	21	10	31	2.017	8.606
42	SERBIA	16	13	29	1.642	1.196

43	ROMANIA	11	17	28	1.169	1.619
44	ARGENTINA	21	6	27	2.315	5.929
45	ECUADOR	16	10	26	1.832	1.026
46	CZECH REPUBLIC	19	6	25	1.608	6.403
47	CROATIA	9	14	23	1.165	1.624
48	SLOVENIA	11	12	23	1.424	1.392
49	EGYPT	12	8	20	1.786	1.067
50	NIGERIA	9	10	19	1.410	1.404

(DCP: Domestic Collaborative papers, ICP: International Collaborative Papers, TCP: Total Collaborative papers, DCI: Domestic Collaborative Index, , ICI: International Collaborative Index)



Network visualization of the countries

Domestic Collaborative Index (DCI)

Generally, this measure is utilized for mapping of the collaborative pattern in different disciplines. This measure was used as a part of the year 2014 by (Garg & Dwivedi, 2014)[14] in the study, "Pattern of collaboration in the discipline of Japanese encephalitis" for figuring the relative yield of locally co-wrote papers individually. Mathematically DCI is written as,

$$DCI = \{(Di|Di10)|(Do|Doo)\} \times 100$$

Where,
Di = number of domestically co − authored papers from country i
Di10 = total number of papers from country i
Do = number of domestically co − authored papers from all countries
Doo = total number of papers from all countries

International Collaborative Index (ICI)

Practically, this measure is used for mapping of the shared example in various disciplines. The estimation of ICI has been acquired by strategies for processing the comparing yield of all around co-made papers. This technique additionally utilized by (Garg & Dwivedi, 2014).The technique for the ICI is composed as

ICI = {(Ii|Ii10)|(Io|Ioo)} × 100

Where,

Ii = number of internationally co − authored papers from country i

I10 = total number of papers from country i

I0 = number of internationally co − authored papers from all countries

I00 = total number of papers from all countries

DCI or ICI = 100 Here, country′s co − authorship effort relates to the world′s normal

DCI or ICI > Here, country′s co − authorship effort higher than world′s

DCI or ICI < 100 Here, country′s co − authorship effort is less than world′s

Table 7. Block year-wise Domestics and International Collaboration

Block	Year	DCP	ICP	TCP	DCI	ICI
A	2000-2005	198	291	489	2.203	1.839
B	2006-2010	487	827	1314	2.016	1.944
C	2011-2015	998	1897	2895	2.038	2.024
D	2016-2019	897	1528	2425	2.012	1.947
Total		2580	4543	7123	8.106	7.754

DCP: Domestic Collaborative papers, ICP: International Collaborative Papers, TCP: Total Collaborative papers, DCI: Domestic Collaborative Index, , ICI: International Collaborative Index

Table 6 presents the data on the Collaboration of the counties are witnessed on Web 2.0 publications during 2000-2019. It's witnessed that USA has highest Domestic and International collaborative papers 840 and 905 respectively out of 1745 publications whereas, the Domestic and International Collaborative Index 1.43 and 1.38 respectively. The data provides the domestic collaboration of the counties, the largest collaboration for 26.51% of the publications recorded above 100 publications by USA, Spain, China, England, Canada, Australia and Germany. On the other hand, 54.8% of the publications contributed by eleven countries i.e. USA, Spain, China, England, Canada, Australia and Germany, Italy, Netherlands, France and Taiwan witnessed more than 100 (it can also be witnessed from Mapping of the countries Collaboration). Further, the network visualization portraits that according to largest DCI has Greece (9.92) followed by Pakistan (8.954), the highest ICI witnessed by Chile (8.60) and Czech Republic (6.403).

The study analysed blocks year-wise Domestics and International Collaboration , there are four blocks divided as A,B,C and D of the Block years 2000-2005,2006-2010, 2011-2015 and 2016 - 2019. Table 7 observed the largest publications share and collaborative Index with block C (DCP 998, ICP 1897 and DCI 2.38, ICI 2.024), the next largest block is D(DCP 897, ICP 1528 and DCI 2.012 ,ICI 1.947). Further, the study can be seen that throughout DCI and ICI are 8.106 and 7.754 revealed respectively from the study.

The study analyses the Ranking of the research areas wise publications on Web 2.0 out of 97 research areas participated in the research. Table 8 data presents out of 97 areas core papers published in the field of Web 2.0 research, there were listed 50 major areas listed for the study. The study reveal that 1177 (17.24%) of the publications appeared in Computer Science, since the prime the web 2.0 disclose the output brings the computer and networks deal on the subject. The next largest publications 12.81% and 12.43% dispersed from Information Science Library Science and Education and Educational Research. Further, the study discussed that there are 75 areas out of 97 research fields on web 2.0 share 57.13 % of publications recorded below 100 for each filed.

Table 8. Ranking the areas wise distributions of Web 2.0

S.No	NAME OF THE AREAS OF THE STUDY	NO.OF RECORDS	PERCENT
1	COMPUTER SCIENCE	1177	17.24
2	INFORMATION SCIENCE LIBRARY SCIENCE	875	12.817
3	EDUCATION EDUCATIONAL RESEARCH	849	12.436
4	COMMUNICATION	462	6.767
5	ENGINEERING	428	6.269
6	BUSINESS ECONOMICS	384	5.625
7	ENVIRONMENTAL SCIENCES ECOLOGY	380	5.566
8	GENERAL INTERNAL MEDICINE	265	3.882
9	HEALTH CARE SCIENCES SERVICES	243	3.559
10	BIOCHEMISTRY MOLECULAR BIOLOGY	232	3.398

11	MARINE FRESHWATER BIOLOGY	208	3.047
12	MEDICAL INFORMATICS	169	2.475
13	SCIENCE TECHNOLOGY OTHER TOPICS	167	2.446
14	PSYCHOLOGY	162	2.373
15	SOCIAL SCIENCES OTHER TOPICS	160	2.344
16	PUBLIC ENVIRONMENTAL OCCUPATIONAL HEALTH	153	2.241
17	ONCOLOGY	122	1.787
18	OCEANOGRAPHY	109	1.597
19	SURGERY	109	1.597
20	TELECOMMUNICATIONS	108	1.582
21	LINGUISTICS	107	1.567
22	SOCIOLOGY	102	1.494
23	PHARMACOLOGY PHARMACY	98	1.435
24	NEUROSCIENCES NEUROLOGY	90	1.318
25	BIOTECHNOLOGY APPLIED MICROBIOLOGY	87	1.274
26	MATHEMATICAL COMPUTATIONAL BIOLOGY	84	1.23
27	CARDIOVASCULAR SYSTEM CARDIOLOGY	80	1.172
28	OPERATIONS RESEARCH MANAGEMENT SCIENCE	73	1.069
29	RESEARCH EXPERIMENTAL MEDICINE	72	1.055
30	CHEMISTRY	69	1.011
31	GEOGRAPHY	68	0.996
32	GOVERNMENT LAW	64	0.937
33	ARTS HUMANITIES OTHER TOPICS	59	0.864
34	PSYCHIATRY	51	0.747
35	TOXICOLOGY	51	0.747
36	GASTROENTEROLOGY HEPATOLOGY	50	0.732
37	GEOLOGY	49	0.718
38	ENDOCRINOLOGY METABOLISM	48	0.703
39	OBSTETRICS GYNECOLOGY	47	0.688
40	PEDIATRICS	47	0.688
41	MATHEMATICS	46	0.674
42	NURSING	46	0.674

43	PUBLIC ADMINISTRATION	44	0.644
44	HISTORY	41	0.601
45	NUTRITION DIETETICS	41	0.601
46	SPORT SCIENCES	41	0.601
47	GENETICS HEREDITY	39	0.571
48	IMMUNOLOGY	39	0.571
49	REMOTE SENSING	37	0.542
50	AGRICULTURE	36	0.527

Table 9 describes the ranking of the journals for the research contribution of the publications in the Web 2.0 research during 2000-2019. It is analyzes the no journal published more than 100, out of 2620 core journals identified based on Web of Science records. The largest 97 (1.42%) of the publications brought out in Journal of Medical and Internet Research. There are five journals only appeared more than 1% of the publications witnessed by Professional De La Information, Nucleic Acids Research, Cochrane Database of systems Reviews and PLOS one. Further , they study investigated that 2615 core journal on the field of web 2.0 witnessed 93.6% of the publications share below 1% of the publications dispersed by an each journal.

Table 9. Ranking of the Journals on Web 2.0

S.No	**Name of the Journal**	**No. of records**	**Percent**
1	JOURNAL OF MEDICAL INTERNET RESEARCH	97	1.421
2	PROFESIONAL DE LA INFORMACION	93	1.362
3	NUCLEIC ACIDS RESEARCH	90	1.318
4	COCHRANE DATABASE OF SYSTEMATIC REVIEWS	87	1.274
5	PLOS ONE	87	1.274
6	COMPUTERS IN HUMAN BEHAVIOR	67	0.981
7	ELECTRONIC LIBRARY	67	0.981
8	COMPUTERS EDUCATION	48	0.703
9	INFORMATION COMMUNICATION SOCIETY	43	0.63
10	NEW MEDIA SOCIETY	39	0.571
11	ONLINE INFORMATION REVIEW	38	0.557
12	PROGRAM ELECTRONIC LIBRARY AND INFORMATION SYSTEMS	38	0.557
13	AUSTRALASIAN JOURNAL OF EDUCATIONAL TECHNOLOGY	35	0.513
14	MARINE ECOLOGY PROGRESS SERIES	35	0.513
15	JOURNAL OF UNIVERSAL COMPUTER SCIENCE	33	0.483
16	EXPERT SYSTEMS WITH APPLICATIONS	32	0.469

17	INTERNET AND HIGHER EDUCATION	32	0.469
18	ENVIRONMENTAL SCIENCE TECHNOLOGY	31	0.454
19	INTERACTIVE LEARNING ENVIRONMENTS	29	0.425
20	LIBRARY HI TECH	28	0.41
21	BRITISH JOURNAL OF EDUCATIONAL TECHNOLOGY	27	0.395
22	EDUCATIONAL TECHNOLOGY SOCIETY	26	0.381
23	GOVERNMENT INFORMATION QUARTERLY	25	0.366
24	BIOINFORMATICS	24	0.352
25	INTERNATIONAL JOURNAL OF INFORMATION MANAGEMENT	21	0.308
26	BMC BIOINFORMATICS	20	0.293
27	INTERNATIONAL JOURNAL OF CLINICAL AND EXPERIMENTAL MEDICINE	20	0.293
28	INTERNATIONAL JOURNAL OF ENGINEERING EDUCATION	20	0.293
29	LECTURE NOTES IN COMPUTER SCIENCE	20	0.293
30	MEDICINE	20	0.293
31	MULTIMEDIA TOOLS AND APPLICATIONS	20	0.293
32	BEHAVIOUR INFORMATION TECHNOLOGY	19	0.278
33	HISTORIA Y COMUNICACION SOCIAL	19	0.278
34	INFORMATION SCIENCES	19	0.278
35	LIMNOLOGY AND OCEANOGRAPHY	19	0.278
36	SCIENCE OF THE TOTAL ENVIRONMENT	19	0.278
37	INTERNATIONAL REVIEW OF RESEARCH IN OPEN AND DISTANCE LEARNING	18	0.264
38	JOURNAL OF WEB SEMANTICS	18	0.264
39	CONCURRENCY AND COMPUTATION PRACTICE EXPERIENCE	17	0.249
40	DECISION SUPPORT SYSTEMS	17	0.249
41	ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY	17	0.249
42	SCIENTIFIC REPORTS	17	0.249
43	COMUNICAR	16	0.234
44	INFORMATION SYSTEMS FRONTIERS	16	0.234
45	INFORMATION TECHNOLOGY PEOPLE	16	0.234
46	JOURNAL OF KNOWLEDGE MANAGEMENT	16	0.234
47	TELEMATICS AND INFORMATICS	16	0.234
48	COMPUTER ASSISTED LANGUAGE LEARNING	15	0.22
49	DATABASE THE JOURNAL OF BIOLOGICAL DATABASES AND CURATION	15	0.22
50	HEALTH INFORMATION AND LIBRARIES JOURNAL	15	0.22

CONCLUSION

The study was undertaken for purpose of the research on publications impact of Web 2.0, today all the Library practitioners and trainers should know about the technology transfer on the field the use of this technology will increase by large number of participation of the student for the utilization of library services such as cataloguing, classification, reference services, collection development process, information delivery and current awareness services. The US scientists have emerged more research contribution in the field of Web 2.0. The Journal articles are predominant source any research publications likewise the Web 2.0 research has more papers appeared in Journals. This technology will also help in many other services of the library, such as user orientation programme, news and library events, information retrieval, etc. Participation in various function and services of the library, the authority will extend its services to the larger section of the community to avail these services.. In developed countries like America and UK the Web 2.0 tools have already been adopted and implemented but in developing countries like Pakistan such technology are adopted in few universities mostly because of their restricted and tight budget. Many authors have highlighted the problems and hurdles confronted to library professionals in implementation or adoption of web 2.0 tools in developing countries such as lack of knowledge how to use these tools in libraries unavailability of computers, lack of computer and internet facility in libraries of Pakistan lack of awareness of social Medias.

CONFLICT OF INTEREST

The author has no conflict of interest

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