



Bibliometric Analysis of Green Marketing Strategies: Innovative Approaches to Improve Sustainability

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Abstract. Sustainability has become an urgent global issue, and green marketing emerges as a crucial strategy to support environmentally friendly business practices. This study aims to identify research trends in the field of green marketing through bibliometric analysis using the VOSviewer tool. The data used were sourced from Scopus-indexed publications between 2014 and 2024, with the main identified themes being green consumption development, environmental awareness, and green supply chain management. The findings indicate that although green marketing raises consumer awareness of eco-friendly products, there is a gap between purchase intentions and actual consumer behavior. This study also highlights the importance of clear information and effective communication to enhance loyalty to green brands. Additionally, collaboration among companies, consumers, and governments is essential to achieving broader sustainability in the context of green marketing and consumption.

Keywords: Sustainability, green marketing, bibliometric analysis, environmental awareness

INTRODUCTION

Sustainability has become an increasingly urgent global issue due to climate change, environmental degradation, and increasing public awareness of the importance of maintaining the balance of ecosystems. In this context, strategy emerges as a relevant and innovative approach to promoting sustainable business practices. Green marketing focuses on achieving economic benefits and environmental conservation efforts through the responsible use of resources and minimizing negative impacts on ecosystems.

Traditional marketing that focuses only on linear economics has encouraged excessive resource consumption without regard to existing resources' limitations. Conventional marketing indirectly encourages people to constantly consume without considering its impact on the environment, creating an unsustainable consumption cycle. On the contrary, the principle of sustainability emphasizes the importance of conservation of

natural resources and regenerative utilization so that they can be sustainable. (Csikszentmihalyi, 2000)

Green marketing is a marketing strategy for services or products that care about the environment. It aims to encourage consumer awareness of and consumption of environmentally friendly products. Early research reveals that the concept of green marketing includes practices oriented towards waste reduction, efficient resource use, and consideration of environmental impacts at every stage of a product's life cycle. (Groening *et al.*, 2018) (Ara *et al.*, 2019) (Moravcikova *et al.*, 2017)

Changes in people's lifestyles that lead to lifestyles, as well as sustainable initiatives that are increasingly prevalent, make green marketing one of the important factors in encouraging environmentally friendly business growth. Thus, in recent decades, green marketing has become a concern for academics and companies to respond to global environmental issues. The popularity of green marketing is increasing, and it is now recognized as one of the most effective tools for realizing a sustainable business. Previous research has shown that green marketing strategies affect sustainable performance in industries such as apparel manufacturing, focusing on social, economic, and environmental parameters. (Sarkar, 2012) (Ayandibu & Akbar, 2021) (Ara *et al.*, 2019)

The integration between marketing and sustainability has given birth to sustainable marketing. Sustainable marketing is defined as the process of creating value for customers while still paying attention to the conservation of natural resources and human welfare. Basically, sustainable marketing is about making products that are environmentally friendly. This approach is not only limited to changing individual behavior but also has the potential to overhaul existing systems and structures in order to achieve broader sustainability. (Diane M. Martin & John W. Schouten, 2014) (Kemper & Ballantine, 2019) (Kemper & Ballantine, 2019)

Sustainable marketing is constantly evolving, extending into the areas of circular economy, innovation, and considering deeper social and ethical dimensions. Although the marketing and business sectors have historically contributed to environmental degradation, recent research indicates that marketing and consumer research can also catalyze positive change. (Maibach *et al.*, 2008)

METHOD

The research aims to identify and analyze the theme of green marketing using bibliometric analysis using the VOSviewer tool. Bibliometric analysis is one of the tools widely used by researchers to analyze publications and research trends in various fields. VOSviewer is a suitable tool for handling large amounts of data from multiple databases compared to systematic literature reviews, which are more appropriate for narrow data scopes. In addition, bibliometric analysis is helpful in classifying research data into thematic groups. This method allows academics to comprehensively understand a field of study and produce a more detailed analysis. The following is the research flow depicted in Figure 1. (Garza-Reyes, 2015) (White *et al.*, 2025)

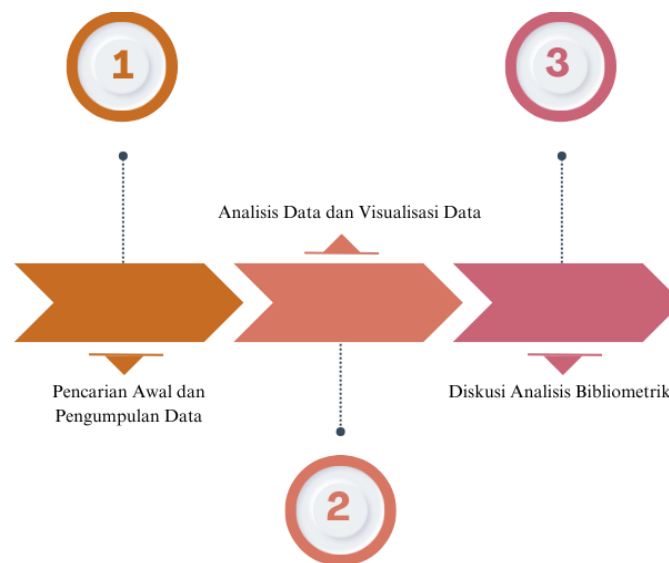


Figure 1. Research Flow

Stage 1 Initial Search and Data Collection

The initial stage of this research began with collecting data through the Scopus database. The keyword "Green Marketing" was used as a reference in the search, resulting in 228 relevant journals. The data was then converted into CSV and RIS file formats to facilitate the next stage of analysis.

Stage 2 Data Analysis and Data Visualization

The data obtained was then analyzed using the VOSviewer application to show the relationship between keywords in the grouping of green marketing themes. VOSviewer is a reliable tool for analyzing text and presenting results visually. The software not only allows for dataset preparation but is also capable of analyzing complex text networks in various disciplines (Bukar *et al.*, 2023).

Stage 3 Discussion of Bibliometric Analysis

The results of data processing were obtained from *Co-Occurrence*, which showed the relationship between understanding the structure of research trends, knowledge structure, and relationships between articles. This method facilitates the exploration and identification of key thematic areas as well as emerging topics within this field of study by utilizing *Co-Occurrence analysis*. (Burhaem *et al.*, 2023).

DISCUSSION

Number of Publications and Citations on Articles

This section seeks to measure the contributions of individual authors, identify growing research trends, and evaluate the cumulative impact of all publications on the advancement of knowledge in the field by analyzing the publication matrix and citations of articles related to corporate social responsibility.

Table 1. Number of Publications and Citations

| YEAR | NUMBER OF ARTICLES | CITES |
|--------------|--------------------|-------------|
| 2014 | 18 | 317 |
| 2015 | 7 | 308 |
| 2016 | 7 | 146 |
| 2017 | 14 | 873 |
| 2018 | 10 | 475 |
| 2019 | 15 | 502 |
| 2020 | 19 | 608 |
| 2021 | 27 | 1129 |
| 2022 | 35 | 650 |
| 2023 | 34 | 528 |
| 2024 | 18 | 166 |
| TOTAL | 204 | 5702 |

Source: Primary data processed, 2024

Between 2014 and 2024, 204 publications in Scopus-indexed journals were published. Figure 2 shows the research trend on green marketing. In 2014, 14 articles were published on this topic, and this trend increased from 2018 to 2022.

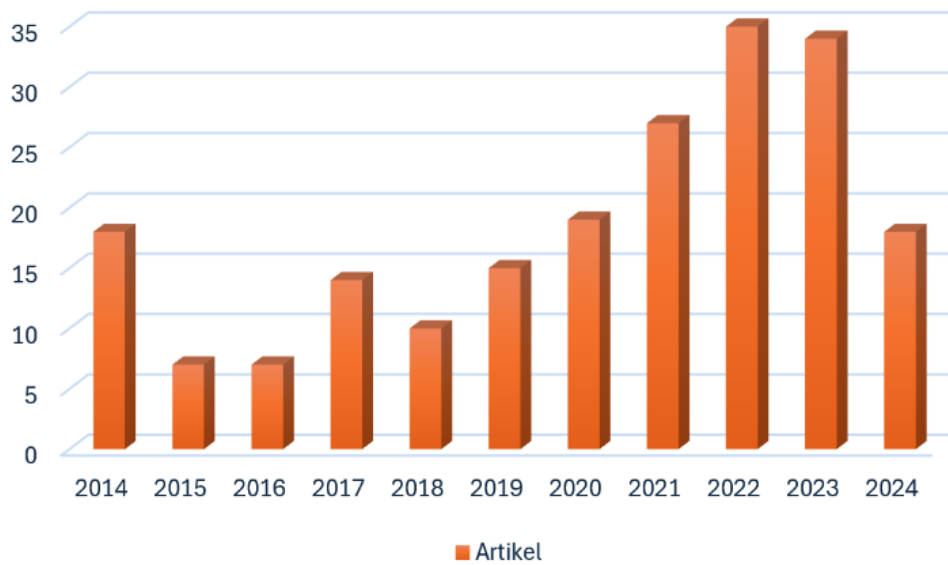


Figure 2. Number of Articles
 Source: Primary data processed, 2024

Figure 3 shows the number of citations in articles on green marketing. In 2017, there were 873, and from 2018 to 2022, citations continued to increase, which shows that research on green marketing continues to increase.

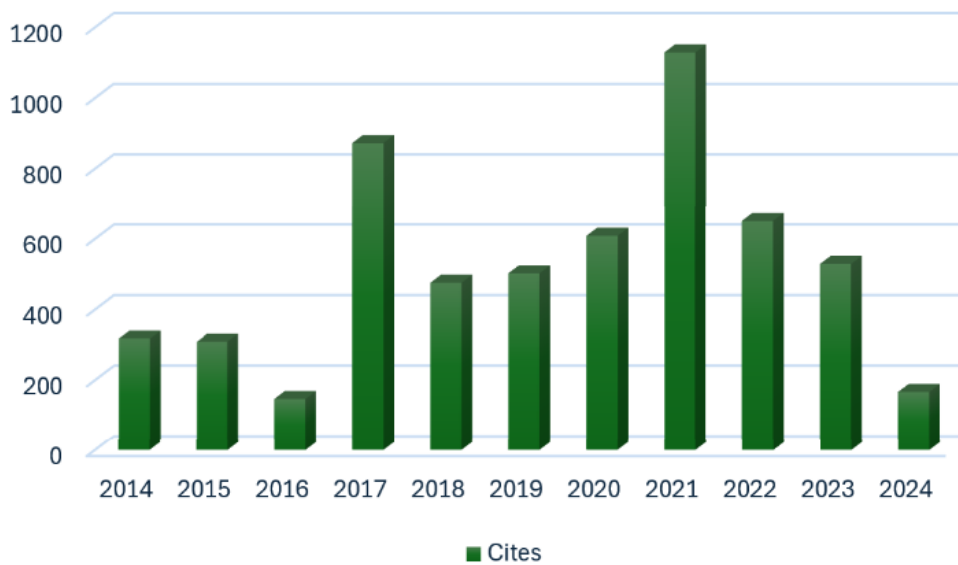
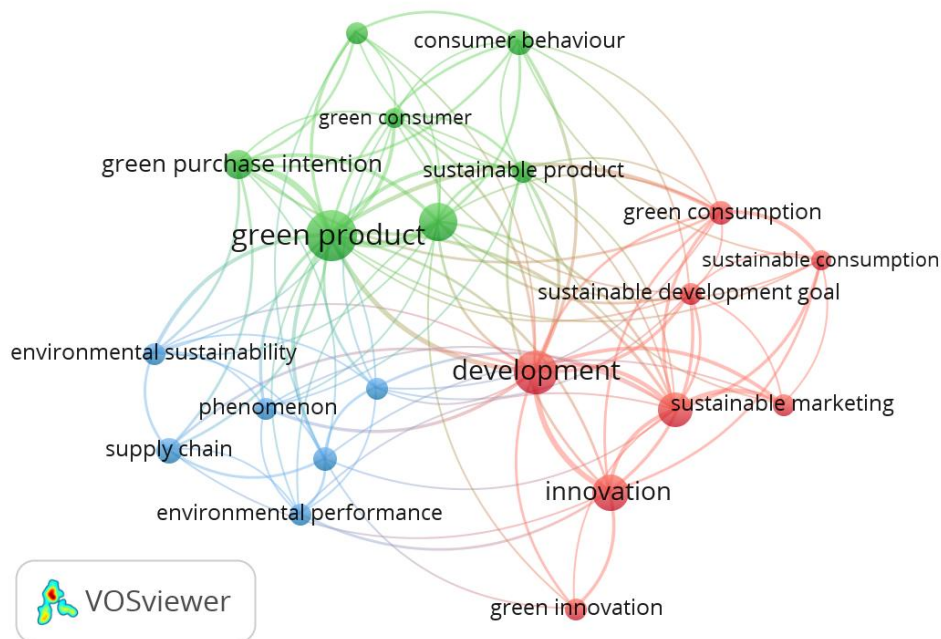


Figure 3. Number of Citations
 Source: Primary data processed, 2024

To get the main cluster of this study, we used *co-occurrence* keyword analysis, as shown in Figure 4, which is divided by color. The first cluster (green) focuses on sustainability, which includes terms such as *development*, *green consumption*, *green innovation*, *innovation*, *sustainable consumption*, *sustainable development*, *sustainable development goals*, and *sustainable marketing*.

The next cluster (blue) discusses consumers, including *consumer behavior*, *environmental awareness*, *environmental concern*, *green consumer*, *green product*, *green purchase intention*, and *sustainable product*.

The last cluster (red) focuses on the environment, which includes several terms such as, *environmental issues*, *environmental performance*, *environmental sustainability*, *green brand image*, *phenomenon*, and *supply chain*.



Source: Primary data processed, 2024

Figure 4. Keywords *co-occurrence*

Cluster 1 refers to efforts to achieve economic growth with environmental protection, social welfare, and sustainable development. This shows a growing trend in business and policy, where companies and governments are increasingly aware of environmental and social impacts. Knowledge about the environment is one of the main aspects that can encourage sustainable behavior, and education about the environment has an important role in increasing awareness and environmentally friendly behavior. (Prieto-Sandoval *et al.*, 2022)

Green consumption involves using eco-friendly products that meet basic needs without damaging the environment or sacrificing the needs of future generations. This includes purchasing eco-friendly products, managing waste wisely, and practices such as recycling, reusing, and reducing overconsumption. Green consumption is not only about

protecting human health and ecosystem diversity but also reflects consumer responsibility for environmental protection. (Trong Nguyen *et al.*, 2023)

Table 2. Item *co-occurrence*

| CLUSTER | ITEMS | TOTAL LINKS STRENG'S | CO-OCCURRENCE |
|---------|-------------------------------------|----------------------|---------------|
| 1 | <i>Development</i> | 50 | 37 |
| | <i>Green consumption</i> | 23 | 11 |
| | <i>Green innovation</i> | 8 | 9 |
| | <i>Innovation</i> | 30 | 27 |
| | <i>Sustainable consumption</i> | 14 | 8 |
| | <i>Sustainable development</i> | 36 | 23 |
| | <i>Sustainable development goal</i> | 17 | 9 |
| | <i>Sustainable marketing</i> | 14 | 10 |
| 2 | <i>Consumer behaviour</i> | 16 | 14 |
| | <i>Environmental awareness</i> | 12 | 9 |
| | <i>Environmental concern</i> | 36 | 29 |
| | <i>Green consumer</i> | 16 | 8 |
| | <i>Green product</i> | 73 | 52 |
| | <i>Green purchase intention</i> | 29 | 18 |
| | <i>Sustainable product</i> | 19 | 9 |
| 3 | <i>Environmental issues</i> | 16 | 11 |
| | <i>Environmental performance</i> | 10 | 9 |
| | <i>Environmental sustainability</i> | 14 | 9 |
| | <i>Green brand image</i> | 13 | 10 |
| | <i>Phenomenon</i> | 11 | 9 |
| | <i>Supply chain</i> | 12 | 14 |

There is a difference between consumers' positive values towards *environmentally friendly green consumption* and their purchasing actions. The research conducted by Essiz et al. (2023) found that consumers who are less afraid of losses and have high confidence in their knowledge of eco-friendly products consistently apply these values in their purchasing behavior. Furthermore, the study found that women tended to have lower levels of risk aversion and higher levels of knowledge than men, thus showing greater consistency

between the value and behavior of green consumption. The study provides a psychological understanding of the green gap and recommends that marketers and policymakers incorporate risk aversion, subjective knowledge, and gender into their marketing strategies for green products. Another study conducted by found that consumers' emotional response to Chen *et al.*, (2024) *green brand image* has a significant impact, in addition to information about eco-friendly products also changing consumer psychology and identifying various ways they participate in environmental conservation activities. Social norms, and *environmental awareness* have a significant influence on *green consumption* behavior, while awareness contributes indirectly. These findings help understand consumers' *green consumption habits* and provide guidance for businesses to develop compelling marketing strategies based on people's green consumption psychology and habits . (Trong Nguyen *et al.*, 2023)

Sustainable marketing that focuses on the advantages of recycled products and their impact on the environment has the potential to increase purchase intentions among Generation Z. Although consumers are increasingly concerned about the environment, there are still very few of those who buy eco-friendly products due to cost factors and are skeptical of green claims. Consumer engagement with (Armutcu & Tan, 2023) (Auliandri *et al.*, 2018) *green marketing* is greatly influenced by clear communication and specific information about products that can increase loyalty to *the green brand image*. Cooperation between companies, governments and consumers is very important to increase *sustainable consumption*. *Sustainable marketing* (Mansour *et al.*, 2024) has a positive impact on *green customer* satisfaction which affects customer satisfaction. (Vafaei *et al.*, 2019)

Cluster 2 focuses on how consumers respond to environmental issues in their purchasing decisions. *Environmental awareness* involves an understanding of environmental problems and a willingness to contribute to their solution, which is influenced by knowledge, emotions, and behaviors. Early studies show a positive relationship between environmental awareness and eco-friendly behavior. However, there is an "attitude-behavior gap" where consumers' purchasing decisions often do not reflect their (Dunlap & Jones, 2002) (Akehurst *et al.*, 2012) *e-nvironmental awareness*. Factors such as brand strength, lifestyle, demographics, culture, lack of information, and financial limitations can affect this gap. (Akehurst *et al.*, 2012; Anders Biel & Ulf Dahlstrand, 2005; Dunlap & Jones, 2002) (Dropulić & Krupka, 2020)

Green products are increasingly in demand due to increasing awareness of environmental protection and environmentally conscious consumer behavior. (Dropulić & Krupka, 2020; Kumar & Ghodeswar, 2015) *Green products* are often considered more durable and less toxic because they use recycled materials and environmentally friendly processes. Although no product is completely green, (Miller, 1999) *a green product* is defined as a product that is manufactured with non-toxic materials, uses environmentally friendly procedures, and is certified by a recognized organization. Research also shows that (Gurău & Ranchhod, 2005) *Green products* can be assessed based on their environmental impact throughout their life cycle, including production, distribution, consumption, and post-consumption. The lower the environmental impact, the more sustainable the product will be. (Dropulić & Krupka, 2020)

The *trend of green consumption* is changing consumer choice and purchase intentions. In research on the (Nguyen & Le, 2020) Ajzen, (1991) *The theory of planned behavior (TPB)* states that *intention is the main factor explaining human behavior*, with intention influenced by attitudes, subjective norms, and perceived behavioral control. *Green purchase intention* is the development of a common purchase intention that involves motivation to protect the environment. (Chan, 2001) *Green purchase intention* is influenced by individual factors such as attitudes, knowledge, values, and habits and situational factors such as price, product quality, and ecological labeling. (Joshi & Rahman, 2015)

Cluster 3 shows increasing concern for the environmental impact of businesses. The company strives to manage these impacts, build a sustainable brand image, and involve the entire supply chain in environmental conservation. Consumer choices in dealing with *environmental issues* are important in influencing product sustainability, especially related to use, waste management, and production methods. By choosing products based on the sustainability of their production processes, consumers can drive improvements in (Tascione & Raggi, 2012) *The food supply chain* and overall environmental performance. In a study conducted by That, if the (Grunert, 2011) Watson *et al.*, (2024) *The environmental performance of a brand can affect consumers' attitudes toward the brand, especially for consumers who care about the environment. However, some consumers are also skeptical of big brands' claims of environmental care, which creates a negative relationship between environmental concerns and a green brand image.*

Balancing economic and sustainable growth is a global challenge, especially in Asia-Pacific. The role of the company and customers is very important in achieving environmental

sustainability. When customers choose products with (Scarcity *et al.*, 2023) (Wolf *et al.*, 2014) a *green supply chain (Green SC)*, they create demand that encourages companies to adopt sustainable practices. The research found that (Huh *et al.*, 2019) Khan *et al.* (2023) *green SC management* in manufacturing companies is influenced by institutional pressure, resource access, and resource allocation. Coercive and normative pressures positively impact internal and external green SC, but the relationship between green SC and the *green purchase intention* of customers is not significant.

CONCLUSION

This research shows that sustainability and *green marketing* are important factors in responding to global environmental challenges. With the increasing public awareness of the importance of ecosystem preservation, green marketing has emerged as a strategy that encourages companies to not only pursue economic benefits but also preserve the environment. Although green marketing can encourage the consumption of environmentally friendly products, challenges such as differences between consumer attitudes and behaviors and the influence of external factors such as price and quality remain.

In addition, the research also shows the importance of the company's role in implementing a *green supply chain (Green SC)* strategy to support sustainability. Although there is a discrepancy between green purchase intent and consumers' actual actions, the study reveals that clear communication and transparent information can strengthen the link between purchase intent and consumer behavior.

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