



A Retrospective Review on Social Marketing and Sustainability

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Abstract

The study of social marketing is a growing research area. However, social marketing and sustainability linkage have not been discussed yet. This study aims to undertake a bibliometric analysis of the linkage of social marketing and sustainability and suggest a research agenda for the future. This study conducted a bibliometric analysis based on scientific production, relevant authors, relevant affiliation and countries, keyword co-occurrences and thematic evolution by analyzing 575 articles published on social marketing and sustainability from 1989 to January 2023, extracting data from the Scopus and Web of Science databases. A strategic diagram of topics, clusters, networks and relationships was created using VoSviewer and Biblioshinysoftware, identifying and assessing relationships between social marketing and sustainability. The result depicts that the most important social marketing and sustainability topics have been behaviour change, health promotion, nutrition and physical activity. The report also identifies relevant issues for further study, including best green marketing, social marketing theory, environment protection, recycling and policies. The qualitative analysis would be useful for future studies since this study emphasized quantitative analysis.

Keywords: Behaviour change, Sustainability, Bibliometric analysis

1. Introduction

The rise of social marketing creates an impact on behavioural issues. Over the years, social marketing has evolved from commercial marketing to creating public awareness among target groups for mass welfare. In 1971, Kotler and Zaltman coined "social marketing." Later, Andreasen, in 1994, proposed a modified definition

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of social marketing in which the primary goal is social welfare through commercial marketing techniques(Nanda, 2015). There have been many different kinds of research on social marketing since it was first introduced(Almestahiri et al., 2017), with the latter two decades of the 21st century seeing an explosion in the number of social marketing scholars(Truong & Dietrich, 2018).

A significant amount of research has been published on social marketing in business journals over the last several years, as it has its roots in the discipline of marketing (Truong & Dietrich, 2018), which is typically classified as part of the overarching business category. Despite its growing interest, social marketing research in sustainability is very limited (Almestahiri et al., 2017). As a result, this research aims to add to the body of knowledge about social marketing and its impact on society. In this paper, we conduct an in-depth and historical study of social marketing and sustainability-related articles published in different academic journals. In addition to identifying more effective approaches to influence human behaviour and improve society as a whole, the collected findings may be helpful to academics in directing their research in the direction of areas with more demand. Social marketing is the most effective approach to influencing human behaviour and achieving society's overall well-being.

The planet's problems nowadays include area lack of financial resources, an increasing poverty gap, political instability, pollution (Rădoiu, 2022)and different kinds of natural calamities such as extreme weather change, increasing carbon emissions, rising sea levels (Hasim et al.,2023). The main cause of the problems is using the resources in the name of development without considering the long-term aspect of those resources. If this type of situation continues, scientists warn that the world will no longer be suitable to live for the species (Azar et al., 1996). So, considering the environmental, social and governance factors is necessary for achieving the sustainable development goal and making the world suitable for future generations (Vaarst et al., 2015).

Social marketing campaign helps to move into sustainable human behaviour that ultimately helps to achieve sustainable development. Social marketing campaigns can be used to reduce waste, recycling, energy management, food waste management, and control pollution(Wang & Lin, 2023). Besides, the social marketing campaign is a powerful strategy to make the public aware of the policies and practices. It is the best strategy to send a message about sustainability to society, influencing people to accept the message socially and psychologically(Florence et al., 2022)(1). The sustainable social marketing campaign can be used across communities such as society, schools, universities, and industries for sustainable development (Hübscher et al., 2022). Finally, the sustainable social marketing campaign is a powerful tool for achieving sustainable development goals run by different countries' governments (Wang & Lin, 2023).

Social marketing has emerged as one of the essential factors for determining what constitutes sustainable human behaviour. People frequently feel that the increasing number of advancements in social marketing will remodel and raise the sustainable behaviour of individuals (Pomering, 2017). The capacity of social marketing can bring novel and inventive solutions that can be integrated into particular risky behaviours (Opel et al., 2009). Even though there are a significant number of studies on social marketing, there are not many studies on understanding current and future patterns of social marketing for sustainability in behaviour modification. As a result of the bibliometric analysis performed in this study, a progressive perspective is provided to clarify the essential constructs and their relationship to the literature.This collaboration has allowed for the sharing of ideas, theories, and data, which has led to an increase in the amount of scholarly literature being published. Further, it is important to consider the number of collaborations among scholars that produce and share research information to establish the research community. Therefore, understanding the growth of collaboration among academics from other fields is also important.

Social marketing and sustainability in behaviour require developing a novel approach to intervention. The analysis used publications indexed in the Web of Science and Scopus databases. Unlike other research, this research takes the perspective of an investigation to enhance the relationship between social marketing and sustainability as a driver for creating value for further research. Sustainable behaviour can take the form of social marketing influencing sustainable behaviour. We seek to address this gap by finding, summarizing, and analyzing existing studies on social marketing in sustainable behaviour.

The study may be important to the government to identify the role of social marketing in achieving sustainable development goals. Besides, it is equally important to policymakers, academicians, and activists working in sustainability. Moreover, the paper might be useful to the donor agencies who donate funds for sustainability.

This paper wants to get the answer to the following research questions.

RQ1. Who are the prominent authors contributing to the research domain of social marketing and sustainability?

RQ2. Which sources, organizations, and countries are most relevant in social marketing and sustainability research?

RQ3. What are the most relevant affiliations and countries in social marketing and sustainability that contribute to the research field?

RQ4. What are the scientific production and citation patterns in the field?

RQ5. What keywords are most often used in social marketing and sustainability?

RQ6. In social marketing and sustainability, what emerging topics will require future development over the coming years?

This paper presents a bibliometric analysis of the literature to understand better how social marketing has evolved and changed over the years. The rest of the section includes methodology, results, discussions, and conclusions.

2. Methodology

Bibliometric analysis is intended to find patterns and dates for the growth of research streams over time to identify patterns.

In 1969, Pritchard coined the term bibliometrics, which refers to using several mathematical and statistical techniques to review the scientific outputs of an area of research; it has grown in popularity over time (Xu et al., 2022). This method of bibliometric analysis has been utilized in numerous areas of study (Donthu et al., 2021). We perform a bibliometric study to compile data on the historical and current intellectual contributions to social marketing and sustainability. It explains the expanding dimensions of research and highlights gaps and areas that need further investigation. As part of the bibliometric analysis, publications were screened according to criteria to identify those most likely to be relevant.

2.1 Research Design

Understanding how the data were acquired and analyzed when conducting bibliometric research (Mazandarani & Royo-Vela, 2022) is important. This bibliometric analysis clearly explains the research topics that need more exploration (Mageto, 2022). The study selected the quantitative research design's subset, descriptive and correlation was made. This design analyses current literature to determine trends, citations, scientific production, countries, affiliations, and theme evolution. As a result, this design offers a more comprehensive

view of trends, citations, scientific production, countries, affiliations, and theme evolution (Abafe et al., 2022). The research uses secondary data to broaden the scope of previously published research (Zhang et al., 2022). In addition, the study utilized two extensive databases, Scopus and Web of Science, to collect consistent, accurate, and unbiased data. This study ensured that the findings were reproducible (Popa et al., 2022) and would measure all necessary concepts and correlate with the same concept measured by different measures.

2.2 Sources of Data

This study has been conducted using Scopus and Web of Science (WoS) indexed databases from Elsevier and Clarivate Analytics, respectively, for obtaining data on January 21, 2023. The fundamental justification for employing these databases as the data sources was to reduce the propensity to exclude essential information and perform thorough research (Zhang et al., 2022). On the other hand, the data conversion operations in this method reduce the possibility of gathering duplicate data. The WoS and Scopus-indexed databases were chosen for their extensive coverage of good publications in all academic subjects and for being the most comprehensive repositories (Syed et al., 2022). These databases also contain all the bibliographic information on their authors, citations, journals, and other items that can be used in the study (Gao et al., 2022). The two databases were searched with the terms "social marketing" AND "sustainability." The search terms were used mainly on the document's title, keywords, and abstract. Table 1 displays the query's structure in the relevant database search engine.

Table: 1 Gathering Data, Searching Strings, and Retrieving Results from Databases

Database	Search strings	Output
SCOPUS	TITLE-ABS-KEY ("social marketing" OR "upstream social marketing" OR "midstream social marketing" OR "downstream social marketing" OR "community-based social marketing" OR "pro-social marketing" OR "macro-social marketing" OR "environmental, social marketing" AND "sustainability" OR "sustainable" OR "environmental sustainability" OR "sustainable marketing" OR "sustainability marketing") AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "re")) AND (LIMIT-TO (LANGUAGE, "English"))	498
Web of Science	"social marketing" OR "upstream social marketing" OR "midstream social marketing" OR "downstream social marketing" OR "community-based social marketing" OR "pro-social marketing" OR "macro-social marketing" OR "environmental, social marketing" AND "sustainability" OR "sustainable" OR "environmental sustainability" OR "sustainable marketing" OR "sustainability marketing"	304

Furthermore, to include all publications that are connected to search words, the scope of search is restricted to "subject" (which provides for searching in "title," "abstract," and "keyword") without any chronological filter. We exclude materials related to languages other than the English language. After selecting primary material, a dataset of 575 articles is compiled for statistical examination.

2.3 Analytical tools

The three bibliometric data analytical tools, RStudio, Biblioshiny, and VOSviewer (version 1.6.19), were used in this study. A free, open-source tool called RStudio can be downloaded from the company's website for data science analysis (Abafe et al., 2022). To give a Web interface for data visualization, Biblioshiny is a Web application launched by RStudio (Syed et al., 2022). At the same time, VOSviewer is open-source software that

can be downloaded and used on desktop computers. Therefore, Biblioshiny and VosViewer are practical tools for data analysis in this study.

2.4 Extraction, Loading, and Conversion of Data

Agbo et al. (2021a) suggested the extraction, loading, and conversion of data procedures (Ryszko & Szafraniec, 2022). The two data points were combined using the Bibliometrix R Library. The steps for converting and combining the data are presented in lines 1 to 8 of Table 2. It illustrates the general procedure for merging and transforming data sources (Scopus and WoS) using RStudio software.

Table 2: Conversion and Combining of two Data Sources with RStudio

Command Line	Command
Line 1	<code>library(bibliometrix)</code>
Line 2	<code>library(xlsx)</code>
Line 3	<code>setwd("C:/Users/UTS/Desktop/Conference feb. 2023")</code>
Line 4	<code>getwd()</code>
Line 5	<code>wos1 = convert2df("wos1.txt")</code>
Line 6	<code>scopus = convert2df("scopus.bib", dbsource = "scopus", format="bibtex")</code>
Line 7	<code>combined = mergeDbSources(wos1, scopus, remove.duplicated = T)</code>
Line 8	<code>write.csv(combined, "finaldata.csv")</code>

Table 3 shows 575 data sets between 1989 and 2023 used in the analysis. The sources for these documents include books, journals, conference proceedings, and book chapters. The data collection contains 1935 authors, 94 of whom are single authors. Conversely, 1686 authors have specific keywords.

Table 3: An Overview of the Merged Data

Period	1989 to 2023
Sources (Journals, Books, etc.)	316
Documents	575
Article	489
Article; early access	5
Article; proceedings paper	6
Review	74
Review; early access	1

2.5. Data Analysis

The Scopus and WoS retrieved data were analyzed using Biblioshiny and VOSviewer version 1.6.19, both free software applications. Biblioshiny and VOSviewer version 1.6.19 were used to examine Scopus and WoS data. This study aims to filter ideas and approaches employed in social marketing and sustainability literature by employing Biblioshiny and VOSviewer to analyze the data. Initially, the study examines the literature's descriptive aspects. The study analyzed and plotted data based on the sources, authors, and documents analyzed. The study investigated thematic evolution and thematic maps to locate future directions.

3. Results and discussion

To ease the flow of information and understanding, we offer the study's findings and discuss them in this part based on the research questions.

3.1 Descriptive Bibliometric Analysis

An overview of data, document types, content, authors, and collaborations among authors is displayed in Table 4. Using Scopus and Web of Science databases, 575 articles were extracted between 1989 and January 2023. Scientific journals dominated the sources of these articles, with 316 publications. The number of keywords used is 1686. In addition, 2653 keywords frequently appear in the article's title, which reflects the popularity of the article. The average citation per document is 28.99. Single document authors are 94, co-author per document is 3.81, and the annual growth rate is 6.68%.

Table 4: Main Information

Description	Results
Main information about the data	
Timespan	1989:2023
Sources (Journals, Books, etc.)	316
Documents	575
Annual Growth Rate %	6.68
Document Average Age	8.7
Average citations per doc	28.99
References	30234
DOCUMENT CONTENTS	
Keywords Plus (ID)	2653
Author's Keywords (DE)	1686
AUTHORS	
Authors	1935
Authors of single-authored docs	94
AUTHORS COLLABORATION	
Single-authored docs	104
Co-Authors per Doc	3.81
International co-authorships %	17.91
DOCUMENT TYPES	
article	489
article; early access	5
article; proceedings paper	6
review	74
review; early access	1

4.2 Most Dominant Authors

This section will answer RQ1. Who are the dominant authors contributing to the research domain of social marketing and sustainability?

4.2.1 Most Dominant Authors Based on Documents

Table 5 and Figure 1 reveal the most relevant authors (contributors) to social marketing and sustainability. Those are Hall C(10, 5.23) , Rundle-Thiele S(8, 2.33), Barr S(7, 2.42), Gordon R(7 (1.72), Cooper P(6, 1.38), Gregory-Smith D(6, 1.35) , Waitt G(6, 1.38), Kim J(5, 1.58), and Manika D(5, 1.98) with articles and articles fractionalized respectively.

Table 5: 10 Most Relevant Authors Based on Documents

Authors	Articles	Articles Fractionalized
Hall C	10	5.23
Rundle-Thiele S	8	2.33
Barr S	7	2.42
Gordon R	7	1.72
Cooper P	6	1.38
Gregory-Smith D	6	1.35
Waitt G	6	1.38
Kim J	5	1.58
Manika D	5	1.15
Truong V	5	1.98

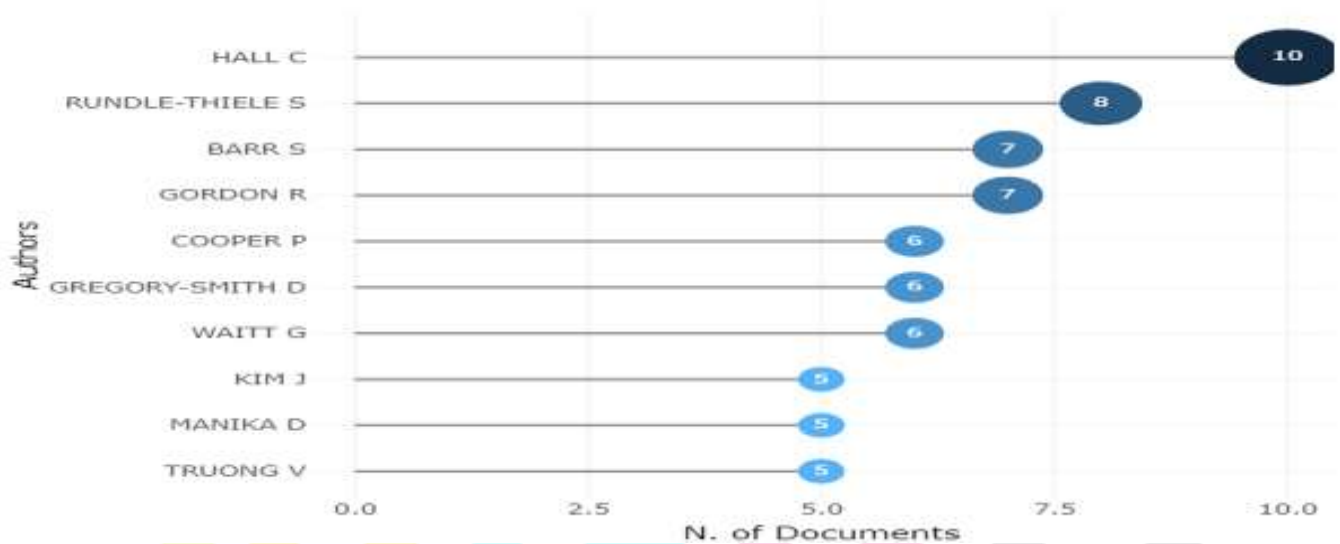


Figure 1: 10 Most Relevant Authors based on Documents

4.2.2 Most Relevant Sources that Involve "Social Marketing and Sustainability."

The results of research question two RQ2. Which are the most relevant sources, organizations and countries contributing to the research domain of social marketing and sustainability? Table 6 and Figure 2 show the top 10 social marketing and sustainability journals. The most relevant sources based on analysis are the Journal of Social Marketing Ranks the highest publication related to social marketing and sustainability with 41 publications, Followed by Social Marketing Quarterly(35), sustainability (21), Journal of Sustainable Tourism(12), International Journal of Environmental Research and Public Health(8), Journal of Business Research(7), Journal of Marketing Management(7), Australasian Marketing Journal(6), Food and Nutrition Bulletin(6), and Journal of Cleaner Production with six publications. The frequency of publications on social marketing and sustainability, as shown in Table 6, suggests that the number of published articles related to this

research area in these journals is still low (less than 50) compared to other disciplines, such as consumer behaviour, advertising, digital marketing and other streams of research, indicating the future research possibility in this topic.

Table 6: Top Sources that involve "social marketing and sustainability"

Sources	Articles
Journal of social marketing	41
Social marketing quarterly	35
Sustainability	21
Journal of sustainable tourism	12
International Journal of environmental research and public health	8
Journal of business research	7
Journal of marketing management	7
Australasian marketing journal	6
Food and Nutrition bulletin	6
Journal of cleaner production	6



Figure 2: Top Sources that involve "social marketing and sustainability"

4.2.3 Author Local Impact

The social marketing and sustainability h-index is used in this section to identify the most outstanding authors. It comprises a portion of the top 20 most influential authors who have published the most articles used as the basis for this Table. Table 7 and Figure 3 display the top 20 authors, their number of publications, the related h-index, g-index, and m-index, total citations in the previous year, and their ranking in the top 20 at the beginning of the year. A 9 h-index is achieved by Hall C, the author with the highest h-index of all. Barr S, Cooper P, Gordon R, Rundle-Thiele S, and Waitt G are the five other researchers with h-indexes equal to six (6). The Truong V has an h-index of five (5). The authors' Butler K, Gregory-Smith D, Kennedy A, Lynes J, Mckenzie-Mohr D, and Shaw G have an h-index of four (4), and the remaining authors, Brennan L, Bryant C, Cadiz F, Carrigan M, Coles T, Gessesew A, and Huang T having an h-index of three. Results suggest that

sustainability and social marketing campaigns were popular after 2010, indicating the concept was strongly considered after the world financial crisis.

Table 7 Author Local Impact

Element	h_index	g_index	m_index	Total Citation	NP	PY_start
Hall C	9	10		445	10	2011
Barr S	6	7	0.462	494	7	2011
Cooper P	6	6	0.75	143	6	2016
Gordon R	6	7	0.462	261	7	2011
Rundle-Thiele S	6	8	0.75	156	8	2016
Waite G	6	6	0.75	143	6	2016
Truong V	5	5	0.455	135	5	2013
Butler K	4	4	0.5	102	4	2016
Gregory-Smith D	4	6	0.444	121	6	2015
Kennedy A	4	4	0.286	184	4	2010
Lynes J	4	4	0.308	118	4	2011
Mckenzie-Mohr D	4	4	0.133	843	4	1994
Shaw G	4	4	0.308	270	4	2011
Brennan L	3	4	0.188	70	4	2008
Bryant C	3	3	0.125	100	3	2000
Cadiz F	3	3	0.3	53	3	2014
Carrigan M	3	3	0.231	298	3	2011
Coles T	3	3	0.231	154	3	2011
Gessesew A	3	3	0.273	24	3	2013
Huang T	3	3	0.25	142	3	2012

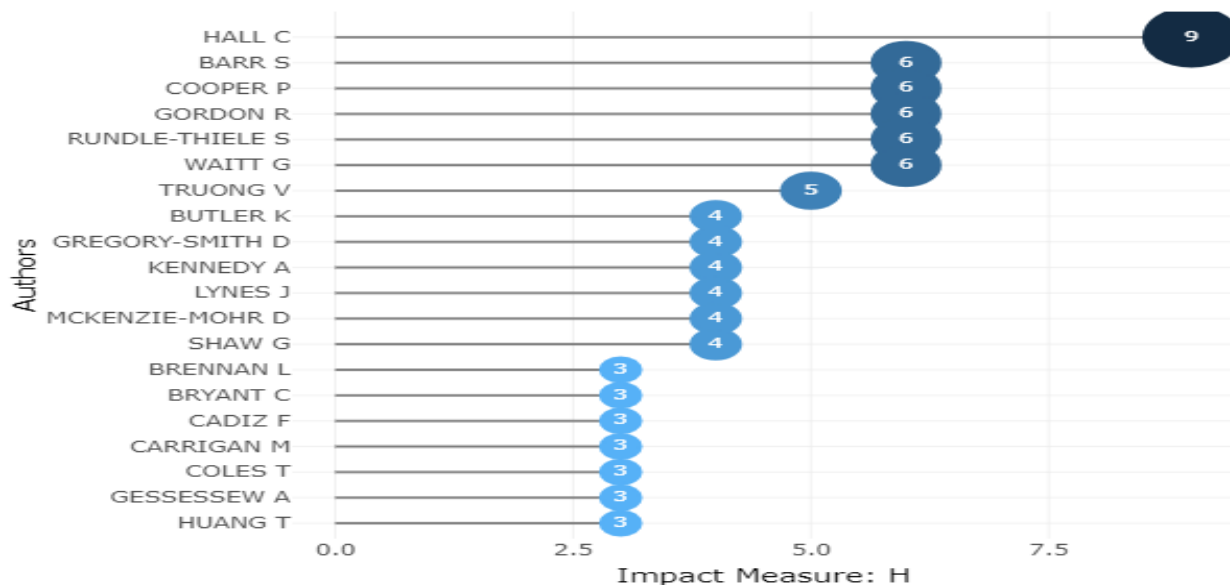


Figure 3 Author Local Impact

4.2.4 Most relevant journals in social marketing and Sustainability (Source clustering through Bradford's Law)

A pattern found by Bradford (1985) can be used to predict the frequency of articles appearing in the core, associated, and isolated publications. Bradford's law is an effective bibliometric analysis method that might be used to draw an exciting conclusion. Bradford (1985) argued that a specific pattern could predict the frequency of articles appearing in the core, associated, and isolated publications that concern this pattern (Xu et al., 2022). The 575 studies are included in this study. Table 8 and Figure 4 show that 117 publications were published in five journals, Journal of Social Marketing, Social Marketing Quarterly, Sustainability, Sustainable Tourism, and International Journal of Environmental Research And Public Health. The 93 articles are published in the next 20 journals, while the remaining 365 publications are spread across 291 Journals. There is a significant under-representation of connected and marginally related publications compared to the total number of key journals. Despite the overrepresentation of related journals in the multidisciplinary social marketing and sustainability field, the proportion of publications indicates that the critical area is much more stronger represented than the whole research area and other scientific fields and plays a much more active role.

Table 8: Most Relevant Journals in Social Marketing and Sustainability (Source clustering through Bradford's Law)

SOURCE	Rank	Frequency	Cumulative Frequency
Journal of social marketing	1	41	41
Social marketing quarterly	2	35	76
Sustainability	3	21	97
Journal of sustainable tourism	4	12	109
International Journal of environmental research and public health	5	8	117
Journal of business research	6	7	124
Journal of marketing management	7	7	131
Australasian marketing journal	8	6	137
Food and Nutrition bulletin	9	6	143
Journal of cleaner production	10	6	149
Global health promotion	11	5	154
Health promotion practice	12	5	159
Journal of environmental management	13	5	164
Journal of macro marketing	14	5	169
Promotion & Education	15	5	174
Frontiers in psychology	16	4	178
Health Policy and Planning	17	4	182
Journal of Nonprofit and public sector marketing	18	4	186
Journal of public policy & Marketing	19	4	190
Malaria journal	20	4	194
Plos one	21	4	198
American Journal of preventive medicine	22	3	201
Applied environmental education and communication	23	3	204
Applied Geography	24	3	207
Current issues in tourism	25	3	210
Environments	26	3	213
Health promotion international	27	3	216
International Journal of Sustainability in higher education	28	3	219

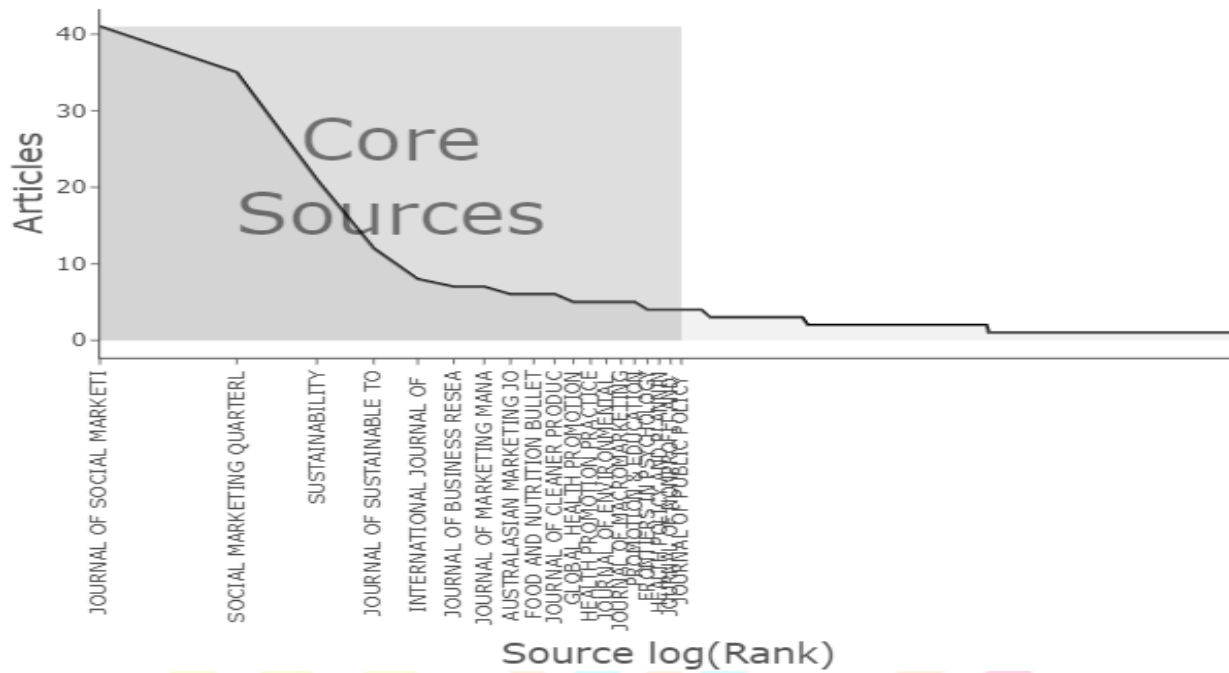


Figure 4: Most journals in social marketing and Sustainability (Source clustering through Bradford's Law)

4.2.5 Most Relevant Affiliation and Countries Based on the Publication

The results of research question three RQ3. What are the most relevant affiliations and countries in social marketing and sustainability that contribute to the research field? Several entities and affiliations across the globe have carried out social marketing and sustainability research. Figure 5 lists the top ten most productive affiliations in the world. The Univ Wollongong has contributed most to the research on social marketing and sustainability with 18 publications, Similarly Univ Exeter(15), Griffith University(14), Monash University (13), University of Canterbury(13), Deakin University(11), University of Waterloo(8), Queensland University of Technology (7), and The University of Queensland(7) respectively. Fewer than 20 publications from the top 10 institutions suggest that social marketing and sustainability research is still in the starting phase (see Table 9 and Figure 5).

Table 9 Most Relevant Affiliation and Countries Based on the Publication

Affiliation	Articles
University Wollongong	18
University Exeter	15
Griffith University	14
Monash University	13
University Canterbury	13
Deakin University	11
University Of Waterloo	8
Queensland University of Technology	7
The University Of Queensland	7
University of Oulu	7

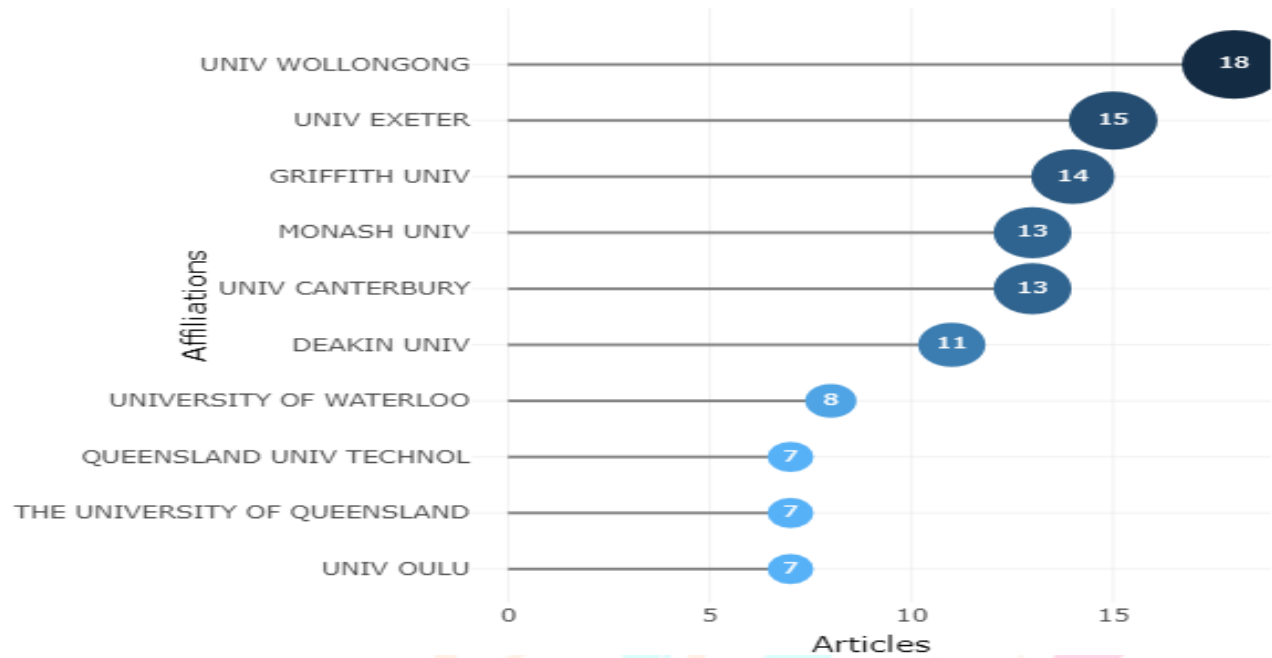


Figure: 5 Most Relevant Countries based on the Publication

4.1.6 Productivity and Impact of Contributing Countries

An assessment of a country's influence within a particular academic field can be determined by analyzing the country's scientific output in that discipline (Abafe et al., 2022). During the selected period, sixty-eight countries or regions have published social marketing and sustainability articles. In descending order, Table 10 shows the top ten countries by publication number: USA (265), Australia (165), UK (161), Canada (50), New Zealand (39), India (30), Spain (26), China (23), South Africa (22), Brazil (19). Regarding publications, the USA contributed the most to social marketing and sustainability. Only two Asian countries (India and China) ranked in the top ten for scientific productions. The results of this study suggest that South Asian countries are not contributing to social marketing and sustainability. The researcher can further focus their research work in South Asia, especially in developing countries and underdeveloped countries like Nepal, Bhutan, Afghanistan, etc.

Table 10 Contributing Countries by Productivity

Region	Freq
USA	265
Australia	165
UK	161
Canada	50
New Zealand	39
India	30
Spain	26
China	23
South Africa	22
Brazil	19

4.2 Scientific production of the field

The results of the research question RQ4. What are the scientific production and citation patterns in the field?

4.2.1 Scientific Production of social marketing and Sustainability

Figure 11 and Table 6 of this study show that the production of social marketing and sustainability articles commenced in 1989. Still, the number of articles produced has increased by two digits since 2006. The rise of social marketing and sustainability in scientific production has continued, indicating that the developing subject has the potential to grow each year significantly. The annual growth rate is 6.68%. In 2022, slightly above 63 and 9 publications in 2023, the data was retrieved in the middle of January 2023, starting the year. The result shows that the growth rate is in increasing trends. It means that social marketing and sustainability research is increasing gradually, indicating future research potential.

Table 11: Scientific production of social marketing and sustainability

<i>Year</i>	<i>Articles</i>	<i>Year</i>	<i>Articles</i>	<i>Year</i>	<i>Articles</i>
1989	1	2001	7	2012	25
1990	0	2002	1	2013	35
1991	1	2003	2	2014	19
1992	1	2004	5	2015	32
1993	4	2005	9	2016	34
1994	2	2006	12	2017	37
1995	2	2007	16	2018	31
1996	0	2008	16	2019	37
1997	1	2009	21	2020	35
1998	5	2010	25	2021	39
1999	3	2011	32	2022	63
2000	7			2023	9

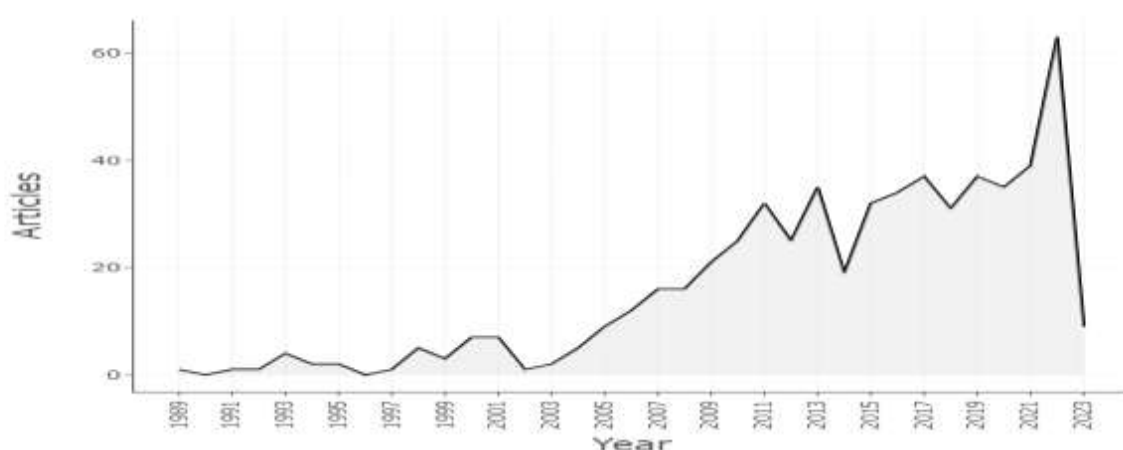


Figure 6: Scientific production of social marketing and sustainability

4.2.2 Three-Field Plot

An overview of the titles, authors, and keywords used in the study is shown in a three-field plot (see Figure 7). This analysis reveals the relationship between fields, including the title of the Journal, its authors, and the 'social marketing and sustainability' keyword chosen by the authors.

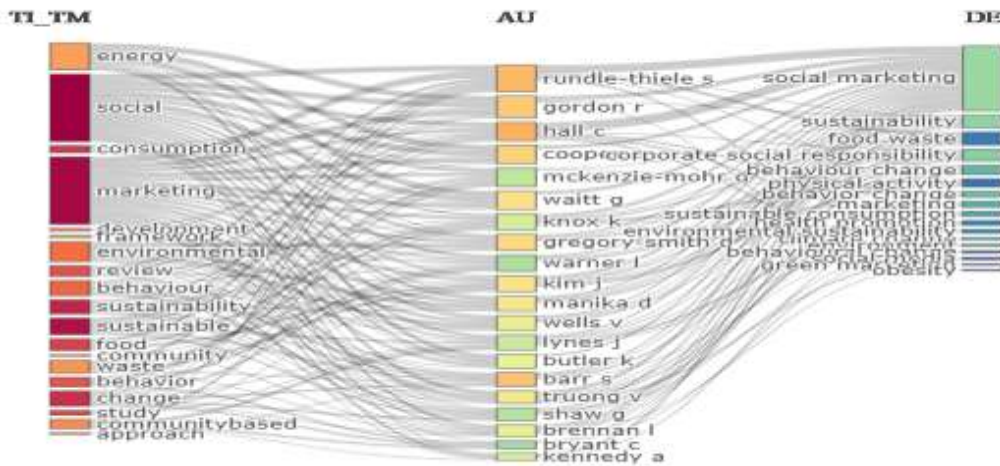


Figure 7: Three-fields Plot (author, titles, keywords)

There is a left field that includes titles of journals. In the title social marketing, there is zero incoming flow count, 18 outgoing flow count, zero marketing flow count, and 19 outgoing flow count. Sustainability incoming flows are zero; outgoing flow counts are ten, 'sustainable' incoming flows are zero, and outgoing flows are nine. Twenty authors have published papers on 'social marketing and sustainability' indexed in the three-field plot. Among them, Rundle-Thiele S is the highest in percentage. It is depicted in a dark rectangle of orange and is connected by many keywords, including social marketing, sustainability, food waste, environmental sustainability, behaviour change, and marketing. According to a three-field plot, the right field consists of keywords such as social marketing, sustainability, food waste, social responsibility, behaviour change, physical activity, sustainable consumption, health promotion, obesity, green marketing, social media, sustainable environment, and environmental sustainability, all of which are often related to different authors.

4.2.3 Most Local Cited Documents

Citation analysis was used to identify the most relevant papers. In the past, bibliometric analyses have been suggested as the method for quantifying the number of times another article has cited a specific publication to determine its reputation and impact in a field of scientific research by enumerating the total number of citations the article has received. The study examined the citation of the 575 selected studies (see Table 12 and Figure 8). Various journals publish the twenty most cited papers. Articles published in 2009 and 2000 received the most citations. The top article has 29 local and 327 global citations, written by Peattie K (2009), followed by Mckenzie-Mohr D (2000), with 24 local and 444 global citations. It should be noted that the top two articles were published in two separate journals, namely the Journal of Business Research and Social Issues.

Table 12: Most Locally Cited Documents

Document	DOI	Year	Local Citations	Global Citations	LC/GC Ratio (%)	Normalized Local Citations	Normalized Global Citations
PEATTIE K, 2009, J BUS RES	10.1016/j.jbusres.2008.01.033	2009	29	327	8.87	18.45	6.67

MCKENZIE-MOHR D, 2000, J SOC ISSUES	10.1111/0022-4537.00183	2000	24	444	5.41	5.25	3.92
MCKENZIE-MOHR D, 2000, AM PSYCHOL	10.1037/0003-066X.55.5.531	2000	8	229	3.49	1.75	2.02
BARR S, 2011, APPL GEOGR	10.1016/j.apgeog.2010.12.003	2011	8	116	6.90	12.80	1.32
KIM J, 2019, J SOC MARKET	10.1108/JSOCM-05-2019-0074	2019	8	59	13.56	21.14	5.12
BUTLER K, 2016, J SOC MARKET	10.1108/JSOCM-07-2015-0045	2016	7	40	17.50	13.22	1.16
SHEAU-TING L, 2013, J ENVIRON MANAGE	10.1016/j.jenvman.2013.10.001	2013	6	29	20.69	21.00	0.70
MCKENZIE-MOHR D, 2014, SOC MARK Q	10.1177/1524500413519257	2014	6	141	4.26	16.29	3.58
BEATSON A, 2020, J SOC MARKET	10.1108/JSOCM-07-2019-0102	2020	6	18	33.33	16.15	1.03
PRILLWITZ J, 2011, J TRANSP GEOGR	10.1016/j.jtrangeo.2011.06.011	2011	5	134	3.73	8.00	1.52
BARR S, 2012, APPL GEOGR	10.1016/j.apgeog.2011.08.002	2012	5	69	7.25	13.89	1.63
SPOTSWOOD F, 2017, J SOC MARKET	10.1108/JSOCM-10-2016-0057	2017	5	21	23.81	18.50	0.90
HALDEMAN T, 2009, SOC MARK Q	10.1080/15245000903154618	2009	4	28	14.29	2.55	0.57
CARRIGAN M, 2011, J BUS ETHICS	10.1007/s10551-010-0694-8	2011	4	67	5.97	6.40	0.76
BUYUCEK N, 2016, AUSTRALAS MARK J	10.1016/j.ausmj.2015.11.001	2016	4	50	8.00	7.56	1.45
HODGKINS S, 2019, J SOC MARKET	10.1108/JSOCM-12-2017-0088	2019	4	16	25.00	10.57	1.39
KIM J, 2020, SOC MARK Q	10.1177/1524500420918690	2020	4	12	33.33	10.77	0.69
HAQ G, 2008, LOCAL	10.1080/13549830802260092	2008	3	34	8.82	9.60	0.79

ENVIRON								
CHAPMAN S, 2012, SEX HEALTH	10.1071/SH10165	2012	3	24	12.50	8.33	0.57	
HUBSCHER C, 2022, J SOC MARKET	10.1108/JSOCM-10-2020-0214	2022	3	6	50.00	37.80	4.72	

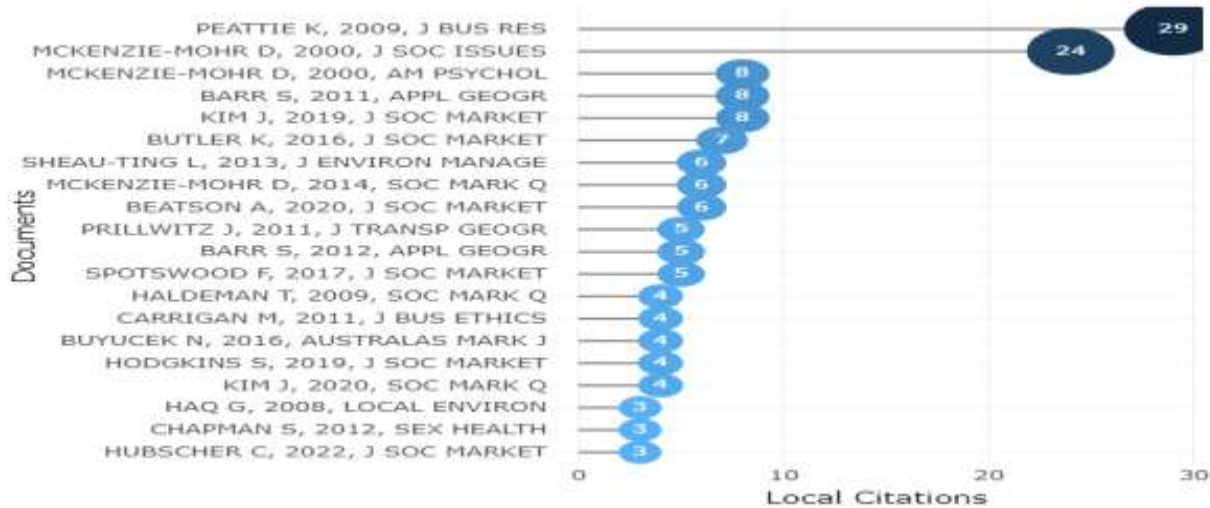


Figure 8: Most Locally Cited Documents

4.2.4 Most cited countries

The most relevant countries based on total citations and average article citations are the USA(TC 4850, AAC 37.60), United Kingdom(TC 3674, AAC 49.65), Australia(TC 1879, AAC 27.23), Canada(TC 1635, AAC 54.50), New Zealand(TC 512, AAC26.95), Netherlands(TC 428, AAC 47.56), Germany(TC 287 AAC 28.70), SPAIN(TC 256, AAC 17.07), Ireland(TC 181 AAC 25.86), and France (TC160, AAC 40.00) respectively.

Table 13 Most relevant countries based on citations

Country	TC	Average Article Citations
USA	4850	37.60
United Kingdom	3674	49.65
Australia	1879	27.23
Canada	1635	54.50
New Zealand	512	26.95
Netherlands	428	47.56
Germany	287	28.70
Spain	256	17.07
Ireland	181	25.86
France	160	40.00



Figure 9: Most relevant countries based on citations

4.3 Most Relevant Keywords

This section mentioned the results of research question fiveRQ5. What keywords are most often used in social marketing and sustainability?

4.3.1 Authors Keywords

The "Keyword" gives an enhanced summary and refinement of articles. Scholars have suggested that keyword analysis can help them identify patterns in certain fields (Farooq, 2022a). A bibliometrics study frequently uses author keywords as a unit of analysis since they accurately represent an article's content(Azevedo et al., 2019). Consequently, "author keywords" were selected for this study's analysis of emerging topics. In addition to showing the structure of scientific knowledge, keyword co-occurrence analyses can help identify hotspots and research trends(Donthu et al., 2021). The author created a keyword co-occurrence map using the VOSviewer software to identify rising social marketing and sustainability topics based on the co-occurrence map. In order to identify the most prominent themes, these terms were counted according to their frequency of occurrence (Lal et al., 2022). 30 out of 1720 author keywords met the minimum criterion of seven times occurrence, indicating their importance for social marketing and sustainability.

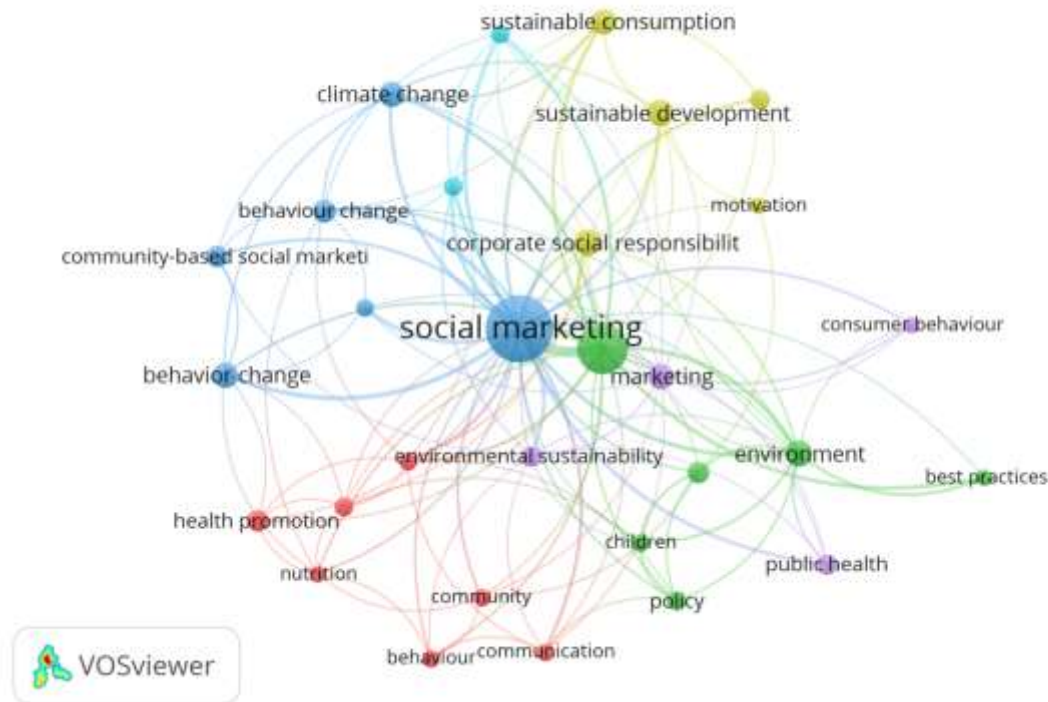


Figure 10: Co-occurrence network of author keywords

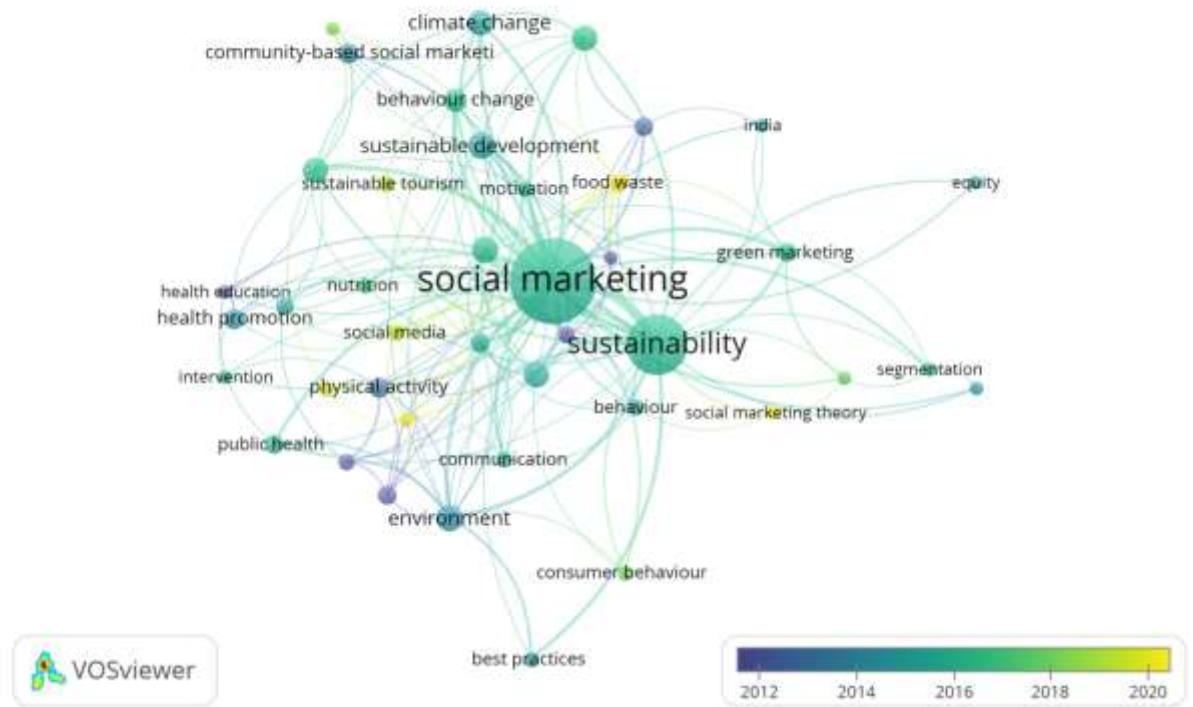


Figure 11: Overly visualization division on the time axis authors keywords network

In the study, six subjects were distinguishable by distinctive cluster colours resulting from significant correlations between their terms. After removing the core terms related to the search query, each issue was given an appropriate topic name. There is a linkage among the keywords in each cluster, indicating they are not isolated but related to each other for achieving sustainability. As yellow shows recent topics, the sustainable concepts are now moving to waste management and tourism.

Table 14 Authors' keywords network

Cluster 1 Communication and health	behaviour, communication, community, health promotion, nutrition, obesity, social media
Cluster 2 Sustainable practices	best practices, children, environment, physical activity, policy, sustainability
Cluster 3 Sustainability and Behaviour	Behaviour change, climate change, community-based social marketing, social marketing, sustainable tourism
Cluster 4 Sustainable Practices for sustainable development	Behavioural change, corporate social responsibility, social responsibility, motivation, sustainable consumption, sustainable development,
Cluster 5 Marketing for sustainability	Consumer behaviour, marketing, public health, environmental sustainability
Cluster 6 Waste management for green	Food waste, green marketing

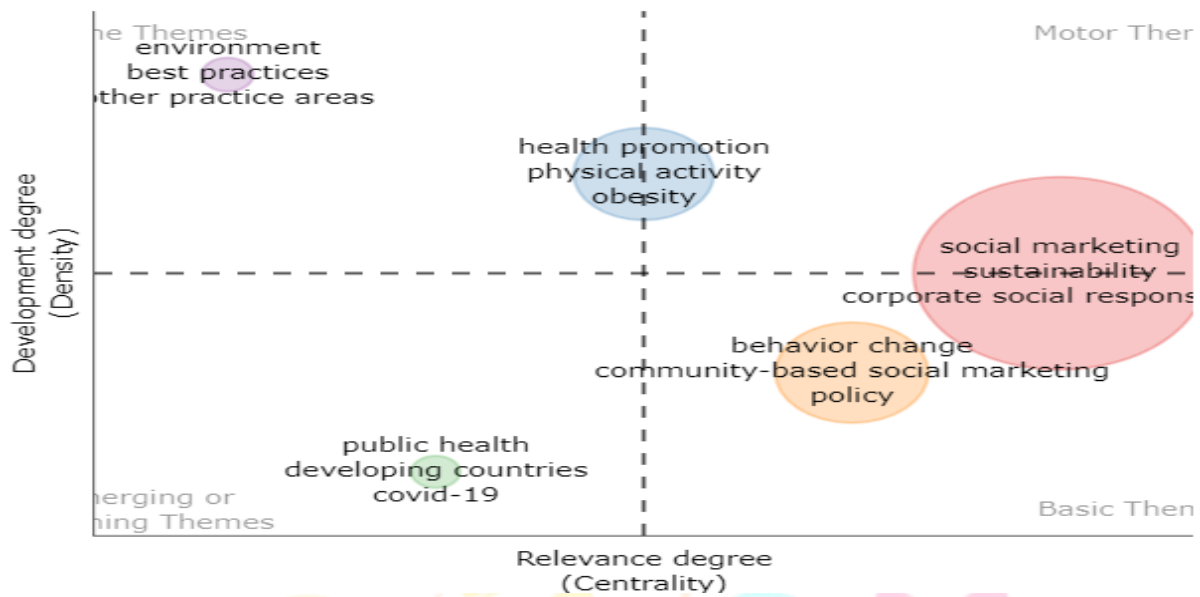


Figure 13: Thematic Map

Based on the thematic map shown in Figure 13, environment, best practices, and other practice areas are some niche themes developed in isolation but can be further researched. The themes like public health, developing countries, and COVID-19 seem to be either emerging or declining. We notice that behaviour change, community-based social marketing, and policy issues are fundamental themes; however, we also observe a precise movement of development in terms of how the social marketing aspects are becoming integrated with other aspects, like sustainable development and corporate social responsibility. Moreover, themes like health promotion, physical activity, obesity, etc., seem to develop in terms of substantial work fully.

Table 15: Clusters in Thematic Map

Social Marketing (Cluster 1)	social marketing, sustainability, corporate social responsibility, climate change, behaviour change, marketing, sustainable consumption, sustainable development, environmental sustainability, food waste, behavioural change, social media, green marketing, sustainable tourism, communication, consumer behaviour, theory of planned behaviour, csr, macro-social marketing, meat consumption, pro-environmental behaviour, sustainable development goals, anti-consumption, china, consumption, corporate social marketing, HIV/aids, identity, social change, social enterprise, stakeholder theory, sustainability marketing, systems thinking, barriers, consumer behaviour, destination management, energy, environmental behaviour, environmental education, environmental justice, extension, food consumption, global warming, higher education, HIV prevention, innovation, macro-marketing
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Health promotion (Cluster 2)	health promotion, physical activity, obesity, children, intervention, motivation, gender health education, exercise, India, prevention, attitude, diet, evaluation, formative research, healthy eating, obesity prevention
Public Health (Cluster 3)	public health, developing countries, covid-19, equity, global health
Environment (Cluster 4)	best practices, other practice areas, monitoring and evaluation
Behavior change(Cluster 5)	behaviour change, community-based social marketing, policy, behaviour, energy efficiency, community health, nutrition, social marketing theory, social practice theory, fisheries, qualitative research, recycling, Vietnam, attitudes, cognitive dissonance, food fortification

5. Conclusion

Our study seeks to understand how social marketing and sustainability evolve, taking 575 papers published between 1989 and 2023 in the Scopus and Web of Science indexed databases. Several methods can be used to conduct a comprehensive and in-depth subject analysis. Still, this approach involves a correlation between the qualitative and quantitative results obtained from a research study on the subject in question (Ryszko & Szafraniec, 2022). Results revealed that the literature published on social marketing and sustainability is an emerging field for research, as most of the studies were published after 2010. Further, the study revealed that the study is still mostly confined to the developed world.

Further, this research contributes to a more comprehensive understanding of how marketing activities have been perceived within social marketing and sustainability and to developing new perspectives regarding analyzing topics related to a sustainable healthcare approach.

This study uses bibliometric analysis to map the social marketing and sustainability literature, most prominent authors, most relevant sources, organizations, relevant affiliations, countries, scientific production, keywords analysis and citation patterns. It analyzed social marketing and sustainability literature across various parameters like relevant sources, highly cited authors, sources, organizations, countries, authors' keywords, and publication trends. Additionally, it defines the current study themes, giving future researchers a direction for their work. Academics can use structured and unstructured public data (Redine et al., 2022) to determine social marketing and sustainability.

The paper has some implications, too. First, the results reveal that the study is confined to developed countries. So, developing and less developed countries can implement these ideas to achieve sustainable development goals.

Second, the marketing activities of organizations should be diverted to green routes to achieve long-term sustainability.

Third, managers, regulators and government agencies should focus on corporate social responsibility activities and be concerned with human health and climate change issues by continuously monitoring and accepting the changes to reduce environmental damage and social injustice.

Fourth, the government/organizations can apply campaigns to change the behaviour of citizens/stakeholders, which is effective for crisis management and promoting sustainability agenda.

Lastly, the academician can also focus on sustainable concepts in marketing, such as green products, green marketing, environment-friendly marketing, etc., rather than simple marketing principles to address the changes gradually happening in the world.

The study has some constraints. It solely takes into account the Scopus and Web of Science-indexed databases. Therefore, it can overlook literature that isn't included in those databases. Future research may use additional databases to broaden the range of sustainability and social marketing papers. Further, the same research can be done on less developed countries. Other methods, such as empirical studies and systematic literature reviews, are other possible areas for research.

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