International Journal of Innovative Research & Growth
E-ISSN: 2455-1848
homepage: http://www.ijirg.com/ijirg/
Volume: 14 Issue: 4, October 2025

Sustainable IT Practices for Employee Workplace Happiness: A Bibliometric Review

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KEYWORDS

Bibliometric Review, Sustainable IT Practices, Sustainable Computing, Employee Satisfaction

ARTICLE DETAILS

Received 31 May 2025; revised 07 August 2025; accepted 30 August 2025

DOI: 10.26671/IJIRG.2025.4.14.184

CITATION
Pandey, L., Sharma, R. (2025). Sustainable IT Practices for Employee Workplace Happiness: A Bibliometric Review. *Int J Innovat Res Growth*, 14(4), 144001-144016. DOI

Abstract

This study presents a comprehensive bibliometric review of Sustainable IT Practices (SIP) in the context of employee workplace happiness, focusing on literature published between 2015 and 2024. Utilizing advanced bibliometric tools such as Bibliophagy and VOS viewer, the analysis captures key scientific trends, mapping the intellectual structure and thematic evolution of the field. The research evaluates metrics including annual scientific output, citation analysis, Lotka's Law for author productivity, H-index for local influence, and the impact of core journals, authors, and institutions. Furthermore, it explores collaborative networks, country-wise contributions, and communication trends, offering insights into global research dynamics. Thematic mapping reveals critical clusters centered on cyber resilience, green IT infrastructure, digital well-being, and the role of sustainable digital environments in enhancing employee happiness and organizational transparency.

The study underscores the increasing relevance of SIP in fostering secure, efficient, and psychologically supportive digital workplaces. Despite its strengths, the study is constrained by its exclusive reliance on the Dimensions database and English-language literature, potentially omitting key multilingual and non-indexed contributions. Additionally, the analysis excludes other document types such as conference papers and books, which may contain valuable insights.

Future research is encouraged to adopt a multi-database approach, integrating Scopus, Web of Science, and Google Scholar, alongside advanced visual analytics for broader and deeper mapping. Expanding linguistic and regional coverage will further enhance inclusivity and depth. This bibliometric exploration provides a foundational framework for scholars and practitioners seeking to advance sustainable digital strategies aligned with human-centric values in the evolving landscape of IT-enabled work environments.

1. Introduction

Green AI, Sustainable AI, Zero Carbon AI, and Net Zero AI are a few terminologies used to explain efforts and practices within the broader domain of Artificial
Intelligence (AI) that intend to shrink the environmental brunt of AI technologies.[1] A few essentials of sustainable IT to reduce the negative impact of IT operations on the environment, including energy consumption, greenhouse gas emissions and electronic waste. Develop and implement IT services and systems that support sustainability, use renewable energy, and save energy. Implement green IT strategies to reduce waste and increase resource efficiencies, such as virtualisation, cloud computing and data center optimization. Implementing sustainable IT practices contributes significantly to meeting the comprehensive objectives of sustainability. Adopting sustainable IT practices helps build a sustainable future and brings about cost savings, an enhanced brand reputation, and higher employee engagement for organizations. Cloud computing enables highly configurable and reliable computing resources on a rentable per-use scheme, facilitating quick and cost-effective provisioning of large-scale applications.[2] Placing sustainability at the core of computing practices, the industry is poised to pioneer positive changes and create a cleaner and more sustainable world for future generations [3]
Source: https://link.springer.com/article/10.1007/s11625-018-0627-5
The definition of sustainable IT practices varies among authors, based on their area of emphasis. Here are a few examples: Murugesan (2008) defines sustainable IT practices as the "design, manufacture, use, and disposal of computers, servers, and associated subsystems— such as monitors, printers, storage devices, and networking and communications systems— efficiently and effectively with minimal or no impact on the environment."Harmon and Auseklis (2009) describe sustainable IT as "a process of aligning business operations and IT infrastructure in ways that reduce the ecological footprint of the organization while ensuring economic viability and social responsibility. “Molla (2008) introduces the concept of "Green IT," which encompasses the "study and practice of designing, manufacturing, using, and disposing of computers, servers, and associated subsystems such as monitors, printers, storage devices, and networking and communications systems efficiently and effectively with minimal or no impact on the environment. “Key Features of Lean IT Sustainable IT typically addresses the following key features: Energy efficiency: Reduces energy consumption by optimizing hardware and software, virtualization, and on energy-efficient data centers. Conservation: Reduce waste, encourage electronics recycling, and use recycled materials. Environmental: Reduce greenhouse gas emissions, water consumption, and other environmental impacts associated with IT operations. Social Responsibility: Ensure that IT policies and practices promote equity, diversity and inclusion, and ensure that technology is used to address social issues. Ethical Considerations: Adherence to ethical principles in the development, use, and handling of IT products and services. Examples of companies that implement sustainable IT practices that lead to employee satisfaction. Google: Leading the way in energy-efficient data centers using innovative cooling and energy management systems A Commitment to carbon neutrality and capital investment a it will be invested in renewable energy. A Develops tools and platforms to help other organizations reduce their carbon footprint. Apple: focuses on reducing its environmental footprint through recycling programs and the use of recycled materials in its products. Use energy-efficient manufacturing processes and reduce packaging waste. An Aim for carbon neutrality in the supply chain. New industry leader also takes advantage of Sustainable It practices for employee satisfaction**.** Patagonia: Known for its commitment to environmental sustainability, Patagonia also focuses on sustainable IT practices. It uses recycled materials in its packaging and promotes responsible e-waste recycling. A Supports organizations addressing environmental issues.

1.1 Employee Satisfaction

Employee satisfaction measures employees' happiness and contentment in their positions. It encompasses their overall feelings and contentment with their position and program. More precisely, it gauges employees' satisfaction levels and perceptions of value from the company.

1.2 Employee Satisfaction is Mainly Influenced by Factors Such As

Job roles and responsibilities: Does the job align with the employee's skills and interests? Is the work environment comfortable and suitable for conducting business activities? Are your workers content with their compensation and benefits? Is it possible for employees to effectively juggle their personal and professional responsibilities? Company Culture: Is there an emphasis on creating and maintaining a positive workplace atmosphere by the company? Is there a sense of respect and value from managers towards employees in leadership and management? Opportunities for personal and professional growth: Are there chances for career progression and enrichment through training? Are employees recognized and rewarded for their efforts? The main drawback of the database is that the bibliometric analysis only focused on the Dimension Core collection. This statement must be rewritten while maintaining the same word count in the input language. This research relies solely on the Dimensions Database as its source. English medium contains only papers. The findings from this research may not be crucial. Future studies can further investigate the elements that

contribute to employee engagement. Discovering, Investigating Implementing successful sustainable computing practices to increase employees' dedication and happiness can lead to wider approval and implementation.

2. Literature Review

The past few years have marked an exciting era of breakthroughs where sustainability converges with next-generation computing technologies, redefining global standards for efficiency, security, and environmental responsibility. Shi (2021), laid the foundation for this transformation by introducing a hybrid cloud-based framework that integrates strategic management accounting with a groundbreaking Water Potential (WP) metric. This innovation not only optimizes enterprise asset structures but also dramatically reduces the water footprint of data centers, ensuring compliance with data sovereignty while pushing the boundaries of green computing. Building upon this sustainability momentum, Saba (2022), advanced the Internet of Things (IoT) landscape with the SDS-GIoT model a dynamic programming-based system designed to minimize energy consumption, enhance routing efficiency, and fortify network security. By intelligently selecting the most efficient nodes and communication pathways, this framework sets a new benchmark for eco-friendly, high-performance IoT networks [07]. In parallel, Jamshidi (2023), revolutionized hardware design with an ultra-compact GSM triplexer tailored for 5G-enabled IoT applications in sustainable smart grids and the Metaverse. Boasting record-low insertion losses (as low as 0.09 dB) and an exceptionally compact footprint of 0.007 λg^2, this device unlocks unparalleled efficiency for energy-aware next-generation networks. Complementing these hardware innovations, Lannelongue (2023), spotlighted the environmental impact of computational sciences by introducing the GREENER principles a powerful roadmap promoting transparency, accountability, and sustainable coding practices aimed at steering research toward a carbon-neutral digital future.

The agricultural sector, facing mounting climate uncertainties, witnessed a paradigm shift with Cadenas (2023), who developed a hybrid decision-support framework combining machine learning, soft computing, IoT, and cloud technologies. Successfully applied to frost forecasting, this approach not only enhances predictive accuracy but also reinforces economic and environmental resilience in crop management [03]. Meanwhile, Roostaei (2023), drove innovation in environmental monitoring with IoT-based Edge Computing (IoTEC), delivering 13% latency reduction and 50% lower data transmission loads while enabling on-site AI analytics. This leap in efficiency translated into cost savings of up to 82%, marking a pivotal moment for sustainable monitoring systems [04].

Further enhancing green computing, Saxena (2023), introduced a multi-layer Feedforward Neural Network (MFNN) integrated with Dual-Phase Black Hole Optimization (DPBHO) for real-time load forecasting and virtual machine placement. This synergy produced a secure, energy-efficient load management system that decisively outperformed traditional approaches [08]. Finally, Bibri (2023), provided a sweeping perspective on sustainable smart cities, synthesizing insights from AI, IoT, and Big Data to create an integrated blueprint for climate-resilient, data-driven urban ecosystems. This comprehensive framework empowers policymakers and researchers to align technological growth with environmental imperatives. Collectively, these groundbreaking contributions chart a bold trajectory toward a sustainability-driven digital revolution, where computational science, AI, IoT, and edge computing converge to deliver intelligent, resource-conscious, and future-ready solutions for the planet.

3. Research Objectives:

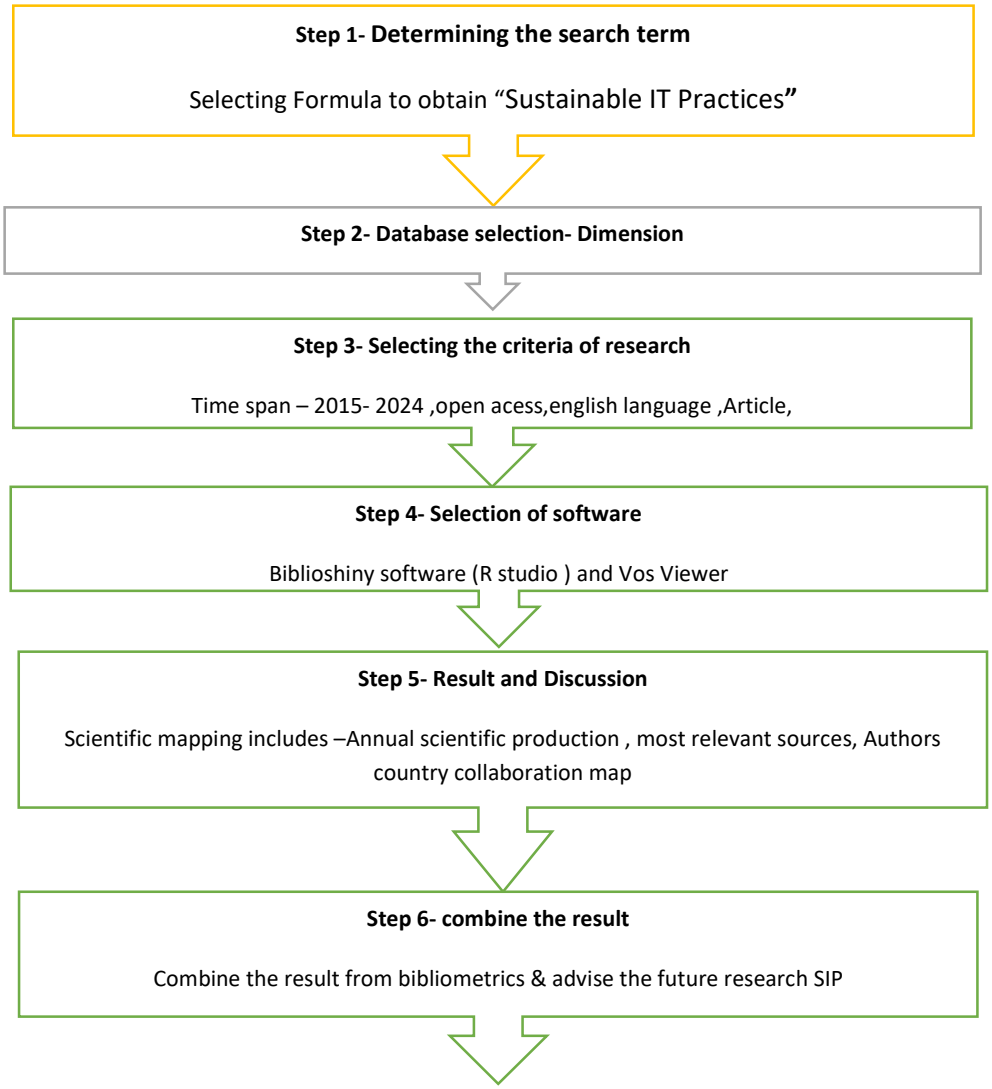
The research objectives are given below:

- To determine the number of articles published on the subject of Sustainable IT Practices within a certain time frame to analyze the annual trend in publications about this issue.
- To determine which author(s) and source(s) have significantly advanced the field of Sustainable IT Practices research by evaluating the significance and applicability of their published work.
- To ascertain the field of study that has produced the greatest literature on Sustainable IT Practices as well as the most common document format used in these publications.
- To determine the most notable publishing affiliation(s) for Sustainable IT Practices papers by looking at the organizations or institutions linked to the greatest number of publications in this area.
- To identify the distribution and concentration of publications across various nations by determining which countries are leading the way in publishing papers on Sustainable IT Practices
- To examine the citation patterns between pertinent research papers in this field and analyze the citation networks linked to Sustainable IT Practices.

4. Research Methodology

The methodologies section includes the formulation of research questions and data extraction. Creation of research methodology, as well as establishing sets. The main goal of this study is to conduct a bibliometric

analysis of articles on employee engagement that are included in the Dimension database. A set of research inquiries has been formulated. Created to provide answers to achieve this objective. These inquiries can be found in Table 1, along with a description of the significance of each one.



Step 1: Identifying the Search Term, where terms such as Sustainable IT Practices are chosen for accurate data collection.
Step 2: Database Selection consists of utilizing Dimensions, a well-regarded research database.
In Step 3: Choosing the Research Criteria, the research concentrates on English-language open-access journal articles from 2015-2024 to guarantee relevance and quality.
Step 4: Choice of Software encompasses Biblioshiny (R Studio) and VOS Viewer, which assist in both statistical and network analysis.
Step 5: Results and Discussion include the scientific mapping of yearly publications, primary sources, and author collaborations, offering insights into research patterns. Finally,
Step 6: Merging the Results combines the findings to propose future research directions in Sustainable IT Practices and employee satisfaction. This methodology guarantees a systematic, data-driven evaluation of Sustainable IT Practices literature.

Table 1: Research Questions with Their Significance

S. No.	Research Questions	Importance
1	What is the yearly trend in Sustainable IT Practices -related publications?	Examining the number of papers published on Sustainable IT Practices each year might shed light on potential future developments in this area.
2	Which document and source have significantly advanced the field of Sustainable IT Practices research?	Identifying key studies, methodologies, and resources that have made the most significant contributions to this field can help researchers conduct high-quality research in Sustainable IT Practices.
3	Which field of study and which type of document has produced the most research on Sustainable IT Practices?	Analyzing research efforts across various domains and document formats by identifying the areas and document types that have published the most research on Sustainable IT Practices can help researchers choose future study directions.
4	Which publication association is the most well-known for articles on Sustainable IT Practices?	Identifying the top publishing affiliations for papers Sustainable IT Practices can help researchers choose the right journals, conferences, and academic institutions to publish their work. This could also influence how frequently their works are cited in the future.
5	Which countries are leading the way in the publication of studies on Sustainable IT Practices?	Analyzing the nations that are prioritizing this field of study can provide insights into the geographical focus of Sustainable IT Practices research. This information may present opportunities for future publications and scientific contributions from those countries
6	Which citation networks are associated with Sustainable IT Practices?	Examining the citation networks related to Sustainable IT Practices can provide future researchers with an effective way to search for and find pertinent material.

5. Result and Discussion

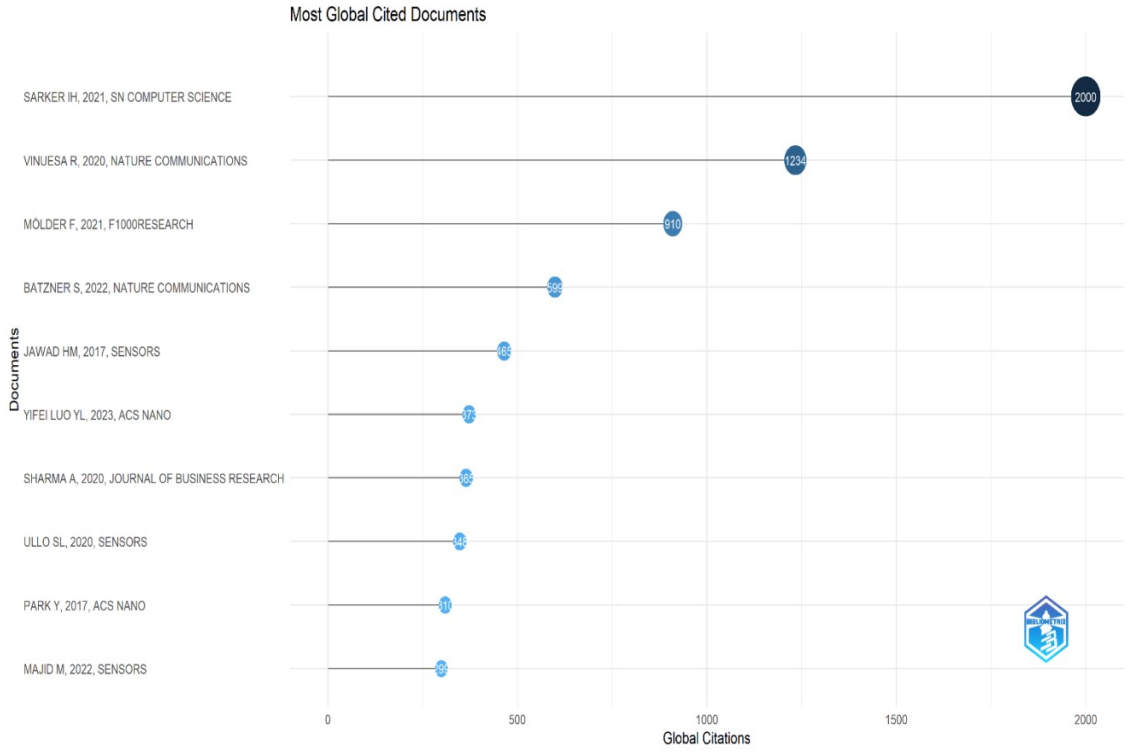


Fig.1 Shows the top cited papers journal documents globally.

The graph named "Top Cited Papers Worldwide" offers a detailed visual depiction of the most cited scientific papers in a specific field. We can see the number of worldwide citations each document has obtained on the horizontal axis (ranging from 0 to 2000). The title, author, publication year, and journal are displayed on the y-axis. Every document in the graph is symbolized by a circle, with its location on the x-axis matching the number of citations. The circles in the graph may represent citation counts relative to each other, however all circles in this specific graph seem to be of equal size. The most cited paper in SN Computer Science in 2021 was authored by Sarker IH, with a total of 2000 citations, distinguishing it as a top paper globally in terms of recognition and impact. Next in line was "Vinuesa R, 2020, Nature Communications" with 1234 references, ranking as the second most cited source.

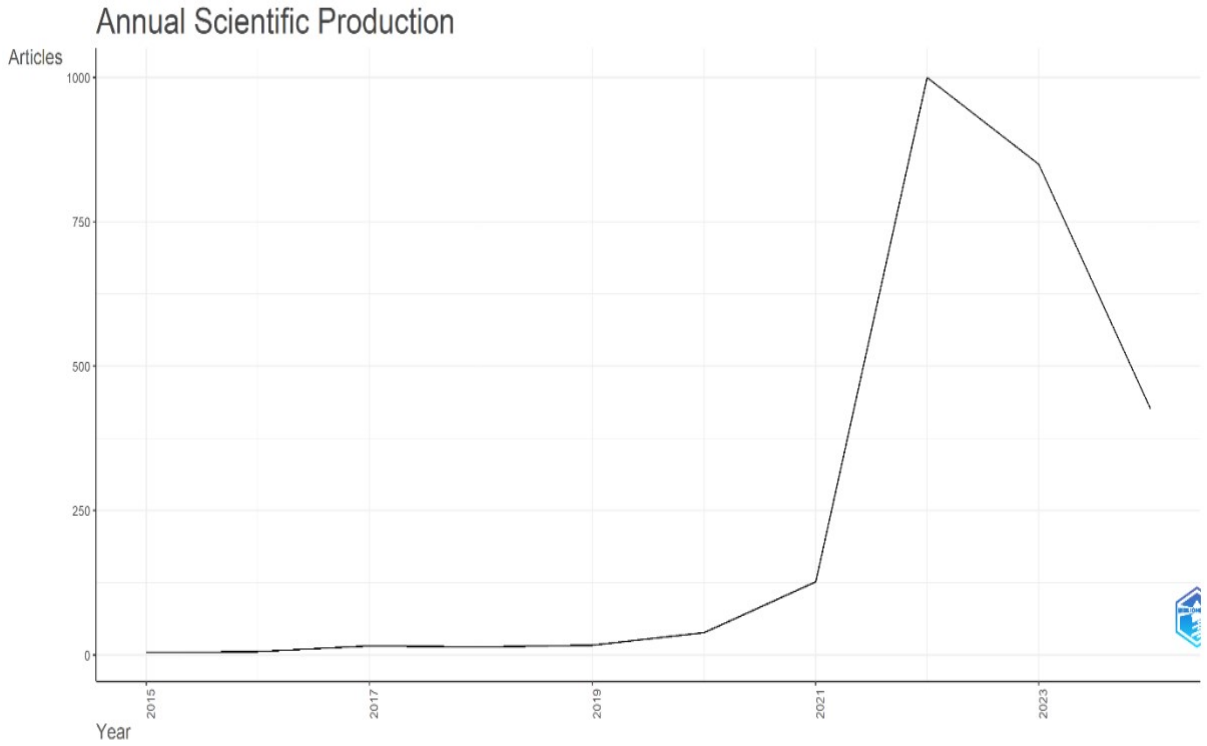


Fig.2 Shows total journal documents annual scientific production.

Table 2: Shows numbers of years and total numbers of articles annual scientific production.

Year	Articles
2015	4
2016	6
2017	16
2018	14
2019	17
2020	39
2021	127
2022	1000
2023	850
2024	427

The annual scientific output is displayed in both the graph and table, illustrating the quantity of papers published per year between 2015 and 2024. Between 2015 and 2019, there was a consistent, modest increase in output, remaining stable overall. A notable increase happened in 2021, reaching its highest point with 1,000 articles in 2022. Nevertheless, there was a significant decrease in the subsequent years, with 850 articles in 2023 and 427 articles in 2024.
This trend indicates a quick growth in research activity in recent years, followed by a decrease.

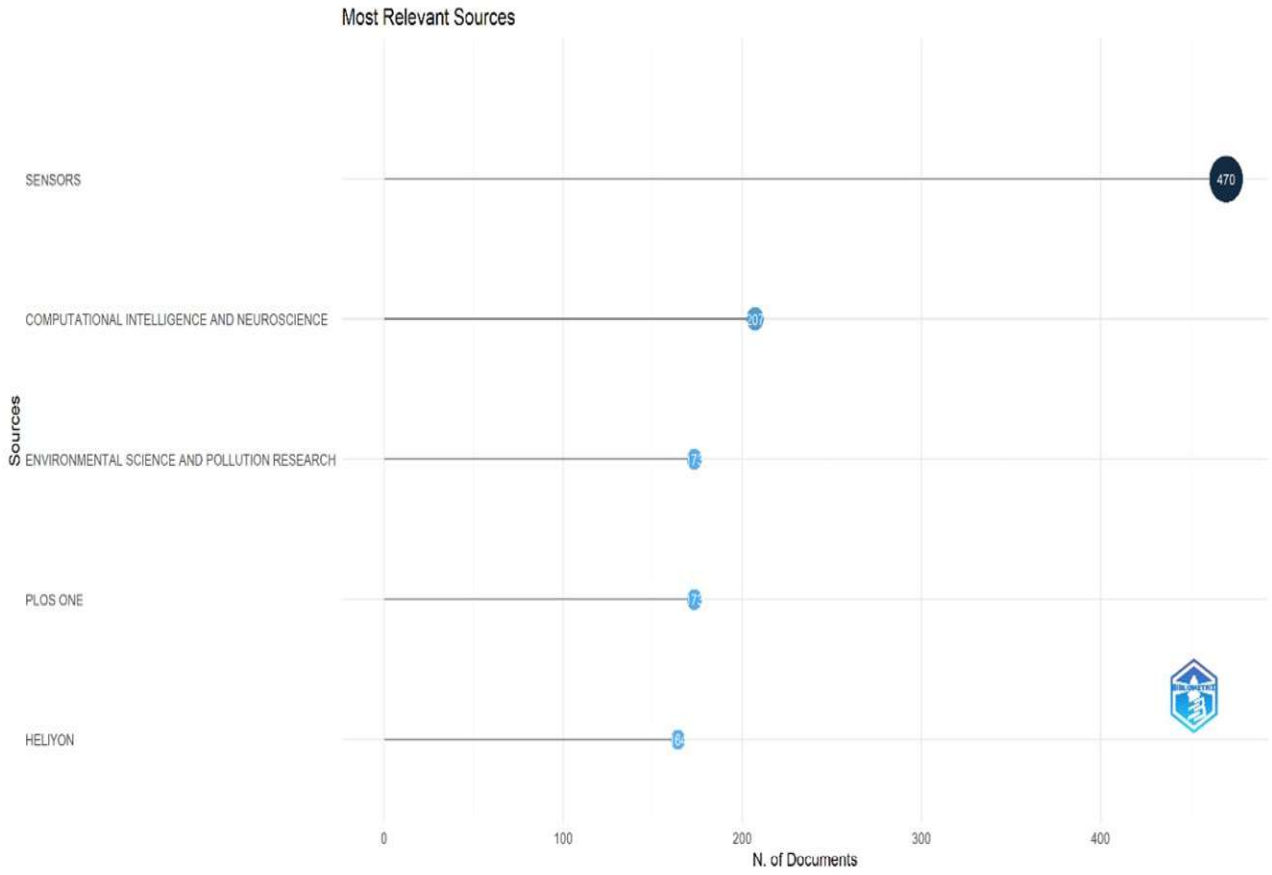


Fig.3 Shows the total number of most relevant sources of journal documents.

Sensors are considered the most important source with 470 documents. Computational Intelligence and Neuroscience is continued by 200 papers. There are 150 documents in Environmental Science and Pollution Research. PLOS ONE has provided 100 documents, while Heliyon has contributed 50 documents. In general, this chart summarizes the top 5 most important sources in terms of document contributions in a particular field.

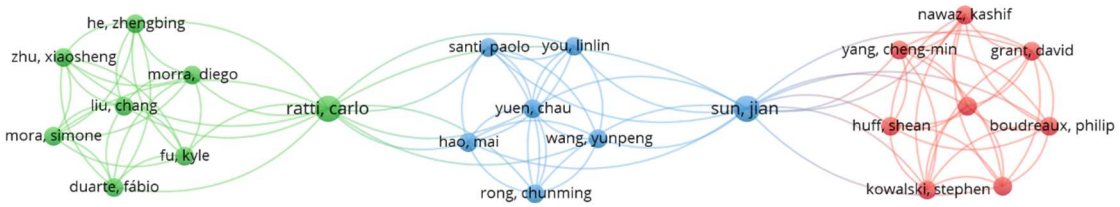


Fig.4 Shows Co-authorship Countries, (sources – Vos viewer software).

The VosViewer chart based on co-author data obtained from the CSV file (2015-2024) reveals three different groups of researchers working in sustainable data processing. These clusters act as central figures, with major contributors such as Ratti, Carlo and Sun, Gian, who burn down many research communities. Strong internal links in each cluster centered on specific sub-subjects, The presence of high cited letters and recurrent authors Collaboration highlights impressive contributors and developed research networks. This result supports the conclusion that permanent data processing research is both cooperative and fragmented, with important writers to run knowledge integration into the domain -giving valuable insights for further educational networks and literature reviews in the research thesis.

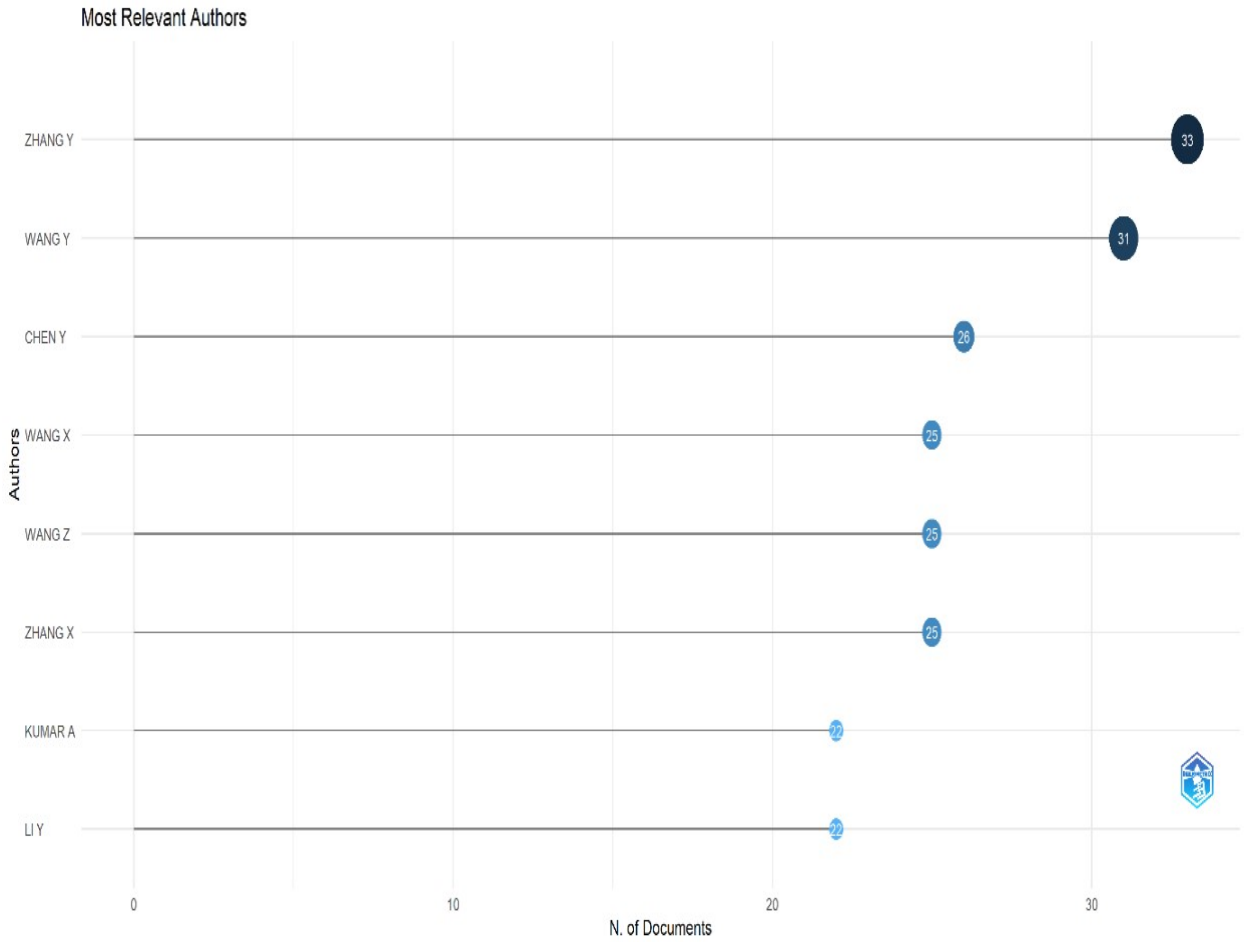


Fig.5. Shows most relevant author and their number of journal documents produced.

The order lists the most important authors according to the number of papers presented. Zhang Y ranks first with 33 papers, and Wang Y ranks second with 32. Chen Y, Wang X, and Wang Z each presented 25 papers. Zhang X and Kumar A have 21 and 20 papers, respectively, while Uy has contributed 10 papers less. The chart shows a visual representation of clerical work in terms of the number of papers produced.

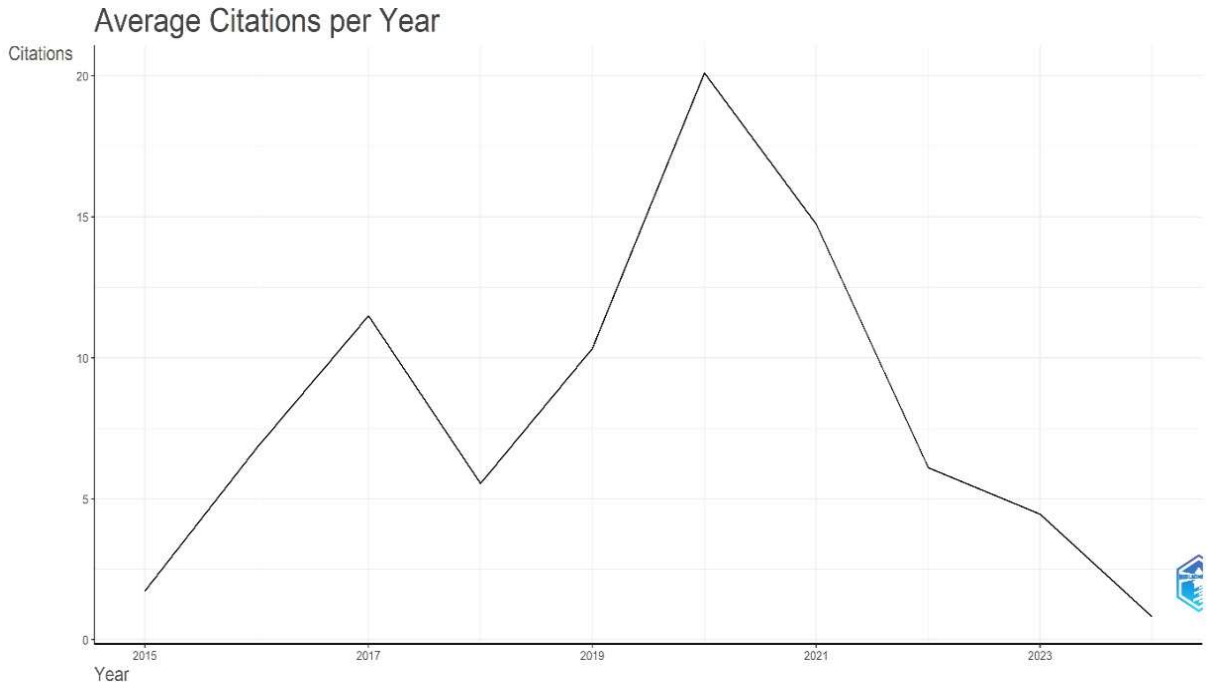


Fig.6 Shows the Average Citation per year of the journal.

Table 3. shows the Mean TC per Art, N, Mean TC per Year, and yearly citations.

Year	MeanTCperArt	N	MeanTCperYear	CitableYears
2015	17.25	4	1.73	10
2016	61.33	6	6.81	9
2017	91.94	16	11.49	8
2018	38.79	14	5.54	7
2019	62.06	17	10.34	6
2020	100.54	39	20.11	5
2021	58.96	127	14.74	4
2022	18.31	1000	6.10	3
2023	8.93	850	4.46	2
2024	0.82	427	0.82	1

The data in this table spans from 2015 to 2024. It displays the MeanTCperArt, N, MeanTCperYear, and yearly citations. In 2022, there were 1000 papers, and in 2020, the average total citations per year were 20.11, the highest in both cases. It is crucial to keep in mind that as time passes, the number of years in which citations are made tends to decrease, potentially impacting the rate of citation.

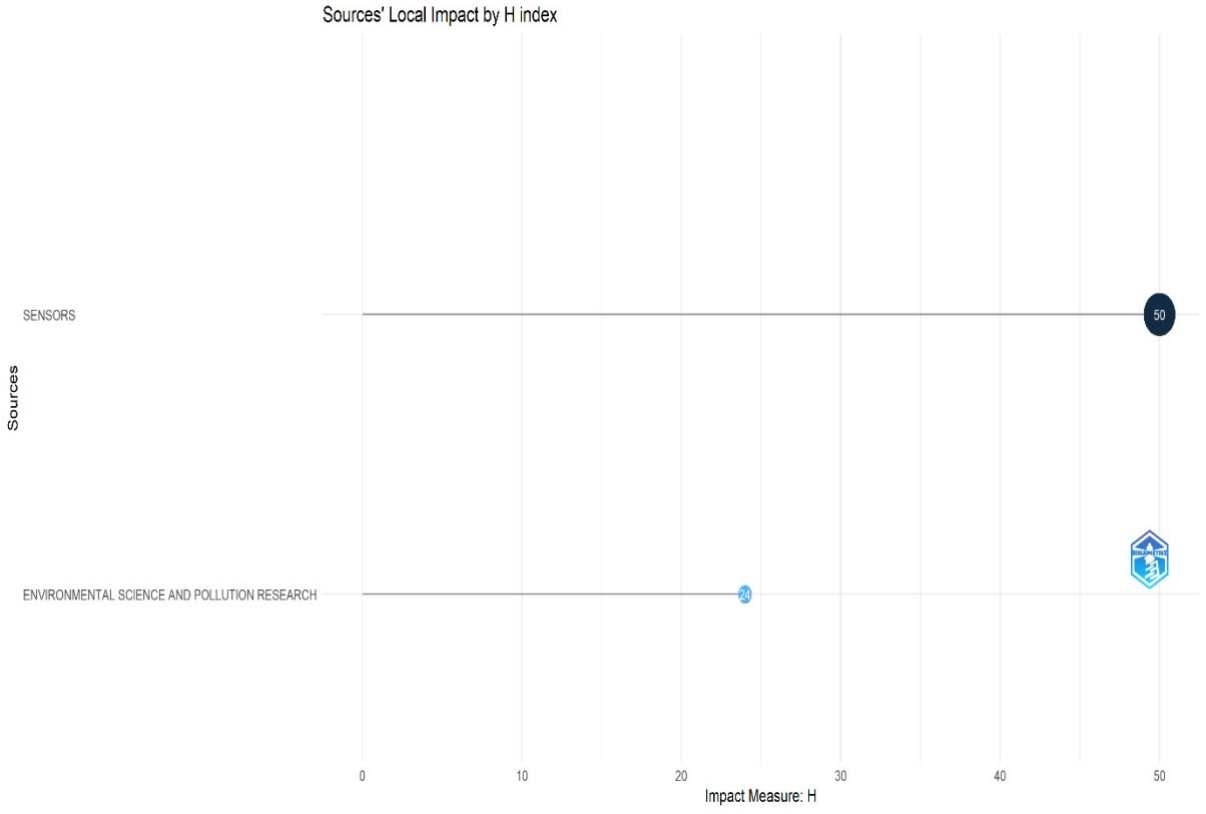


Fig.7 Shows impact on the local area, as measured by the h-index.

The data given provides information on how different sources within Sustainable IT Practices impact the local area, as measured by the h-index. The h-index measures the impact of a research source by identifying the highest number of articles that have received equal to or more than h citations. "Sensors" is the central focus in this scenario. This measure indicates the influence of "SENSORS" in Sustainable IT Practices by showing how many articles refer to it. Researchers and professionals can use "SENSORS" as a potential tool to access influential and relevant research in the field of Sustainable IT Practices.

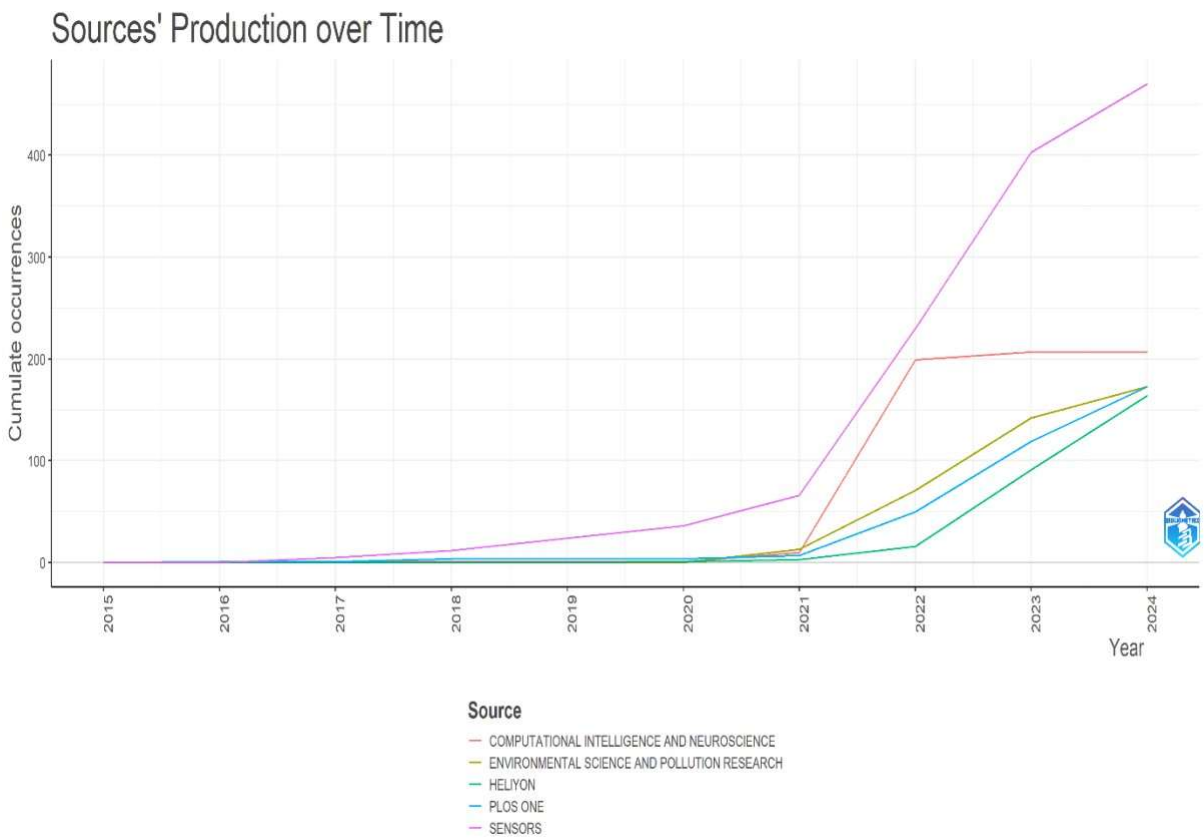


Fig.8 Shows the total number of sources produced over time.

Table 4. shows the total number of articles produced

Year	SENSORS
2015	0
2016	0
2017	5
2018	12
2019	24
2020	36
2021	66
2022	230
2023	403
2024	470

The data presented in the table shows a notable rise in the number of articles published by SENSORS from 2015 to 2024. Although no articles were created in the early years of 2015 and 2016, a consistent increase started in 2017 and quickly picked up speed from 2020 onward. This rapid increase led to a significant rise in the number of articles published, reaching a peak of 470 articles in 2024.

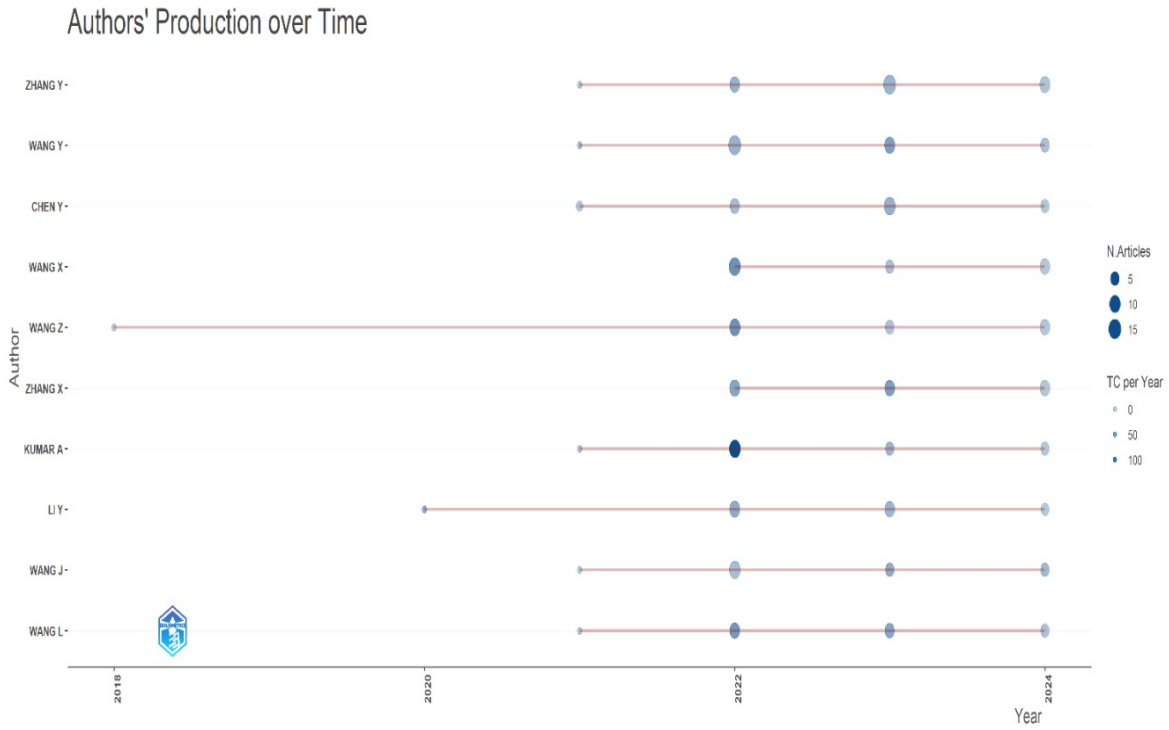


Fig. 9 Shows Author's Production over time.

The chart shows the productivity of multiple authors during a set period. The name of each author is shown on the left side of a horizontal line. The x-axis represents publication years, while the y-axis shows the quantity of articles generated. The diameter of the circles on each author's line is proportional to the number of articles published during that specific year. An examination of the visuals shows differences in how authors are publishing. Certain researchers show steady productivity over time, consistently publishing a similar number of articles each year. Some show variations in production, having times of high output and then less productive periods. The chart indicates that Zhang Y and Wang Y have been the top authors with the highest number of publications over several years. The graph shows the publishing history of different authors in the sustainable IT Practices field. Duration. The image showcases various authors who have written articles covering different topics related to sustainable IT practices. The dataset contains information on total citations (TC) and total citations per year (TCpY) for certain articles. The dataset displays Authors in the Employee Engagement field, their research results, focus area, and publication frequency—the passage of time.

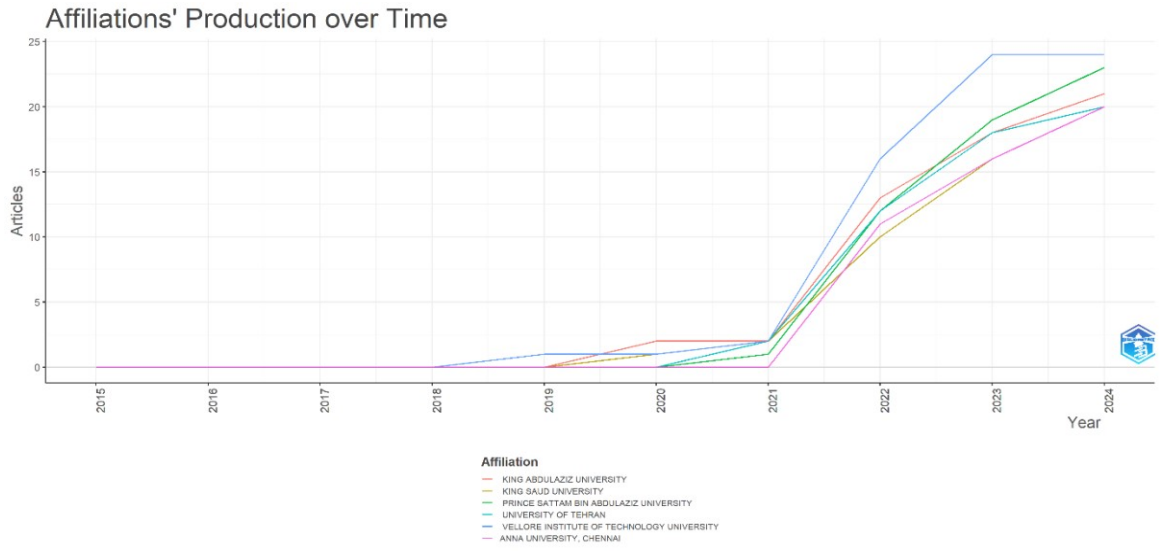


Fig.10 Shows Affiliation's Production over time.

The graph shows the total number of articles produced by six affiliations between 2015 and 2024. King Abdulaziz University and King Fahd University of Petroleum & Minerals show remarkable progress, outperforming others. There is a consistent rise in Prince Sattam bin Abdulaziz University and University of Tehran. Vellore Institute of Technology University and Anna University Chennai have seen a rise in output in recent years despite having relatively lower outputs.

Table 4: Shows Affiliation's Production over time

Documents written	N. of Authors	Proportion of Authors
1	7441	0.872
2	639	0.075
3	202	0.024

The chart shows how productive authors are based on their contributions to documents. The majority of writers (87.2%) created just one piece, with 7.5% producing two, and a smaller proportion (2.4%) penning three. This suggests a large number of authors who have produced a small amount of published work.

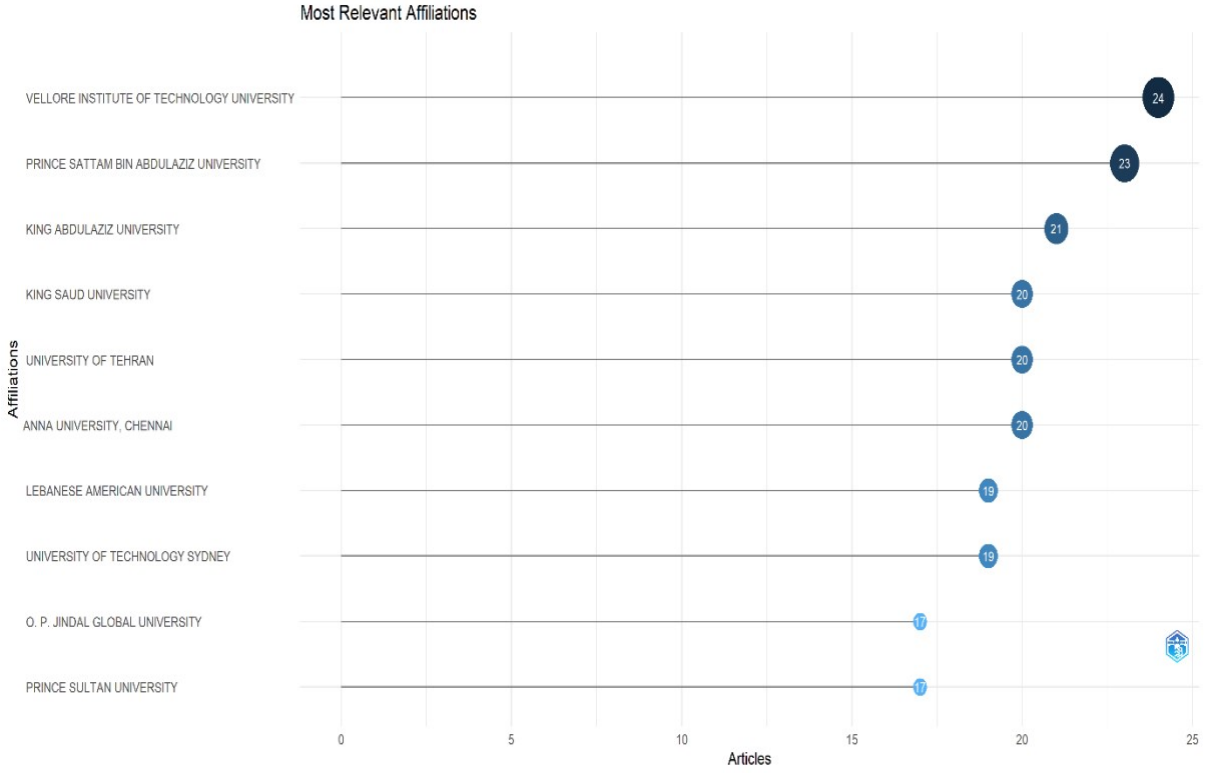


Fig. 11 Shows the most relevant affiliation.

The chart shows the primary associations according to document contributions. King Abdulaziz University is in the top spot with 21 articles, while Prince Sattam bin Abdulaziz University is close behind with 20. Anna University Chennai, University of Tehran, and Lebanese American University have also made significant contributions, with 19, 18, and 17 articles, respectively. The article counts of the remaining affiliations are reduced.

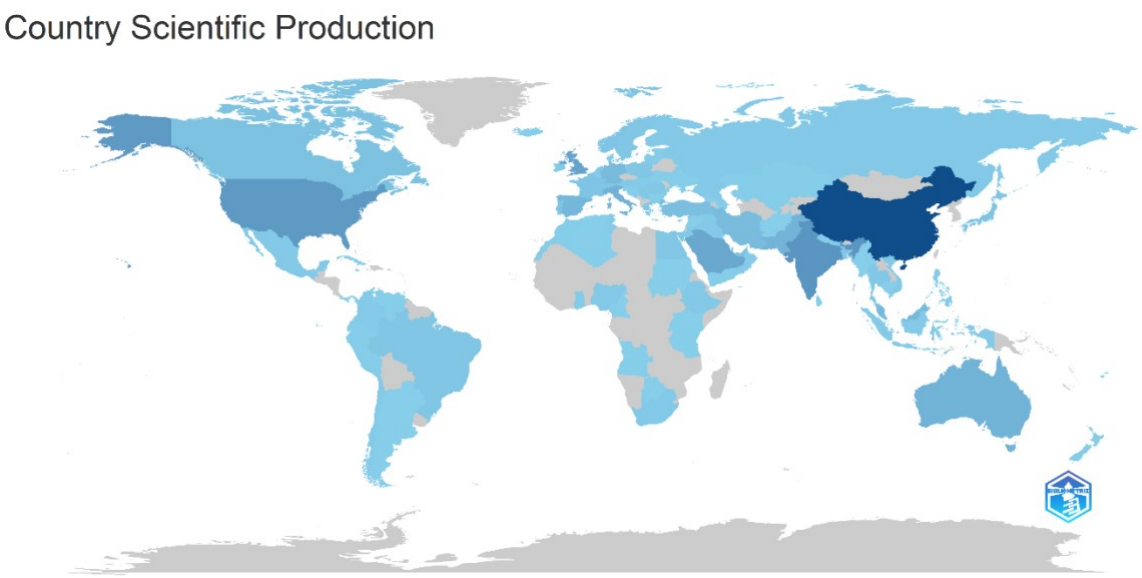


Fig.12 Shows Country's Scientific production

Table 5: Shows the number of country's scientific production

Countries' Scientific Production

Search:

Country	Freq
CHINA	391
INDIA	305
USA	276
UK	223
SAUDI ARABIA	203
ITALY	147
AUSTRALIA	143
PAKISTAN	137
SPAIN	118
MALAYSIA	106

The scientific output of ten countries is shown in the table. China is in the lead with 391 publications, while India is close behind with 305. The USA and the UK both have substantial production, with 276 and 223 publications, respectively. Saudi Arabia, Italy, Australia, Pakistan, Spain, and Malaysia have different levels of scientific output.

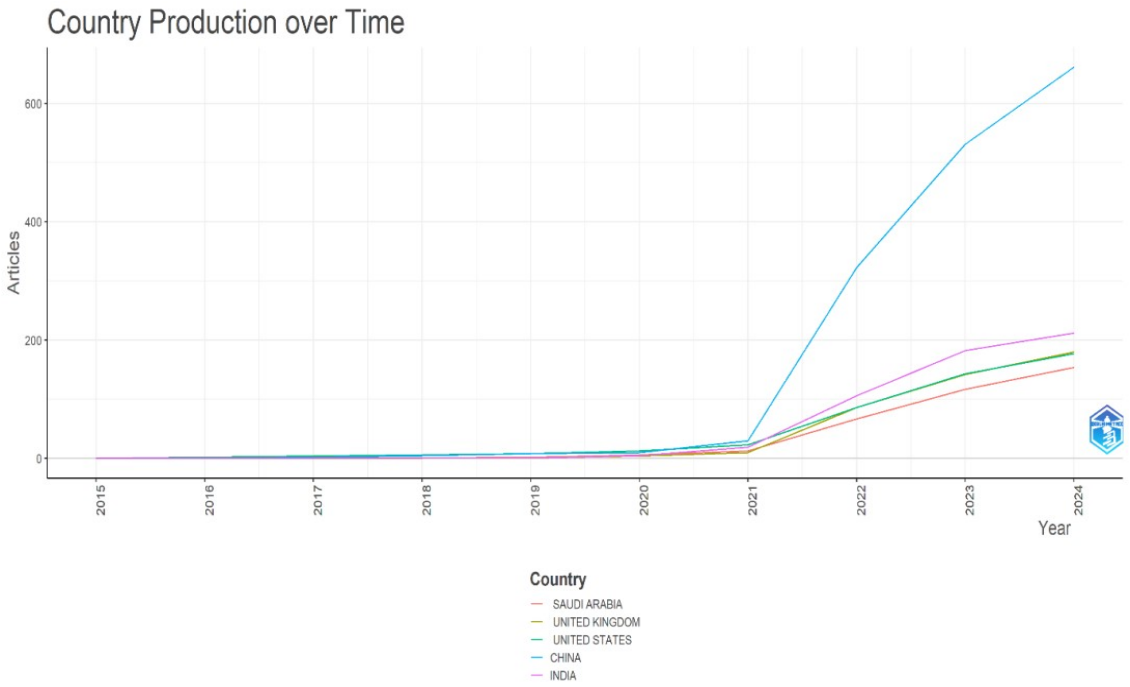


Fig.13 Shows the output of articles on a specific subject by five nations.

This chart shows the output of articles on a specific subject by five nations—Saudi Arabia, the UK, USA, China, and India—from 2015 to 2024. The horizontal axis shows the years, and the vertical axis shows the quantity of articles. At first, there was low article output worldwide until approximately 2020, when a significant rise starts. By 2024, the United States will have the greatest increase in growth rate, far surpassing all other countries. China, the UK, Saudi Arabia, and India show increasing trends, with China closely following the U.S. in terms of article production volume.

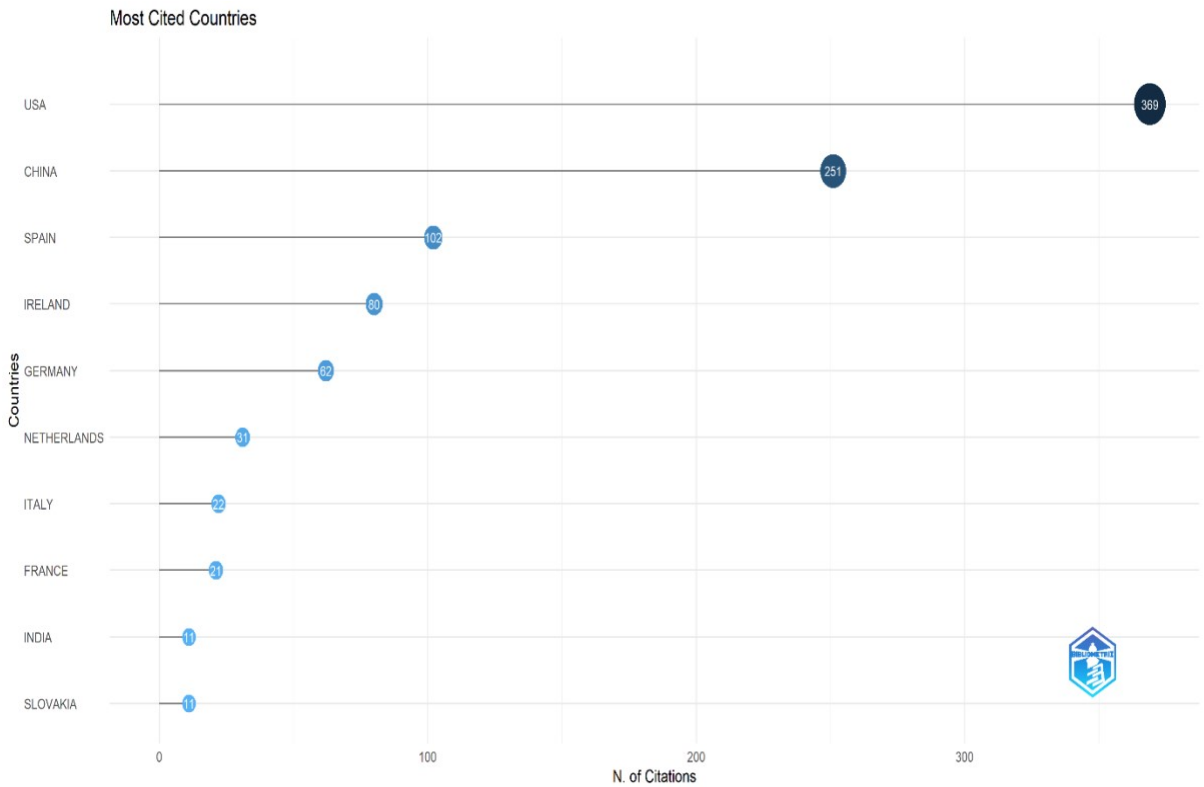


Fig.14 Shows most cited country.

Table 6: Shows the citation count for articles from different nations.

Country	TC	Average Article Citations
USA	369	30.80
CHINA	251	14.80
SPAIN	102	34.00
IRELAND	80	80.00
GERMANY	62	15.50
NETHERLANDS	31	15.50
ITALY	22	7.30
FRANCE	21	21.00
INDIA	11	11.00
SLOVAKIA	11	11.00

This chart displays the citation count for articles from different nations, emphasizing the top cited countries. The number of citations is shown on the x-axis, while the countries are displayed on the y-axis. The USA is leading by a significant margin with 369 citations, while
China follows closely with 251 citations. Spain and Ireland are similarly noteworthy, with 102 and 80 citations, respectively. Germany, the Netherlands, Italy, France, India, and Slovakia have a lower number of citations compared to other countries, with Slovakia and India both having 11 citations each.

6. Conclusion

Bibliometric Analysis was utilized to examine the patterns and characteristics of publications on sustainable IT practices. Biblioshiny software, utilized by R-Studio, is a bibliographic mapping tool employed in research for citation analysis. Ownership, the quantity of published works, the source of the teaching materials, and various other factors linked to the. Research findings included in the Dimensions database including publications, etc.
Distinguished Publications and Writers: The study showcases important studies and respected authors in eco-friendly computing, with remarkable input from writers such as Sarker IH and Vinuesa R. These studies, featured in periodicals like SN Computer Science and Nature Communications, are widely cited, underscoring their significant influence on the industry.
Research Output Trends: There has been a significant rise in research activity over the years, with 2022 standing out as a peak year in scientific output from 2015 to 2024. Even though there was a decrease in following years, the increase in publications around 2021-2022 suggests a rising interest and commitment to sustainable computing research at that time.
Crucial sources for sustainable computing research include journals like Sensors,
Computational Intelligence and Neuroscience, and Environmental Science and Pollution Research. Sensors is notably the domain with the most documents, highlighting its crucial role in sharing research.
Prolific Writers and Associations: Zhang Y and Wang Y are highly productive authors who have made a significant contribution to the field through their many publications. King Abdulaziz University and King Fahd University of Petroleum & Minerals demonstrate impressive research results, suggesting significant backing for sustainable computing research within these institutions.
Research from around the world shows that the USA and China are leading in publications and citations, indicating their strong presence in sustainable computing research. The UK, India, and Saudi Arabia are also making noteworthy contributions, displaying a diverse and worldwide research endeavor.
Analysis of citations: The importance of particular papers and authors is highlighted, with the USA being the top country in terms of citation numbers. This indicates that studies from the United States are not only abundant but also highly respected and often cited in academia.
Research partnerships and effects: The information indicates possible chances for novice researchers to work together with experienced authors and institutions who are actively making strides in the field. Recognizing influential journals and successful authors gives researchers a guide to enhancing their visibility and impact in sustainable computing.
VosViewer Analysis (2015-2024) revealed three major research groups in sustainable data processing, led by key authors such as Carlo Ratti and Gian Sun. These clusters strongly show internal collaboration, but limited interactions between groups, which reflect both cooperation and fragmentation in the region. The presence of

highly cited authors suggested the establishment of a research network that runs knowledge development. This insight supports the target literature review and future cooperation strategies.
In summary, the bibliometric analysis of sustainable computing shows that it is a constantly changing field with important input from various authors, institutions, and countries. Studying trends in publications, impacts of citations, and important sources gives researchers useful information, allowing them to identify key studies and explore potential collaborations and progress in sustainable computing practices.

Acknowledgement

The author expresses sincere gratitude to Dr. Richa Sharma for her valuable supervision and insightful guidance throughout the research. I am also grateful for Suresh Gyan Vihar University for providing academic and technical support during this work.

Conflict of Interest

The authors state that there are no conflicts of interest related to this study.

Sources of Funding

This study does not receive specific grants from fundraising agencies in the public, commercial or non-profit sectors.

References

[1] Cadenas, J. M., Garrido, M. C., Martínez-España, R. (2023). A Methodology Based on Machine Learning and Soft Computing to Design More Sustainable Agriculture Systems. *Sensors*, 23(6), 3038. https://doi.org/10.3390/s23063038
[2] Jamshidi, M., Yahya, S. I., Nouri, L., Hashemi-Dezaki, H., Rezaei, A., Chaudhary, M. A. (2023). A Super-Efficient GSM Triplexer for 5G-Enabled IoT in Sustainable Smart Grid Edge Computing and the Metaverse. *Sensors,* 23(7), 3775. https://doi.org/10.3390/s23073775
[3] Khan, M. A., Farid, H., Ali, I. (2024). Bibliometric Analysis of Dubious Research. In Otávio José de Oliveira. *Bibliometrics - An Essential Methodological Tool for Research Projects*, IntechOpen.
[4] Lannelongue, L. *et al.* (2023). GREENER principles for environmentally sustainable computational science. *Nat. Comput. Sci.*, 3(6), 514–521. doi: 10.1038/s43588-023-00461-y.
[5] Pazienza, A., Baselli, G., Vinci, D. C., Trussoni, M. V. (2024). A holistic approach to environmentally sustainable computing. *Innov. Syst. Softw. Eng.*, 20(3), 347–371. doi: 10.1007/s11334-023- 00548-9.
[6] Periola, A. A., Alonge, A. A., Ogudo, K. A. (2022). Networked computing systems for bio-diversity and environmental preservation. *Sci Rep,* 12, 3249. https://doi.org/10.1038/s41598-022-07226-z
[7] Raman, R., Pattnaik, D., Lathabai, H.H. et al. (2024). Green and sustainable AI research: an integrated thematic and topic modeling analysis. *J Big Data*, 11, 55. https://doi.org/10.1186/s40537-024-00920-x
[8] Roostaei, J., Wager, Y. Z., Shi, W., Dittrich, T., Miller, C., Gopalakrishnan, K. (2023). IoT-based edge computing (IoTEC) for improved environmental monitoring. *Sustain. Comput. Informatics Syst.*, 38. 10.1016/j.suscom.2023.100870.
[9] Saba, T., Rehman, A., Haseeb, K., Bahaj, S. A., Damaševičius, R. (2022). Sustainable Data-Driven Secured Optimization Using Dynamic Programming for Green Internet of Things. *Sensors*, 22(20), 7876. https://doi.org/10.3390/s22207876
[10] Saxena, D., Singh, A. K., Lee, C. N., Buyya, R. (2023). A sustainable and secure load management model for green cloud data centers. *Sci. Rep.*, 13(1), 1–22. doi: 10.1038/s41598-023-27703-3.
[11] Yunlong, F., Jie, L. (2024). Incentive approaches for cloud computing: challenges and solutions. *J. Eng. Appl. Sci.*, 71, 51, 1-18. https://doi.org/10.1186/s44147-024-00389-8