Research Article

Environmental Consciousness: A Comprehensive Investigation Using Bibliometric Analysis

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ARTICLE INFO	ABSTRACT
	Introduction: Environmental Consciousness (EC) has been gaining greater attention lately but the field is still relatively young and conceptual clarity is yet to be established. The objective of this study is to analyse current trends in literature related to environmental consciousness, with an emphasis on bibliometric analysis. Scopus and Web of Science were used to conduct the bibliometric analysis of environmental consciousness. This study encompassed all the years relevant to environmental consciousness, as this study is the first bibliometric research on the same. **Methods**: A total of 295 publications were generated after the records were refined and scanned. Results were analysed using the Bibliometric R-package. The Biblioshiny app was used to do a descriptive study, which included the most often used terms in titles and keywords, eminent authors, top journals, and contributing organisations, followed by a content analysis. A network visualisation analysis of patterns has been investigated using Biblioshiny. **Results**: The bibliometric analysis shows a significant increase in the area of environmental consciousness. The study highlights notable authors, significant works, top organisations, nations, and journals in environmental consciousness through science mapping and performance analysis of the existing studies. The research showed how environmental consciousness has developed over time and how it may give businesses a sustainable competitive advantage. **Conclusions**: As far as the author knows, no study has analysed environmental consciousness using bibliometric analysis. The aim of the present investigation is to bridge a major gap by analysing the impact of EC in order to comprehend conceptual formation and offer an agenda for future studies for researchers engaged in this field. **Keywords**: Environmental consciousness, Bibliometric analysis, Biblioshiny

INTRODUCTION

Environmental consciousness, also known as environmental awareness or eco-consciousness, has arisen as one of the main concepts in current environmental concerns (Smith and Johnson, 2020). In an era of growing concerns for climate change, habitat destruction, resource depletion, and pollution (Brown et al., 2019), environmental consciousness reflects a fundamental shift in how individuals, communities, and societies perceive and interact with their natural surroundings (Davis and White, 2018). This includes a recognition of the complex interconnectedness between human activity and the environment and a dedication to ethical and environmentally friendly behaviour (Jones, 2021). Environmental consciousness is a broad notion that goes beyond awareness and includes adopting eco-friendly habits, sustainable consumption patterns, and actively participating in environmental preservation initiatives (Adams and Garcia, 2017). The foundation is in the recognition that Earth's resources are finite and demands appropriate administration to preserve the welfare of the present and subsequent generations (Wilson, 2019).

The growing significance of tackling global environmental concerns emphasises the need for environmental consciousness (Thompson et al., 2020). Among the urgent concerns that call for collective action and a significant

change in human behaviour are deforestation, air and water pollution, climate change, and biodiversity loss (Miller, 2018). It is critical to recognise the value of both individual and collective environmental consciousness in order to encourage sustainable lifestyles, develop effective environmental policies, and establish peaceful coexistence with the earth (Jackson and Robinson, 2021). Researchers and scholars are realising more and more that environmental consciousness is what propels sustainable development (Miller and Davis, 2019). According to Robinson et al. (2018), it is regarded as a crucial antecedent to pro-environmental behaviours including recycling, energy saving, and support for environmental laws. Additionally, how people feel about the world, how businesses operate, and how governments make decisions are greatly impacted by environmental consciousness (Thompson and Jones, 2020).

OBJECTIVES

The development of environmental consciousness has been influenced by environmental movements and broader cultural changes (Clark and Adams, 2016). A significant turning point in the public's understanding and involvement with environmental problems occurred with the formation of the environmental movement in the middle of the 20th century, as demonstrated by occasions like the inaugural Earth Day in 1970 (Smith and Garcia, 2018). Through time, this awareness has grown into a more thorough comprehension of the intricate connections between human activity and the natural world (Johnson and Wilson, 2021). The measurement and evaluation of environmental consciousness have also risen to prominence in the academic discourse, (White et al., 2017). Several scales and instruments have been established to quantify people's environmental attitudes, values, and behaviours, (Davis and Thompson, 2019). Important insights are offered by these tools into the variables that affect people's decision to adopt pro-environmental behaviours.

Consequently, the current study fills this gap by employing bibliometric analysis to provide a comprehensive understanding of environmental consciousness. To achieve this goal, a substantial collection of references linked to environmental consciousness was gathered via Web of Science (WOS) and Scopus. The data were elaborated and synthesised using performance analysis and scientific mapping. Numerous indicators were employed in the studies, including the author collaboration network, h-index, Bradford's law, thematic mapping, Lokta's law, co-occurrence of keywords, most prolific authors, most cited nations, pertinent affiliations, and co-citation analysis. Drawing from the growth of environmental consciousness, the research seeks to address each of these questions:

Q1. How do scientific publications on environmental consciousness tend to be published globally?

Q2. How has environmental consciousness been structured?

Q3. How has environmental consciousness evolved within the literature?

METHODS

Figure 1, which draws from Donthu et al. (2021a) findings, illustrates the four steps involved in conducting a bibliometric analysis. These are: defining the purpose and scope of the study; choosing an analysis technique; collecting data; conducting the bibliometric analysis and reporting results. The study intends to perform a bibliometric analysis using articles about "Environmental consciousness." The bibliometric analysis uses a variety of quantitative methods, such as performance analysis and scientific mapping approaches, to analyse bibliographic data, such as the number of publications and the number of citations (Broadus, 1987). Consequently, bibliometric analysis is more appropriate for research since it facilitates the identification of well-known writers, works, journals, organisations, and places associated with a specific area of study, as well as the investigation of the connections among them (Donthu et al., 2021b). To accomplish responsible resource management and minimise environmental impact, sustainability relies on increased environmental consciousness. Therefore, it is crucial to research environmental consciousness given its contemporary prominence.

According to Pranckute (2021), the main resources for extensive bibliometric analysis and research evaluations are the WoS and Scopus databases. To investigate the research on environmental consciousness, both databases using the TITLE-ABS-KEY phrase "Environmental consciousness" were searched. All articles related to this topic were reviewed without a specific year range. The search yielded 295 publications published in English between 1992 and 2025. When it comes to searching for academic literature, the most popular search engines are Scopus and WOS. They cover a wide range of conference proceedings, peer-reviewed books and scientific journals (Agrifoglio et al., 2021). a broad variety of scientific publications (Agrifoglio et al., 2021). Databases like these are frequently utilised for bibliometric study, either together for comparative analysis (Gorraiz and Schloegl, 2008) or separately for WOS

(Caputo et al., 2018) and Scopus (Farooq, 2022). Google Scholar is not included due to its unreliable accuracy and incomplete citation data. Studies have indicated that it is inadequate in the quality control required to function as a bibliometric instrument (Jacso, 2010; Aguillo, 2012). Consequently, a bibliometric study was carried out using Scopus and WOS. This yielded a total of 2,450 outcomes in WOS and 6,202 outcomes in Scopus, covering research published since the ve[...]5.
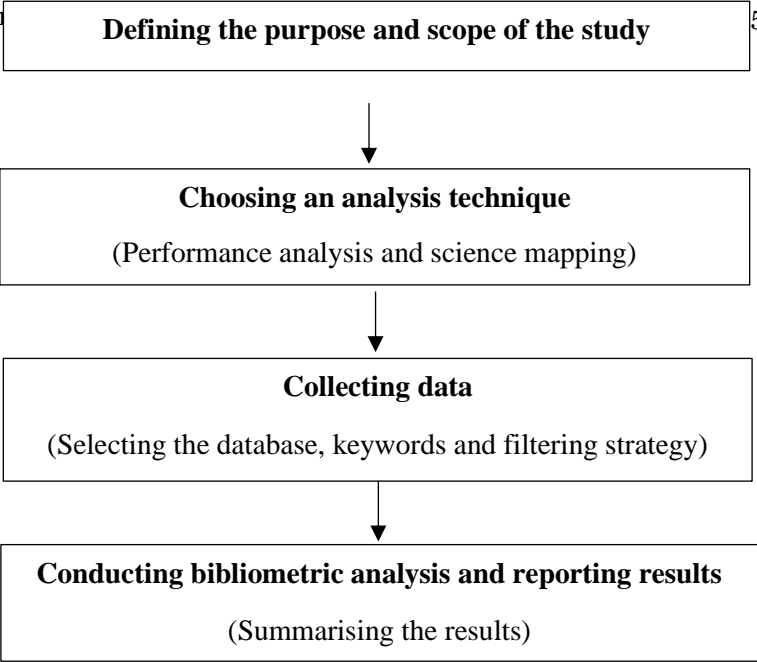
Defining the purpose and scope of the study

↓

Choosing an analysis technique (Performance analysis and science mapping)

↓

Collecting data (Selecting the database, keywords and filtering strategy)

↓

Conducting bibliometric analysis and reporting results (Summarising the results)

Figure 1 The bibliometric analysis approach employed is centred upon Donthu et al.'s (2021a)

Table 1 Search and selection strategy

Search and Filtering Strategy	Final Results
Search Engine: **Scopus**	
Search date: 6 January, 2024	
TITLE-ABS-KEY (environmental AND consciousness) AND	
(LIMIT-TO (SUBJAREA, "BUSI"))	
AND (LIMIT- TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "re")) AND	
(LIMIT-TO (EXACT KEYWORD, "Environmental Consciousness")	
AND	
(LIMIT-TO (SRCTYPE, "j")	
AND (LIMIT-TO (LANGUAGE, "English"))	106
Search Engine: **WOS**	
Search date: 6 January, 2024	
Environmental Consciousness (Topic) and Article or	
Review Article (Document Types)	
and Management or Business (Web of Science Categories) and English (Languages)	189

Note(s): The methodical procedure followed to obtain the final set of (295) articles for bibliometric analysis is shown in the table.

The search results were carefully analysed and reviewed to ensure no duplicates. This was done using basic R functions. Studies which were not related to the research concern were also excluded. Specifically, studies that did not pertain to business, management, and accounting areas were removed. We also limited our search to articles and reviews, while excluding other sources such as notes, short surveys, editorials, conference reviews, books, and conference papers. The keywords used were "Environmental Consciousness". Additionally, we only considered papers published in journals. For the WOS database, we focused on studies that were part of the WOS core collection, and narrowed our search to articles and review articles in the business and management categories. Moreover, those papers were also excluded which were not in English language.

The open-source Bibliometrix package of R software is one of the thorough science mapping tools for bibliometric analysis (Aria and Cuccurullo, 2017). As a result, bibliometric and network analysis were conducted using R software's "bibliometrics" package, based on the suggestions made by Aria and Cuccurullo (2017). After screening and eligibility procedures, 28 papers were eliminated, leaving 267 publications in the final data set. 267 papers make up the final data set, which was examined with the use of the R software's bibliometrix tool.

RESULTS

Data analysis

The emergence of several statistical tools can be attributed to the establishment of business research using bibliometric analysis, including VOSviewer (Van Eck and Waltman, 2010), Bibexcel (Persson et al., 2009), SciMAT (Cobo et al., 2012), CiteSpace (Chen, 2006) and CitNetExplorer (Van Eck and Waltman, 2014). The R software's Biblioshiny package was utilised to analyse the data for this investigation. The descriptive analysis and visualisation were both done using Biblioshiny. According to Aria & Cuccurullo (2017), researchers have supported the use of biblioshiny because it is easy to upgrade and integrate using additional R packages for statistics. In comparison to other statistical tools, the package emphasises the accuracy and statistical correctness of the outputs in addition to data visualisation (Dervis, 2019). For bibliometric analysis, Mougenot and Doussoulin (2022) recommend using Biblioshiny, an open-source R package that can be applied to build more effective visualisations centred around interactive web interfaces.

Performance analysis

Scientific production

The dataset provides a diverse collection of scholarly research documents spanning the years 1992 to 2025, with 267 documents gathered from 127 distinct academic outlets. The dataset shows an annual growth rate of 12.64% over this period, showing an ever-expanding field of research. Articles make up most of the documents (261), which have an average age of 6.8 years. Other document types include early access articles, proceedings papers, and reviews. Each document receives 43.64 citations on average, demonstrating its significance. The study identified 671 authors out of which 40 documents were single-authored with an average of 2.79 co-authors per document and 24.72% of international co-authorships as shown in Table 2. The dataset also includes a substantial number of cited references (16,549), as well as an extensive keyword inventory (885 Keywords Plus (ID) and 1012 Author's Keywords (DE). The research corpus has 671 authors in total, 36 of whom are the sole authors of certain documents. This extensive dataset provides information about the development, cooperation, and impact of scholarly work across multiple domains. The variety of document types and the patterns of collaborative authorship add to the dynamic research environment. In conclusion, the dataset shows tendencies of expansion, international collaboration, a concentration on recent research, a major impact from citations, changing research interests, a range of document forms, collaborative authoring, and a large number of authors. Collectively, these patterns show how the academic landscape in the given topic is dynamic and changing.

Table 2 Main information about the Data from 1992 to 2025

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	1992:2025
Sources (Journals, Books, etc)	127
Documents	267
Annual Growth Rate %	12.64

Document Average Age	6.8
Average citations per doc	43.64
References	16549
DOCUMENT CONTENTS	
Keywords Plus (ID)	885
Author's Keywords (DE)	1012
AUTHORS	
Authors	671
Authors of single-authored docs	36
AUTHORS COLLABORATION	
Single-authored docs	40
Co-Authors per Doc	2.79
International co-authorships %	24.72
DOCUMENT TYPES	
article	251
article; early access	7
article; proceedings paper	3
review	5
review; early access	1

Annual citations per year

Over the years, the articles on environmental consciousness have been cited frequently. A lower count of citations and publications were received during the first ten years, from 1992 to 2001. In regard to mean annual citations (5.96) and mean citations per article (155), 2000 was one of the most productive years. Researchers began to pay more attention to environmental consciousness between 2002 and 2011. According to Table 3, the most productive year was 2003, possessing the highest overall average citation count (43.17) and average number of citations per article (993). The most prolific time frame, however, was from 2012 to 2025, during which time there was a considerable increase in the total number of documents produced because of the creation of different environmental consciousness models. With regard to the papers that were published and the citations that were obtained, the idea of environmental consciousness changed during the last ten years. Even though the years 1992–2001 were the least fruitful, there were a lot more groundbreaking studies during that time. The number of citations that articles on environmental consciousness have acquired shows how the topic is developing and expanding. The current business environment may be forcing organisations to refocus their attention on environmental sustainability, which could account for the rise in environmental consciousness publications.

Table 3 Annual Citations per year

Year	N	MeanTCperArt	MeanTCperYear	CitableYears
1992	1	5	0.15	34
1993	0	0	0	0
1994	0	0	0	0
1995	1	135	4.35	31
1996	0	0	0	0
1997	2	62	2.14	29
1998	2	21	0.75	28
1999	0	0	0	0
2000	1	155	5.96	26
2001	2	144.5	5.78	25
2002	1	124	5.39	23
2003	1	993	43.17	23
2004	2	66.5	3.02	22
2005	1	24	1.14	21
2006	1	155	8.16	19

2007	3	128.67	6.77	19	
2008	3	172.67	9.59	18	
2009	4	77.5	4.56	17	
2010	3	41	2.56	16	
2011	1	120	8	15	
2012	11	131.45	9.39	14	
2013	7	113.29	8.71	13	
2014	9	72.67	6.06	12	
2015	13	64.23	5.84	11	
2016	8	55.62	5.56	10	
2017	13	40.23	4.47	9	
2018	9	83	10.38	8	
2019	10	86.6	12.37	7	
2020	17	58.65	9.78	6	
2021	21	49.71	9.94	5	
2022	20	32	8	4	
2023	20	18	6	3	
2024	40	2.98	1.49	2	
2025	7	0.43	0.43	1	

To demonstrate the significance of journals, Table 4 displays the ten most pertinent journals based on H-index ranking. The M-index, which also takes into account the number of years ago that each journal contributed its first publication to the databases, validates these findings concerning the citations that each journal obtained from other authors in the collection known as a total citation (TC). On the ranking list, the Journal of Retailing and Consumer Services is in the lead. Journal of Business Ethics, Business Strategy and Environment, International Journal of Consumer Studies, Journal of Cleaner Production, Journal of Business Research and others have also had a big impact on the field. Despite having high TC and contributing to environmental consciousness publications, journals like the Journal of Operational Research, International Journal of Operations and Production Management and Journal of Marketing are not included in Table 4 because of their low H-index. The most important publication started in 2018 with the Journal of Retailing and Consumer Services.

Table 4 Journal Publications

Source	h_index	g_index	m_index	TC	NP	PY_start
JOURNAL OF RETAILING AND CONSUMER SERVICES	18	21	2.25	1633	21	2018
JOURNAL OF BUSINESS ETHICS	15	16	0.6	1455	16	2001
BUSINESS STRATEGY AND THE ENVIRONMENT	12	17	0.705882353	857	17	2009
INTERNATIONAL JOURNAL OF CONSUMER STUDIES	12	14	0.705882353	954	14	2009
JOURNAL OF BUSINESS RESEARCH	9	10	0.391304348	1539	10	2003
TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE	7	10	0.4375	413	10	2010
MARKETING INTELLIGENCE & PLANNING	5	5	0.454545455	326	5	2015
PSYCHOLOGY & MARKETING	5	6	0.172413793	582	6	1997
CORPORATE SOCIAL RESPONSIBILITY AND ENVIRONMENTAL MANAGEMENT	4	7	0.307692308	260	7	2013
JOURNAL OF HOSPITALITY AND TOURISM MANAGEMENT	4	4	0.571428571	102	4	2019

Note: Min: 10 Journals

Most Relevant Authors

The author's production is depicted in Figure 2 over time, with Chen having the maximum author timeframe from 2008 to 2019. According to Aria and Cuccurullo (2017), the quantity of documents corresponds to the bubble size, Chang produced the most documents in 2012. The colour intensity is correlated with the annual quantity of citations (Aria and Cuccurullo, 2017). Table 5 depicts that the documents of Kumar (2021) received the highest total number of citations per year. The h-index, which measures author productivity, shows that Kumar with an h-index of 4, was the most productive author. As indicated in Table 5, Chang had the highest total citations with an H index of 3.
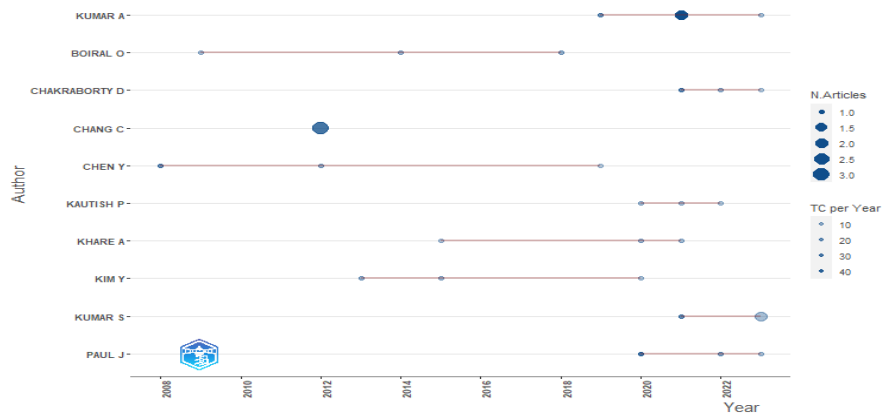
Figure 2 Authors' Production over time

Table 5 Authors' Local Impact by H index

Element	h_index	g_index	m_index	TC	NP	PY_start
KUMAR A	4	4	0.666666667	321	4	2019
CHANG C	3	3	0.230769231	433	3	2012
PRAKASH G	3	3	0.5	315	3	2019
BOIRAL O	3	3	0.1875	225	3	2009
PAUL J	3	3	0.6	208	3	2020
KIM Y	3	3	0.25	188	3	2013
WICKER P	3	3	0.428571429	133	3	2018
KUMAR S	3	3	0.75	106	3	2021
KHARE A	3	3	0.3	62	3	2015
KAUTISH P	3	3	0.6	56	3	2020

Note: Min: 10 Authors

Most cited countries

The performance analysis findings highlight the countries with the most citations. With more than 2,000 citations overall, China was the most referenced nation in the field of environmental consciousness, as illustrated in Table 6. The country with the most average article citations is Austria (465), preceded by Kuwait (294) and Portugal (105). With 2,644 citations in the field, Asia's most-cited nation was China. This is because China prioritizes spending more efficiently on research and development than other countries. The United States, the United Kingdom, Austria, Germany, Spain, Canada, Australia, and Portugal are among the other nations that have demonstrated a strong interest in environmental consciousness. Similarly, Asian nations like Korea and India have contributed significantly to the area and have consistently published state-of-the-art studies over the past few decades.

Table 6 Most Cited Countries

Country	TC	Average Article Citations
CHINA	2644	54
USA	1813	42.2
INDIA	1181	49.2

AUSTRIA	993	993
UNITED KINGDOM	773	85.9
SPAIN	757	94.6
AUSTRALIA	548	68.5
GERMANY	476	47.6
CANADA	462	77
PORTUGAL	351	175.5

Note: Min: 10 Countries

Analysis of keywords

Keywords increase the exposure of the research and are the most effective way to identify and assess a key keyword utilising a search engine. The most popular keywords associated with environmental consciousness were investigated in the study. With 100 occurrences, the most often used keyword was "environmental consciousness," as Table 7 demonstrates. The other important keywords have fewer than ten occurrences. The research looked at the most popular themes in every decade. Many themes, such as environmental consciousness, sustainability, environment, corporate social responsibility, sustainable consumption, environmental concern, health consciousness, environmental knowledge, green marketing, purchase intention, and green products between 2014 and 2024, as Figure 3 illustrates. Environmental consciousness first surfaced as a term in 2002 and has remained the most constant keyword, according to the word dynamics data (see Table 8). Similarly, in 2001, the term sustainability became well-known in the context of environmental awareness. Between 2012 and 2025, 73 analyses of the keyword environmental concern with an emphasis on environmental consciousness were conducted. Between 2001 and 2025, there were 72 studies on the environment, while between 2009 and 2025, there were 59 studies on health consciousness and sustainable consumption. From 2017 to 2025, the keyword environmental knowledge appeared 45 times. Next, 42 and 35 instances of purchase intention and green purchase intention, respectively, between 2012 and 2025.

Table 7 Most Frequent Keywords

Keywords	Occurrences
environmental consciousness	100
sustainability	21
environmental concern	11
health consciousness	10
sustainable consumption	10
environment	9
green marketing	9
organic food	9
purchase intention	9
attitude	7
climate change	7
environmental awareness	7
green products	7
consumer behaviour	6
corporate social responsibility	6
environmental knowledge	6
green consumption	5
green purchase intention	5
structural equation modeling	5

Figure 3 Trend Topics in Environmental Consciousness
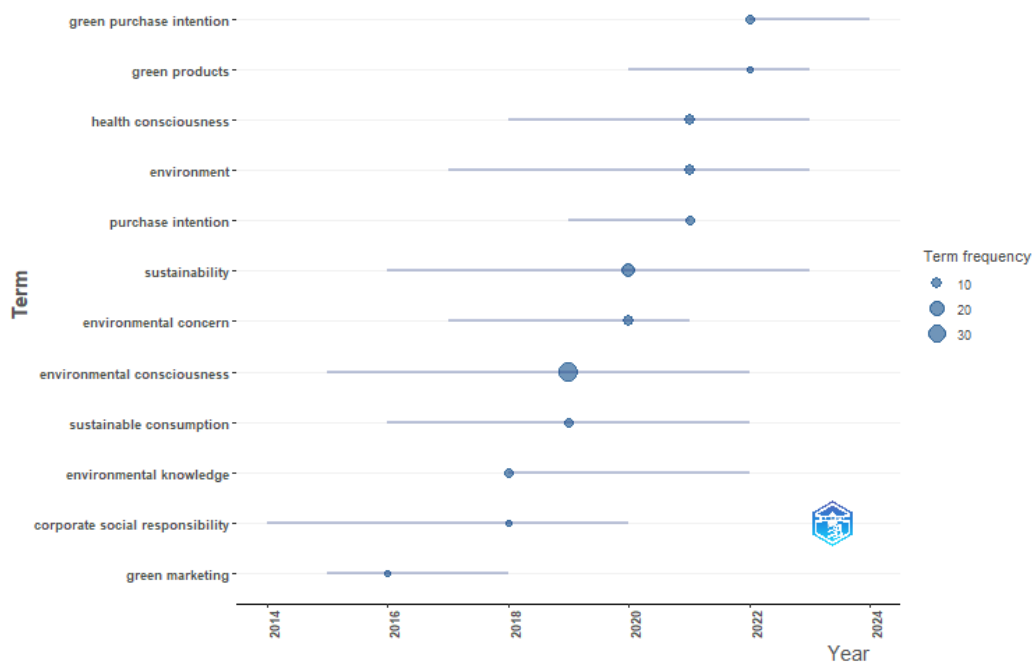
Table 8 Word Frequency Over Time

Ye ar	Environ mental Consciou sness	Sustaina bility	Environ mental Concern	Environ ment	Health Conscio usness	Gree n Purc hase Inten tion	Sustain able Consum ption	Environ mental Knowled ge	Purc hase Inten tion
19 92	0	0	0	0	0	0	0	0	0
19 93	0	0	0	0	0	0	0	0	0
19 94	0	0	0	0	0	0	0	0	0
19 95	0	0	0	0	0	0	0	0	0
19 96	0	0	0	0	0	0	0	0	0
19 97	0	0	0	0	0	0	0	0	0
19 98	0	0	0	0	0	0	0	0	0
19 99	0	0	0	0	0	0	0	0	0
20 00	0	0	0	0	0	0	0	0	0
20 01	0	1	0	1	0	0	0	0	0

2002	0	1	0	1	0	0	0	0	0
2003	0	1	0	1	0	0	0	0	0
2004	0	1	0	1	0	0	0	0	0
2005	0	1	0	1	0	0	0	0	0
2006	0	1	0	1	0	0	0	0	0
2007	0	1	0	1	0	0	0	0	0
2008	1	1	0	1	0	0	0	0	0
2009	2	1	0	1	1	0	0	0	0
2010	2	1	0	1	1	0	0	0	0
2011	3	1	0	1	1	0	0	0	0
2012	6	2	1	1	1	1	0	0	0
2013	7	2	1	2	1	1	2	0	0
2014	8	4	2	2	2	1	2	0	0
2015	10	4	2	2	2	1	2	0	1
2016	12	5	2	2	2	1	2	0	1
2017	14	7	4	3	2	1	4	2	2
2018	17	7	4	3	3	1	4	4	2
2019	19	7	5	4	3	1	4	5	2
2020	20	10	6	4	4	1	4	5	2
2021	25	11	8	6	6	2	5	5	6
2022	28	11	9	6	6	5	7	5	6
2023	31	14	9	8	7	5	7	5	6
2024	34	16	10	9	8	6	8	7	7
2025	36	16	10	9	9	8	8	7	7

Science mapping analysis

Co-occurrence of keywords

The degree to which a keyword occurs with other keywords is indicated as co-occurrence. According to Farrukh et al. (2020), the use of keywords highlights a pattern in earlier works. In accordance with Huang et al. (2020), a network diagram representing a network of co-occurrence of keywords can show specific associations among terms. The co-occurrence of terms in article titles and abstracts is depicted in Figure 4. The study used Aria and Cuccurullo's (2017) methodology to examine the co-occurrence of keywords. According to the size of the vertex, the findings of scientific mapping show that environmental consciousness was the most frequently used keyword in comparison to other phrases like sustainability, buy intention, and green intention. The vertex size determines how significant is a keyword. Each vertex in the network denotes a piece of data or a keyword, and vertex size is related to the frequency of the piece of data (Yu et al., 2020).

Six clusters were found in the study, and each cluster had a unique set of terms. Betweenness and closeness centrality are used in the study as measurements to ascertain how frequently environmental consciousness keywords appear together. According to the findings, in cluster 1 sustainability and India possess the highest betweenness, this suggests that in comparison to other keywords, these are the ones that are closest to one another. Cluster 2 identifies sustainable consumption as the keyword having the highest betweenness. Cluster 3 identifies health consciousness, attitude and organic food with the highest prominence of keywords. In cluster 4 environmental consciousness was the keyword with the highest betweenness centrality. In cluster 5, the environmental attitude and knowledge have the highest betweenness. In cluster 6, climate change, carbon dioxide emissions and pro-environmental behaviour are identified to be the keywords having the highest betweenness. It was found that the keywords environmental consciousness, environmental attitude and environmental knowledge have the highest closeness, suggesting that these keywords have been thoroughly examined about one another, as Table 9.

Figure 4 Network of Co-occurrence of keywords

Table 9 Co-word Network according to Betweenness and Closeness

Node	Cluster	Betweenness	Closeness	PageRank
sustainability	1	68.6	0.01923077	0.06393558
india	1	5.4	0.01818182	0.02870898
environment	1	0.6	0.01333333	0.02089782
consumer behaviour	1	0	0.01785714	0.02731215
corporate social responsibility	1	0	0.01282051	0.01276361
innovation	1	0	0.01282051	0.01276361
sustainable consumption	2	26	0.01785714	0.0255796
environmental awareness	2	0	0.01219512	0.01587133
health consciousness	3	11.9285714	0.01851852	0.0433238
attitude	3	7.95238095	0.01818182	0.03290139
organic food	3	4.11904762	0.01851852	0.03250792
environmental concern	3	0.48076923	0.01298701	0.02894272
purchase intention	3	0.40384615	0.01851852	0.0433174
environmental consciousness	4	328.515385	0.03125	0.28772874
green marketing	4	0	0.01724138	0.02272242
green products	4	0	0.01724138	0.01917794
green consumption	4	0	0.01724138	0.01917794
green purchase intention	4	0	0.01724138	0.01208897

structural equation modeling	4	0	0.01724138	0.01208897
environmental sustainability	4	0	0.01724138	0.01208897
green intellectual capital	4	0	0.01724138	0.01563345
social consciousness	4	0	0.01724138	0.01208897
theory of planned behavior	4	0	0.01724138	0.01563345
sharing economy	4	0	0.01724138	0.01208897
behavioral intentions	4	0	0.01724138	0.01208897
environmental knowledge	5	0	1	0.03333333
environmental attitude	5	0	1	0.03333333
climate change	6	0	0.01785714	0.03068181
carbon dioxide emissions	6	0	0.01785714	0.03068181
pro-environmental behaviour	6	0	0.01785714	0.03053605

Co-citations analysis

According to Acedo and Casillas (2005), the instances in which two authors or publications are cited together serve as the basis of co-citation analysis. One of the popular techniques for tracking a set of publications that are mentioned together in the field of environmental consciousness is co-citation analysis. Disciplines, including marketing (Kumar et al., 2020), entrepreneurship (Block et al., 2020), human resource management (Qamar and Samad, 2022), and strategic management (Ferreira et al., 2016), have adopted this approach. The authors' co-citation network in environmental consciousness is shown in Figure 9. According to Gaviria-Marin et al., (2018) based on centrality metrics, document frequency, and document size, the interpretation of the co-citation network can be done. Each network node represents an article in environmental consciousness literature. According to Mougenot and Doussoulin (2022), the nodes' proximity indicates a close relationship between the co-cited work and the size of a node corresponds to the content of the citation. Figure 5 shows the formation of three clusters. Dark colours represent the components of the structure, and the size of the author's name denotes an important contribution (El-Baz and Iddik, 2021). The frequency of research, including the first red cluster, is reflected in Fornell (1981), Hair (2009), Anderson (1988), Ajzen (1991), Podsakoff (2003), anonymous (1996), Bagozzi (1988), Kautish (2019), Laroche (2001), Dunlap (2000), Ajzen (1985), Chan (2001), Paul (2016), Rana (2017), Stern (2000), Griskevicius (2010), Nunnally (1978), Schwartz (1992), Baron (1986), Kim (2011), Yadav (2017), Chen (2012), Diamantopoulos (2003), Dunlap (1978), Lin (2018), Roberts (1996), Sen (2001), Tanner (2003), Zelezny (2000), Ajzen (1980), Dunlap (2002), Hu (1999), Jaiswal (2018), Kim (2005), kollmuss (2002), Lee (2008), Lin (2012), in the area of environmental consciousness, these papers have the most citations. Each of these is a pioneering research project in the field of environmental consciousness. Porter (1995) and Hart (1995) are part of the second cluster which is blue. As seen in Figure 10, the blue cluster has fewer studies. The third cluster is green, which includes studies such as Michaelidou (2008), Smith (2010), Gould (1988), Tarkiainen (2005), Magnusson (2003), Yadav (2016), Chen (2009), Henseler (2015), Hughner (2007) and Padel (2005).

Figure 5 Co-citation network of authors
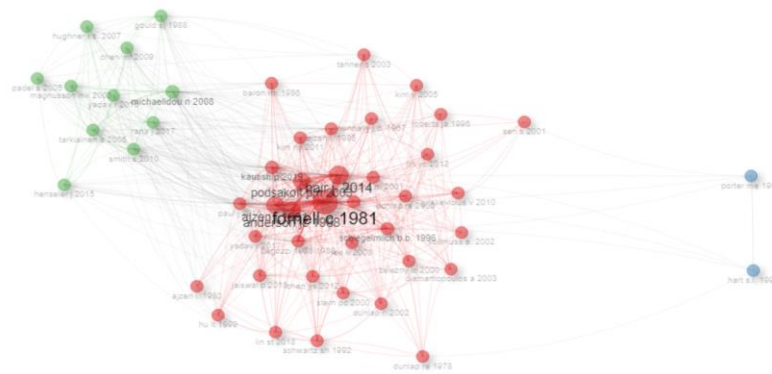
Thematic mapping

Locating the essential concepts that are fundamental to the industry is made easier by thematic mapping (Omotehinwa, 2022). The metrics of density and centrality are used to assess the significance of themes. While centrality determines the significance of the theme over the complete study region, density evaluates the theme's evolution (Aria and Cuccurullo, 2017). Several themes in the field of environmental consciousness were found by applying a clustering algorithm to the different keywords. The word from the cluster with the highest occurrence value is the bubble name.

Considering the themes and the instances of them, the study found 26 clusters. Cluster 1 labelled as sustainability has twenty themes. With 21 occurrences, sustainability was the most often mentioned theme in cluster 1, as given in Table 10. There are thirty-two themes in Cluster 2, which is titled Environmental Concern. The most frequently addressed topic in Cluster 2 was found to be environmental concern, with 11 occurrences. Corporate social responsibility and management had the next highest frequency, with 6 and 2 occurrences respectively, in Cluster 3 and Cluster 4. The environmental consciousness cluster, designated as cluster 5, contains eighteen themes, with varying occurrences for each theme. The environmental consciousness theme has the highest occurrences (100) within the fifth cluster. Five themes have been found using Cluster 6 and corporate greening and values were the widely discussed themes with three occurrences followed by organizational identification and food waste with two occurrences in Cluster 7 and Cluster 8 respectively. Cluster 9 has five themes and was centred around climate change with the highest number of instances (7). Business ethics precedes two occurrences in the tenth cluster. It is further followed by ethnocentrism in Cluster 11. There are two themes in Cluster 12 and cultural values have the maximum occurrences (2) followed by the theory of planned behaviour with four occurrences in Cluster 13 and sustainable development with four occurrences in Cluster 14. Cluster 15 has four sub-themes with materialism having maximum occurrences (3) followed by brand loyalty with three occurrences in Cluster 16 and csr too with three occurrences in Cluster 17. Personal values in cluster 18 have two instances and logistics have two instances in cluster 19. Green intellectual capital in cluster 20 has four instances which is preceded by brand love having two instances in cluster 21. Cluster 22 has identified two themes and green investment practices were a highly debated subject with two instances that were preceded by altruistic value in Cluster 23. Critical success factors were identified as a theme with two occurrences in cluster 24. Cluster 25 has environmental regulation as a widely discussed theme out of four themes with two instances preceded by environmental innovation having two instances in Cluster 26. The field of environmental consciousness has recognised environmental consciousness and sustainability as core topics, as seen by the size of the bubbles.

Table 10 Thematic map

Occurrences	Words	Cluster	Cluster_Label
21	sustainability	1	sustainability
9	environment	1	sustainability
5	structural equation modeling	1	sustainability
4	innovation	1	sustainability
3	environmental marketing	1	sustainability
3	health	1	sustainability
2	behavioral intentions	1	sustainability
2	behaviour	1	sustainability
2	consciousness	1	sustainability
2	consumer	1	sustainability
2	fashion orientation	1	sustainability
2	generation y	1	sustainability
2	green consumerism	1	sustainability
2	green manufacturing	1	sustainability
2	human values	1	sustainability
2	intrinsic motivation	1	sustainability
2	message framing	1	sustainability
2	revisit intention	1	sustainability
2	strategic management	1	sustainability

2	waste management	1	sustainability
11	environmental concern	2	environmental concern
10	health consciousness	2	environmental concern
10	sustainable consumption	2	environmental concern
9	organic food	2	environmental concern
9	purchase intention	2	environmental concern
7	attitude	2	environmental concern
7	environmental awareness	2	environmental concern
6	environmental knowledge	2	environmental concern
4	environmental attitude	2	environmental concern
4	india	2	environmental concern
4	social consciousness	2	environmental concern
3	attitudes	2	environmental concern
3	organic foods	2	environmental concern
3	segmentation	2	environmental concern
3	sharing economy	2	environmental concern
3	trust	2	environmental concern
2	corporate citizenship	2	environmental concern
2	cosmopolitanism	2	environmental concern
2	covid-19	2	environmental concern
2	diversification	2	environmental concern
2	ecological behavior	2	environmental concern
2	environmental policy	2	environmental concern
2	ewom	2	environmental concern
2	facebook	2	environmental concern
2	food safety	2	environmental concern
2	food safety concern	2	environmental concern
2	local food	2	environmental concern
2	millennials	2	environmental concern
2	price consciousness	2	environmental concern
2	s-o-r model	2	environmental concern
2	social responsibility	2	environmental concern
2	social value	2	environmental concern
6	corporate social responsibility	3	corporate social responsibility
4	consumer behavior	3	corporate social responsibility
3	ecological consciousness	3	corporate social responsibility
2	ecology	3	corporate social responsibility
2	identity	3	corporate social responsibility
2	management	4	management
100	environmental consciousness	5	environmental consciousness
9	green marketing	5	environmental consciousness
7	green products	5	environmental consciousness
6	consumer behaviour	5	environmental consciousness
5	green consumption	5	environmental consciousness
5	green purchase intention	5	environmental consciousness
4	theory of planned behavior	5	environmental consciousness
2	consumers	5	environmental consciousness
2	consumption	5	environmental consciousness
2	environmental education	5	environmental consciousness
2	green brand knowledge	5	environmental consciousness
2	green consumers	5	environmental consciousness
2	green issues	5	environmental consciousness
2	green purchase behaviour	5	environmental consciousness

2	motivation	5	environmental consciousness
2	pro-environmental behavior	5	environmental consciousness
2	status consciousness	5	environmental consciousness
2	willingness to pay	5	environmental consciousness
3	corporate greening	6	corporate greening
3	values	6	corporate greening
2	consciousness development	6	corporate greening
2	environmental leadership	6	corporate greening
2	smes	6	corporate greening
2	organizational identification	7	organizational identification
2	food waste	8	food waste
7	climate change	9	climate change
4	environmental sustainability	9	climate change
3	carbon dioxide emissions	9	climate change
3	pro-environmental behaviour	9	climate change
2	tourism education	9	climate change
2	business ethics	10	business ethics
2	china	10	business ethics
2	ethnocentrism	11	ethnocentrism
2	cultural values	12	cultural values
2	lifestyle	12	cultural values
4	theory of planned behaviour	13	theory of planned behaviour
2	green purchase	13	theory of planned behaviour
4	sustainable development	14	sustainable development
3	materialism	15	materialism
2	gender	15	materialism
2	mindfulness	15	materialism
2	sustainability consciousness	15	materialism
3	brand loyalty	16	brand loyalty
3	csr	17	csr
2	personal values	18	personal values
2	sustainable	18	personal values
2	tourism	18	personal values
2	visiting intention	18	personal values
2	logistics	19	logistics
4	green intellectual capital	20	green intellectual capital
2	competitive advantage	20	green intellectual capital
2	corporate social responsibility (csr)	20	green intellectual capital
2	green human capital	20	green intellectual capital
2	green structural capital	20	green intellectual capital
2	brand love	21	brand love
2	household size	21	brand love
2	natural products	21	brand love
2	green investment practices	22	green investment practices
2	jse listed firms	22	green investment practices
2	altruistic value	23	altruistic value
2	egoistic value	23	altruistic value
2	critical success factors	24	critical success factors
2	environmental regulation	25	environmental regulation
2	incomplete information	25	environmental regulation
2	investment	25	environmental regulation
2	signaling	25	environmental regulation
2	environmental innovation	26	environmental innovation

Collaboration network of authors and countries

Based on a specific topic or business, a cooperation network shows how authors and nations interact and work together (Farooq, 2022). The nations, authors and institutions' collaboration network was analysed using betweenness and closeness centrality metrics. Closeness centrality denotes the average distance between an actor's node and every other node, indicating that each actor is connected to every other actor via the shortest path or distance (Li et al., 2013; Lu and Feng, 2009). According to Li et al. (2013), betweenness centrality measures how effectively an actor is bridging structural gaps in a network. According to the findings, Chakraborty, Kumar, and Kaur have high betweenness, indicating that they are most likely to acquire citations and are in a position of relative importance within the collaboration network. As seen in Table 11, with the greatest closeness centrality, Kumar and Kaur can connect with various authors within the network more quickly.

The institutional network highlights several clusters and associated significance in environmental consciousness. The colour coding draws attention to the greatest number of environmental consciousness collaborations. Figure 6 illustrates the institutions with the greatest number of environmental consciousness collaborations. These institutions include Florida State University, State University System of Florida, Auburn University, University of Florida, Auburn University System, Symbiosis International University, Indian Institute of Management (IIM system), Nirma University, National Institute of Technology (NIT system), O.P. Jindal Global University, University of Agder, Pennsylvania State University, Pennsylvania Commonwealth System of Higher Education (PCSHE), Pennsylvania State University, Bournemouth University and Akdeniz University.

The map of collaboration of countries demonstrates how different countries are working together to raise environmental consciousness. The presence of a country-specific output is shown in the network by the colour blue, while the absence of a country-specific output is represented by the colour grey. According to Figure 7, a country with a deep blue colour is remarkably engaged when it comes to environmental consciousness, and the lines in red, demonstrate the countries' collaboration. According to the findings of the world collaboration network, Table 12 shows that the China and USA ; China and the United Kingdom; United States and Korea; China and Australia; collaborated the most in the field of environmental consciousness, followed by Canada and France, China and the United States, India and the United Kingdom, and United Kingdom and Australia.

Table 11 Collaboration Network of Authors

Node	Cluster	Betweenness	Closeness
chakraborty d	1	0	0.1
kumar s	1	8	0.125
dhir a	1	0	0.1
kaur a	1	0	0.07142857
kaur p	1	5	0.11111111
chang c	2	1	0.5
chen y	2	0	0.33333333
lin y	2	0	0.33333333
kumar a	3	5	0.09090909
prakash g	3	0	0.0625
kautish p	4	0	1
khare a	4	0	1
ambe c	5	0	1
ngwakwe c	5	0	1
boiral o	6	0	1
baron c	6	0	1
coskun a	7	0	1
filimonau v	7	0	1

russell c	8	0	1
russell d	8	0	1
ahmad w	9	0	1
kim w	9	0	1
balderjahn i	10	0	0.5
peyer m	10	0	0.5
seegebarth b	10	0	0.5
paul j	11	0	1
sadiq m	11	0	1
herrero a	12	0	1
martínez p	12	0	1
kim y	13	0	1
gupta s	13	0	1
chen s	14	0	1
hung c	14	0	1
chiu c	15	0	1
lin c	15	0	1
ahn j	16	0	1
park j	16	0	1

Figure 6 Collaboration Network of Institutions
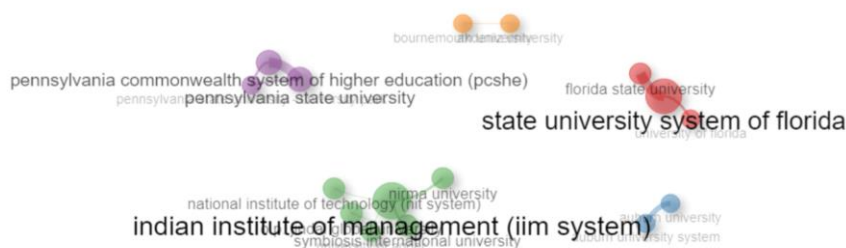
Figure 7 Collaboration Map of Countries
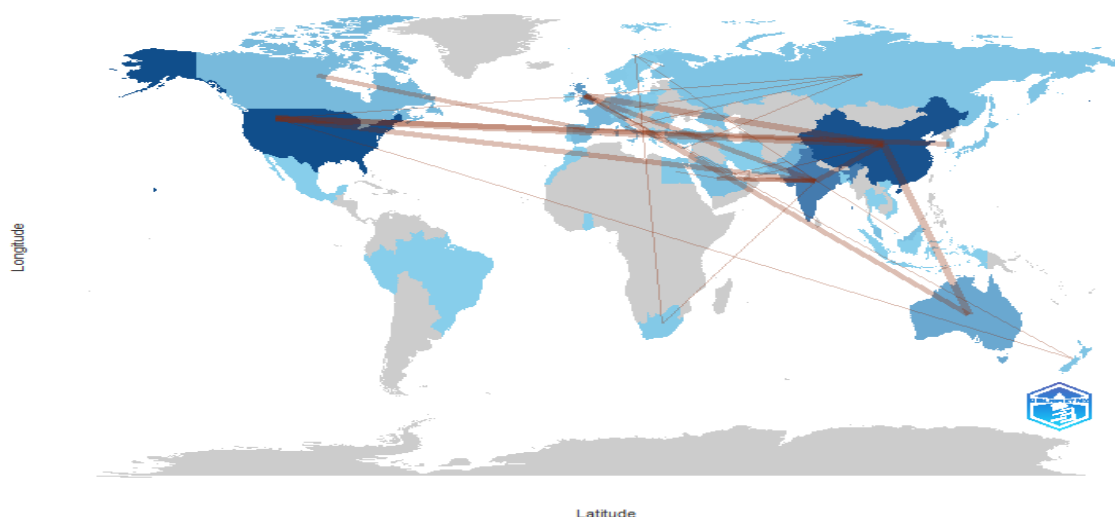
DISCUSSION

The research advances the concept in several ways. Firstly, it provides a bibliometric analysis of environmental consciousness, which has not been substantially explored so far. The study gives precise information on environmental consciousness, which has hitherto been overlooked by researchers. Second, the study classified and visualised the data using precise processes, such as science mapping and performance analysis. Third, the study

identifies the most cited nations, pertinent sources, most productive authors, and important affiliations in the field of study via performance analysis. Fourth, utilising scientific mapping, the study investigates developing concepts and the authors' collaboration network. Fifth, utilising data from WOS and Scopus is a further addition to this area. Sixth, the research could serve as a model for bibliometric analysis in other domains.

Environmental issues have gained increasing attention in society as a result of the climate disasters brought on by global climate change (Chen, 2010). Due to social pressures regarding the environment, an increasing number of businesses are eager to take on greater responsibility and reduce their environmental impact (Chen et al., 2006). Managerial and scholarly implications result from the current study: Initially, the research will help managers comprehend several models of environmental consciousness that can enhance the performance of their organisation. As a result of environmental consciousness, people find it simpler to assess the knowledge they need to increase their productivity and efficiency. Accordingly, businesses seeking to establish a long-term competitive edge should concentrate on implementing the several approaches and strategies that are suggested. Third, organisations looking to fully realise the potential of environmental consciousness as an approach have to start with the foundational studies mentioned above. Fourth, to maximise the impact, researchers can exchange ideas and thoughts by using the collaboration networks that have been identified. Fifth, individuals comparatively unfamiliar with the field of environmental consciousness might utilise the identified emergent themes as an initial point.

Regardless of the study's uniqueness, there are a few drawbacks: Firstly, just Scopus and WOS were searched; while EBSCOhost, ProQuest, and Google Scholar databases were ignored. Future studies might use information from the ignored databases to increase the accuracy and credibility of their findings. Secondly, the investigation employed "Environmental Consciousness" AND "Environmental Awareness" as search terms and alternative terms that could have been relevant were mostly omitted. To make the data set more comprehensive, subsequent investigations can broaden the field of inquiry by utilising additional similar keywords. Thirdly, only articles from different journals were included whereas papers published in additional sources like notes, conference proceedings, short surveys and editorials were excluded. Future studies should consider the data obtained via additional sources as well. Fourth, only papers published in English were taken into consideration for the final analysis.

Conclusion

A comprehensive bibliometric overview of environmental consciousness was provided. Through performance analysis and science mapping, 267 papers were found and examined until the year 2025. The analysis shows that the field of environmental consciousness research is developing and has expanded significantly in recent years. The scope of the study encompasses a wide range of methodologies, actors, and datasets. The development of environmental consciousness is relatively new and the literature highly anticipates the integration of environmental consciousness with sustainability. What makes the research special is that it analyses and presents in-depth information regarding the advancements in the field of environmental consciousness, which has not been done earlier. The study adds to the body of literature on environmental consciousness by examining current trends and offering insightful information on the domain.

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