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# *The Most Cited Article on Sustainable Development Goals: A bibliometric analysis*

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***Abstract***

**Background of the study:** This study investigates the main basis for public recognition of the merits of scientists, which has always been the system of scientific publications and citations.

**Purpose:** The purpose of this study was to identify the most cited publications focusing on SDGs and identify the publications that contribute the most to the SDGs to provide readers with useful historical information on current relevant research.

**Methods:** This study used bibliometric analysis in a qualitative descriptive approach. A search of all databases and journals accessible in Elsevier's Scopus was performed on May 31st, 2024. The document search was performed using the query "SDGs," yielding 17.834 results. The most cited papers were identified, and data were extracted. All references contained within the most cited articles were collected.

**Findings**: The most cited articles were published in 97 different journals from 13 countries. The most cited article is "Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2): An overview of viral structure and host response" by Astuti and Ysrafil, published in 2020 in the journal Diabetes and Metabolic Syndrome: Clinical Research and Reviews with 691 citations and on SDG 3: Good Health and Well-being. The largest contribution of SDG insightful articles was contributed by articles on SDG 3 (Good Health and Well-Being). Included are a list of the most cited articles, the top seven journals these publications most frequently appeared in, the top institutional affiliations, the top international collaborations of the most cited publications, the trend of subject area on SDGs, and publications by Cite Score Quartile.

**Conclusion:** The most cited works regarding SDGs have been found and examined in this study. For further research, this study will be used as a historical reference. This study will also provide a guide to facilitate effective SDG research and offer insight into the developments of SDG research.

**Keywords**: Article focused on SDGs, article impact, citation, education quality, SDGs



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## Introduction

Sustainable Development Goals (SDGs) were initiated by the United Nations (UN) in 2015; thus, each member country has set goals to achieve (Suasih et al., 2022). SDGs are a group of development goals, including environmental, social, and economic value, that emphasize respective sustainability (Jones et al., 2017). SDGs are a transformation of the Millennium Development Goals (MDGs), which were developed with a more holistic approach and grouped into 4 development pillars, namely: (a) social, (b) economic, (c) environmental, and (d) legal and governance. The SDGs are a global development agenda to eliminate poverty, increase prosperity, and protect the planet through achieving 17 goals as targets to be reached by 2030 (Pisano et al., 2015; Salvia et al., 2019; Smith, 2020).

The university boasts a rich history that has evolved from its initial role as an institution for the elite to its current focus on social development as part of its third mission. This third mission complements both education and research missions to improve society by providing necessary education, media, and opportunities for all members of society. It is also believed that it would improve fundamental and applied knowledge of society (Chankseliani & McCowan, 2021). Higher education institutions, such as universities, hold an important role as a means to achieve SDGs, which are integrated into the Tri Dharma or vision, namely education, research, and social service. Universities, as knowledge centers, help the government prepare, implement, monitor, evaluate, and report SDG action plans in Indonesia. Realization of the universities' action was carried out by establishing SDG Centers throughout the country. Universitas Gadjah Mada (UGM) is one of them and is committed to producing knowledge, creating superior and innovative education, research, and community service that provides benefits to society and the nation. One particular concrete implementation of SDGs at UGM is carried out by Kuliah Kerja Nyata-Pembelajaran Pemberdayaan Masyarakat (KKN-PPM) or community service, where students can directly implement and provide education to the public regarding SDGs issues. Research and scientific publications related to the 17 SDGs goals are one form of contribution by researchers and universities in efforts to realize the 17 SDGs goals. Each SDG goal has a series of keywords related to the targets and indicators set by the UN. Keywords for each of the 17 SDG goals are used to map research topic trends (Fauzi et al., 2024).

The research is supposed to provide an overview of UGM's reputation on the global stage, particularly in the higher education institution's rankings carried out by the Times Higher Education (THE) Impact Ranking. The research is also expected to encourage an increase in the number of research publications contributed by UGM within the SDG scope. Thus, it can also help to increase the impact ranking by the contribution of universities to the 17 SDGs. In contrast to the research conducted by Fauzi & Oktavianus (2014) and Sianes et al. (2022), which measures SDG impact through scientometric methods using comprehensive WoS data from peer-reviewed journals in the 2015-2020 period. This study identifies the contribution of SDG-oriented articles using Scopus data for the 2014-2022 period.

Several studies have analyzed the most cited articles across various fields, highlighting influential research and trends. Brandt et al. (2019) compared the most cited articles in OBGYN specialty journals with those in non-specialty journals. Their findings revealed that articles addressing broader topics relevant to women's health professionals often had higher citation counts and were more likely to be randomized trials. They also noted significant differences in the most cited articles from non-specialty journals compared to those in specialty journals, likely due to differing journal objectives aimed at optimizing the dissemination of influential articles. Yadava et al. (2019) examined citation trends between 1920 and 2018 using data from WoS and Scopus. Articles were ranked based on factors such as topic, country of origin, open access status, and year of publication. Their study found that U.S.-based research and



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observational study topics dominated the earlier period, whereas post-1995 trends showed an increase in randomized trials, higher citation counts, and contributions from international authors.

In the field of osteoporosis research, Gao et al. (2020) conducted a bibliometric study of the 100 most-cited articles published between 1990 and 2019. Using data from WoS, they employed VOSviewer software to perform collaboration and keyword analyses, offering insights into influential research themes and author networks. COVID-19 research also saw bibliometric analysis from Johnson et al. (2020), who identified the top 100 most cited articles using WoS and Scopus. Their query yielded thousands of documents, which were analyzed to determine key contributors, leading journals, top categories, institutional affiliations, and international collaborations. These articles provide a valuable reference for understanding impactful research during the pandemic and guiding future investigations. Other bibliometric studies have focused on specific journals or methodologies. Wulansari et al. (2020) identified the most influential authors and their affiliations within the Data in Brief journal, offering valuable insights into contributions and trends in the field. Hsieh, Chien, and Chou (2022) used WoS data to examine differences between the top 100 articles and those outside this category, employing visualization and co-word analysis techniques. They identified 11 themes and created a thematic bibliographic grid (TBG) linking themes, years, citations, and article groups, noting that the Medicine Journal (Baltimore) published the most articles in both categories.

Kan Yeung (2021) explored how databases like WoS, Scopus, and PubMed label "Top 100" (T100) papers. While WoS and Scopus often classified them as articles, PubMed rarely assigned document type (DT) labels. Labeling inconsistencies were influenced by the presence of terms like "review" in titles, abstracts, or keywords, with only modest inter-rater agreement among the databases. Hernández-González et al. (2022) studied the 100 most cited articles in the "public health, environment & work" category up to March 2022. Their research detailed attributes such as journal, publication year, impact factor, institution, country, topic, citation count, and author collaborations. Similarly, Gan et al. (2023) analyzed NEPC research trends, aiming to guide future studies and shed light on influential journals and authors in the field.

This study aimed to identify the most cited publications focusing on or related to SDGs (UN) and to find out the SDG criteria in each of these articles. Many field specialties use bibliometrics to compile, publish, and review the most cited works within their respective fields. Our literature search revealed that this has not been done for SDGs. Analyzing the current status and trend subject areas on SDGs can provide a basis for relevant SDG publications, provide readers with useful information about the areas of research performed, provide a guide to facilitate effective SDGs research, and provide unique insight into the developments in SDGs research. Different from previous studies, the novelty of this study is its focus on analyzing the most cited articles related to the SDGs, identifying influential articles and authors within the scientific community dedicated to this field. As one of the first studies to employ a bibliometric approach for examining highly cited SDG-related research, it offers unique insights into the global impact and influence of such studies. Additionally, it maps the connections between key SDG research topics and citation trends, highlighting research priorities that are most critical for advancing the achievement of the SDGs. The most cited works about the SDGs have been found and examined in this study. This research contributes to identifying the main trends and themes that dominate research focused on SDGs so that it can help researchers understand the intellectual map in this field. Through the examination of the most cited works, this study promotes the growth of interdisciplinary cooperation to help achieve the SDGs.



## Method

This study used bibliometric analysis in a qualitative descriptive approach. Bibliometric

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analysis aims to describe, differentiate, and measure the significance of scientific work. Bibliometric analysis is becoming an increasingly important way to measure and assess the research impact of individuals, groups of individuals, or institutions. SciVal is one of the tools you can use to gather bibliometric data. Elsevier developed SciVal using collected semantic technology, which is a subscription-based research performance assessment platform.

A search of all databases and journals accessible in Scopus was performed on May 31st, 2024, by SciVal. The document search was performed using the query "SDGs," yielding 17.834 results. The most cited papers from the Scopus database were identified, and data were extracted, collected, and sorted. All references contained within the most cited articles were collected, sorted, counted, and cleaned by OpenRefine tools.

*Population and Sample*

The study sample's inclusion and exclusion criteria specify who is eligible to be included or excluded. The standards for highly cited articles are derived from Bornmann & Marx (2012). Typically, the inclusion criteria for the study are as follows: 1) publications UGM listed in Scopus within the time frame of 2014–2022; 2) articles with more than 50 citations; 3) the number of authors less than 20 per article; and 4) articles with author keywords specifically focused on the SDGs.

Coding is only done on articles that fit the requirements, which include being focused on SDG and having more than or equal to 51 citations. Having 691 citations, article number one is the top-ranked article. The article with 51 citations, ranked 267th, takes the place of the last article, which is ranked 104th.

*Operational definition*

We chose to conduct the bibliometric analysis. The bibliometric method is used to analyze the quantitative evaluation of bibliographic data. It is expected that this method can provide an overview of the most cited documents, the most influential journals, and the most productive authors, as well as subject area trends (Merigo & Yang, 2017; Hakimova, 2023). In line with our scope, the identification of productivity (and scientific impact) was based on the most used parameters (Avanesova & Shamliyan, 2018; Craig et al., 2021; Purkayastha et al., 2019; Cucari, et al., 2022), listed in Table 1.

Table 1. Overview of the Performance Parameters

| Indicator | Measured entity characteristic | Definition |
|---|---|---|
| Most cited documents | Scientific impact | The number of citations received by an entity's publications |
| Most influential journals | Scientific impact | The most influential journals are influential in any field |
| Most productive authors | Scientific impact | Productivity metrics give information on the volume of output of an entity |
| Subject area trend | Scientific impact | A subject area trend is an assumed development in the future that will have a long-term and lasting effect on something and change it |
| Field-weighted citation impact | Scientific impact | The number of citations received by an entity's publications compared with the average number of citations received by all other similar |



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| | | |
|---|---|---|
| | | publications in the data universe |
| International collaboration (%) | The degree of collaboration between international coauthors | Proportion of internationally co-authored publications |

Source: Avanesova & Shamliyan (2018)

*Collection of data & data analysis*

According to Figure 1. Sourced data from the UGM publication database that ranged from 2014 to 2022 was retrieved from Scopus by SciVal. SciVal is a research performance assessment tool that allows analysis of the data from Scopus. The major advantage that SciVal has over other metrics and reporting tools is the sheer amount of available data (Dresbeck, 2015). The obtained data dimension was as much as 17.834 articles. The collected data were then tabulated, and analyses were developed through the use of Microsoft Excel (Van Eck & Waltman, 2014). From a total of 17.834 publication titles, those with a number of citations >50 were identified, which found 268 articles. Of these 268 titles, 164 articles did not focus on SDG, so they were excluded from the tabulation and analysis. The remaining number of publication titles that are eligible for further analysis are publications that have a number of citations >50 and are focused on SDG, totaling 104 titles.

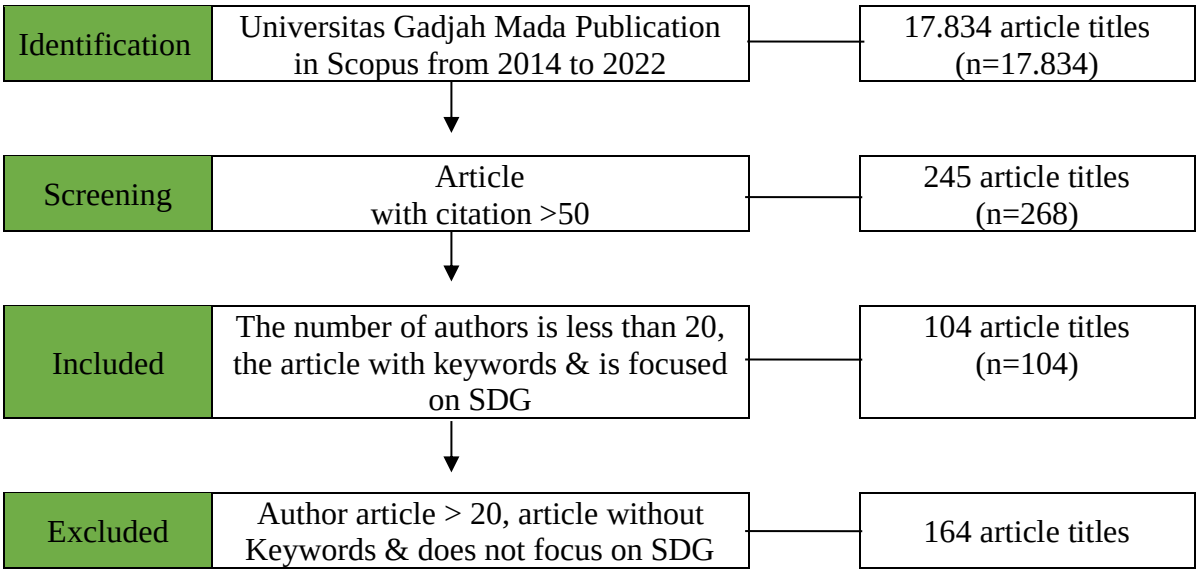


Figure 1. Flowchart data collection procedure

Source: Processed by author (2024)

**Result and Discussion**

All articles were published in 2014-2022. The most cited article was "Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2): An overview of viral structure and host response" by Astuti and Ysrafil, published in 2020 in the journal Diabetes and Metabolic Syndrome: Clinical Research and Reviews with 691 citations and focused on SDG 3/Good Health and Well-being.

Citation shows how many times an article has been cited by other authors. The more often an article is cited, the more it shows its usefulness and makes a greater contribution to other authors (Ebrahim et al., 2014). In line with Ebrahim's opinion, Linnemer & Visser (2016) and Aksnes (2019) explain that highly cited articles are very different from ordinary cited



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articles. Popularly cited articles have distinctive differences from ordinary articles. Most of the top-cited articles were contributed by several scientists, international collaborations, and several types of journals. The curve of citations can vary based on its cognitive function, but it is generally similar to the distribution of all articles. Furthermore, Aksnes (2019) explains that the number of citations generally consents to measure impact and research quality. This has limitations to the research quality dimensions, but is still perceived well in the aspects of impact and relevance. The overlooked research quality dimensions that receive insufficient attention are usually solidity/plausibility, originality, and societal value.

*Discussion*

To comprehend trends, contributions, and impacts, the study "The Most Cited Article on Sustainable Development Goals" (SDGs) examines articles about the SDGs. Gao et al. (2020) used both qualitative and quantitative techniques, such as bibliometric analyses and collaboration, to analyze osteoporosis research. Based on WoS data (1990–2019), the study assessed key topics, research trends in osteoporosis, citation impact, and collaboration patterns among authors, institutions, and nations. Disparities in focus, methods, topic coverage, and discussed dimensions are revealed through comparisons with other studies. For example, while Gao et al. stress international cooperation in osteoporosis, SDG research emphasizes global trends and impacts on sustainable development. Every study has a different methodology that reflects its own goals and settings.

Johnson et al. (2020) evaluated COVID-19 articles according to international cooperation and citations. The most significant writers and affiliations in the Data in Brief Journal were examined by Wulansari et al. (2020). Hsieh, Chien, and Chou (2022) used thematic analysis to compare articles in medical journals that were in the Top 100 and those that were not. The labeling of the top 100 articles from various databases was assessed by Yeung (2021). Every study uses different techniques and scopes, like co-word analysis, bibliometrics, or metadata evaluation, and produces unique insights that are in line with their particular goals.

To accomplish this, Yumnam, Gyanendra, and Singh (2024) and Raman et al. (2023) examined publications focused on SDG. The purpose of the Yumnan study is to evaluate current knowledge, identify trends, and fill research gaps by performing a critical bibliometric analysis of research publications about the SDGs from 2015 to 2022. Based on a dataset of 2227 research publications from the WoS database, the study shows that there has been a notable rise in research on the SDGs, indicating a greater understanding of global issues. However, in contrast to Raman's research, our study uses a qual-quant methodology that combines the PRISMA framework, performance analysis, and content analysis. This analysis reveals that only about 25% of business research directly relates to the SDGs, using the Australian Business Deans Council's list of more than 2500 journals as a stand-in for business research as of 2016–2022. The most mapped are SDGs 3 (Good Health and Well-Being) and 7 (Affordable and Clean Energy). SDG 7 and SDG 13 (Climate Action) are the main topics of the most cited journals, which are the Journal of Cleaner Production, Applied Energy, and the European Journal of Public Health. Few publications are devoted to SDG 1 (No Poverty), SDG 8 (Decent Work and Economic Growth), and SDG 5 (Gender Equality). Instead, top authors concentrate their research primarily on SDG 7, SDG 13, and SDG 12 (Responsible Consumption and Production). Concerning SDGs, applied economics has become the most prominent field.

Comparing this study with the Yumnam, Gyanendra, and Singh (2024) and Raman et al. (2023) is: 1) All three studies employ bibliometric analysis, including techniques like citation analysis and science mapping, to explore research trends; 2) Focus on SDGs to



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understand global research contributions toward achieving the 2030 agenda; 3) all studies likely use bibliographic databases such as Scopus or WoS for collecting and analyzing research publications; 4) the studies identify trends, key contributors, and the distribution of research across disciplines or countries; and 5) they assess how specific areas of research contribute to SDG-related goals.

*The article focused on the SDGs*

According to Figure 3, it can be seen that the top five articles with an SDG perspective that contributed the most to the SDGs were those with SDG 3 (Good Health and Well-Being), with 45 articles. Followed by SDG 17 (Partnership for the Goals) with as many as 18 articles, SDG 7 (Affordable and Clean Energy) with 16 articles, SDG 12 (Climate Responsible Consumption and Production) and SDG 13 (Climate Action) with 7 articles, respectively. Through the process, it was found that one SDG target did not receive a contribution from the 104 article titles analyzed, namely SDG 5 (Gender Equality).

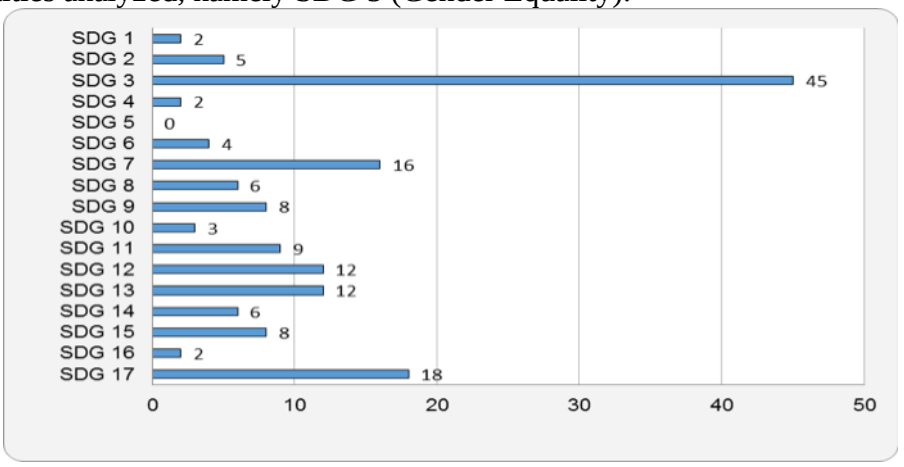


Figure 3. Contribution Most Cited Article on SDGs
Source: Primary data processed (2024)

Furthermore, the most prolific authors and countries were identified to encourage inter-country collaboration among the top active researchers found in this study. Most articles were published in 97 different journals, reflecting the multidisciplinary nature and complexity of this disease. To our knowledge, this is the first bibliometric analysis of SDGs.

The results of our study showed that SDG research is unprecedented, with more than 17.834 publications in under a year. Moreover, the top-cited SDG articles are important for future researchers to consider. This study will serve as a reference for SDG research and researchers. As Sharma (2023) argued, SDG research used a wide scope of disciplines to embark on a focused analysis of the framework and challenges of the SDG itself. Researchers would focus on approaches that are inherently interconnected to multiple sustainable development challenges. They often collaborate across parties, such as stakeholders and the local community, also utilizing various combinations of quantitative and qualitative methods.

Burbridge (2023) explains in his review of the SDGs that aligning research with SDG goals and targets can be a powerful and practical way to increase the social impact of research. This is a sound strategy and can help connect research to goals, reach a wider target audience, while increasing its quality and visibility. Many publishers, institutions, and large projects have used the SDGs to draw attention to their high-impact research, as has been done by Sage Publishing. Furthermore, Beasley (2021), in an interview with the publisher Springer Nature, showed that many publishers are now tagging SDG-related content on their platforms, sometimes adding additional resources or curating events to dig deeper into SDG-related content and uncover under-explored research areas.



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*Author collaborations and affiliations*

A total of 852 authors contributed to these published works, with reference dates ranging from 2014 to 2022. These articles were written by authors in various specialties, representing over 79 countries, and were published in 97 different journals. And the top five countries contributing to the most cited articles were Indonesia, Japan, Australia, the Netherlands, and the United Kingdom, contributing 104, 18, 17, 12, and 12 articles, respectively. There were 100 reported institutional affiliations with the most cited articles.

Collaborations in research, such as co-authorship, partnership, and joint research, offer significant benefits, particularly for early-career researchers. The modules can be used to learn how and why to collaborate with industry, create and maintain long-term partnerships, and understand the dynamics themselves. Collaboration within an academic institution could involve various groups, such as faculty, staff, administrators, and students, who then work together on research projects, ranging from informal mentoring to formal contributions by tenured faculty. Collaboration between academic institutions typically occurs when a primary investigator involves junior researchers in funded projects, benefiting from shared resources like specialized equipment and various study participants. International collaboration is increasingly important due to globalization, enhancing research by incorporating broader cultural perspectives and applications, thereby enriching both the research process and its outcomes (Rhein, 2023; Muntiah & Dewi, 2023).

Table 2. Collaboration Metric Most Cited Article on SDGs

| Metric | Percentage (%) | Scholarly Output | Citations | Citations per Publication | FWCI |
|---|---|---|---|---|---|
| International collaboration | 75.00 | 78 | 7396 | 94.8 | 4.72 |
| Only national collaboration | 15.40 | 16 | 1322 | 82.6 | 5.39 |
| Only institutional collaboration | 4.80 | 5 | 1019 | 203.8 | 12.87 |
| Single authorship (no collaboration) | 4.80 | 5 | 534 | 106.8 | 5.86 |

Source: Elsevier's Scopus from SciVal (May 31st, 2024)

Payumo et al. (2023) argue that there are some findings regarding collaborative SDG research. An increase was found at the author and institutional levels, but it only happened once. The collaboration tends to repeat, especially at the institutional level, for a long period. The research focused on identifying a network of collaboration in order to assist consistent and sustainable partnerships.

An interesting finding of this process is that there are articles contributed by a single author, namely Suhendro, Iman, Rohman, Maryudi, and Marfai. Based on the Scopus database, each of these authors is considered productive. Suhendro has an h-index of 7 with a total of 40 documents and a total of 414 citations from 390 documents. Iman has an h-index of 8 with a total of 21 documents and a total of 288 citations from 258 documents. Rohman has an h-index of 39 with a total of 389 document titles and a total of 5,818 citations in 3,519 documents. Maryudi has an h-index of 27 with a total of 79 document titles and a total of 2,097 citations from 1,126 documents. Marfai has an h-index of 20 with a total of 114 documents and a total of 1,845 citations in 1,354 documents, and the top ten authors contributing the most cited articles on SDGs are listed in Table 3.

Another interesting finding is the collaboration between authors from different faculties, which is the collaboration between Maryudi from the Forestry Faculty and Lele from the Social and Politics Sciences Faculty, who wrote an article entitled 'Opposing interests in the legalization of non-procedural forest conversion to palm oil in Central Kalimantan, Indonesia,' published in the Land Use Policy journal.



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Table 3. Top Ten Authors Contributing the Most Cited Article on SDGs

| Author | Affiliation | Country/ Region | Scholarly Output | Views Count | FWCI | Citation Count |
|---|---|---|---|---|---|---|
| Maryudi, Ahmad | Universitas Gadjah Mada | Indonesia | 5 | 740 | 5.25 | 373 |
| Triasih, Rina | Universitas Gadjah Mada | Indonesia | 4 | 152 | 2.05 | 249 |
| Marfai, Muh Aris | Universitas Gadjah Mada | Indonesia | 3 | 452 | 1.93 | 269 |
| Anwar, Sumadi L. | Universitas Gadjah Mada | Indonesia | 3 | 121 | 2.41 | 213 |
| Rohman, Abdul | Universitas Gadjah Mada | Indonesia | 3 | 379 | 3.01 | 212 |
| Aziz, Muhammad | The University of Tokyo | Japan | 3 | 645 | 3.05 | 475 |
| Abeyratne, U., Ranjith | University of Queensland | Australia | 3 | 131 | 1.74 | 194 |
| Swarnkar, Vinayak R. | University of Queensland | Australia | 3 | 131 | 1.74 | 194 |
| Anders, Katherine L. | Monash University | Australia | 2 | 190 | 6 | 145 |
| Anstey, Nicholas M. | Charles Darwin Univ. | Australia | 2 | 86 | 3.91 | 156 |

Source: Elsevier's Scopus from SciVal (May 31st, 2024)

*Trend of the subject area*

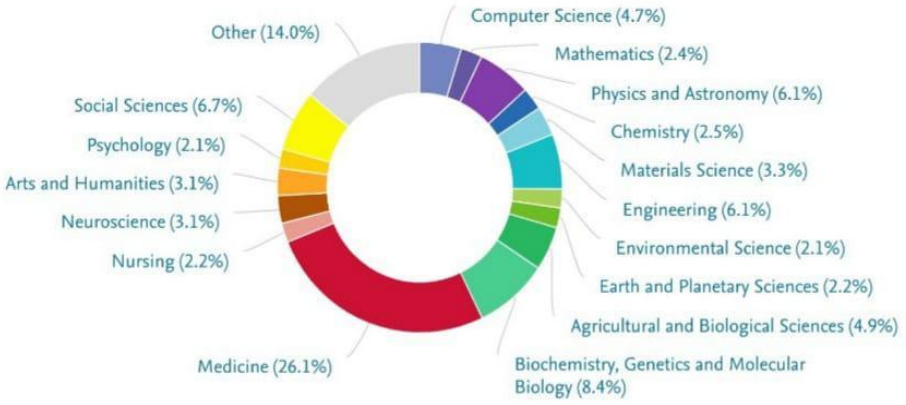


Figure 2. Percentage (%) of the Subject Area on SDGs Research
Source: Elsevier's Scopus from SciVal (May 31st, 2024)

According to Figure 2 and Table 5, five out of twenty-four subject areas dominantly cover a percentage of the articles. The largest percentage of subjects is medicine, which is at 26%, followed by environmental science at 25%, engineering, and agricultural and biological sciences, each at 15.4%, and the subject area of social science at 12.5%. Based on the subject area analysis, it can be concluded that the subject area of medicine is the most discussed by the authors of the most cited article on SDGs. Meanwhile, the subject area that is least discussed is immunology and microbiology, mathematics, physics and astronomy, multidisciplinary, business, management and accounting, decision sciences, nursing, pharmacology, toxicology and pharmaceutics, neuroscience, psychology, and dentistry.

The total number of citations found on SDG articles by grouped subject, including eleven areas, namely immunology and microbiology, mathematics, physics and astronomy,



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multidisciplinary, business, management and accounting, decision sciences, nursing, pharmacology, toxicology and pharmaceuticals, neuroscience, psychology, and dentistry, was 2181 citations, with an average citation of 198.3.

*Journal of publication*

The top seven journals were (1) Energy Procedia and (2) Forest Policy and Economics, each with 3 publications; (3) BMC Public Health, (4) BMC Medicine, (5) Asian Pacific Journal of Cancer Prevention, (6) Natural Hazards, and (7) Transportation, each with 2 publications (Table 4).

Table 4. Top Seven Journals with the Most Cited Articles on SDGs

| No | Scopus Source Title | Number of Publications | Cite Score 2023 | SJR 2023 | Quartile 2023 | Doc. SDG 2023 |
|---|---|---|---|---|---|---|
| 1 | Energy Procedia* | 3 | - | - | - | - |
| 2 | Forest Policy and Economics | 3 | 9.0 | 1.30 | Q1 | 114 |
| 3 | BMC Public Health | 3 | 6.5 | 1.25 | Q1 | 1738 |
| 4 | BMC Medicine | 2 | 13.1 | 2.71 | Q1 | 326 |
| 5 | Asian Pacific J. of Cancer Prevention | 2 | 2.8 | 0.44 | Q3 | 454 |
| 6 | Natural Hazards | 2 | 6.6 | 0.80 | Q1 | 381 |
| 7 | Transportation | 2 | 10.7. | 1.36 | Q1 | 107 |

Source: Elsevier's Scopus from SciVal (May 31st, 2024)

Table 5. Trend of Subject Area in SDGs Research

| Subject Area | Pencentage (%) | Scholary Output | Citations | Author | Citations per Publication | FWCI |
|---|---|---|---|---|---|---|
| Medicine | 26.0 | 27 | 2572 | 323 | 95.3 | 5.88 |
| Environmental Science | 25.0 | 26 | 2275 | 142 | 87.5 | 4.71 |
| Agricultural and Biological Sciences | 15.4 | 16 | 1323 | 53 | 82.7 | 4.91 |
| Engineering | 15.4 | 16 | 1455 | 81 | 90.9 | 6.62 |
| Social Sciences | 12.5 | 13 | 936 | 62 | 72 | 5.03 |
| Biochemistry, Genetics and Molecular Biology | 11.5 | 12 | 895 | 96 | 74.6 | 2.65 |
| Earth and Planetary Sciences | 11.5 | 12 | 986 | 56 | 82.2 | 3.25 |
| Energy | 11.5 | 12 | 1562 | 51 | 130.2 | 4.9 |
| Computer Science | 7.7 | 8 | 652 | 27 | 81.5 | 3.79 |
| Chemical Engineering | 6.7 | 7 | 516 | 34 | 73.7 | 2.2 |
| Economics, Econometrics and Finance | 6.7 | 7 | 561 | 20 | 80.1 | 5.55 |
| Chemistry | 4.8 | 5 | 586 | 27 | 117.2 | 2.62 |
| Materials Science | 3.9 | 4 | 326 | 21 | 81.5 | 5.04 |
| Other | 14.0 | 22 | 2181 | 324 | 1116.6 | 56.05 |

Source: Elsevier's Scopus from SciVal (May 31st, 2024)

According to Table 5, 67 (69.8%) of the most cited articles on SDGs were published in a journal ranking Q1 (top 25%). As Rajpurohit (2023) reveals, journal rankings in Q1 have three characteristics: (1) high impact and visibility within their field, (2) publish cutting-edge research with significant contributions, and (3) attract a large number of citations from other scholars. Q1 Journals are highly esteemed and are often the preferred venues for publishing groundbreaking research. Prakash (2023) argued that journal quartile rankings can either improve or degrade over a period. Evaluating your research quality against the journal's published articles last year, the scope of the journal, and the domain can give you a fair idea



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regarding which quartile journal to target.

Table 6. Publications by Cite Score Quartile in the Most Cited Article on SDGs

| Cite Score quartile | Overall | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Q1 (top 25%) | 67 | 6 | 10 | 9 | 11 | 7 | 7 | 9 | 5 | 3 |
| Q2 (top 26% - 50%) | 25 | 4 | 2 | 2 | 2 | 5 | 2 | 3 | 4 | 1 |
| Q3 (top 51% - 75%) | 3 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Q4 (top 76% - 100%) | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Total | 96 | 12 | 12 | 11 | 13 | 13 | 10 | 12 | 9 | 4 |

Source: Elsevier's Scopus from SciVal (May 31st, 2024)

Table 6 shows that 8 out of 104 articles had no quartile. The rest of the 96 have a respective quartile: Q1 with 67, Q2 with 25, Q3 with 3, and Q4 with only a single article. This study sought to identify and characterize the most cited articles regarding SDGs to gain insight into the most influential SDG articles. Although knowledge about SDGs is rapidly expanding and changing, this study offers important quantitative information to understand the current progress and trends in SDGs research.

## Conclusion

Theoretical implications refer to the contribution of research in generating relevant knowledge and theory. This study highlights key authors, recurring themes, and trends in the literature on the SDGs. It expands the body of knowledge in sustainable development studies by aiding researchers in developing new theoretical models or evaluating existing frameworks in the context of achieving the SDGs. Furthermore, the findings can guide policymakers in identifying research priorities that align with regional or global needs, particularly in decision-making and SDG implementation.

Limitations of this study: The study focuses only on the most-cited articles, which may favor older publications or those in high-impact journals, overlooking recent and emerging research that is impactful but not yet highly cited. For further research, this study will be used as a historical reference. This study will also provide a guide to facilitate effective SDG research and offer insight into the development of SDG research. Longitudinal analysis may be used in future research to monitor the development of highly cited articles over time and spot new trends in SDG-related studies.

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## Authors' Contributions

All authors have contributed to the final manuscript. The contribution of all authors: conceptualization, methodology, formal analysis, writing original draft preparation, writing review, and editing. All authors have read and agreed to the published version of the manuscript.

## Conflict of Interest

All authors have no conflict of interest related to this study.

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