

A BIBLIOMETRIC ANALYSIS COLLABORATIVE GOVERNANCE OF PLASTIC REDUCTION THROUGH THE TRANSFORMATION INDUSTRY

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Abstract

This study aims to analyse collaborative governance research trends in reducing the use of plastic through industrial transformation by using a bibliometric review. The information obtained is related to the study of changes in the use of plastic bags into environmentally friendly bags through industrial transformation, using Google Scholar database analysis. Scope of aspects with titles, keywords, and several aspects in the abstract related to the study of environmentally friendly plastics through an industrial transformation as a form of deepening the search process. Extract search results with VOSviewer. Furthermore, the results of the mapping of the literature are analysed further. A total of 957 articles were found in the Google Scholar database which was accessed on November 9, 2022. There was a significant number of publications regarding collaborative governance of plastic reduction through an industrial transformation from 2017 to 2021. However, in 2022 there has been a decline in the Google Scholar database. The most publications in this study will be in 2021, namely 149 publications. After analysis, there are 51 items with 6 clusters which shows that there are various relationships in each topic. which became the topic of discussion in this study, namely related to plastic waste, waste, impact, government, problems, innovation, collaborative governance, and plastic bags. Analysis of the number of articles published through Vosviewer by looking at the various relationships that occur. These results can certainly provide a reference regarding changes in plastic studies through an industrial transformation so that there are changes in the use of plastic bags to become environmentally friendly.

Keywords: Bibliometric, Collaborative governance; Industry; Plastic, Vosviewer.

1. Introduction

Plastic waste is one of the causes of natural damage. Because plastic is one of society's unavoidable consumption, it can cause various impacts. This research is to analyse the trend of collaborative governance in the use of plastics through industrial transformation by using bibliometric reflections.

The stages in this research are by using the information obtained related to the study of changes in the use of plastic bags into environmentally friendly bags through industrial transformation [1].

With the industrial transformation, there is a paradigm shift that can make life better. This can be known by using Google Scholar database analysis using application processing. The scope of this research is regarding titles, keywords, and aspects in the abstract related to the study of environmentally friendly plastics through industrial transformation which can make an in-depth form in the search process. Extract the search results in this study using VOSviewer.

The results of the mapping of the literature are analysed further by looking at the relationship in an interrelated variable. Then it can be seen that as many as 957 articles were found in the Google Scholar database which was accessed on November 9, 2022. This data shows that there is a significant amount of research related to publications, starting from 2017 and 2018 there were studies that were relatively balanced and then experienced an increase until 2021. But in 2022 there has been a decrease in the Google Scholar database, this is likely due to the spread of the Covid-19 virus, which has caused limitations in taking field data. The most publications in this research are in 2021 totalling 149 publications, this is possible because field research has been carried out in the previous year. Analysis of articles published through Vosviewer by looking at the various relationships that occur. These results may indicate that plastics research is experiencing changes due to industrial transformation [2].

The concept of collaborative governance is a form of concept in the administration of collaborative governance [3]. In implementing a policy or implementing a program, the government does not only rely on its internal capacity, but the government can collaborate with various parties, both the government and the government, the private sector as well as the community and civil society communities. This is because there are limited capabilities, resources, or networks so it can encourage the government in the form of collaborative government cooperation to achieve policy goals or program goals [4].

Collaborative governance is a structured process involving various actors in the management of public policy formulation to achieve public goals jointly carried out by various levels of government/public agencies, the private sector, and civil society [5]. Collaborative is a supporter of the implementation of Governance which emphasizes the process of agreement from various stakeholders from the government but also involves the community or non-governmental organizations in carrying out collective action and cooperation which consists of four stages including assessment, initiation, deliberation, and implementation [6].

Concerning avoiding environmental problems by controlling the bad effects of plastic and increasing public awareness. Transformation and the changes required will not be easy - at the individual or systems level [7]. The industry is an effort to

make finished goods with raw materials or raw materials through processing in large quantities so that goods can be obtained at low prices but with the best quality [8]. In other words, industrial transformation is a change in the company so that it can make the company develop which results in various kinds of changes for the better.

The research aims to analyse the trend of collaborative governance studies in reducing the use of plastic through an industrial transformation which shows the research results that there are many mining technologies as many as 71 articles (65%), while other fields such as exploration technology as many as 17 articles (10.69%) with 61.01%. All oil and gas exploration activities are controlled by research and development (R and D) institutions, universities, and entrepreneurs. This collaboration provides opportunities and convenience for researchers to publish their research results and research breakthroughs in journals, especially those with international reputations. Collaborative work motivates researchers to collaborate and has an impact on research quality and productivity.

2. Methods

The bibliometric research method uses three methods, including data screening and data analysis, and visualization. The first way, collecting articles from Google Scholar uses the period from 2015 to 2022 and the keywords collaborative; governance; industry; and plastics. Processed using Publish or Perish software using the RIS format. In this process, data mining was carried out, and found as many as 957 articles that match the keywords. The second is data culling, namely removing articles without publication year to create articles with the publication date, then proceeding to the next analysis. The third is data analysis and visualization using literature analysis with Vosviewer software [9]. The data is then analysed using descriptive analysis, using clusters and relationships derived from the data items used. VOSviewer software to see three things, namely network visualization, overlay, and density. Data analysis was also carried out with the help of Ms. Excel to describe research trends based on previous research [10-27].

3. Results and Discussions

The data disbursement process uses Publish and Perish which can show a development in research related to changes in the use of plastic bags into environmentally friendly bags through industrial transformation starting from 2017 to 2022. Shows the results of a balance in 2017 and 2018, subsequently experienced a significant increase, but in 2020 towards 2021 there was a quite drastic downward trend due to the outbreak of the Covid-19 disease. Thus, researchers experienced difficulties in collecting field data. The number of publications can be seen in Fig. 1.



Fig. 1. Number of publications for 2020-2022.

A total of 957 articles from the keywords collaborative, governance, industry, and plastic, 10 articles can be found that are interconnected in this study and have the most citations based on the results of the Google Scholar database, which can be seen in Table 1.

Table 1. List of articles by citation.

Cites	Authors	Title	Web Journal	Document Type	Year
428	F Pearce, S Tombs	Toxic Capitalism: Corporate Crime and the Chemical Industry: Corporate Crime and the Chemical Industry	taylorfrancis.com	Book	2019
124	M Coccia	Disruptive firms and industrial change	papers.ssrn.com	Artikel	2018
120	ME Krasny, KG Tidball	Civic ecology: adaptation and transformation from the ground up	books.google.com	Book	2015
119	P Raines	Cluster development and policy	books.google.com	Book	2017
103	C Scardovi	Digital transformation in financial services	Springer	Book	2017
79	G Dale, MV Mathai, JAP de Oliveira	Green growth: ideology, political economy and the alternatives	books.google.com	Book	2016
71	K Liljestrand	Logistics solutions for reducing food waste	emerald.com	Artikel	2017
65	A Steiner, G Aguilar, K Bomba, JP Bonilla, A Campbell	Actions to transform food systems under climate change	ageconsearch.umn.edu	Artikel	2017
60	J Van der Heijden	Innovations in urban climate governance: Voluntary programs for low carbon buildings and cities	books.google.com	Book	2017
29	E Ardyan, A Nurtantiono, B Istiyanto, G Rahmawan	Green innovation capability as driver of sustainable competitive advantages and SMES marketing performance	researchgate.net	Artikel	2017

Looking at Table 1 it can be seen that there are 5 highest articles 100 citations, up to a maximum of 428 citations published by taylorfrancis.com. Meanwhile, the other 5 articles have citations 100.

The results of the network visualization analysis show that there are 6 clusters consisting of:

- (i) Cluster 1. 15 items in red = article, chapter, context, implementation, innovation, literature, organization, person, politics, project, relationship, report, term, time, work

- (ii) Cluster 2. 10 green items = collaborative governance, example, goal, government, packaging, plastic bag, plastic waste, type, use, waste.
- (iii) Cluster 3. 9 items coloured blue = chemical, effect, evidence, firm, impact, ocean, problem, production, rubber.
- (iv) Chapter 4. 7 yellow items = action, climate change, energy, future, range, way, world.
- (v) Chapter 5. 6 purple items = concept, fossil fuel, life, need, sale, sustainable developer.
- (vi) Chapter 6. 4 items in light blue = circular economy, Europe, glass, metal

Based on the mapping analysis, it can be seen that there are 6 clusters from VOSviewer and Network Visualization on the topic of collaborative governance in reducing plastic use through industrial transformation, namely in Fig. 2.

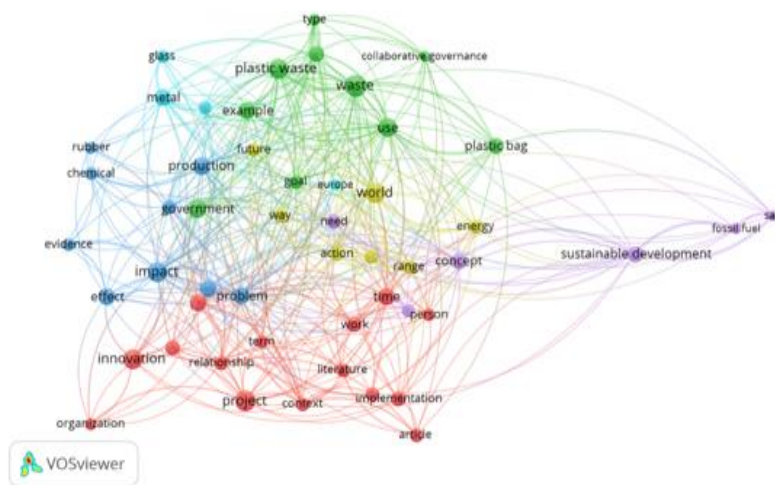


Fig. 2. Networks visualization.

Networks between terms described in VOSviewer are displayed through network visualization. The interrelationships between terms are illustrated in Fig. 2. The relationships in the network visualization are depicted by lines connecting one term to another. Fig. 2 shows the clusters in each of the topic areas studied. Based on Fig. 2, the study of collaborative governance in reducing plastic use through industrial transformation has links with 6 clusters.

Explains the density visualization of the keywords "collaborative, governance, industry, plastic,". Several colours appear in Fig. 2. The yellow colour indicates that this research has generally been repeated a lot consisting of several items including innovation, project, implementation, relationship, effect, impact, problem, person, time, work, range, concept, energy, action, need, word, use, waste, plastic waste, metal, example, productions, government. Visualization of the density of collaborative governance in reducing plastic use through industrial transformation can be seen in Fig. 3.

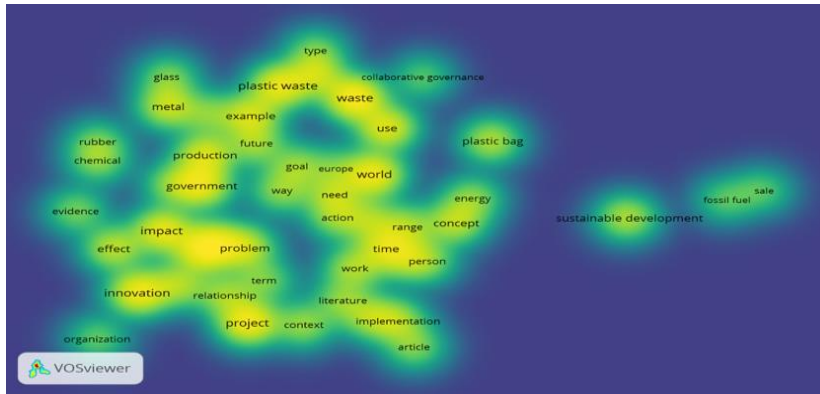


Fig. 3. Density visualization collaborative governance in reducing plastic use through industrial transformation.

Overlay visualization of collaborative governance in reducing plastic use through industrial transformation can be seen in Fig 4.

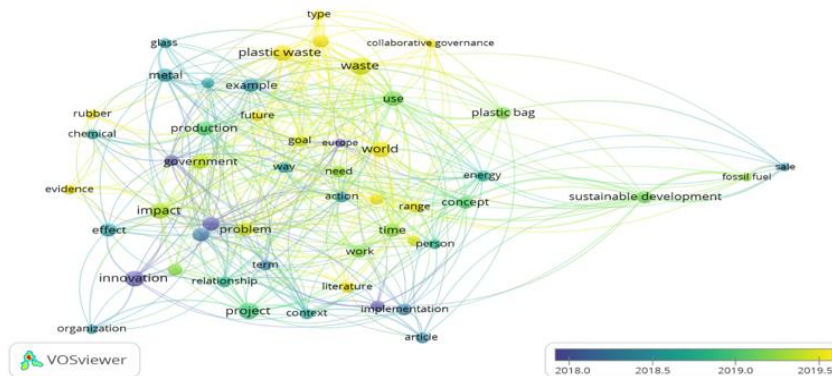


Fig. 4. Overlays visualization of collaborative governance in reducing plastic use through industrial transformation.

Figure 4 describes that every year there are trending keywords starting from 2018 which have different trends and show that the latest trend in research related to collaborative governance, and plastic waste is in 2019. In collaborative governance items, there is a strong relationship because it has a total link strength 14, in the sense that there is a relationship between collaborative governance and type, packaging, plastic waste, waste, use, world, goal, need, time, work, metal, energy, sustainable development. Whereas plastic waste items have a higher value than collaborative, which has a total link strength of 45 which indicates that there is a strong relationship between plastic waste and collaborative governance, type, waste, metal, example, use, productions, government, impact, problem, term, project, work, time, action, way, goal, world, concept. This study gives additional data for the use of bibliometric in giving research trend, as discussed in other reports [28-31].

4. Conclusion

Collaborative governance in reducing the use of plastic through an industrial transformation using VOSviewer software is then carried out a bibliometric review on the collaborative problem of replacing plastic bags with environmentally friendly bags through industrial transformation. In determining references, use publish or perish software, so that information can be identified according to the collaborative keyword; governance; industry; plastic. Based on the processing of the software results, 957 related articles can be found which are then sorted, so that there are variations every year. In 2017 and 2018 there were 95 articles, in 2019 there were 114, in 2020 there were 139 articles, in 2021 there were 149 articles and in 2022 there were 94 relevant articles according to keywords. In the results of the mapping, there are restrictions which are the most relevant highlights with keywords including plastic waste, waste, impact, government, problems, innovation, collaborative governance, and plastic bags.

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