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Mapping of Indian Research Output on the Internet of Things (IoT): A Scientometrics Study

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Abstract

The Internet of Things (IoT) has emerged as a pivotal domain, driving technological progress and societal transformation. This scientometrics study examines the Indian research output on IoT, leveraging the SCOPUS database, a premier source of scientific literature. The study aims to analyse the growth, trends, and sectoral contributions within the IoT field, offering valuable insights to researchers, professionals, and policymakers. The dataset encompasses 18,694 documents from 2,884 sources, including journals, books, notes, and editorials. The analysis unveils an impressive annual growth rate of 93.78%, signifying the dynamic expansion of IoT research. While the average document age is 3.73 years, indicating recent publications, each document receives an average of 10.08 citations, highlighting the impact of IoT research. The collaborative nature of IoT research is evident, with 30,778 authors contributing and an average of 3.31 co-authors per document. Furthermore, international co-authorships account for 14.34% of the dataset, underscoring global collaborative efforts. This study provides an understanding of the growth, trends, and contributions within the IoT field in India, leveraging scientometrics tools and techniques. By mapping scientific articles and publications, it evaluates the performance of researchers, institutions, and periodicals, offering valuable insights for stakeholders across domains.

Keywords: Internet of Things (IoT), Cloud Computing, Block Chain, Machine Learning, Scientometrics Study, Bibliometric Study.

1. Introduction

The Internet of Things (IoT) is one of the highest discussed and researched domains in the last decades which plays an essential role in the overall development and technological advancement of the society and living. It is clearly noticeable that the significant increase in the use of technologies such as smart phones, laptop, smart band, smart watches, tablets, and other consumer electronics devices in all the sectors (Faria, et al., 2021). The use of the Internet for communication between people is a consolidated reality. However, the trend points to a communication between objects and electronic equipment, capable of processing data and returning information to its users, called the Internet of Things (IoT). Smart devices are mostly connected with the network or to the internet which enable machine-to-machine learning, interaction and communication between devices, objects and people. The term IoT was first introduced by Ashton in 1998 and later in 2005 International Telecommunication

Union formally introduced the technology to the world (Liu, et al., 2018). IoT is the system of interrelated computing devices with the unique identifiers and they have the power to transfer the data over a network without human to human or human to computer interaction.

Today, Internet is connected in all the sectors such as industries, education, agriculture, military, production line, healthcare, transportation, home automation and consumer electronics. The main component and architecture of the IoT includes internet connectivity, communication layers, application layers, cloud storage, processing unit, and hardware such as sensors and circuit boards. As the technology is being widely functional in variety of the sectors, it is facing many challenges in installation, maintenance, upgradation, optimization, interoperable, integration and security (Opejin, et al., 2020; Wonyoung et al., 2021).

As the number of research publication in the Internet of Things and related domain is increasing, there is a need of the scientometrics study to provide overview, characteristics, subject domain, and trends. The scientometrics study is useful to map and measure the scientific literature in terms of research trends, citation, co-relation, repetitive work, authors, geographical area, dates, subject domains and many related areas of measurement. The bibliometric analysis is a systematic approach and also known as statistical analysis method to measure output of a research, author, contributor, countries, and research network or group and identify the development of multi-disciplinary research opportunities in the related area (Brandt, et al., 2019). The bibliometric analysis can be done of books, journals, databases, research journals, theses, dissertations, patents and reports.

Scientometrics methods are utilized for different purposes like assurance of different logical indicators, assessment of logical output, choice of journals for libraries and even determining potential Nobel Laureates. Scientometrics investigation has turned into a well-established part of information research. The most evident utilization of scientometrics information is to enhance bibliographic control, as it is plainly not possible to give enough auxiliary services without knowing the size and qualities of a literature. Scientometrics has developed with the notion that the literature is growing and upgrading at a rate which no information professional having traditional information management skill could manage (Aparicio-Martinez, et al., 2019).

It has become challenge for the librarian to identify the quality collection for their libraries. The scientometrics analysis and statistical study will be very useful tool for the librarian. In recent years we have seen a progressive development of information technology, as well as an enormous number of intelligent devices and objects that are monopolizing our daily lives. With the recent developments in sensor, communication and microcontroller technologies, we are witnessing a convergence of the physical world and the cyber world.

2. Statement of the Problem

The enormous increase in research activities producing large number of research publication has contributed widely in one direction of the development and advancement of related subjects, different areas fields and subfields in the domain of ‘Internet of Things’ subject as an origin. The Internet of Things has become one of the most discussed, researched and essential area of research focused by the global research and academic community. The contemporary research approach and development has offered new opportunities in interdisciplinary and multidisciplinary study and research practices. Libraries in the world, in

general, and libraries in developing countries like India in particular are thriving to adopt the IoT technology in the libraries.

In this research study, the emphasis will be on Mapping of Indian Research Output on the Internet of Things (IoT): A Scientometrics Study.

3. Significance of Study

Conducting a scientometrics study could be a valuable asset in many aspects for an academic library and other Institutions. This study is an attempt to determine the scientometrics features in the core and related field research practices on Internet of Things.

In this research study, the SCOPUS database was used since it is one of the largest sciences and technology database recognised by the academicians of the world. This study will be useful for the library professionals along with researchers in all domain working in the field of Internet of Things to understand the growth of the publication, research trends, and contribution of the sectors.

4. Research Objectives

The objective of this research is to analyse the Indian academic scientific production related to the Internet of Things (IoT) through scientometrics tools and techniques based on SCOPUS database.

- To investigate the characteristics of the publication landscape on Internet of Things (IoT) through a scientometric analysis, including the identification of key features such as publication types, subject areas, and temporal trends.
- To identify the prominent journals and subject categories that have published significant research on IoT, and analyze their impact and influence within the field.
- To conduct a keyword analysis of the research publications, revealing the most frequently used keywords and emerging themes, providing insights into the topical focus and evolving trends within IoT research.

5. Research Methods

This research shows a study of the scientific productions related to the theme Internet of Things (IoT) in the scientific database of SCOPUS published till 2021. The scientometrics study serves with an important mechanism of scientific research that shows the evolution of this technology in the world during the period investigated. The measurement of scientific production through scientometrics allows an evaluation of the performance of researchers, institutions, countries and periodicals, through a mapping of scientific articles and other scientific productions, taking into account quantitative and qualitative metrics. This study is limited to Indian research publications in Scopus database till 2021.

6. Review of Literature

Bibliometric and content analysis were applied to a total of 169 Internet of Things (IoT) publications that were indexed in the Web of Science database. This was done in order to examine current research trends and patterns in the phenomena of Internet of Things (IoTs). The software known as VOSViewer was utilised in order to determine the most popular keywords associated with the IoT topics, the publication productivity associated with those

keywords, the most relevant journals, and the most prolific authors contained within those journals. The combination of the findings from the bibliometric analysis and the content analysis points to the need for more research into the post-adoption technological use pattern of IoT technology in developing nations, especially in the context of smart homes (Leong et al., 2021).

Research incredibly similar to this was carried out where bibliometric method was used to assess research publications in the field of smart homes and the Internet of Things. Specifically, papers presented at prominent international conferences and articles published in reputable journals were selected for inclusion. This investigation compiles a total of 2339 articles from the SCOPUS database that were produced during the years 2015 and 2019. According to the findings, there are presently more SHIoT publications being published each year than there were before. In 2015, there were just 157 papers published, but in 2019, there have already been more than 700 articles published. The bulk of the research publications that were published in SHIoT was produced from inside the fields of computer science and engineering, which are both considered to be different types of study (Choi et al., 2021).

The Internet of Things (IoT) presents the construction sector with intriguing new prospects to address the time and resource restrictions as well as the frequent defaults that have plagued the industry. In order to map the research trends and areas of innovation via the use of technology, a scientometric study was carried out on the Internet of Things (IoT) and the Construction sector. The VOSviewer programme was used to conduct an analysis on a total of 417 journal articles. According to the findings, the area of research is still in its infancy, and there are only a small number of specialists working in what might be described as relative isolation and providing point-specific answers rather than adopting an integrated "holistic" approach. It was determined which publishing sources were most important, and the majority of the study conducted was concentrated on the technical aspects of environmentally responsible construction, smart buildings, and smart construction products (Ghosh et al., 2020).

Internet of Things (IoT) devices need access control and authentication methods that can withstand a variety of attacks to be considered secure. This study analyses 2008-2017 academic research publications in this topic. Grooby et al. analysed total 906 academic publications to determine the most prolific nations, journals, authors, and research organisations, as well as the most prevalent study fields, keywords, and highly referenced articles. They emphasized at each country's production patterns and found that total output and the number of nations contributing are significantly growing. India, South Korea, and the USA are increasing their percentage contribution to the dataset, while China is declining (Grooby et al., 2019).

The Internet of Things (IoT) is a relatively new field, and blockchain is one of its subfields. Blockchain is a distributed, decentralised, and immutable digital ledger that records transactions over a worldwide network of computers in a highly secure environment. A bibliometric analysis of publications in the Blockchain IoT sector is presented in a research study. The study covers 151 papers that were published in top journals in the Web of Science database between the years 2008 and 2019. According to the conclusions of the research, IEEE Access was found to be the most important publishing source, China was the most important nation, and computer science information systems was the most important domain (Kamran et al., 2020).

A bibliometric study was conducted solely on analysing articles related to innovation in blockchain technology with IoT in vehicles and automotive in order to have a clear view of the trends in the discussion, which can generate ideas and knowledge for future research. The number of frequently occurring keywords, the number of publications produced year between 2016 and 2020, the number of papers that have been published on the subject of combining blockchain technology and IoT in automotive, as well as the most common trends and word subjects (Meyliana et al., 2021).

An examination employing bibliometrics and altmetrics was carried out in order to discover various features of research conducted all around the globe on the internet of things (IoT). The citation and altmetrics ratings have been used in an additional analysis to investigate the scientific and social effect of the journal articles. Following a search of the Scopus database for indexed papers, a total of 13,725 publications published between the years 2011 and 2016 were located, retrieved, and analysed. The findings of the analysis revealed that there was a continuous increase in the number of publications per year over the period, with an approximately 7-fold rise in the number of publications, with the highest 5000 documents being published in 2016. This was the highest number of documents published in any one year during the period. Collaborative work was responsible for around 89% of all publications, while Asia-Pacific was responsible for roughly 53% of the world's scientific output of Internet of Things literature. The findings also demonstrated that the presence of Internet of Things (IoT) research on the social web is still rather insignificant, with just 6.8% of all papers displaying some kind of altmetrics activity (Erfanmanesh & Abrizah, 2018).

There has been a geometric increase in the number of academic papers that are related to the emerging topic of Internet of Things (IoT), which has contributed to the quick evolution of this discipline. A research emphasis on reviews the literature of Internet of Things (IoT) in the past 16 years using rigorous bibliometric and network analysis tools, while offering at the same time future directions for the Internet of Things research community as well as implications for managers and decision makers. The bibliometric and network analysis methods have been used by the researchers to the papers that were published on the Internet of Things between the years 2000 and 2015. This research looks at the most prominent works in terms of citations and PageRank, as well as both existing and growing research clusters. It also looks at the top contributing authors, major research issues linked to the area, and the most influential publications (Mishra et al., 2016).

7. Data Analysis and Interpretation

The current investigation employs bibliometric and scientometric methodologies to examine studies pertaining to the Internet of Things (IoT). The bibliographic records used in this study were sourced from SCOPUS, a comprehensive collection of peer-reviewed scientific literature published by Elsevier. Following the completion of the data cleaning procedure for the downloaded dataset, the research identified a cumulative count of 18,694 articles produced by a total of 30,778 individuals exclusively from India. These publications were sourced from a total of 2,884 distinct sources.

Table 1 provides a comprehensive summary of publications on the Internet of Things (IoT) from 2008 to 2021, offering key metrics and trends:

- The timespan of publication spans from 2008 to 2021, capturing the evolution of IoT research over the years.
- A total of 2,884 sources, including journals, books, notes, and editorials, contributed

to the extensive body of IoT literature.

- The dataset comprises 18,694 documents, reflecting the substantial volume of scholarly output in the field.
- An impressive annual growth rate of publications, calculated at 93.78%, signifies the dynamic expansion of IoT research.
- The average age of documents is 3.73 years, indicating the relatively recent nature of the majority of publications.
- Each document, on average, receives 10.08 citations, underlining the impact and influence of IoT research in the academic community.
- The cumulative number of references across all documents amounts to 408,324, reflecting the extensive knowledge base and citation network within IoT literature.
- A total of 32,420 author's keywords enriches the dataset, providing insights into the diverse themes and topics covered.
- Involving 30,778 authors, the collaborative nature of IoT research is evident, with an average of 3.31 co-authors per document.
- Of the total documents, 755 are single-authored, showcasing individual contributions within the collaborative landscape.
- International co-authorships contribute to 14.34% of the dataset, emphasizing the global collaborative efforts in IoT research.

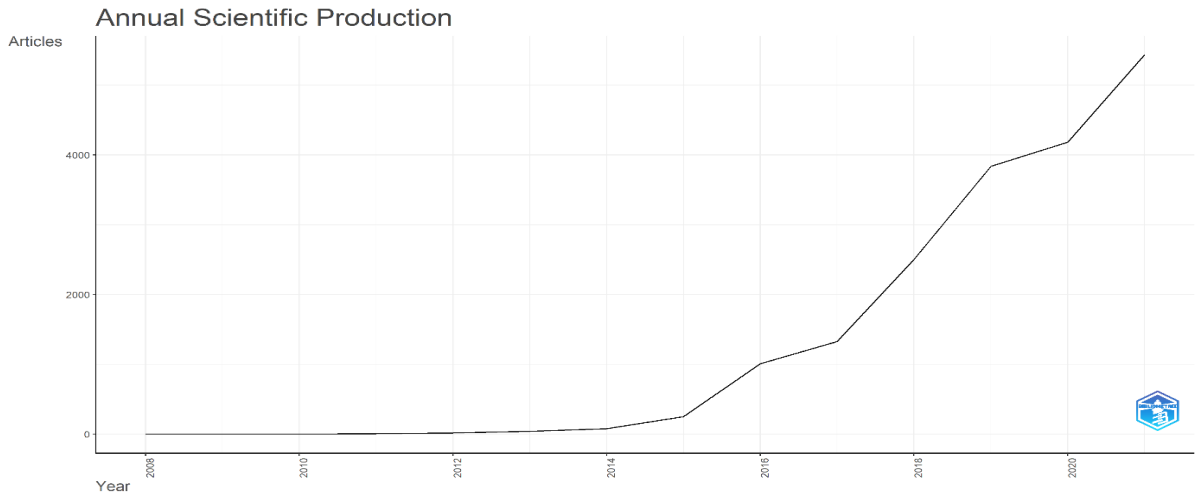
Table - 1: Overall Summary of Publications on IoT

Description	**Data**
Timespan of Publication	2008 to 2021
Total Number of Sources (Journals, Books, Notes, Editorials etc.)	2884
Total Number of Documents	18,694
Annual Growth Rate of Publications (%)	93.78
Average Age of Documents	3.73
Average Citations per Documents	10.08
Total Number of References	408324
Total Number of Author’s Keywords	32420
Total Number of Authors	30778
Single-authored docs	755
Co-Authors per Doc	3.31
International co-authorships %	14.34

7.1 Annual publications growth

Figure 1 presents the yearly academic publication output pertaining to research on the Internet of Things (IoT). The analysis revealed that there was little rise in publications between the years 2008 and 2011. Following the year 2012, there was a notable increase in research growth, with double-digit growth rates seen until 2014. The subject matter has been consistently attracting the interest of experts across several disciplines. The research productivity shown exponential growth over the last six years, with an average annual publication count of about 3048 papers. In the observed study period, it is evident that the year 2021 exhibits the greatest level of research output, as shown by the production of 5434 papers. Furthermore, it is noteworthy that the trends of publications continue to demonstrate a trend towards increase as shown in the figure 1 as curve shows exceptional growth from 2015 onwards.

Figure 1: Annual Scientific Production on IoT



7.2 Average citation

The result reveals in the table 2 about average citation per year shows a decline in the mean number of citations per article throughout the period from 2008 to 2021, with a fall from an average of 6 citations per article in 2008 to 5.02 citations per piece in 2021. The year 2009 had the lowest average number of citations per year, with a value of 1. Conversely, the greatest average number of citations per year was 181.56. In terms of the average number of citations received each year, the findings suggest that 2011 had the highest average percentage, with a value of 13.97 citations.

Table - 2: Average Citations per Year

Year	Mean TC per Art	N	Mean TC per Year	Citable Years
2008	6	1	0.38	16
2009	1	1	0.07	15
2011	181.56	9	13.97	13
2012	34.78	18	2.90	12
2013	13.26	43	1.21	11
2014	29.81	78	2.98	10
2015	24.82	252	2.76	9
2016	13.75	1,009	1.72	8
2017	17.55	1,328	2.51	7
2018	14.9	2,502	2.48	6
2019	9.55	3,837	1.91	5
2020	9.22	4,182	2.31	4
2021	5.02	5,434	1.67	3

7.3 Most prominent sources

Table 3 presents a comprehensive overview of the primary 10 sources of publishing within the domain of the Internet of Things. Advances in Intelligent Systems and Computing is the primary source that exhibits the highest volume of published papers, namely 682 publications pertaining to the field of Internet of Things (IoT). Additionally, Lecture Notes in Electrical Engineering has published a total of 393 articles on this subject matter. The Proceedings of

the 2015 International Conference on Green Computing and Internet of Things, ICGCIOT 2015, emerges as the third most prolific resource, with a total of 304 publications dedicated to the field of Internet of Things (IoT). Over the last 13 years, many academic journals such as LNNS, IJITEE, JP, LNDECT, IJRTE, CCIS, and I-SMAC have published a substantial number of papers, often ranging from 200 to 300.

Table - 3: Most Prominent Sources in the field of IoT

Sources	Articles	Cite Score 2019	Publisher
ADVANCES IN INTELLIGENT SYSTEMS AND COMPUTING	682	0.9	Springer Nature
LECTURE NOTES IN ELECTRICAL ENGINEERING	393	0.6	Springer Nature
PROCEEDINGS OF THE ICGCIOT 2015	304	NA	
LECTURE NOTES IN NETWORKS AND SYSTEMS	297	0.7	Springer Nature
INTERNATIONAL JOURNAL OF INNOVATIVE TECHNOLOGY AND EXPLORING ENGINEERING	267	0.6	Blue Eyes Intelligence
JOURNAL OF PHYSICS: CONFERENCE SERIES	253	0.8	IOP
LECTURE NOTES ON DATA ENGINEERING AND COMMUNICATIONS TECHNOLOGIES	241	0.7	Springer Nature
INTERNATIONAL JOURNAL OF RECENT TECHNOLOGY AND ENGINEERING	234	NA	Blue Eyes Intelligence
COMMUNICATIONS IN COMPUTER AND INFORMATION SCIENCE	221	1.0	Springer Nature
PROCEEDINGS OF THE 4TH ISMAC 2020	197	NA	

7.4 Core sources by Bradford's Law

According to the findings shown in table 4, the primary sources discovered by the application of Bradford's Law are disclosed. Bradford's Law, sometimes known as the Bradford Distribution, is a principle in library and information science that describes the distribution of scientific According to Bradford's Law, it is possible to identify the first 10 articles in the most significant sources. The sources have been categorised into several zones. The first 10 articles retrieved from the search results are regarded as the primary zone, encompassing the primary source of information where a significant portion of the relevant articles are located. The aforementioned table presents the findings of the study, showcasing the ten primary sources that have contributed to the body of literature on the subject of the Internet of Things (IoT). The field of Intelligent Systems and Computing has seen significant advancements, resulting in a substantial volume of scholarly publications. Among the several academic outlets, Advances in Intelligent Systems and Computing stands out as the most prolific, generating the maximum number of documents. Following closely behind are Lecture Notes in Electrical Engineering and ICGCIOT, which have produced 393 and 304 documents, respectively.

Table - 4: Core Sources by Bradford's Law

Source	Rank	Freq	cumFreq	Zone
ADVANCES IN INTELLIGENT SYSTEMS AND COMPUTING	1	682	682	Zone 1
LECTURE NOTES IN ELECTRICAL ENGINEERING	2	393	1075	Zone 1
PROCEEDINGS OF THE ICGCIOT 2015	3	304	1379	Zone 1
LECTURE NOTES IN NETWORKS AND SYSTEMS	4	297	1676	Zone 1

INTERNATIONAL JOURNAL OF INNOVATIVE TECHNOLOGY AND EXPLORING ENGINEERING	5	267	1943	Zone 1
JOURNAL OF PHYSICS: CONFERENCE SERIES	6	253	2196	Zone 1
LECTURE NOTES ON DATA ENGINEERING AND COMMUNICATIONS TECHNOLOGIES	7	241	2437	Zone 1
INTERNATIONAL JOURNAL OF RECENT TECHNOLOGY AND ENGINEERING	8	234	2671	Zone 1
COMMUNICATIONS IN COMPUTER AND INFORMATION SCIENCE	9	221	2892	Zone 1
PROCEEDINGS OF THE 4TH ISMAC 2020	10	197	3089	Zone 1

7.5 Most prominent authors

From 2008 to 2021, a comprehensive analysis reveals that a significant number of 30,778 writers have made valuable contributions by producing 18,694 publications pertaining to the field of Internet of Things (IoT). Table 5 is a compilation of the ten writers who are deemed to be the most relevant in the context being discussed. According to the data, Kumar, A emerged as the most prolific contributor, having authored a total of 291 papers. Kumar, S closely followed with 273 documents, while Kumar, N contributed 234 documents. The seven writers that remain at the top have together authored over 125 publications pertaining to the field of Internet of Things (IoT). In order to ascertain the writers who have made significant contributions to the area of Internet of Things (IoT) and their potential influence on future research. Additionally, table 5 gives the top 10 authors and the corresponding number of documents they have published.

Table - 5: Most Prominent Authors

S.N.	Authors	Number of Documents
1	Kumar, A	291
2	Kumar, S	273
3	Kumar, N	234
4	Sharma, S	172
5	Kumar, R	169
6	Sharma, A	164
7	Kumar, P	135
8	Singh, S	133
9	Singh, R	126
10	Singh, A	125

7.6 Most prominent sources' local impact

Table 6 presents an overview of the local influence of the most prominent sources, as measured by their H, G, and M-index. Local effect may be characterised as the influence exerted by certain elements, such as journals, which is determined by their respective h-index, g-index, and m-index values. The h-index is a metric that allocates equal weight to each source depending on its productivity, whereas the g-index suggests that articles with a higher number of citations are given more weight. Regarding the m-index, it is a metric that assigns weight to elements (sources) depending on their time duration. This implies that older sources are given more weight than younger ones.

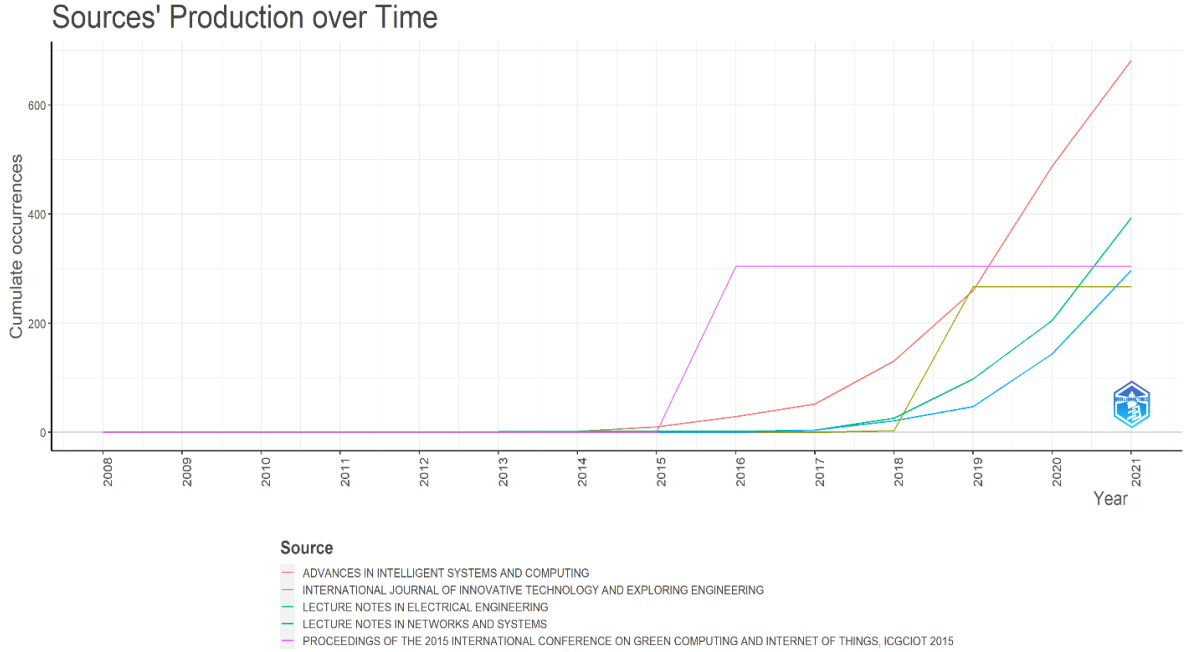
Table - 6: Most Prominent Sources' Local Impact

Element	h-index	g-index	m-index	TC	NP	PY start
IEEE INTERNET OF THINGS JOURNAL	46	81	5.111	7538	164	2015
IEEE ACCESS	44	95	4.889	9806	173	2015
FUTURE GENERATION COMPUTER SYSTEMS	37	73	4.625	6321	73	2016
COMPUTER COMMUNICATIONS	30	48	5	2463	62	2018
PROCEDIA COMPUTER SCIENCE	29	48	3.222	2897	127	2015
IEEE TRANSACTIONS ON INDUSTRIAL INFORMATICS	25	41	4.167	2224	41	2018
WIRELESS PERSONAL COMMUNICATIONS	24	53	1.846	3461	163	2011
JOURNAL OF AMBIENT INTELLIGENCE AND HUMANIZED COMPUTING	23	40	3.286	1909	94	2017
JOURNAL OF NETWORK AND COMPUTER APPLICATIONS	23	32	2.875	2526	32	2016
PROCEEDINGS OF THE I-SMAC 2017	21	40	3	2177	165	2017

7.7 Sources' production over the time

Figure 2 displays the quantity of academic papers that have been published in reputable sources. The most substantial growth subsequent to 2014 was seen in the publications titled "Advances in Intelligent Systems and Computing" and "Proceedings of the 2015 International Conference on Green Computing and Internet of Things, ICGCIOT 2015". The other sources have likewise seen a significant rise in recent years. The three notable academic publications in the field of electrical engineering and technology are "Lecture Notes in Electrical Engineering," "Lecture Notes in Networks and Systems," and the "International Journal of Innovative Technology and Exploring Engineering."

Figure 2: Sources' Production over Time



7.8 Most relevant keywords

The study of keyword occurrences in table 7 provides a complete examination of frequent topics in research related to the Internet of Things (IoT). The provided data offers significant insights for scholars seeking to assess the trends and interests within the subject. Keywords that have a high citation count, such as "IoT" and "Internet of Things," indicate the central area of academic investigation. The presence of keywords such as "security" and "cloud computing" highlights significant areas of interest and the integration of technology, underscoring the dynamic character of Internet of Things (IoT) applications. Furthermore, the emergence of words such as "blockchain" and "machine learning" underscores the convergence of the Internet of Things (IoT) with cutting-edge technology, indicating a growing focus on sophisticated solutions. The inclusion of particular platforms such as "Raspberry Pi" highlights the practical considerations associated with implementation. The significance of this study lies in its importance for guiding future research endeavours. It underscores the need of investigating the interconnections between well-established concepts such as "sensors" and emerging technologies like "fog computing" in order to foster innovation and enhance our comprehension of the dynamics within the realm of the Internet of Things (IoT). The utilisation of these keyword patterns by researchers may facilitate the discovery of intricate connections, promoting interdisciplinary partnerships and propelling the advancement of the area.

Table - 7: Most Relevant Keywords

Keywords	Occurrences	Keyword Interpretations
IoT	4265	Unsurprisingly, these terms dominate the list, signifying the central theme of the research. The high occurrence emphasizes the persistent interest and focus of researchers in this area. "Internet of Things (IoT)" The appearance of this variation alongside the standalone term suggests a significant focus on clarifying the concept, often seen in academic papers where the terminology is defined for readers.
Internet of Things	4249	
Internet of Things (IoT)	1926	
Security	1072	Highlighting the importance of security in IoT, this keyword stands out with over a thousand occurrences. This reflects the growing concern about securing IoT devices and networks against cyber threats, a critical area of study given the proliferation of connected devices.
Cloud Computing	948	These keywords underline the integration of IoT with advanced technologies. The coexistence of cloud computing and machine learning indicates a trend toward leveraging cloud-based solutions and intelligent algorithms in IoT applications.
Machine Learning	865	
Sensors	785	As the foundational elements of IoT, sensors play a fundamental role. Their substantial presence in research keywords emphasizes the ongoing developments and innovations in sensor technologies, crucial for IoT advancements.

Blockchain	556	The appearance of blockchain signifies an interest in decentralized, secure transaction systems within the IoT landscape, addressing issues of data integrity and trust, especially in applications like supply chain management and smart contracts.
Raspberry PI	494	Its presence indicates a practical focus, with researchers exploring cost-effective solutions for IoT implementations, often involving Raspberry Pi microcomputers.
Fog Computing	477	This keyword reveals a specific interest in fog computing, an architecture that extends cloud computing to the edge of the network. Its presence suggests a focus on real-time data processing and low-latency applications in IoT scenarios.

8. Conclusion

The Internet of Things (IoT) has emerged as a transformative domain, driving technological advancements and societal progress. This scientometric study, which analyzes Indian research output on IoT, offers valuable insights into the growth, trends, and sectoral contributions within this field. The analysis, based on the SCOPUS database, reveals a substantial volume of scholarly output, with 18,694 documents contributed by 2,884 sources. The impressive annual growth rate of 93.78% highlights the dynamic expansion of IoT research, while the average age of documents at 3.73 years underscores the relatively recent nature of the publications. Overall, this scientometric study provides a comprehensive understanding of the Indian research landscape in the IoT domain, serving as a valuable resource for researchers, professionals, and policymakers in navigating the growth and contributions within this rapidly evolving field.

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