

Bibliometric Analysis of Green Marketing for a Period of 20 Years

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Abstract:

Global warming is one of the serious problems facing the world today. It is the responsibility of all nations to reduce it. In order to reduce global warming and limit the effects of it on humans, the United Nations framed the Sustainable Development Goals (SDG), where all nations have to develop laws to protect the environment as well as implement these laws to maintain sustainability. Due to this reason, many industries have started practicing green marketing in order to meet the regulations laid down by governments. The main purpose of this study is to know the research work that was done in this field and also to know the countries and authors who contributed more to this field. In this study, 849 articles that are available in the Scopus database are considered and analysed using VOS Viewer and R Studio. The results of the study show that there has been significant growth in green marketing over the years, and green marketing is also gaining more importance.

Keywords:-Sustainability, Green Marketing, Global warming, VOS viewer, Data Visualization.

1. Introduction:

In order to cater to the needs of customers, businesses are extensively using natural resources, which are damaging the environment. In order to reduce the effects of global warming and also preserve the natural resources for future generations, steps have to be taken. Green marketing is the term that intends to reduce the harmful effects on the environment by designing, manufacturing, and recycling the product. Nowadays, most companies are shifting towards Green practices because customers prefer more eco-friendly products in order to gain their attention and also attract environmentally friendly customers. The majority of the companies are following Green initiatives, which may include everything from the manufacturing process, packaging, supply chain, and distribution of products to the recycling of products in the best possible way without damaging the environment. In order to maintain businesses for a longer period of time, companies have to follow such types of initiatives that will help them develop new ideas and new products so that they can sell their ideas and develop new products and sell them in an effective way through Green Marketing. Companies that come up with new ideas are always rewarded with growth in business and profitability and can acquire the majority of market shares, which helps them, become market leaders and have a cutting edge over competitors. New ideas are required for innovation and can fetch more profits for companies as well as provide a competitive advantage (Mabenege et al., 2020). Green marketing is one of the key aspects of providing knowledge on sustainability and also helps in providing solutions for many environmental problems. Green marketing focuses on environmental problems; keeping this in mind, most businesses are trying to attract customers by developing new ideas and utilizing resources to produce eco-friendly products that are friendlier to the environment. Most researchers, industrial experts, and customers are focusing a lot on eco-friendly products and ideas (Stal and Jansson, 2017). Consumers in the environmentally friendly market realize that they are accountable for the environment, suggesting human responsibility.

2. Review of Literature:

Green marketing refers to marketing actions that consider our society's long-term benefits with the goal of involving customers, businesses, and the environment. Green marketing employs a non-traditional,

environment-focused approach and tool system to improve quality of life. Green marketing is one of the most important factors in today's businesses and is more applicable to developing and underdeveloped countries. Due to the increasing importance of sustainability all over the world, green marketing is of utmost importance. (Dangelico, et.al 2017).

Green marketing is directly connected to sustainability and sustainable marketing; Sustainability is essential in green marketing, Sustainable development was defined in the 1987 World Commission on Environment and Development and its Brundtland Report, also known as "Our Common Future," as "meeting the needs of the present without compromising future generations' ability to meet their own needs" (United Nations, 1987). Sustainability involves three major elements: environmental, economic, and social factors, whereas green marketing particularly focuses on environmental concerns.

Due to the increase in demand for sustainability, the adoption of green marketing has gained more importance. (Barbarossa and De Pelsmacker, 2016; Johnstone and Tan, 2015;). Consumers are becoming more conscious of the need for environmental preservation along with ethical and sustainable manufacture and marketing of goods (Khattak A. 2019). Various nations and regional regulatory agencies have also enacted legislation to reduce the environmental impact of product manufacture and marketing. The significance and progress of green marketing research require an examination of the discipline from both a quality and quantity perspective. There are numerous methods for assessing and evaluating the quantity and quality of research in any scientific area. Bibliometric analysis was chosen for this study because it may be used to examine a discipline's progress, publishing trends, and patterns (Durisin, B. et al. 2010). One of the major benefits of bibliometric analysis is its ability to evaluate published research without contacting the authors individually (Garfield, E. 1979). Green marketing has attracted a lot of attention from academics all around the world in recent years, and as a result, several literature evaluations on the subject have been produced.

This study mainly focused on the available literature from 2003 to 2023. The main objective of the study is:

- To know the research work that was done in this field
- To know the countries and authors who contributed more to this field.

3. Methodology:

In this study adopts the scientific procedures and Rationales for Systematic Literature Review developed by (Paul et al., 2021) was adopted. It includes 3 stages like assembling, arranging and assessing, as given below.

I. Assembling

- Identification

Review Domain: Green Marketing

Research questions:

- **Q1:** To study the available literature on Green Marketing initiatives that is contributed by different countries.
- **Q2:** To provide an overview of existing research that has been done by researchers earlier.

Source Type: Empirical and Review articles in Journals.

Database source: Scopus.

- Acquisition

Search mechanism and material acquisition: Scopus

Search period: 2003-2023

Search Keywords: Green OR Sustainable OR Environmental Marketing

Source Quality: Scopus

- **Assembling Stage - Total articles available:** 2157

II. Arranging

- **Organization**

Organization codes: Language – English, Document Type: Article

- **Purification**

Subject Areas: Business, Management and Accounting

Source type: Journals

Publication Stage: Final

Arranging Stage: Total Documents – 849 documents

III. **Assessing**

Evaluation

Analysis method: Bibliometric analysis

Analytical technique:

- Performance Analysis: Article publication trend, main articles, authors and journals.
- Science mapping: Citation, Co citation, Bibliometric coupling

Software: MS Excel, VOS Viewer, Biblioshiny using R Studio

Reporting

Conventions: Figures (Network visualization), tables and words (descriptive)

Limitations: Data collected from Scopus and the review limited to the data, based on the keywords used.

Source of Support: This work received no funding.

Source: Adapted from Paul et al., 2021

3.1 Assembling:

The steps involved in assembling are identification and acquisition. The aim of this review is to identify publications in the field of Green Marketing; this is the main topic of the study. This study particularly focuses on the journals that are available in the Scopus database.

Data plays an important role in analysing the research that has been done in this field. Data can be obtained from different databases like Web of Science (WOS), Scopus, PubMed, etc. In this study, data has been collected from the Scopus database. Scopus is one of the largest databases available in the world. Data has been collected using the keywords "Green Marketing" OR "Environmental Marketing" OR "Sustainable Marketing".

3.2 Arranging:

The documents were further filtered by using the "time period" from 2003 to 2023, and documents were searched using the subject area "Business, Management, and Accounting." When documents are filtered by the document type "Articles & Review Articles," "English" is used as the default language. The article publication stage is also considered one of the criteria for extracting the documents. Articles that are in the final stages of publication are only considered for this study. The source for the documents is journals; documents that are published in journals are considered for this study; articles that are published in book chapters or books are not considered for this study. After refining the articles based on the availability of authors, publishers, and abstracts, 849 documents were finalised for this study.

3.3 Assessing:

The last phase in this model is assessment, which includes evaluating and reporting. The SPAR-4-SLR protocol is given in the fig., which provides the required information on the rationale behind the conclusions (Paul et al., 2021). In this study, bibliometric analysis is used for analysing the existing literature that is available in the databases. This method is very helpful in providing current and upcoming research topics. In this study, VOS

Viewer and Biblioshiny-R software have been used to visualise the network mapping of citation, co-citation, bibliometric coupling, etc.

4. Results & Discussion:

a) Documents Published:

Documents that were published from 2003 to 2023 are given in the below figure 1. It is clearly visible that the number of documents published every year is increasing. Especially from 2003 to 2013, the number of documents on green marketing increased significantly. In 2014, there was a fall in the number of documents published, and again in 2017, there was a sudden drop in the number of documents published. Since 2019, the number of articles published has steadily grown, which clearly indicates that awareness of Green marketing is increasing. That is the reason why many researchers as well as marketers are focusing their research on this area compared to previous studies.

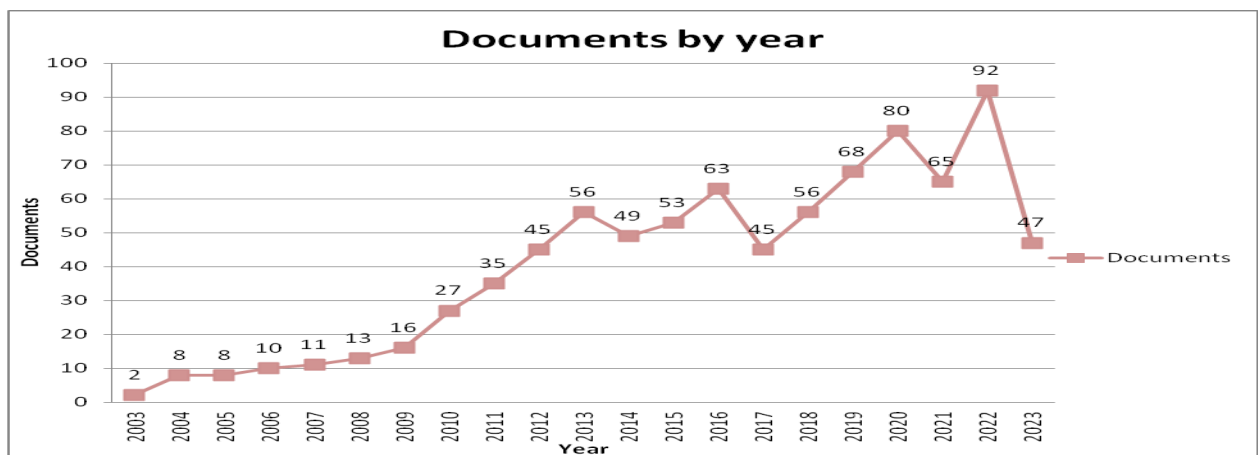


Fig. 1 shows the growth of documents over the years from 2003 to 2023.

b) Documents by Author:

In the area of Green Marketing, research is carried out by many researchers; among them, a few authors have contributed more articles; among them, Leonidou has contributed 7 documents, followed by Kim J with 6 documents. Some other prominent authors in this field are Sun, Chen, Mehraj, Othman, Sarkis, and Taghian. The top 10 contributors in this area are given below Figure 2.

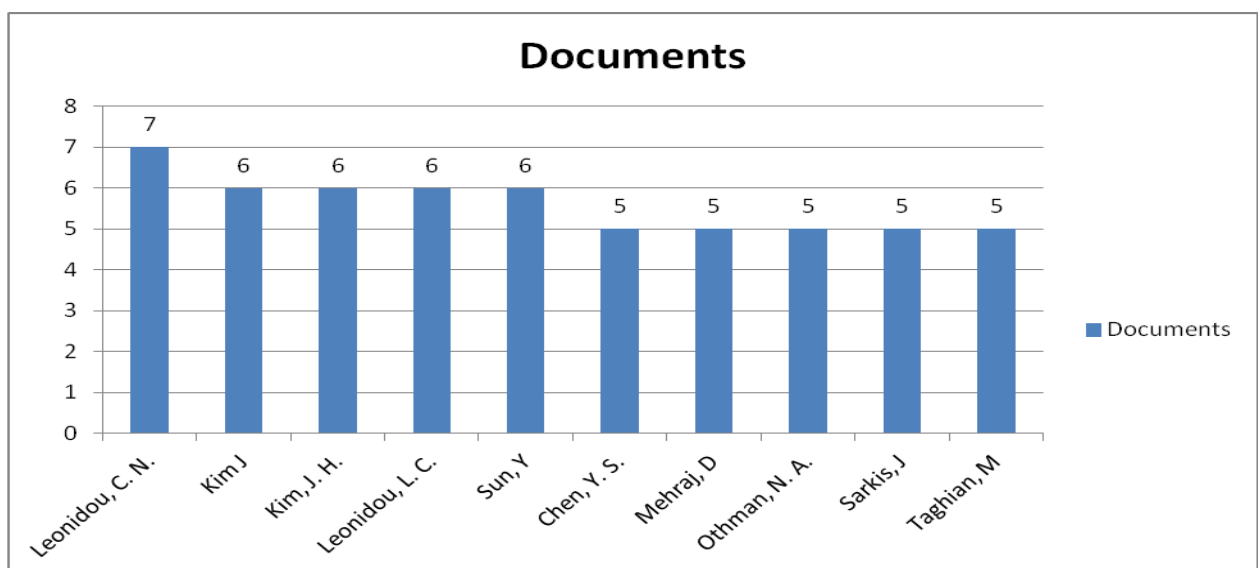


Fig. 2, shows the top 10 authors

c). Documents by Country:

Many nations are passing resolutions or laws to protect the environment from harmful emissions that industries emit in order to reduce pollutants and also meet the UN's guidelines to reduce global warming. As part of that, many industries are turning green. In the below figure.3, the top countries that are supporting green marketing are listed. Among the countries, the United States tops the list with 173 documents, followed by India with 125 documents, the United Kingdom with 61 documents, China with 57 documents, Australia with 49 documents, Malaysia with 47 documents, Taiwan with 36 documents, South Korea with 33 documents, Spain, and Indonesia with 29 and 27 documents, respectively. These are the top 10 countries that are contributing to this field, as per the documents available in the Scopus database.

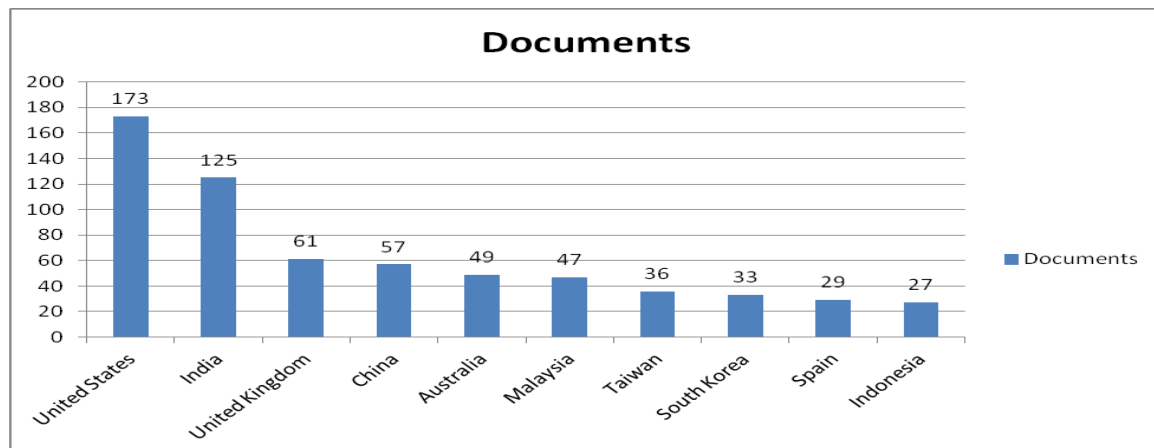


Fig. 3, shows the top 10 Countries

Bibliometric Analysis

- i. **Keywords:** Keywords are required in searching the documents; these are the words used to identify a particular topic. The most popular keywords are those that various authors use in their research, as shown in the below figure.4. The most frequent keywords are larger in size, whereas the small size of the keywords indicates that they are used rarely. As shown in the below figure.4, it is observed that Marketing, Commerce, Green Marketing, Sustainable development, Sales, consumer behavior, sustainability, decision-making, environmental management, consumer behavior, etc. are the most frequently used keywords by the authors in their research. The top 10 keywords that are used and their frequency are listed in the table.1 shown below.



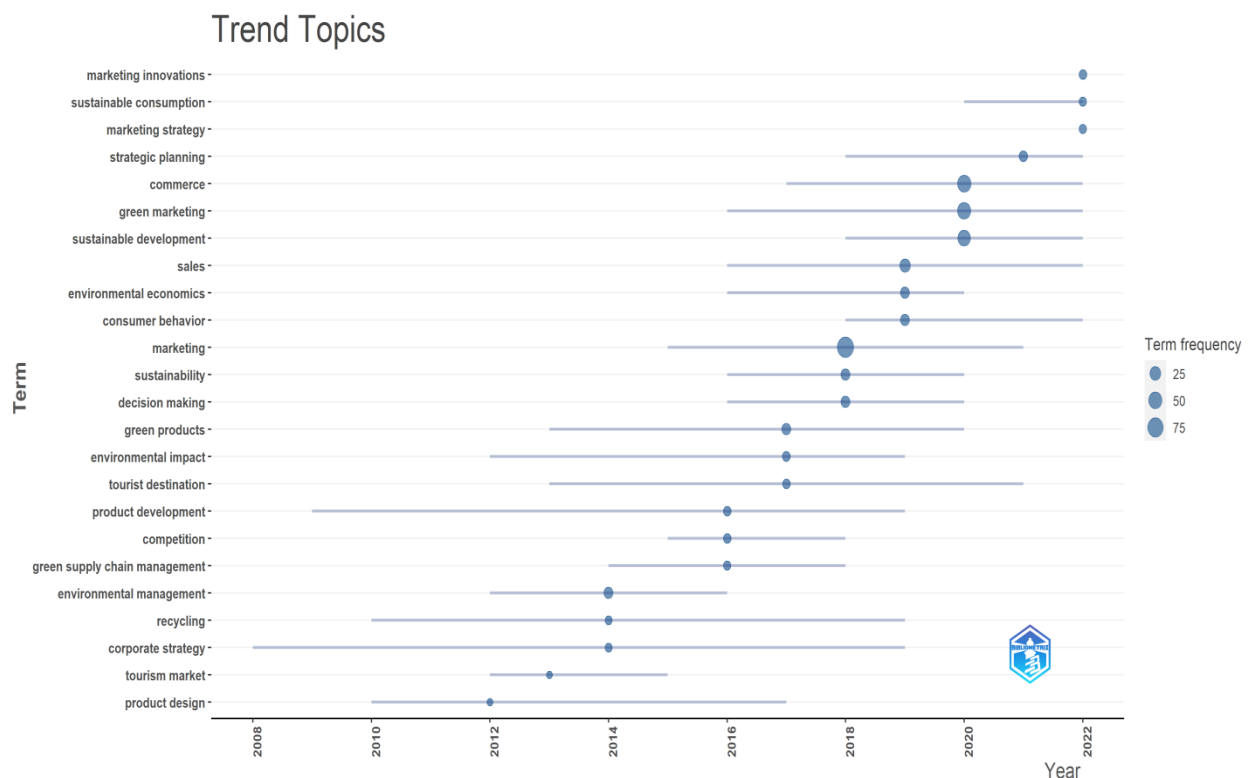
Fig. 4 shows the most frequently used keywords.

Table 1. Shows the top 10 keywords and their frequency.

S No	Terms	Frequency
1	Marketing	91
2	Commerce	52
3	Green marketing	49
4	Sustainable development	42
5	Sales	22
6	Consumption behaviour	20
7	Sustainability	15
8	Decision making	14
9	Environmental management	14
10	Consumer behaviour	13

ii. Trending Topics:

Over a period of time, topics keep changing. During the period of study, i.e., from 2003 to 2023, there were many trending topics, which are provided in the below fig.5. All the trending topics are given on the Y-axis, and the year is given on the X-axis. It is observed that many topics came into existence over a short period of time. Term frequencies are given in bubbles; a larger bubble indicates that it has been trending for longer durations, and a smaller bubble indicates that the topic has been trending for a short period of time. As shown in the below figure.5, the most trending topics are Product design, environmental management, corporate strategy, recycling, competition, product development, Green supply chain management, green products, and environmental impact. These are some of the most trending topics during the period of study.



iii. Country Scientific production:

Country Scientific Production

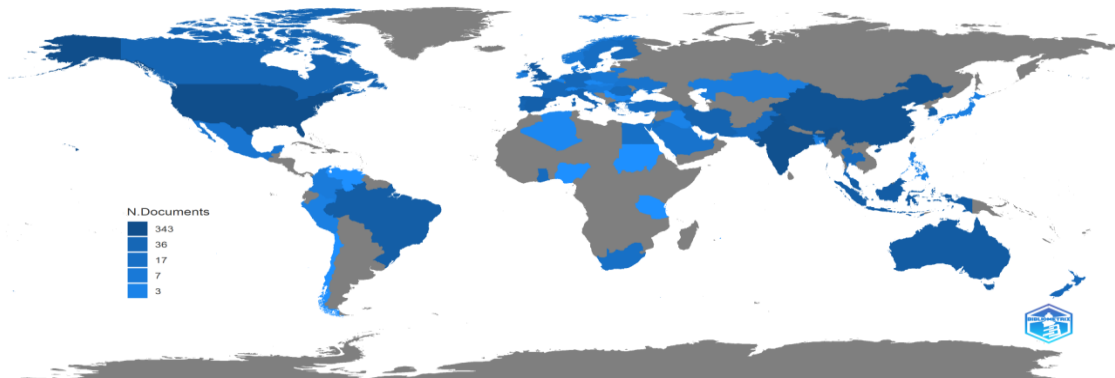


Fig. 6, shows the country production

In the above figure.6, countries scientific production has been given. Shaded regions provide the number of documents contributed by that nation. The thickly shaded countries are the ones that have more documents. It is observed that the US contributed nearly 343 documents, followed by India, China, Australia, etc. Countries that are thinly shaded and are contributing very few articles say that developed countries are focusing more on Green marketing than developing countries. Still, awareness has to be generated in other countries, and businesses need to be supported in order to practice Green marketing.

Country Collaboration Map

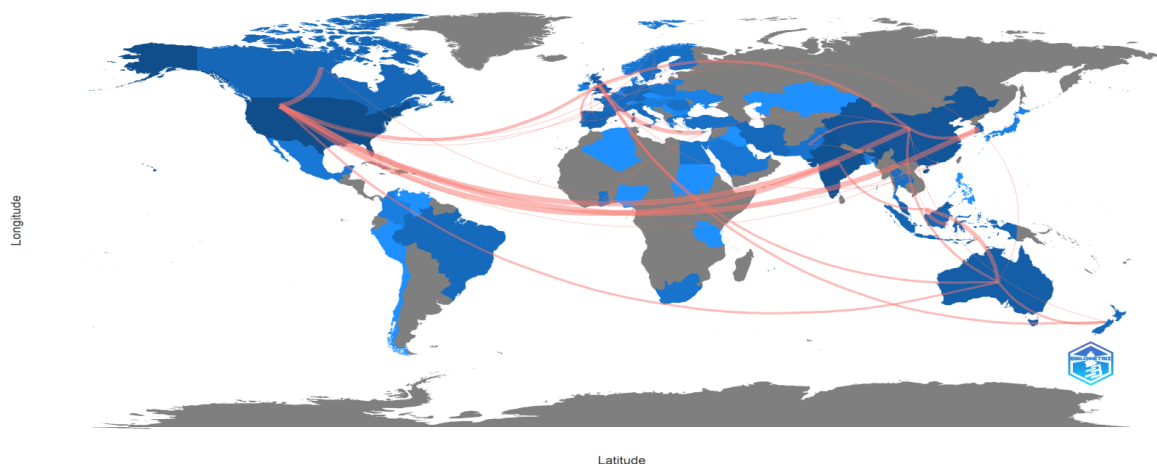


Fig. 7, shows the country collaboration map

In the above-shown fig.7, the collaboration between countries is given. Research that involves two or more nations working together is given with a link. The line indicates the collaboration link between the countries. The thickness of the line shows more collaboration between the countries. Countries that are thicker in color have more documents. The link shows how countries are connected in their collaborative work. The longer and thicker the line, the stronger the collaboration between the countries. Collaborations between countries are required to share and transfer their research-related works so that more products and services can be produced.

Science Mapping:

Science mapping investigates the connections between research connections (Baker, Kumar, & Pandey, 2021; Cobo et al., 2011). The investigation concentrates on the collaborations and links between research constituents.

The main approaches to Science mapping include citation analysis, co-citation analysis, bibliographic coupling, co-word analysis, and co authorship analysis. When paired with the analysis of networks, such techniques are useful in displaying the bibliometric structure as well as the intellectual structure of the study field (Baker, Pandey, Kumar, & Haldar, 2020; Tunger & Eulerich, 2018).

a. Citation Analysis:

Citation analysis involves a fundamental technique for scientific mapping that is based on the concept that citations indicate intellectual connections formed when one publication refers to another (Appio et al., 2014). The analysis determines the most significant articles in the research field. Despite the fact that there are several methodologies to evaluate the importance of publications in a research field, Stremersch, Verniers, and Verhoef (2007) As a result of using citations, one can study the leading articles on a study topic to acquire a greater understanding of its intellectual dynamics.

The below figure.8, shows the citation analysis. Authors who cited others work are given in the below figure. The more citations, the bigger the bubble; if it is small, the number of citations received for that particular author is less. Colors are based on the year of publication of an article due to changes in trends in the topics of research. All the citations are clustered based on the works of the authors, year, topics, etc. Authors who are cited more are given in the below figure.8

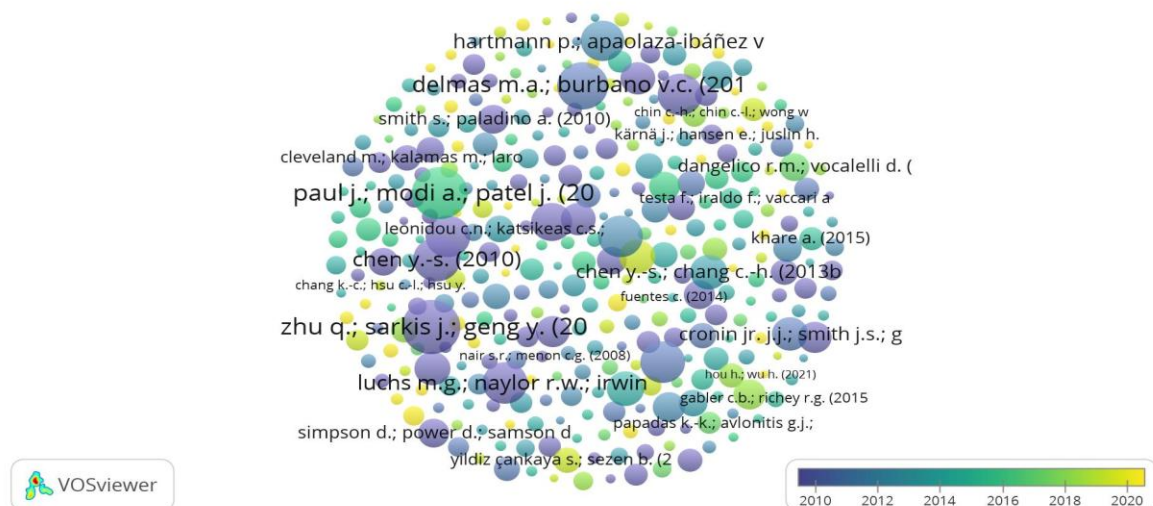


Fig. 8 shows the Citation analysis of authors.

b. Co-Citation Analysis:

Co-citation analysis is a scientific mapping technique that conveys thematically related works that are frequently cited together (Hjrlund, 2013). The study may be used to uncover intellectual property. The structure of a research field, including its basic concepts (Liu, Yin, Liu, & Dunford, 2015), is connected in a co-citation network when two publications appear in the reference list of another publication. The advantage of utilising co-citation analysis is that business academics can discover theme clusters in addition to locating the most important publications.

As shown in the below figure.9, a co-citation analysis is given. In the given figure, it has 760 items in 4 clusters; each cluster is represented by one colour. Cluster 1 has 213 items, Cluster 2 has 212 items, Cluster 3 has 208 items, and Cluster 4 has 127 items. The lines that are present in the figure.9 are called links, which denote how each author connected with other authors. Nearly 207409 links are available, with a link strength of 1254973. As shown in the figure.9, Peattie K. has received more link strength (35813) and 540 citations, followed by Polonsky M. J. with 26803 link strength and 374 citations. Ajzen I, Hair J F, Menon A, and Kotler P are some other authors who have more link strengths.

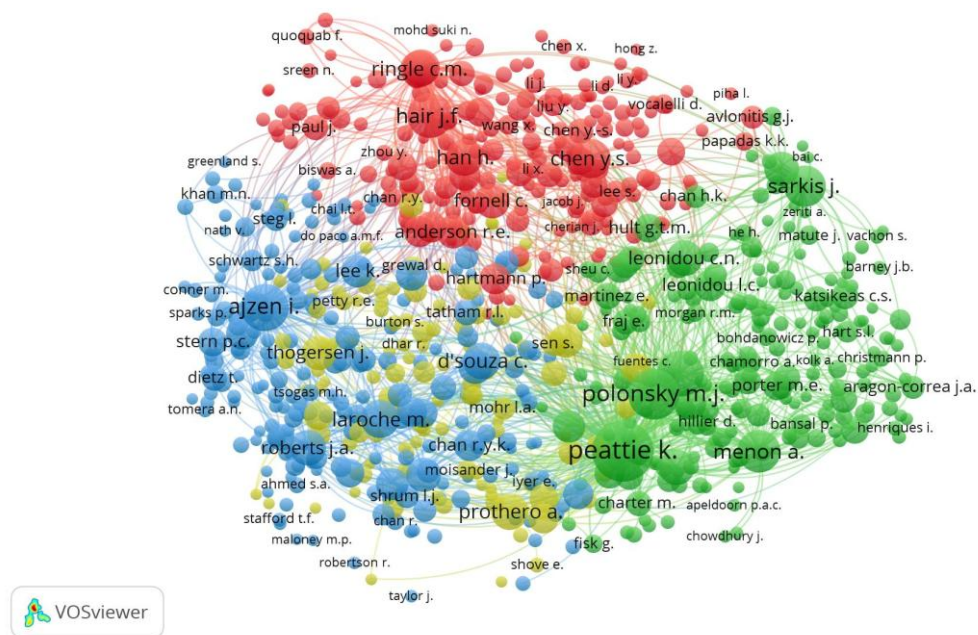


Fig.9 shows the co-citation analysis of authors.

c. Country and Co Authorship Analysis

In the below figure.10, it shows the country's co-authorship analysis; the country that has more documents will be shown in a big bubble, and the line shows the link between the countries. Among the countries, the United States tops the list with 159 documents and 13813 citations, followed by India with 123 documents and 5263 citations, the United Kingdom with 50 documents and 5340 citations, China with 50 documents and 3088 citations, Australia with 42 documents and 2761 citations, and Malaysia with 39 documents and 1301 citations. These are some of the top countries with the most citations, as can be seen in the below figure. Some other countries that contributed are South Korea, Canada, New Zealand, Spain, Hong Kong, Egypt, France, Germany, Indonesia, etc.

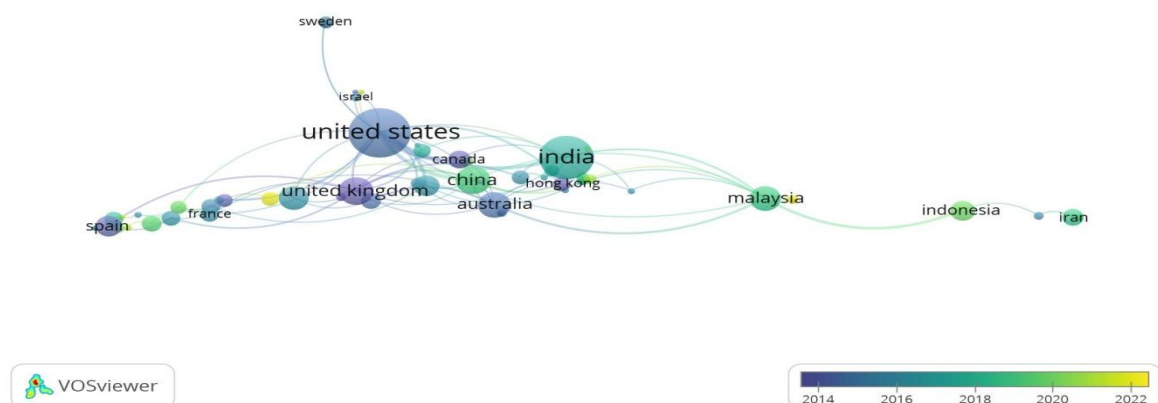


Fig. 10 Shows the Country's Co Authorship Analysis

5. Conclusions:

It is observed that companies are shifting towards green marketing. Still, there is a need for companies to move towards green practices, and to produce green products, it is their responsibility to protect the environment. It is a known fact that it cannot be done all of sudden, but steps have to be taken to implement it. There is a need to promote green products and maintain sustainability, so it is the responsibility of organisations, businesses, and governments to raise awareness among citizens. Businesses need to focus on green practices not only for the sake of their businesses but also for the betterment of the environment.

This study clearly indicates that there has been rapid growth in research on green marketing from 2003 to 2023. It is clear that researchers are working to bring awareness and also to promote green marketing for the betterment of society, so businesses and governments should provide support to those who are working in this field. In the near future, there will be a lot of demand for green marketing; hence, companies need to educate consumers on the green products, which will result in their support for the green products.

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