PAPANDA (Paguyuban Panalungtik Sunda)

Journal of Metrics Studies and Social Science
E-ISSN 2830-7739
https://ejournal.papanda.org/index.php/jmsss/index

REVIEW ARTICLE

OPEN ACCESS

A focal point of a decade (2010-2020) publication trends on domestic waste

Authors' contribution:
A. Conception and design of the study
B. Acquisition of data
C. Analysis and interpretation of data
D. Manuscript preparation
E. Obtaining funding

Article History:
Received: November 9, 2022
Accepted: December 3, 2022
Published: December 14, 2022

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How to Cite: Rahman, A.S.A., Rosli, N.S., Afri, N.A.A., & Kamal, M.L. (2022). A focal point of a decade (2010-2020) publication trends on domestic waste. *Journal Metrics Studies and Social Science*, 1(2), 67-74. https://doi.org/10.56916/jmsss.v1i2.229

Abstract. Domestic waste consists of non-hazardous and hazardous matters. Non-Hazardous Waste might consist of recyclable or compostable food wastes, paper, bottles, food containers, and market decayed. This review aims to examine and evaluate domestic waste publications between 2010 and 2020. In this review, the Scopus database was utilised to collect the list of publications on domestic waste from 2010 to 2020. Microsoft Excel was used for data visualisation and to analyse the retrieved data. The growth of publications and research productivity were presented using standard bibliometric analysis. Based on the search results, a total of 11758 documents were recorded. Most of the articles were published in the form of journals and were mainly written in English. Most of the research on domestic waste was favoured by the field of environmental science. Wastewater and Domestic waste were the top keywords with more than 3000 times used in previous research and represented the main research areas covered in domestic waste research. Chinese authors wrote most of the research related to domestic waste. This review presents the evolution of the scientific literature on domestic waste and identifies areas of current research interests and potential directions for future research expansion.

Keywords: publication trends; domestic waste; Scopus database

INTRODUCTION

Domestic waste is disposable materials generated by households. This waste is comprised of non-hazardous and hazardous waste. Non-Hazardous Waste includes food waste, paper, bottles, containers, and market wastes that can be recycled or composted. Adding to that, examples of hazardous waste include batteries and household cleaners. Hazardous waste must be handled safely to ensure that they are disposed of properly so they do not cause harm to others (Abdullah et al., 2021). As the population is increasing, waste is also growing every year at a faster rate (Gautam & Agrawal (2021). These wastes can be degradable and non-degradable. Non-biodegradable waste remains for long-lasting years due to the non-decomposition of matters, causing the problem of solid disposal. The issue of water handling and management occurs all over the world, especially in densely populated countries. Currently, medicines, especially antibiotics, have increased significantly, affecting domestic waste (Li et al., 2022). The human population contributes to the spread of antibiotic residue into the environment via the excretion of pharmaceuticals during the ordinary course of treatment (Mutuku et al.,2022). To minimise human health and environmental impacts, access to clean cooking fuels and technologies is essential for achieving Sustainable Development Goals, particularly in developing countries.

This bibliometric analysis aims to analyse the publication of domestic waste indexed in Scopus, which is limited from 2010 to 2020. The relevance of studying publication patterns with bibliometric parameters has evolved into a successful strategy that can identify research gaps that can assist future researchers in determining the originality of any research (Abdullah et al., 2022). The subsequent five research questions will help us attain our research objective:

1. What is the characteristic of publications' growth trend on domestic waste research from 2010 until 2020?
2. What is the protruding author-affiliated country in this research domain?
3. What is the prominent journal that has published research on domestic waste?
4. What is the distribution pattern of author-affiliated institutions?
5. What is the most crucial keyword that has been recorded in previous publications within the period of 2010 to 2020?

METHOD

This study obtained all of its information from the Scopus database. The Scopus database was selected since it is the largest single abstract and indexing database ever created and the most comprehensive source of searchable citations and abstracts (Abdullah & Abd Aziz, 2020; Sofyan & Abdullah, 2022). The collected documents contain several analytical results, including access type, subject area, document type, source title, keywords, affiliation, country, source type, and language (Abdullah et al., 2020).

This bibliometric analysis began with the selection of pertinent keywords in August 2022. According to Abdullah and Sofyan (2022b), the chosen keywords should be able to deliver reliable information following the analysis's objectives. The inquiry was conducted utilising the document inspection method within the context of descriptive analysis (Abdullah, 2021). Based on publication titles, abstracts, and keyword queries, the authors performed a Scopus database search using the keywords "domestic waste" OR "domestic" AND "waste." The use of quotation marks produced robust and accurate search results. The restricted search period is from 2010 through 2020. Following the completion of the search, roughly 11758 papers from various periodicals were discovered. The authors also

found a total of 10841 English-language articles; most published works were written in journal form with 9361 documents.

The information, including years, authors, the field of study, article sources, nations, and languages, were then transferred to Microsoft Excel in CSV format for further analysis. Several elements served as the basis for the subsequent analysis: the worldwide publication trend, the active author-affiliated countries, the prominent journals, the distribution of author-affiliated institutions, and keyword analysis.

RESULTS AND DISCUSSION

The bibliometric analysis of domestic waste publications was examined to answer the research questions as follows:

Research Question 1: What is the characteristic of publications' growth trend on domestic waste research from 2010 until 2020?

Research question 1 is related to the worldwide publication trends on domestic waste from 2010 to 2020. Figure 1 depicts the domestic waste research publication trends from 2010 to 2020. From 2010 to 2020, the number of publications increased substantially, as seen in Figure 1. In 2016, more than one thousand articles were published on this domain, a rise over the previous year. The total number of publications has steadily increased, and the volume in 2021 was exceptionally high. This indicates that experts may be more interested in researching the global issue of domestic waste. This is because, according to Rodseth et al. (2020), the quantification of informal waste flows not only contributes to a more realistic representation of national waste flows and management practises but also, given the potentially negative social and environmental consequences of informal waste practises, clearly identifies the absence of a standard for domestic waste management in rural settings as a significant issue. Thus, the increased number of publications depicted that it is becoming a hot topic as a new trend that encourages the examination and integration of established directions in research (Sofyan & Abdullah, 2022a).

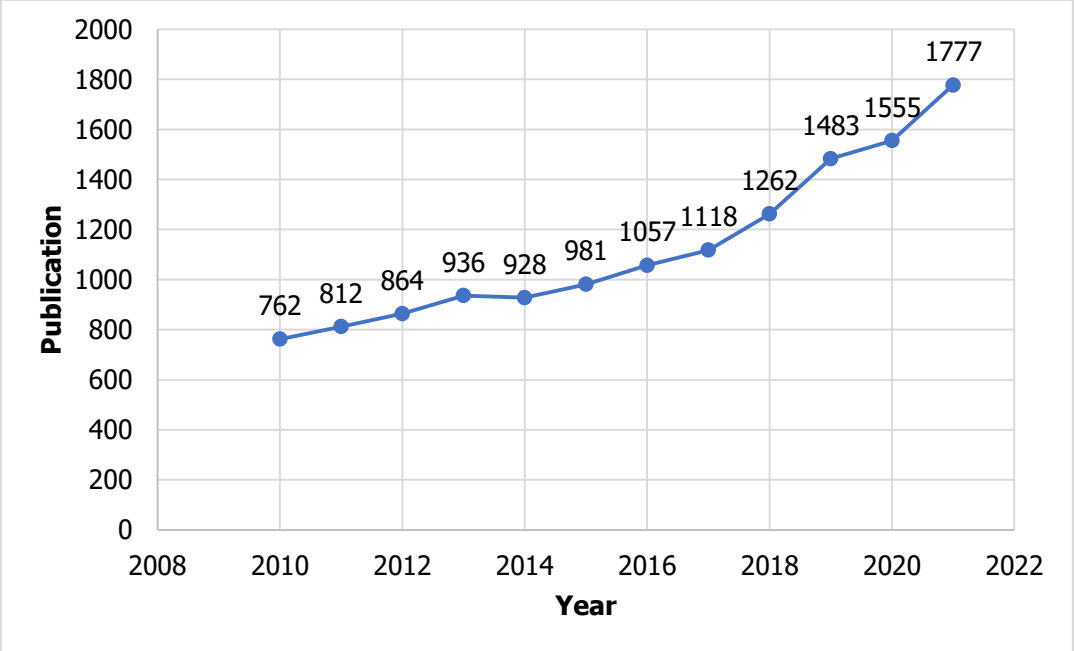

Figure 1. Publication trends of domestic waste research from 2010 to 2020
Source: Scopus database

Research Question 2: What is the protruding author-affiliated country in this research domain?

Research question 2 identifies the significant author-affiliated country that actively published research on domestic waste. Table 1 depicts, based on the analysis, the top 10 nations in terms of the number of linked papers published. The results indicate that China has published the most articles, with 3,132 publications. India and the United States ranked second and third with 1,424 and 1,311 publications, respectively, are two additional countries that have published more than one thousand articles. This analysis indicates that China is the most prolific publisher of studies on domestic waste. This could confirm the assertion made by Guo et al. (2021) that waste management in China is driven directly or indirectly by government policies and the growth of the economy and technology. The decision-making process should consider the requirements of economic and social development to address the environmental concerns produced by domestic waste.

Table 1. Top ten list of author-affiliated countries

Country	Publication
China	3132
India	1424
United States	1311
United Kingdom	749
Brazil	658
Australia	441
Italy	430
Japan	423
Spain	390
Indonesia	378

Source: Scopus database

Research Question 3: What is the prominent journal that has published research on domestic waste?

Research question 3 is related to the vital focus title that produced the most articles between 2010 and 2020. The relevance of the top ten source titles with more scholarly publications on domestic waste is given in Table 2. Bioresource Technology received the most contributions (374 publications), followed by Science of The Total Environment (352 publications), and Water Science and Technology came in third (316 publications). The significance of the list is signified in Table 2. The information in Table 2 could be a reference guide for readers and future researchers to obtain relevant and reliable articles on the specific topic that has been observed (Abdullah, 2022b). In addition, the list of source titles will also aid future researchers in submitting their articles to suit the aim and scope of those source titles (Abdullah & Othman, 2022).

Table 2. Top ten list of prominent journals

Source Title	Publication
Bioresource Technology	374
Science of The Total Environment	352
Water Science and Technology	316
Waste Management	278
Environmental Science and Pollution Research	236
Water Research	202
IOP Conference Series Earth and Environmental Science	182

Journal of Environmental Management	177
Resources Conservation and Recycling	175
Chemosphere	171

Source: Scopus database

Research Question 4: What is the distribution pattern of author-affiliated institutions?

The distribution pattern of the author-affiliated institution is a list of an institution with the most related publications that have been published. Table 3 shows the list of the top ten most active author-affiliated institutions. Identifying which institution is most representative in the topic area might help researchers choose a research station or join some of their academic programmes or research projects (Sofyan et al., 2022). This study offers the institution a reputation and motivates others to continue publishing it to obtain a superior position. This study depicted that the Chinese Academy of Sciences led on the list with 357 publications. The second position was the Ministry of Education China, with 217 publications. And the third-ranked also institution in China, namely, the University of Chinese Academy of Sciences, with 156 publications. The data in Table 3 revealed that author-affiliated institutions were mainly from China. As the world's most populous country with a quickly rising economy, China surpassed the United States as the world's greatest trash creator in 2004 and is expected to have the quickest and most noticeable increase in solid waste growth in history (Zhang et al., 2015).

Table 3. Top ten list of author-affiliated institutions

Institution	Publication
Chinese Academy of Sciences	357
Ministry of Education China	217
University of Chinese Academy of Sciences	156
Tsinghua University	150
Beijing University of Technology	139
Harbin Institute of Technology	127
Universidade de São Paulo	100
Tongji University	93
Research Center for Eco-Environmental Sciences Chinese Academy of Sciences	78
CNRS Centre National de la Recherche Scientifique	74

Source: Scopus database

Research Question 5: What is the most crucial keyword that has been recorded in previous publications within the period of 2010 to 2020?

Table 4 contains a list of keywords that have become popular in prior studies on domestic waste. The list of keywords observed in this study is related to the authors' keywords. Author keywords are the keywords chosen by the writers of a document. The authors' keywords made identifying essential passages easier for readers and academics (Abdullah, 2022a). Many search engines, databases, and journal websites employ author keywords. The frequent keywords that have been used in this study with more than 3000 were "wastewater" (3538) and "domestic waste" (3381). It is depicted that rapid population growth in many towns throughout the arid and semiarid regions of the world continues to exert additional strain on scarce freshwater supplies (Hossein et al., 2010). Many cities and districts are attempting to strike a balance between municipal, industrial, agricultural, and recreational water users. The rise in population has raised the demand for freshwater and the volume of wastewater generated. Residential, commercial, and institutional structures are the sources of domestic wastewater. It includes liquids from toilets, bathtubs, kitchens, and sinks that are disposed of via sewers. As rainfall passes over the rooftops of buildings, it picks up various contaminants and becomes part of the

waste stream. Domestic waste is a significant source of pollution, particularly in urban areas, since there is a disparity between the demand for and supply of water and because sewage contains numerous suspended and dissolved organic particles (Majumder et al., 2019).

Table 4. Top ten list of keywords used in prior studies

Keywords	Frequency
Wastewater	3538
Domestic Waste	3381
Wastewater Treatment	2210
Sewage	2045
Nonhuman	1434
Waste Management	1349
Waste Water Management	1221
Water Quality	1189
Recycling	1166
Waste Disposal	1108
Nitrogen	1095

Source: Scopus database

CONCLUSION

Using bibliometric analysis, this study intends to assess the trend of research on domestic waste. By employing this bibliometric approach, evaluating the research and publication output in the specified research domain is possible. The information supplied by bibliometric data can be used to assess the performance of a specific research domain and is helpful for research-related bodies to govern funding distribution rules and compare scientific inputs and outputs. In addition, the results of the bibliometric study can explain the characteristics that encourage the contribution of investigations to a particular research field and aid academics in producing influential studies. Keywords are essential and can give understanding to the readers. The most used keywords in the published documents were wastewater, followed by domestic waste. Both of these keywords were frequented more than 3000 in prior studies. This study used bibliometric analysis to promote comprehension and provide a more excellent knowledge of the trend and contributions to domestic waste-related research activities.

ACKNOWLEDGEMENT

This paper was greatly enhanced by the ideas of anonymous reviewers, whom we gratefully acknowledge.

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