ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 7| Issue: 12| December 2021|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2021: 8.047 || ISI Value: 1.188

MEASURING THE GLOBAL RESEARCH TRENDS OF BLOCKCHAIN TECHNOLOGY: A BIBLIOMETRIC ANALYSIS

Pratibha Prajapati[1], Dr. Mahender Pratap Singh[2]

[1]*Research Scholar, Department of Library and Information Science, Babasaheb Bhimrao Ambedkar University, Lucknow*

[2]*Professor, Department of Library and Information Science, Babasaheb Bhimrao Ambedkar University, Lucknow*

1. INTRODUCTION

The present study entitled with "Measuring the Global Research Trends of Blockchain Technology: A Bibliometric Analysis" is a systematic bibliometric study on the literature of Blockchain technology. The main purpose of study measurd the growth of literature in the field of blockchain Technology. Bibliometric is statistical and mathematical methods to analysis books and other media of communication. Blockchain technology is an emerging topic because this technology works as decentralized distribution ledger system and transfer digital information securely. Every transaction is secure with digital signature so in this way no chance of cheating hacking and alteration of information. This technology plays an important role in the field of banking and financial sectors. In India 56% business are moving towards this technology. Top most companies which are used this technology are – Hyperlink Information system, Infosys, fueled and Tech Mahindra. This study will provide best guidance for those who are engaged with this technology and future researchers.

2. REVIEW OF LITERATURE

Ante et al.(2021) revealed Bibliometric Analysis of Blockchain and Energy and in this study, researcher used exploratory factor analysis in Six research streams. Researcher found that a high degree of homogeneity in all six research streams and explain more than 71 % variance count during the study period.

Bayramova et al.(2021) presented the role of Blockchain Technology in augmenting supply chain resilience in Cybercrime. Total 867 papers were retrieved from Scopus database during the period 2016-2020. VOSviewer and NVivo used for this study. He identified six cluster in research analysis from subsequent grounded theory. United States and India found most prominent country and Li, Z. was found on top with 10 papers followed by Choi, T. and Wang, T. with 9 papers.

Singh, M.P.et al. (2021) concluded bibliometric studies on Green Economics during the period of 2012-2021. Total 6514 data retrieved from Scopus database. The highest publication was found in 2020 with 980 articles. China was on top country followed by United States in the field of Green Economics. In journal wise production "Journal of Cleaner Production" was highly source followed by Sustainability Switzerland.

3. RESEARCH METHODOLOGY

Scopus database has been used for data collection and total 2651 literature retrieved from during the study period from 2017-2021. Researcher used this query in Scopus database (TITLE (blockchain technology) AND PUBYEAR > 2016 AND PUBYEAR < 2022). VOSviewer software used for data visualization and MS Excel 19 used for data analysis and graphical presentation of data.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 7| Issue: 12| December 2021|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2021: 8.047 || ISI Value: 1.188

4. OBJECTIVES OF THE STUDY

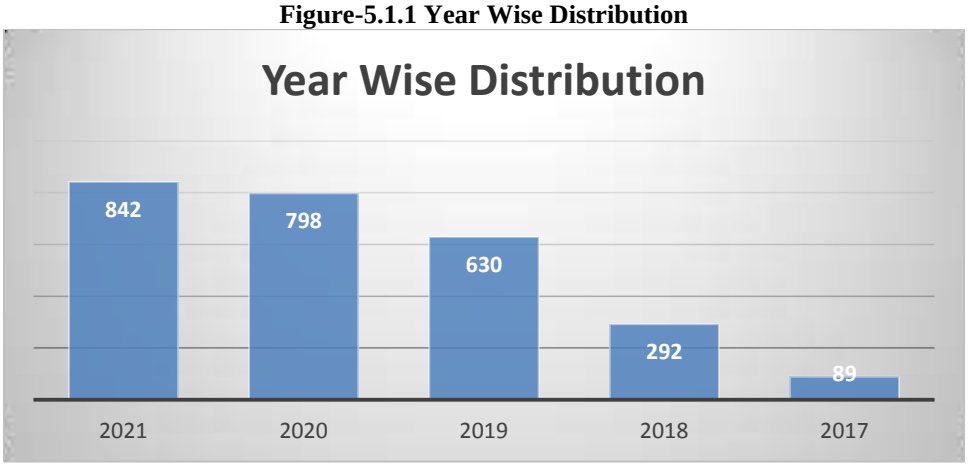
- To find out the year wise Growth Rate of Blockchain Technology.
- To calculate the Authorship Pattern in Blockchain Technology literature.
- To measure the subject and language wise distribution of publication.
- To examine the highly cited Articles in the field of Blockchain Technology.
- To examine the visualization of highly cited authors keyword occurrences in the field of Blockchain technology.

5. ANALYSIS AND INTERPRETATION OF DATA

5.1 Year Wise Distribution

Table-5.1.1 shows that year wise distribution in the field of Blockchain Technology during the study period from 2017-2021. Total 2651 documents found in five years in which year 2021 has published 842 documents followed by year 2020 with 798 documents. The least number of publications in the year 2017 with 89 documents.

Figure-5.1.1 Year Wise Distribution



5.1.2 Annual Growth Rate

Table-5.1.2 shows that AGR in the field of Blockchain Technology during the study period from 2007-2021. In which maximum AGR count in 2018 with 328.09 and after that AGR has increased in year by year.

Table-5.1.2 Annual Growth Rate

Year	Initial Value	End Value		AGR
2017	0	89	-89	Not Define
2018	89	381	292	328.09
2019	292	922	630	215.75
2020	630	1428	798	126.67
2021	798	1640	842	105.51

5.1.3. Relative Growth Rate and Doubling Time in the Field of Blockchain Technology

Table-5.1.3 shows that the RGR and Doubling time of the literature Blockchain technology publications. In this study maximum RGR count 1.19 in year 2018 and the minimum RGR count in 0.05. In the analysis researcher found that maximum doubling time in year 2021.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 7| Issue: 12| December 2021|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2021: 8.047 || ISI Value: 1.188

Table-5.1.3. Relative Growth Rate and Doubling Time in the Field of Blockchain Technology

Year	Initial Value	New Added Publication	End Value	W1	W2	RGR	DT
2017	0	89	89	Undefined	4.48	Undefined	Undefined
2018	89	292	381	4.48	5.67	1.19	0.58
2019	292	630	922	5.67	6.44	0.77	0.9
2020	630	798	1428	6.44	6.68	0.24	2.89
2021	798	842	1640	6.68	6.73	0.05	13.86

5.1.4. Authorship Pattern

Table-5.1.4 shows that the authorship pattern in the filed of Blockchain technology. In this study found that 165 publications written by single author and most of the literature 565 documents published by double authors and 162 publications published by Three authors.

Table-5.1.4. Authorship Pattern

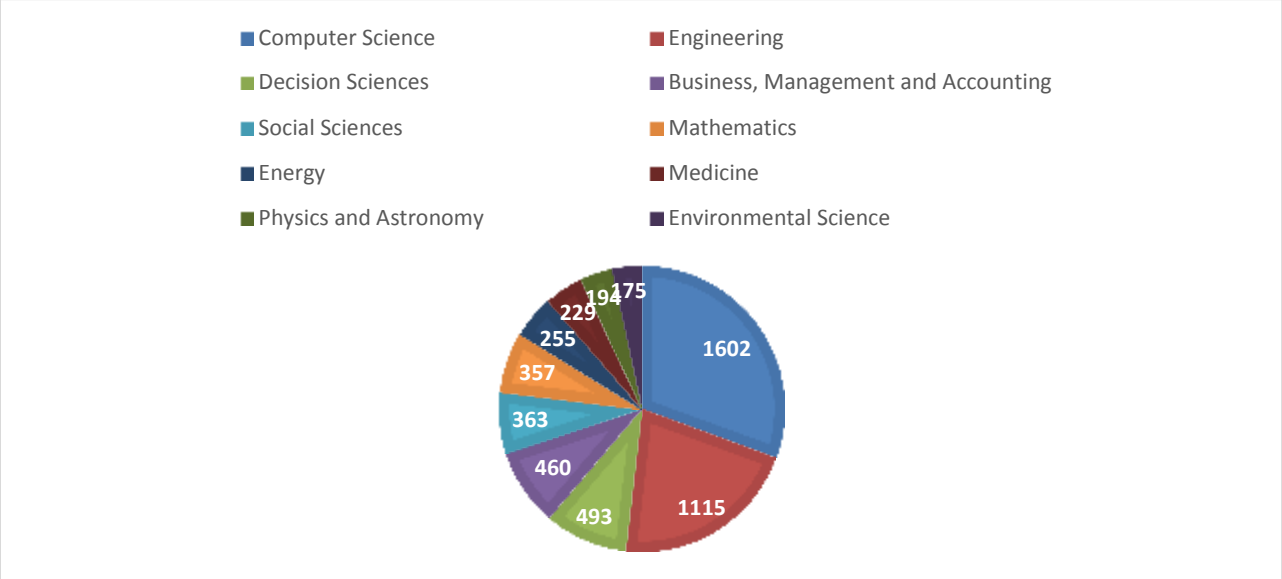
Documents written	Number of Publications	Proportion of Authors
Single Author	165	0.032
Double Authors	565	0.093
Three Authors	162	0.031
Four Authors	52	0.01
Five Authors	27	0.005
Six Authors	24	0.005
Seven Authors	9	0.002
Eight Authors	6	0.001
Nine Authors	7	0.001
Ten or More than Ten Authors	22	0.004

5.1.4 Subject Wise Distribution

Figure no 5.1.4 revealed that subject wise distribution of the field of Blockchain Technology. It is found that Computer Science is found most productive subject with 1602 found during the period 2017-2021. Engineering found on second position with 1115 publications followed by Decision sciences with 493 publications.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 7| Issue: 12| December 2021|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2021: 8.047 || ISI Value: 1.188

Figure-5.1.4 Subject Wise Distribution



5.1.5 Language-wise Distribution

Table-5.1.5 shows that language wise distribution in the field of Blockchain technology. Blockchain literature published in 13 languages in which Most of the literature published in English language with 2539 (95.70) followed by Chinese languages with 67 publications.

Table-5.1.5 Language-wise Distribution

S.N.	LANGUAGE	NUMBER OF PUBLICATIONS	(%) 2653
1.	English	2539	95.70
2.	Chinese	67	2.53
3.	Spanish	16	0.60
4.	German	13	0.49
5.	Russian	4	0.15
6.	Turkish	3	0.11
7.	French	2	0.08
8.	Italian	2	0.08
9.	Japanese	2	0.08
10.	Portuguese	2	0.08
11.	Croatian	1	0.04
12.	Korean	1	0.04
13.	Polish	1	0.04

5.1.6 Highly Cited Articles

Table-5.1.6 presented top ten highly cited articles in the field of Blockchain Technology during the period of 2017-2021. “An Overview of Blockchain Technology: Architecture, Consensus, and Future Trends” found highly cited articles with 1356 citations followed by Blockchain technology in the energy sector: A systematic review of challenges and opportunities with 610 citations.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 7| Issue: 12| December 2021|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2021: 8.047 || ISI Value: 1.188

Table-5.1.6 Top Ten Highly Cited Articles

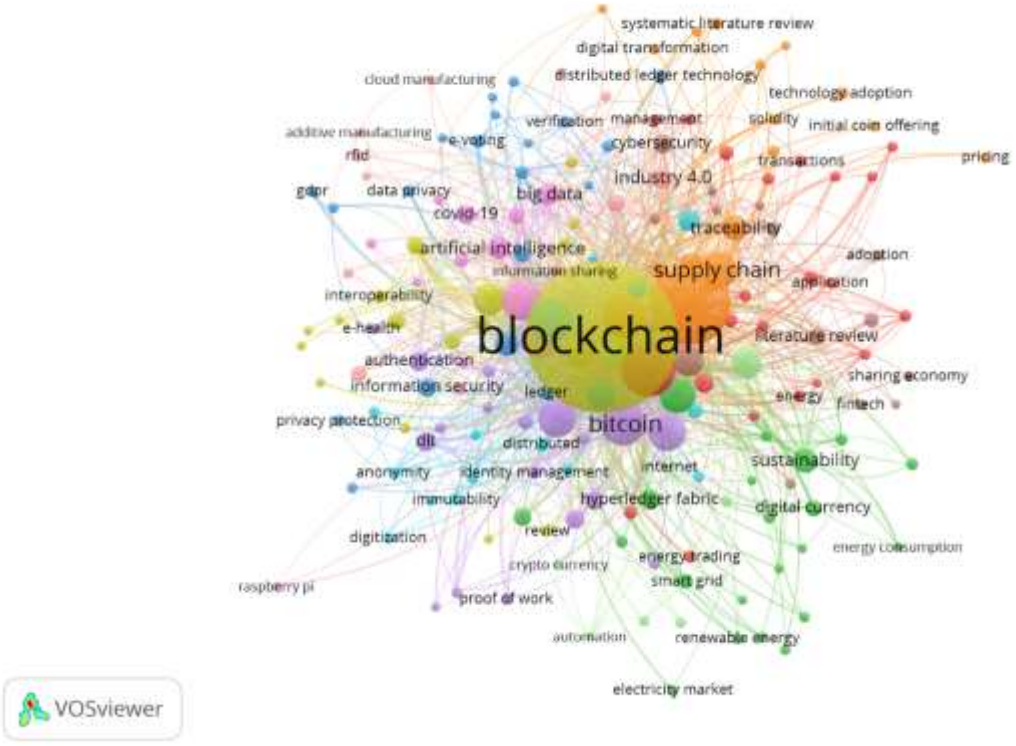
S.N.	Title	Year	Citation
1.	An Overview of Blockchain Technology: Architecture, Consensus, and Future Trends	2017	1356
2.	Blockchain technology in the energy sector: A systematic review of challenges and opportunities	2019	610
3.	Blockchain technology and its relationships to sustainable supply chain management	2019	602
4.	Blockchain distributed ledger technologies for biomedical and health care applications	2017	403
5.	Blockchain technology in the chemical industry: Machine-to-machine electricity market	2017	378
6.	Blockchain in government: Benefits and implications of distributed ledger technology for information sharing	2017	309
7.	The IoT electric business model: Using blockchain technology for the internet of things	2017	294
8.	Securing smart cities using blockchain technology	2017	288
9.	Ancile: Privacy-preserving framework for access control and interoperability of electronic health records using blockchain technology	2018	266
10	The limits of trust-free systems: A literature review on blockchain technology and trust in the sharing economy	2018	243

5.1.7 Visualization of Authors Keyword Occurrences

Figure-5.1.7 show the author keyword occurrences with the help of VOSviewer software. This figure is showing the frequency of author keywords in the field of Blockchain Technology. Total 3918 keyword used for visualization. The minimum occurrences of keyword were considered at 5. The number of circles can be seen by size of the circles, if the circle is bigger it means the larger number of the publications used this keyword. It has been observed that "Blockchain" term is highly occurred keyword followed by Blockchain with 1172 occurrence followed by "Smart Contract" with 341 occurrences.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 7| Issue: 12| December 2021|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2021: 8.047 || ISI Value: 1.188

Figure-5.1.7 Visualization of Authors Keyword Occurrences



6. FINDINGS AND CONCLUSION

This study provides comprehensive review of the literature published on Blockchain technology. This study reveals that the highest number of publications in 2021 which was 842 articles followed by 2020 with 798 articles. "Blockchain" keyword occurred in maximum time during the study period. In citation wise analysis "An Overview of Blockchain Technology: Architecture, Consensus, and Future Trends" found highly cited articles published in 2017. Most of the literature published in English language followed by Chinese and Spanish language. Author explained the authorship pattern in which maximum literature published by Double authors. This study reveals that the number of publications in Blockchain Technology increasing year by year so it is very relevant topic for future researcher and companies' employs who will use this technology in future.

REFERENCES

1. *Ante, L., Steinmetz, F. & Fiedler, I. (2021). Blockchain and energy: A bibliometric analysis and review. In Renewable and Sustainable Energy Reviews (Vol. 137). Elsevier Ltd. https://doi.org/10.1016/j.rser.2020.110597*
2. *Bayramova, A., Edwards, D. J. & Roberts, C. (2021). The role of blockchain technology in augmenting supply chain resilience to cybercrime. In Buildings (Vol. 11, Issue 7). MDPI AG. https://doi.org/10.3390/buildings11070283*
3. *Singh, M.P. Prajapati, Pratibha. Bharati, V. K. (2021). GREEN ECONOMICS RESEARCH TRENDS IN WORLD: A BIBLIOMETRIC STUDY Dr. EPRA International Journal of Multidisciplinary Research (IJMR)-Peer Reviewed Journal, 11, 198–210. https://doi.org/10.36713/epra2013*
4. *https://www.investopedia.com/terms/b/blockchain.asp*
5. *https://www.ibm.com/in-en/blockchain*