Research Publication Outcome Of Stochastic Model –A Study On Open Access Publications

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Abstract:

Aim of this paper is to evaluate the research literature on "Stochastic model" by conducting a bibliometric analysis of research papers in the Web of Science database from an Indian perspective. The bibliometric review and analysis were carried out using the analytical tools of the Biblioshiny, Excel and Histcite. The research literature was investigated over a period of 30 years (1989– 2021) and analyzed trends in production of research papers, citation trends, top countries, journals, and authors contributing to literature related to Stochastic Model. USA was the topmost contributing country based on the number of publications and citations received. The key theories used in researching the domain of stochastic model. The intellectual of the Stochastic Model research studied in order to offer fundamental insights into recent developments in this research area, which would provide researchers and academicians with a broad guideline for conducting further research in this area.

The term "Stochastic Model" is combined and used as search term in the International Indexing Database 'Web of Science' which is initially published by Institute for Scientific Information founded by the International Information Scientist Eugene Garfield, it is found that there are 3,459 number scholarly publications as the outcome of the research carried out in International and National Journals, by 10,704 number of researchers from 2976 Institutions and research organizations of 50 nations across the Globe. Among these, 3,459 open access publications are as the outcome of 2,646 funding agencies across the globe. There are 77 research

areas were the Stochastic Model has been studied. Of which, major subject areas such as Engineering (535) Mathematics (464) Science Technology, Physics (347) Environmental Sciences Ecology (339) Mathematical Computational Biology (323) were the major subject areas in which Stochastic Model have been studied. The country wise analyze reveals that USA (1,265) is the topmost nation with highest Research Productivity which is followed by England (497), Peoples R China (405), France (217), and Germany (266). India (66) is placed 15th rank in the research outcome of Stochastic Model.

Keyword: Stochastic Model, Publication Productivity, Bibliometrics, Biblioshiny, Scientometrics

1. Introduction:

The domain of probability and statistics known as stochastic modelling is both fascinating and demanding. The property is said to be stochastic if it is best represented by a random probability distribution. While stochasticity is employed in a variety of domains, including natural science, technology, engineering, finance, medicine, and geomorphology, stochastic modelling is also employed in social science. A stochastic model depicts a scenario in which there is uncertainty, or, in other words, a model for a process with some degree of unpredictability. All features of the subject under investigation are reflected in stochastic models. Probabilities can be utilised to make predictions and provide further details about the process. Stochastic models, especially for small samples, are more realistic. Every time a stochastic model is run, the outcomes are likely to be different. Because "stochastic" means "random," a "stochastic process" could also be referred to as a "random process." A stochastic process is a collection of random variables X with a parameter selected from an index set. There are no clear distinctions between what constitutes a stochastic or deterministic process; what one person considers to be a random process, another may consider to be deterministic. For example, one person might assign the probability of getting heads while flipping a coin to a deterministic 50/50 chance. Someone else would argue that this would only happen if the coin were perfectly balanced and fair, in which case a stochastic model would be suitable.

2. Review of Literature:

Srinivasaragavan, S., Prasanna Kumari, N., & Durai Murugan, M. (2019). 9160 Publications on "Elephants" for the academic period 2002-2017 were retrieved from web of knowledge having h-index of 118 with citations of 1,38,206. 119 countries contributed 9106 publications were distributed in various subject domains. 21,510 authors contributed various articles in reputed journals namely NATURE, PLOS ONE with funding from various international funding agencies. investigate the research productivity on the study examined the prolific authors, country wise distribution and funding agencies during the study period. The author productivity, degree of collaboration was also brought under the purview of the study and it is also analytical in nature with the suitable statistical tools applications in strengthening the experimental validity. There are

various sources contributing to the research output on "Elephants" research by overall scientists. The necessary data was collected from the database of Science Citation Index (SCI), Social Science Citation Index (SSCI) and Arts & Humanities Citation Index (ACHI) which is available via the Web of Science (WoS).

Rusydiana, A., Et. al. (2020). has studied bibliometric study investigated the current state of documents on 'Islamic accounting' published by digital object identifier equipped journals from 1990 to 2020 listed in Dimension. The analysis focused on the trends of the keywords, authors and journals. The data analyzed were 556 publications of research publications in Dimension (https://dimension.ai). Search terms were 'Islamic accounting'. The searches used to establish the study dataset were last updated on November 13, 2020. Descriptive statistical methods were used, and a bibliometric analysis was conducted using the R Biblioshiny to find out the bibliometric map. The number of articles discussing the theme of Islamic accounting has been quite extensive in years, along with the development of Islamic financial institutions. Many journals publish on this theme, among which the top journal is the Journal of Islamic Accounting and Business Research. The most popular keywords used are Islamic, Accounting and Financial and the most prolific author is Karim RAA, who has been writing since 1990. The country with the most popular and the most number of authors is of Malaysia. This study provides an overview of trends in the most popular keywords, journals and authors in articles on the topic of Islamic accounting, thus providing information for researchers focused on research in the field of Islamic accounting.

3. Objectives of the Study

The main objective of this study is to analyze the publications of Stochastic Model research reported during 1989-2021 and indexed in the Web of Science database. In particular, the study aims to find:

- Over view of Bibliometric Profile of Stochastic Model Research
- Find Annual Scientific Production on Stochastic Model Research
- Calculating Source Impact and Evaluating Source Growth on Stochastic Model Research
- Depicting about Author productivity in Lotkaw's law on Stochastic Model Research
- Mapping of Corresponding authors from various countries
- Institution wise distribution and countrywide scientific Publication Productivity is being analysed.
- To reveal Most Contributed Papers on Stochastic Model Research.

4. Methodology:

Application of bibliometric methods were used in the present study. The study period was restricted to the years 1989 to 2021. The study is based on the "Open access publication on Stochastic model" which are indexed by Web of Science database. The research data was retrieved from the Web of Science citation database (https://apps.webofknowledge.com/) using search string

(BASIC SEARCH-TOPIC (Searches title, abstract, author keywords, and Keywords Plus) ("Stochastic Model") AND (LIMIT-TO (PUBYEAR,1989-2021) on April 2021. The search strategy yielded 3459 open access scholarly publications, which was used for further analysis. All types of the publications were selected for the analysis. The complete bibliographic data was retrieved from Web of Science database in BibTeX (.bib) file format. Initially, the bibliometrix R package (Version 2.3.2 released on 23/11/2019) was installed and loaded through R Studio. Then, biblioshiny app was started by entering the first command is "(library (bibliometrics))" and following by the second command "biblioshiny ()" and running the command in R console. As the result there are 13, 329 total publication output on Stochastic Model found for the period in 1989-2021,which of the present study culled out only open access full text documents for further analysis.

Biblioshiny: The shiny app for bibliometrix from R Statistical Package (https:/ /bibliometrix.org/ Biblioshiny.html) was used to carry out present bibliometric analysis. It has many features that are helpful to carry out in-depth bibliometric analysis. It is an application that provides a web-interface for bibliometrix tool (https://bibliometrix.org/Biblioshiny.html). Finally, Web of Science file in Bib TeX format was uploaded on Biblioshiny interface. Then, as per the objectives of the study, excel files were downloaded and used for data analysis.

5. Data Analysis and Interpretation:

5.1 Main Information about Data

Table 1 represents the profile on "Stochastic Model" of open access publications seen through window of Biblioshiny. There are different kinds of bibliometric profile data of stochastic model found in biblioshiny. It is found that there are 10704 authors contribute 3459 open access publications on stochastic model research, of which 225 single authors who were published 253 documents. there are 10479 authors are contributed multiauthor documents. The collaboration index of the open access publication research is of 3.27. The analysis also reveals that publications proliferated into 1056 sources which includes journals, books and other forms of scholarly communication. The citation impact of the literature on stochastic research revealed 21.67 as average citations per document.

Table 1: Bibliometric Profile of Stochastic Model in India

Description	Results
Documents	**3459**
Sources (Journals, Books, Etc)	**1056**
Keywords Plus (ID)	**9507**
Author's Keywords (DE)	**8482**
Period	**1989:2021**
Average Citations Per Documents	**21.67**

Authors	**10704**
Author Appearances	**12857**
Authors of Single-Authored Documents	**225**
Authors of Multi-Authored Documents	**10479**
Single-Authored Documents	**253**
Authors per Document	**3.09**
Co-Authors per Documents	**3.72**
Collaboration Index	**3.27**

5.2 Growth of Publications

Publication growth of stochastic model find the gradual growth without fluctuations having increasing trend chronologically. The publication productivity is of negligible from the year of 1989-1994. As each year recorded single digit publications, above 200 were records from the year 2014 highest productive year is of 2020 (324). As the data downloaded in the month of April 2021 has got only (54) publications. It is quite interesting to note that open access scholarly publication enabled by the publisher even for the archival publications though the trend of open access started only after millennium only from particularly the year of 2005, while the open access publications on stochastic model culled out from the retrieved publications spreaded into all the years of study period i.e. 1989-2021

Table 2: Year-wise Growth of Publications on Stochastic model

S.No	Year	Articles	%	Year	Articles	%
1	1989	1	0.03	2005	61	1.76
2	1990	4	0.12	2006	96	2.78
3	1991	8	0.23	2007	118	3.41
4	1992	8	0.23	2008	100	2.89
5	1993	9	0.26	2009	133	3.85
6	1994	8	0.23	2010	151	4.37
7	1995	14	0.40	2011	155	4.48
8	1996	24	0.69	2012	201	5.81
9	1997	27	0.78	2013	194	5.61
10	1998	27	0.78	2014	204	5.90
11	1999	38	1.10	2015	215	6.22
12	2000	36	1.04	2016	263	7.60
13	2001	31	0.90	2017	239	6.91
14	2002	42	1.21	2018	280	8.09
15	2003	48	1.39	2019	274	7.92
16	2004	62	1.79	2020	324	9.37

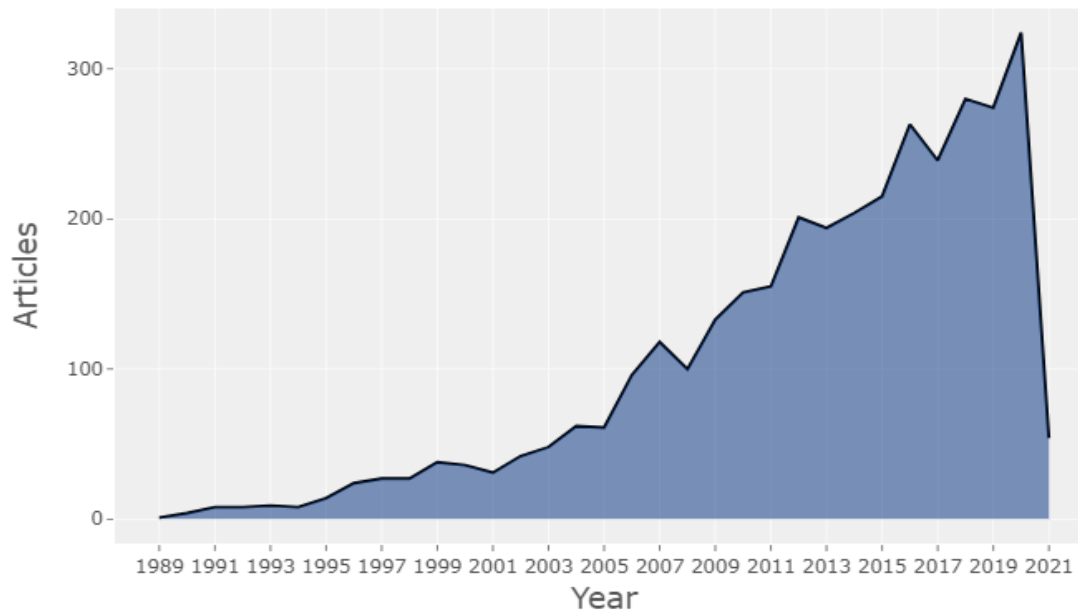|					2021	54	1.56

Figure 1: Annual Scientific Production

5.3 Journal wise Publications

Table 3 revealed that 121 articles are under the source title of **PLOS ONE**, 89 are published by the source title **Proceedings of The National Academy of Sciences of the United States of America**, followed by 83 articles are from the source title of **Biophysical Journal** followed by 82 articles published in **PLOS Computational Biology**. The distribution of publications was spread over **1056** open access journals. The top 25 open access journals were published above 20 publications each.

Table 3: Journal wise distribution of Publications (1056)

S. No	Sources	Articles	%	S. No	Sources	Articles	%
1	PLOS ONE	121	3.50	14	Advances in Difference Equations	29	0.84
2	Proceedings of The National Academy of Sciences of The United States of America	89	2.57	15	Geophysical Research Letters	29	0.84
3	Biophysical Journal	83	2.40	16	Journal of Theoretical Biology	29	0.84
4	PLOS Computational Biology	82	2.37	17	Bmc Systems Biology	26	0.75

| 5	Water Resources Research	80	2.31	18	Mathematical Problems in Engineering	26	0.75
6	Physical Review E	76	2.20	19	Proceedings of the Royal Society B-Biological Sciences	25	0.72
7	IEEE Access	49	1.42	20	Geophysical Journal International	24	0.69
8	Journal of the Royal Society Interface	45	1.30	21	Journal of Chemical Physics	24	0.69
9	Scientific Reports	41	1.19	22	Journal of The Atmospheric Sciences	24	0.69
10	Mathematical Biosciences And Engineering	39	1.13	23	Annals of Applied Probability	23	0.66
11	Applied Mathematical Modelling	31	0.90	24	Journal of Geophysical Research-Atmospheres	23	0.66
12	Physical Review Letters	31	0.90	25	Sensors	23	0.66
13	Energies	30	0.87				
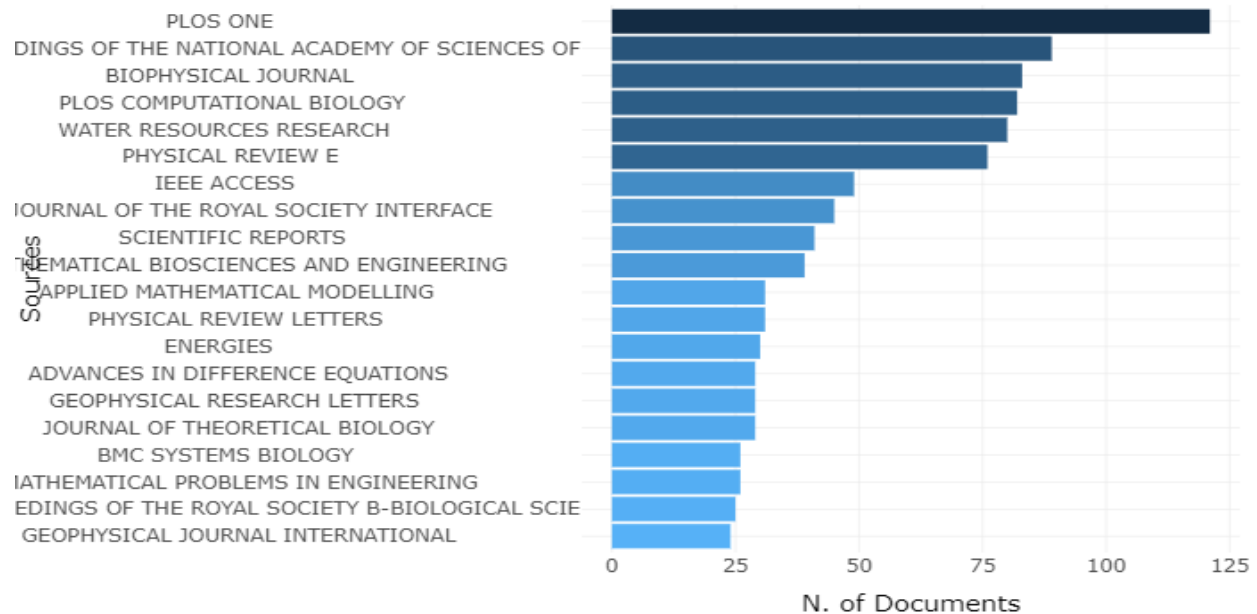
Figure 2: Most Relevant Sources

5.4. Source Growth rate

This graph reveals the development of journals which are the sources of research on the theme Stochastic Modeling. The curve below shows the development of the annual occurrence of each journal from 1989 to 2021. Where the curve illustrates that research with the theme open access

Stochastic Modeling research tends to fluctuate in its publication. From the curve below, it also shows that several journals have begun to experience development since 2005 and continue to increase. Such as the Journal of **PLOS ONE, Proceedings of the National Academy of Sciences of the United States of America**, **Biophysical Journal, PLOS Computational Biology and Water Resources Research.** In this graph one can analyse clearly that PLOS ONE Journal got first rank followed by Proceedings of the National Academy of Sciences of the United States of America which is slightly decreasing between the period of 2019 to 2021 comparing to PLOS ONE Journal and Biophysical Journal positioned in third place in terms of number of publications contributed on Stochastic Model.
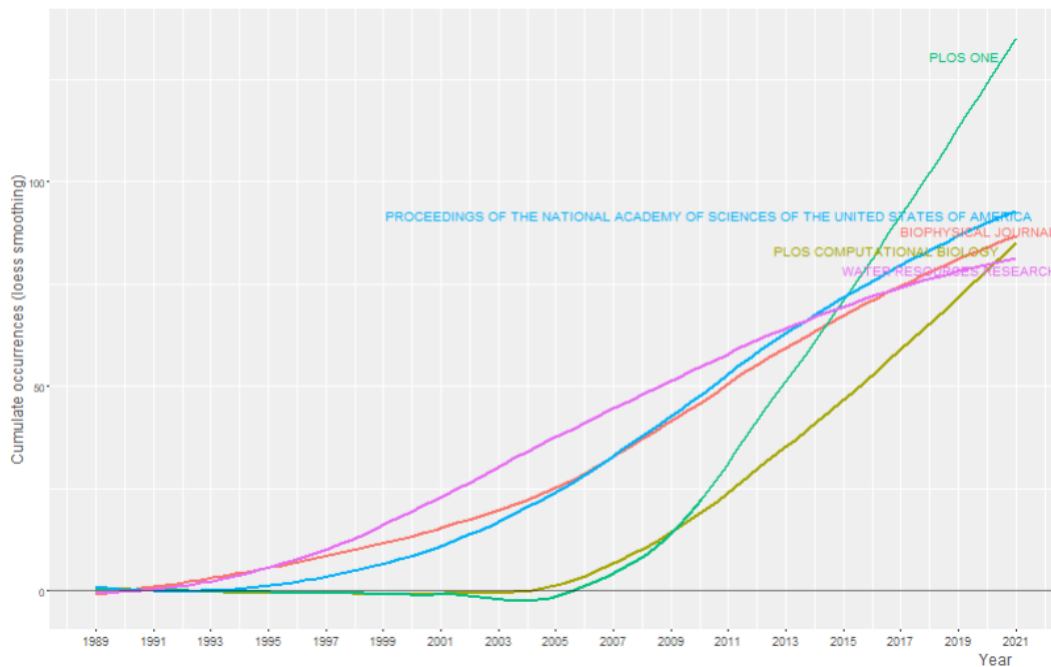

Figure 3: Source Growth

5.5. Most Prolific Authors

The most productive authors on open access Stochastic model were found [Table 4]. It is known that top 50 authors published nearly 10% (409) of open access publications with 10307 citations. **Zhang Y** from Peking University , School of Mathematics Science, Beijing, Peoples R China published 13 open access articles with 116 global citations, **Gilligan CA**, University of Cambridge, Department of Plant Science, Cambridge, England is the leading author in this field with only 12 papers, but with highest citations (414), followed by Alarcon T , Centre de Recerca Mathematical (CRM) Department of Mathematics, Bellaterra, Barcelona, Spain with 11 publications with 106 citations, and **Baker RE,** University of Oxford, Mathematics Institute, Oxford, England published 11 articles with 232 citations. The study found only seven authors are published more than 10 publications, 60 authors published more than five open access publications each and 273 authors with more than 3 open access publications.

Table 4: Most Prolific Authors (10704)

| S.No	Author	Records	TGCS	Articles Fractionalized (%)
1	Zhang Y	13	116	3.74
2	Gilligan CA	12	414	3.74
3	Alarcon T	11	106	4.73
4	Baker RE	11	232	3.85
5	Majda AJ	10	391	3.89
6	Tyson JJ	10	270	2.11
7	Wang Y	10	225	2.24
8	Wang L	9	179	2.15
9	Anderson RM	8	789	1.68
10	Foo J	8	318	2.95
11	Hyrien O	8	136	2.62
12	Jiang DQ	8	91	2.53
13	Li Y	8	32	1.68
14	Lopez-Garcia M	8	44	2.64
15	Wang CX	8	413	1.66
16	Wang K	8	51	2.95
17	Zhang L	8	166	1.69
18	Evans JW	7	35	2.56
19	KERMARREC G	7	20	3.25
20	KOLOMEISKY AB	7	369	2.83
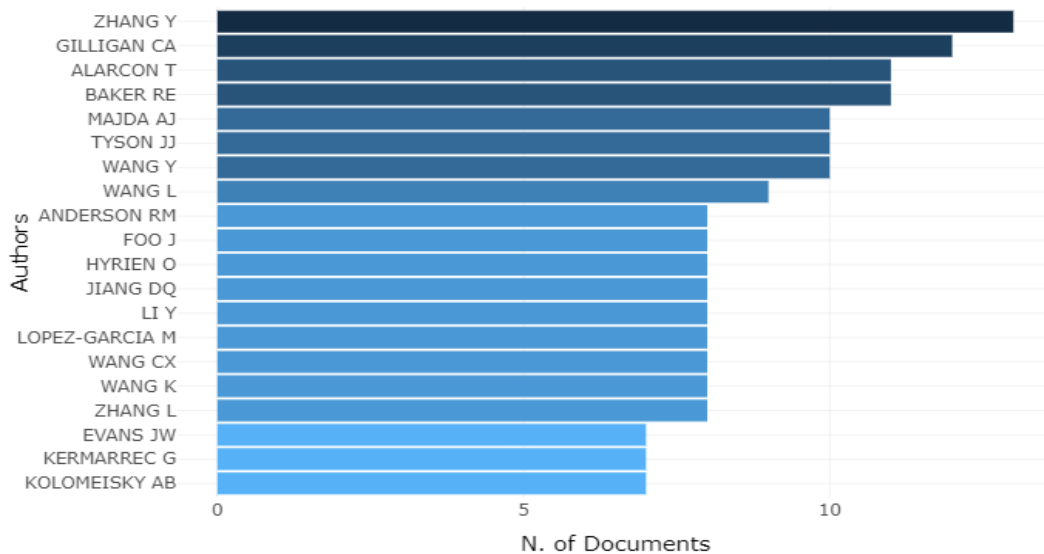
Figure 4: Most Prolific Authors

5.6. Author Productivity through Lotka's Law

The below table reveals that the Author Productivity through Lotka's Law in Stochastic Model Research one document is written by 9283 authors (86.78%) and the proportion is to be calculated as (0.867) authors followed by two documents written by 1034 authors (9.67 %) and the proportion is (0.097) and three documents were written by 215 authors (2.01%) with the proportion of (0.02). Lotka's law accepted or dispelled.

Table 5: Author Productivity through Lotka's Law

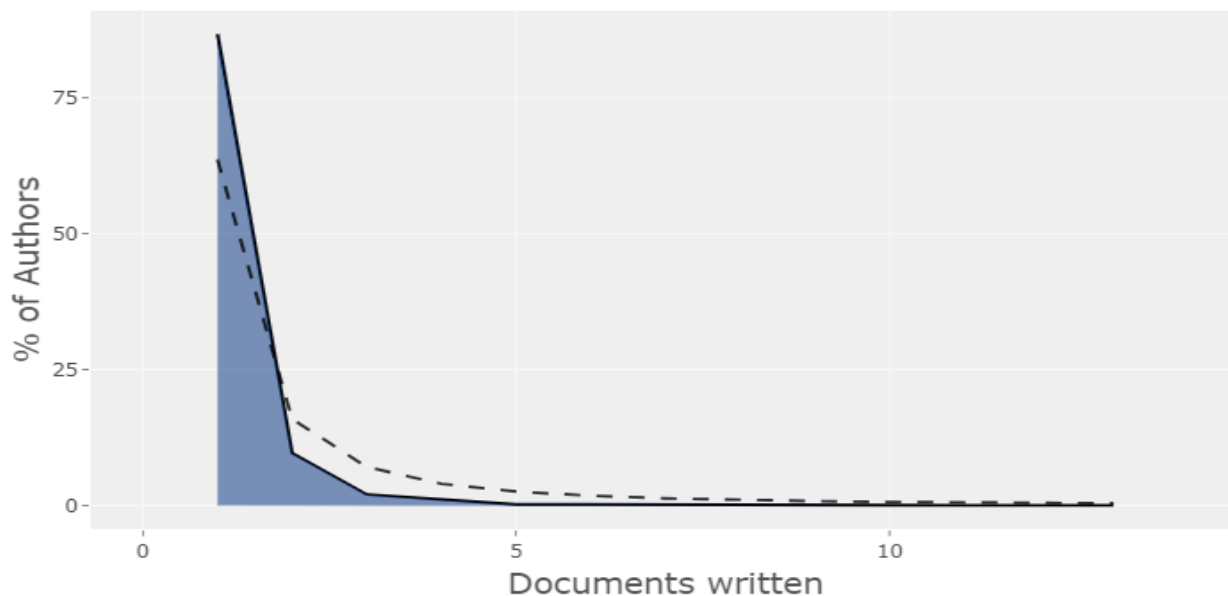| S.no	Documents written	N. of Authors	Percentage	Proportion of Authors
1	1	9283	86.78	0.867
2	2	1034	9.67	0.097
3	3	215	2.01	0.02
4	4	108	1.01	0.01
5	5	20	0.19	0.002
6	6	18	0.17	0.002
7	7	9	0.08	0.001
8	8	9	0.08	0.001
9	9	1	0.01	0

Figure 5: The Frequency Distribution of Scientific Production

5.7. Institution wise distribution of Publications (2976)

Among these Institutions, the highly productive Institutions were of University of Oxford with 62 (1.79%) publications which are received 1877 citations followed by Harvard University with 50 (1.45%) publications and 2812 citations, University of Cambridge with 50 (1.45%) publications and 1568 citations. The study found that 12 Institutes are more than 30 publications each, 20 institutes with more than 20 each publications contributed.

Table 6: Most Prolific Affiliations

| S.No	Institution	Records	%	TGCS
1	University Oxford	62	1.79	1877
2	Harvard University	50	1.45	2812
3	University Cambridge	50	1.45	1568
4	University California Berkeley	47	1.36	2192
5	Stanford University	38	1.10	1982
6	MIT	37	1.07	1766
7	University Washington	37	1.07	1266
8	UCL	34	0.98	665
9	University California Los Angeles	34	0.98	762
10	University London Imperial College of Science Technology & Medical	32	0.93	1606
11	University Edinburgh	31	0.90	974
12	University Tokyo	30	0.87	519
13	Duke University	29	0.84	658
14	NYU	29	0.84	2089
15	University California San Diego	29	0.84	1512
16	University Nottingham	29	0.84	434
17	Swiss Fed Institute Technology	28	0.81	568
18	Chinese Academy Science	27	0.78	276
19	University of LEEDS	27	0.78	510
20	University Minnesota	27	0.78	1083
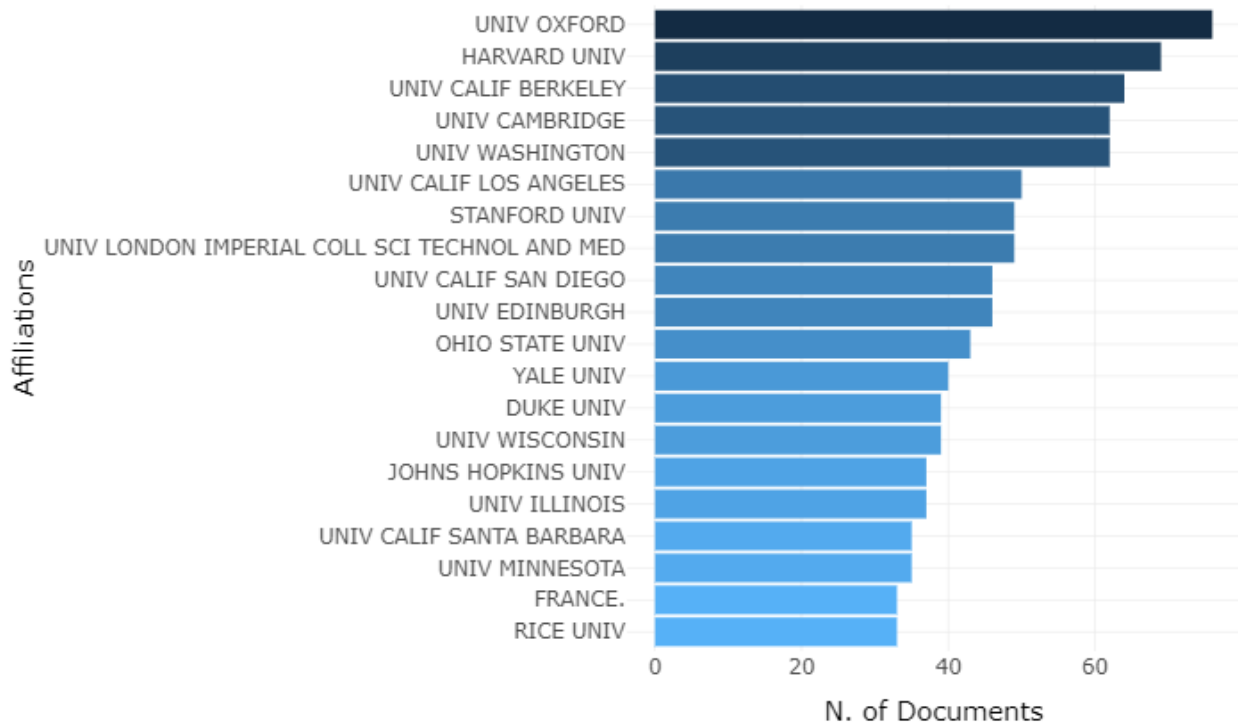
Figure 6: Most Prolific Institutions

5.8. Corresponding Author's Country

This below table examined the Corresponding Author's Country of the intra-country (SCP) and inter-country (MCP) collaboration indices. **United State of America** has published 982 records with frequency of (0.28) and the Single Country Publications (SCP) is higher with 758 Records comparing with Multiple Country Publications (224) and the MCP Ratio is 0.228. Followed by **United Kingdom** has published 363 records with frequency of (0.105) and the Single Country Publications (SCP) is higher with 227 Records comparing with Multiple Country Publications (136) records and its MCP Ratio is 0.375. **China** has published 346 records with frequency of (0.101) and the Single Country Publications (SCP) is higher with 232 Records comparing with Multiple Country Publications (114) records and it MCP Ration is 0.329. The publication output reveal the research collabration between multiple contries is not dominent when compare to the corressponding author country collabration.

Table 7: Corresponding Author's Country

S.No	Country	Articles	Freq	SCP	MCP	MCP_Ratio
1	USA	982	0.28	758	224	0.228
2	United Kingdom	363	0.105985	227	136	0.375
3	China	346	0.101022	232	114	0.329
4	France	189	0.055182	126	63	0.333

5	Germany	178	0.051971	100	78	0.438
6	Italy	127	0.03708	83	44	0.346
7	Japan	109	0.031825	91	18	0.165
8	Spain	100	0.029197	55	45	0.45
9	Canada	99	0.028905	66	33	0.333
10	Australia	87	0.025401	42	45	0.517
11	Netherlands	78	0.022774	47	31	0.397
12	Switzerland	72	0.021022	33	39	0.542
13	Brazil	58	0.016934	37	21	0.362
14	India	44	0.012847	32	12	0.273
15	Belgium	36	0.010511	13	23	0.639
16	Korea	36	0.010511	27	9	0.25
17	Sweden	33	0.009635	15	18	0.545
18	Norway	32	0.009343	18	14	0.438
19	Austria	30	0.008759	14	16	0.533
20	Denmark	29	0.008467	15	14	0.483
21	Poland	28	0.008175	22	6	0.214
22	Finland	26	0.007591	11	15	0.577
23	Iran	26	0.007591	16	10	0.385
24	Israel	25	0.007299	13	12	0.48
25	New Zealand	22	0.006423	12	10	0.455

The Intra-Country (SCP) and Inter-Country (MCP) Collaboration Indices
SCP: Single Country Publications   MCP: Multiple Country Publications
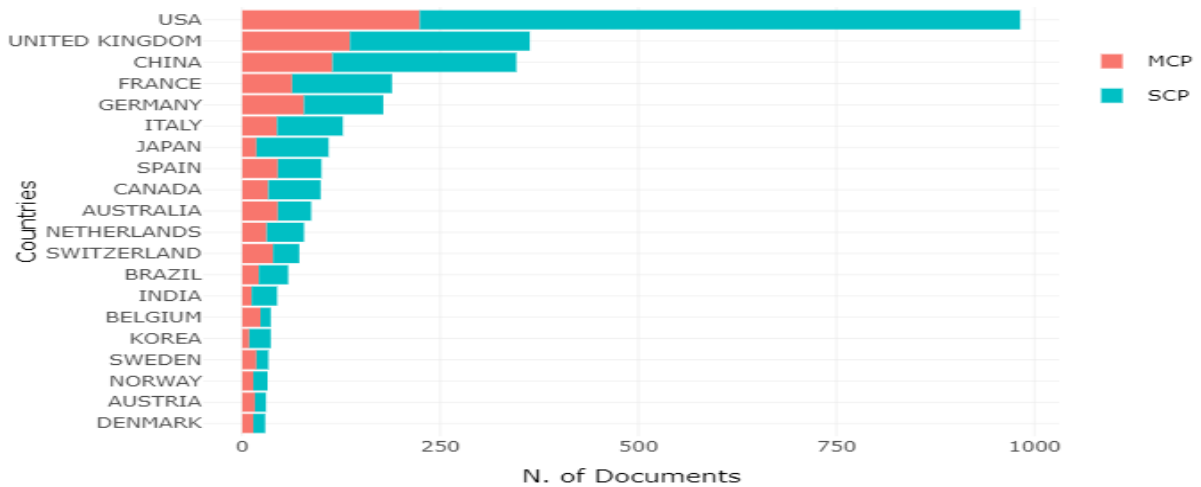

Figure 7: Corresponding Author's Country

5.9. Country Scientific Production

There were 107 countries involved in research on Stochastic Model and table presented only top 20 countries, which are received at least 100 citations each. The publication share of highly productive and Highly Cited Works Countries (≥100 citations). USA published 1219 (35.24) records and received the highest number of citations (37414) followed by United Kingdom (UK) have 560 (16.19) publications with 13157 citations, Peoples Republic of China has 391publications (11.30) with 4788 citations. The study found that United State of America, United Kingdom and Peoples R China has highest intellectual in the subject areas related to the Stochastic Model research.

Table 8: Country Scientific Production

| S. No	Country	Records	%	Freq	TGCS
1	USA	1219	35.24	2652	37414
2	UK	560	16.19	909	13157
3	Peoples R China	391	11.30	828	4788
4	France	263	7.60	510	5238
5	Germany	255	7.37	450	5416
6	Italy	193	5.58	352	4291
7	Canada	170	4.91	275	3359
8	Spain	157	4.54	274	2159
9	Australia	151	4.37	245	3814
10	Netherlands	135	3.90	235	3379
11	Switzerland	133	3.85	209	3728
12	Japan	132	3.82	204	1818
13	Brazil	77	2.23	137	725
14	India	65	1.88	95	495
15	Sweden	62	1.79	92	882
16	Denmark	52	1.50	83	1086
17	Israel	52	1.50	78	1440
18	Belgium	51	1.47	78	835
19	South Korea	49	1.42	73	506
20	Unknown	46	1.33	70	1756
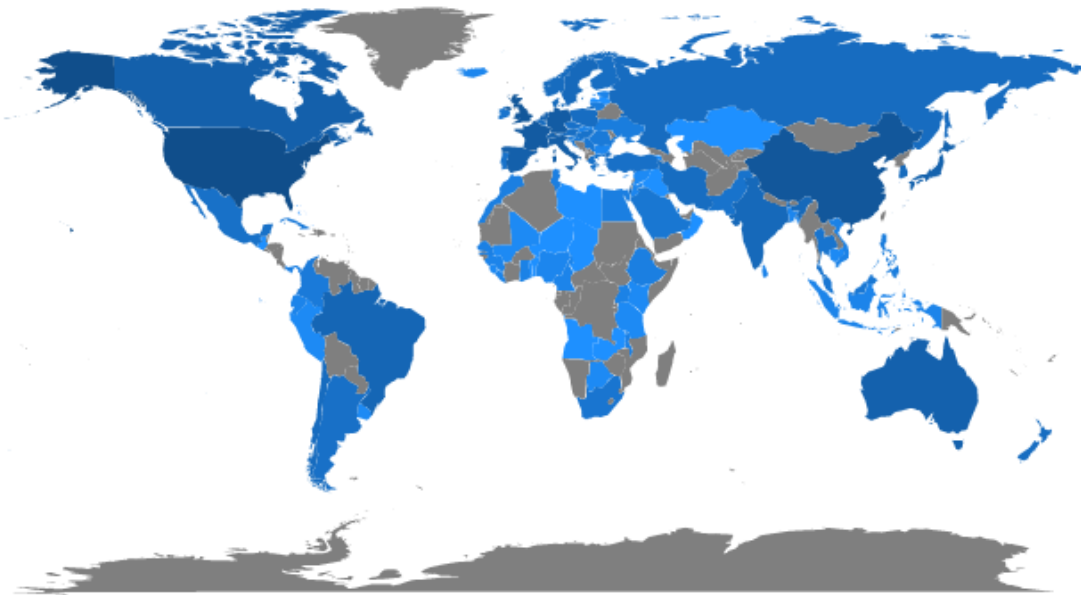
Figure 8: Country Scientific Production

5.10. Three Field Plot:

The Three Fields Plot below is a picture consisting of 3 elements in it, namely, the name of the n journal, a list of authors' names and the themes / topics used. The three elements are connected by a gray plot which is related to one another. Initially from the name of the journal, then each journal shows the author who often contributes to its publication, then every writer shows the subject they often use for research carried out with the theme of Stochastic Model research. The size of the four-sided figure illustrates the large amount of publications linked with each of these elements.

From the picture below, it is known that in the first element, there are 16 journals indexed in the Three Fields Plot that publish the stochastic model research papers. The top journal that publishes the highest number of papers on the theme is of PLONS ONE followed by Proceedings of National Academy of Sciences and the United States of America which is depicted with a light blue rectangle connected to the authors Wang Y, Toyson, JJ and Majda AJ.

Next, go to the second element in the middle of the image, which shows the author's name. Where there are several authors who are linked with previous journals. In addition, the author will also be associated with topic keywords that are often used on the right of the image. Where in this study there were 18 top researchers enrolled in this plot. The size of the rectangle indicates the respective quantity of research publications from each author. As for this research, the authors mostly publish the theme of Stochastic Model research, namely Zhang, Y., Wang, I., Gilligan, CA., Wang, Y, Majda AJ., Alarcon, T., Tyson, JJ. and Baker, RE., which are depicted by purple, blue, Gray and pink rectangles.

Finally, the third element that describes the research topic which is on the right side of the picture. Each topic is connected with writers who write a lot on related topics. From the results of the image, there are 18 listed keyword topics. of all the topics that appear, the words Simulation, Stochastic Model, extinction, mathematical are words that often appear marked with a rectangle in light purple, dark purple and brown colors. This illustrates that the words Stochastic Model and extinction are closely related to research on the theme of Stochastic Model research.
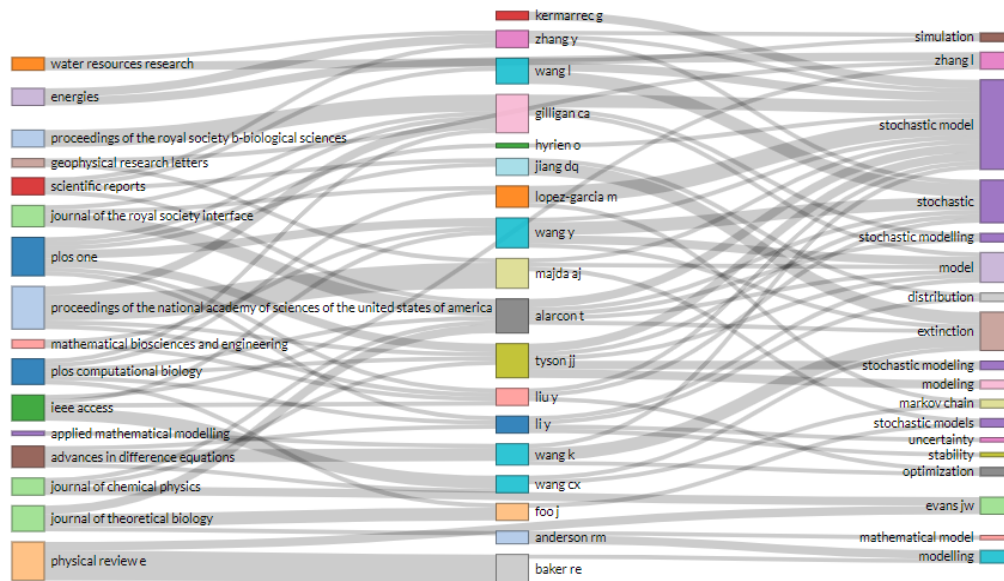

Figure 9: Journal< Authors< keyword = Three Field Plot

5.11. Reference Spectroscopy

Table 9: Reference Spectroscopy

S.no	Year	Citations	diffMedian5	Year	Citations	diffMedian5
1	2021	28	-1427	2004	5398	568
2	2020	966	-1336	2003	5033	591
3	2019	1455	-1529	2002	4830	513
4	2018	2302	-1474	2001	4442	747
5	2017	2984	-1433	2000	4317	861
6	2016	3776	-1101	1999	3695	555
7	2015	4417	-815	1998	3456	594
8	2014	4877	-877	1997	3140	591
9	2013	5232	-845	1996	2862	470
10	2012	5754	-327	1995	2549	413
11	2011	6081	-15	1994	2392	520
12	2010	6077	-44	1993	2136	429

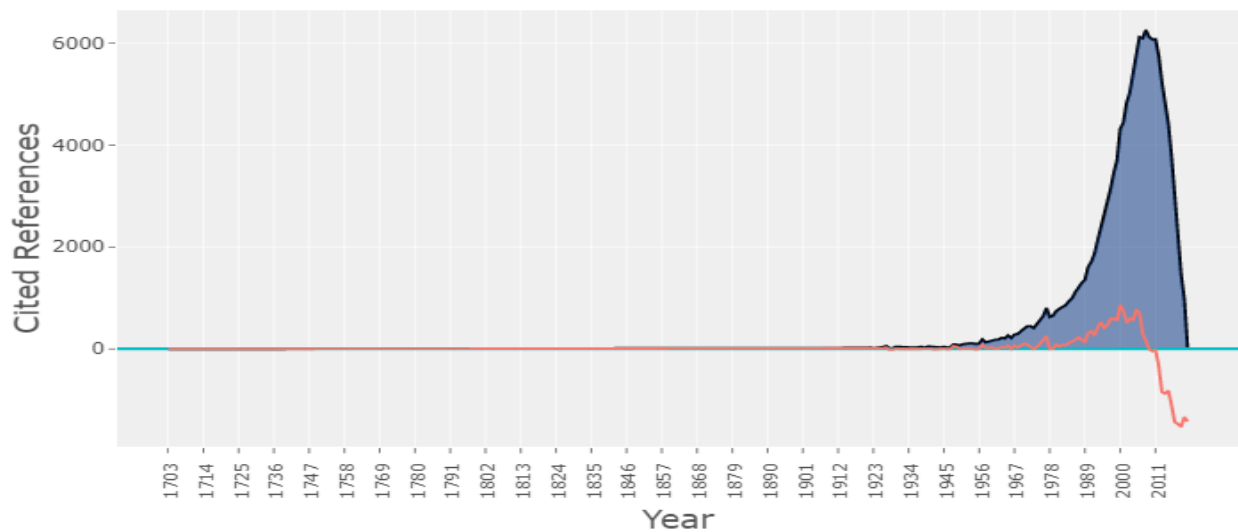| 13	2009	6122	1	1992	1872	264
14	2008	6261	165	1991	1707	349
15	2007	6096	304	1990	1608	314
16	2006	6121	723	1989	1358	134
17	2005	5792	759			

Figure 10: Reference Publication year Spectroscopy

5.12. Most Contributing Paper

The Factorial Analysis below shows the existence of most contributing Documents between many Document clusters. The clusters were divided into two parts. Cluster 1 and Cluster 2, the color is variant by blue and red colors each. The chart of y axis and x axis is divided by Dim 2 (26.55%) and Dim 1 (31.09%) with the use of factorial Analysis. The most contributed documents in cluster one is Scott m. 2007.p National Academy of Science USA, Gutierrez ps.2012. PLOS ONE, van hoek, M.2007.PLOS Computational Biology, Makela J. 2011, BME bioinformatics and Robb ML., 2014. PLOS ONE. The most highly contributed document in cluster two which is covered by blue in color is Amador J.2018, discrete cont dyn-b., Chen c, 2016, applied mathematics model., Feng T.2016. J Inequal Application. Jesse M, 2011. J Theoritical Biology. Imran M, 2013, J Biology Dynamics.
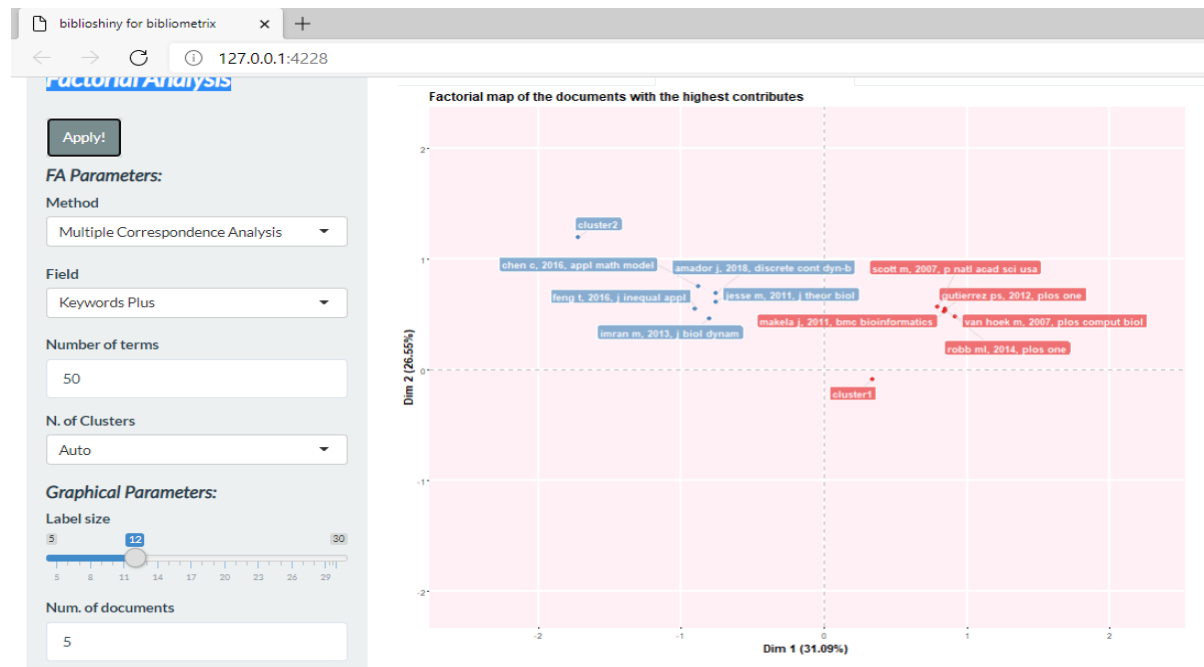
Figure 11: Most Contributing Paper

6. Conclusion:

As open access publication in scholarly Communication is gaining momentum this present study focused on identifying the open access publication as the research outcome of stochastic model. As the quantitative and qualitative analysis of research outcome enabled open access will throw new approaches for scholarly publishing and the libraries to venture into research support to it users. The present context twenty to thirty percent scholarly publications of even commercial publishers and scientific societies are of open access which need to be communicated to the researchers and library users to the libraries services of academy libraries. The research also use biblioshiny and open access which enables more dynamics analyzed on the publication research outcome from leading international indexed databases in the present content. The graphs highlighted prominent sources, the journal, the researchers, the organizations contributed on stochastic research visually and effectively, source dynamics, intra country and Intercountry Collaboration, Three Field Plot, Reference Spectroscopy, Indexes along with conventional methods of lotka's law author productivity and subject proliferation also analysed.

References:

1. Farooq, R. K., Rehman, S. U., Ashiq, M., Siddique, N., & Ahmad, S. (2021). Bibliometric analysis of coronavirus disease (COVID-19) literature published in Web of Science 2019–2020. Journal of Family & Community Medicine, 28(1), 1.

2. Rusydiana, A., Taqi, M., Firmansyah, I., Assalafiyah, A., & Kustiningsih, N. (2020). A bibliometric analysis of Islamic accounting research indexed by dimensions. ai. Library Philosophy and Practice (e-journal), 4803.

3. Srinivasaragavan, S., Prasanna Kumari, N., & Durai Murugan, M. (2019). Scientometrics Analysis on Elephants.

4. Sun, T.; Feng, Z.; Yang, Y.; Lin, Y.; Wu, Y. Research on land resource carrying capacity: Progress and prospects. J. Res. Ecol. 2018, 9, 331–340.

5. Hammad, A.; Tumeizi, A. Land degradation: Socioeconomic and environmental causes and consequences in the eastern Mediterranean. Land Degrad. Dev. 2012, 23, 216–226.

6. Batunacun; Wieland, R.; Lakes, T.; Yunfeng, H.; Nendel, C. Identifying drivers of land degradation in Xilingol, China, between 1975 and 2015. Land Use Pol. 2019, 83, 543–559.

7. https://www.kent.ac.uk/smsas/personal/lb209/files/notes1.pdf