

SPIRITUALITY AND SUSTAINABILITY: A BIBLIOMETRIC REVIEW

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Abstract: *Amidst the global stress escalation triggered by the COVID-19 pandemic, there has been a noticeable surge in people turning to spirituality. Recognizing the growing importance of spirituality in contemporary society, this study investigates the relationship between spirituality and sustainability through a bibliometric analysis, utilizing the SCOPUS database. The main objective of the study is to holistically map and evaluate the direction of the area by identifying prominent themes, patterns, and major works, which in turn will be used as the guiding principles for future research. The analysis of 384 documents reveals a substantial upward trend in publications between 1993 and 2023. Predominantly, studies on spirituality and sustainability originate from the United States of America, India, and Australia. Through the evaluation of bibliometric data, this research identifies leading authors, publications, journals, and institutions in the field. Additionally, keyword co-occurrence analysis, topic modeling, and content analysis unveil the theoretical foundations and emerging patterns, offering valuable insights for future research directions. The study showcases diverse themes in spirituality and sustainability, providing implications for both academics and organizations. Furthermore, it sheds light on areas where research is lagging in the current landscape.*

Keywords: *Spirituality, Sustainability, Bibliometric Analysis.*

Introduction

Sustainability is a primary global challenge that each state, sector and individual are facing all around the globe (Gigauri & Vasilev, 2022; Nikčević, 2023; Surmanidze et al., 2023). In the contemporary landscape of academia and societal discourse, the intersection of spirituality and sustainability has emerged as a compelling area of exploration (Leal Filho et al., 2022). This convergence offers a lens through which to understand and address pressing environmental and social challenges, fostering holistic approaches to sustainability that encompass not only ecological considerations but also ethical, cultural, and spiritual dimensions. Over the past three decades, scholars and practitioners have increasingly recognized the importance of integrating spiritual values and principles into sustainability

efforts, acknowledging the profound interconnectedness between human well-being and the health of the planet (Daniel, 2002; Dhiman & Marques, 2016).

Through a comprehensive trend analysis of scholarly publications spanning from 1993 to 2023, this article aims to illuminate the evolving discourse and engagement with spirituality and sustainability. The main research questions examined in this study include

1. What are the recent publication trends in Spirituality and Sustainability research?
2. What are the most prominent sources in Spirituality and Sustainability research?
3. Who are the most influential authors studying the impact of Spirituality and Sustainability?
4. Which countries lead in Spirituality and Sustainability research influence?
5. What keywords are frequently used by authors in Spirituality and Sustainability research?
6. What themes are frequently used by authors in Spirituality and Sustainability research?
7. What future research recommendations are suggested for Spirituality and Sustainability?

By examining publication trends, thematic clusters, authorship patterns, and citation impacts, we seek to uncover key insights into the trajectory of research and dialogue within this interdisciplinary field. From the nascent beginnings of inquiry to the current state of prominence, our analysis offers a nuanced understanding of the dynamics shaping the intersection of spirituality and sustainability and underscores its significance in addressing the complex challenges of the 21st century.

Methodology

This paper utilizes bibliometric analysis to offer a comprehensive overview of the current state of scholarly output and assess the quality of previous studies, thereby providing valuable insights into a specific topic. Bibliometric analysis has seen significant growth and is recognized for its utilization of various mathematical tools and statistical methodologies to examine published works such as articles and books, as described by (Garfield, 1955). It serves to elucidate scientific research trends, explanations, and disciplinary patterns, aiding researchers in understanding the history and current status of a field while suggesting new avenues for research (Durieux & Gevenois, Pierre, 2010).

Focusing specifically on spirituality and sustainability research, this study concentrated on empirical and review articles written in English. The methodology, depicted in Figure 1, follows five stages typical of bibliometric analysis: research design, data gathering, analysis, visualization, and interpretation (Dissanayake et al., 2022; Zupic & Čater, 2014).

The SCOPUS database was chosen as the primary source due to its comprehensive coverage of peer-reviewed academic journals across various disciplines (Dissanayake et al., 2023). Using search terms "Spirituality" and "Sustainability," 418 documents were initially identified. Subsequently, non-English language articles and 2024 publications were excluded, resulting in 384 English language publications for further analysis.

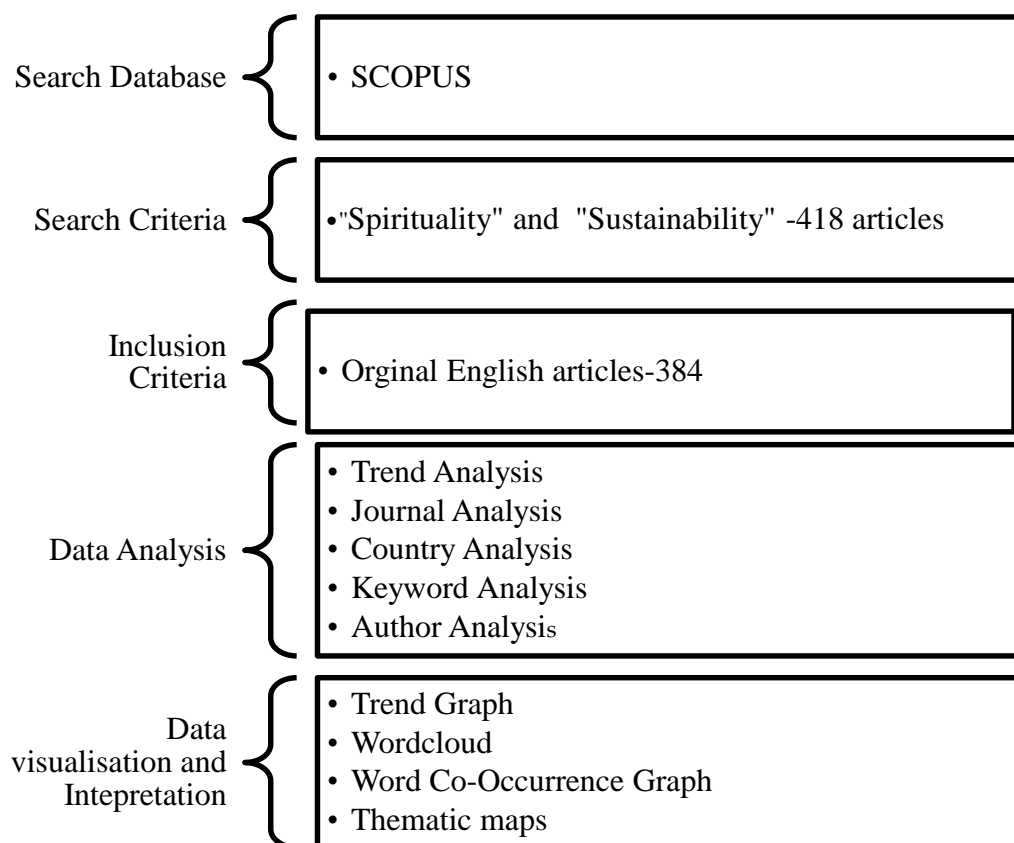


Figure 1. Methodology of the Paper

Adapted from Zupic and Čater (2014)

Data analysis was conducted using biblioshiny programs, a software developed by Massimo Aria with the R programming language, to examine the current landscape and future directions of entrepreneurship education at universities(Aria & Cuccurullo, 2017). Various bibliometric techniques were employed to explore publication trends and analyze sources, countries, authors, and keywords. Author and journal productivity were assessed using metrics such as H-Index, G-Index, m-Index, and total citations, providing insights into scholarly influence and productivity. Table 1 illustrates the data analysis sections and tools for each research question.

Table 1. Data Analysis Methods

Research Question	Analysis section	Analysis tools
1. What are the recent publication trends in Spirituality and Sustainability research?	Trend Analysis	Trend Graph
2. What are the most prominent sources in Spirituality and Sustainability research?	Source Analysis	Bradford Law, Source Impact Analysis
3. Who are the most influential authors studying the impact of Spirituality and Sustainability?	Author Analysis	Lotka Law, Author Impact Analysis

4. Which countries lead in Spirituality and Sustainability research influence?	Country Analysis	Country Total Publications, Citations analysis
5. What keywords are frequently used by authors in Spirituality and Sustainability research?	Keywords Analysis	Keyword Occurrence Analysis, Word cloud, Trend Topics
6. What themes are frequently used by authors in Spirituality and Sustainability research?	Thematic Analysis	Thematic Map, Word Occurrence Graph
7. What future research recommendations are suggested for Spirituality and Sustainability?	Future Research Directions	Content Analysis

Source: Constructed by the authors

Visualization techniques, including trend graphs, top authors' production charts, country figures, maps, and thematic maps, were utilized to present the data visually. These visualizations were then interpreted to derive meaningful conclusions from the findings.

Results and analysis

Trend Analysis

In recent decades, the exploration of spirituality and its relationship with sustainability has emerged as a significant and evolving field of study. Through a meticulous examination of article publication trends spanning from 1993 to 2023, a compelling narrative emerges, reflecting the evolution of discourse and engagement with this multifaceted intersection. Trend analysis of four periods is depicted in Figure 2.

Emergence and Early Discourse (1993-1999): During the early stages of our analysis, spanning from 1993 to 1999, it becomes evident that scholarly attention towards spirituality and sustainability was scant, with a mere handful of articles published. The first article published in 1993 was *Economy, ecology and Spirituality: Toward a theory and practice of sustainability (Part I)*(Korten D.C, 1993). The highest cited article in this period was “The growing interest in spirituality in business: A long-term socio-economic explanation” with 66 citations (Tischler, 1999). This period likely represents the initial seeds of inquiry, where scholars tentatively began to explore the interplay between spirituality and environmental concerns, although the discourse had yet to gain significant traction within academic and public spheres (Brinkerhoff & Jacob, 1999).

Incremental Growth and Recognition (2000-2009): As we transition into the new millennium, the trajectory of discourse around spirituality and sustainability begins to take shape. The number of articles published gradually increases, indicating a burgeoning interest and recognition of the importance of this intersection. Scholars and practitioners alike start delving deeper into the connections between spiritual beliefs, values, and practices, and their implications for fostering sustainable lifestyles, communities, and societies. In this period highest cited article was “A holon approach to agroecology”(Bland & Bell, 2007). This period serves as a foundational phase, laying the groundwork for more robust and nuanced explorations in the years to come.

Rapid Expansion and Maturation (2010-2019): The following decade witnesses a remarkable surge in both the quantity and quality of articles addressing spirituality and sustainability. The exponential growth in publication numbers underscores a profound shift in societal consciousness, as issues related to environmental degradation, social justice, and existential purpose increasingly converge. “Mindfulness in sustainability science, practice, and teaching” was the highest cited article with 150 citations(Wamsler et al., 2018). “Consumers’ Sustainable Purchase Behaviour: Modeling the Impact of Psychological Factors” was the second highest cited article in this period which cited by 140 scholars(Joshi & Rahman, 2019). Scholars from diverse disciplines contribute to a rich tapestry of research, examining topics ranging from indigenous ecological wisdom to eco-spiritual activism, from mindfulness-based sustainability practices to ethical consumption patterns. This period marks the maturation of the field, as interdisciplinary collaborations flourish, and holistic frameworks for understanding and addressing sustainability challenges begin to take shape.

Consolidation and Acceleration (2020-2023): In the most recent years under review, spanning from 2020 to 2023, the momentum of discourse around spirituality and sustainability shows no signs of abating. On the contrary, publication numbers continue to climb, signaling a deepening engagement and urgency in confronting pressing ecological and existential dilemmas. The unprecedented challenges posed by climate change, biodiversity loss, and social inequities catalyze renewed reflections on the interconnectedness of all life and the imperative of cultivating spiritual resilience and wisdom in the face of uncertainty. In this period highest citation count was obtained by the article titled “The New Consumer Behaviour Paradigm amid COVID-19: Permanent or Transient? Which received 185 citations (Mehta et al., 2020). Moreover, emerging paradigms such as regenerative agriculture, eco-spiritual activism, and deep adaptation gain prominence, offering hopeful pathways towards a more sustainable and spiritually fulfilling future.

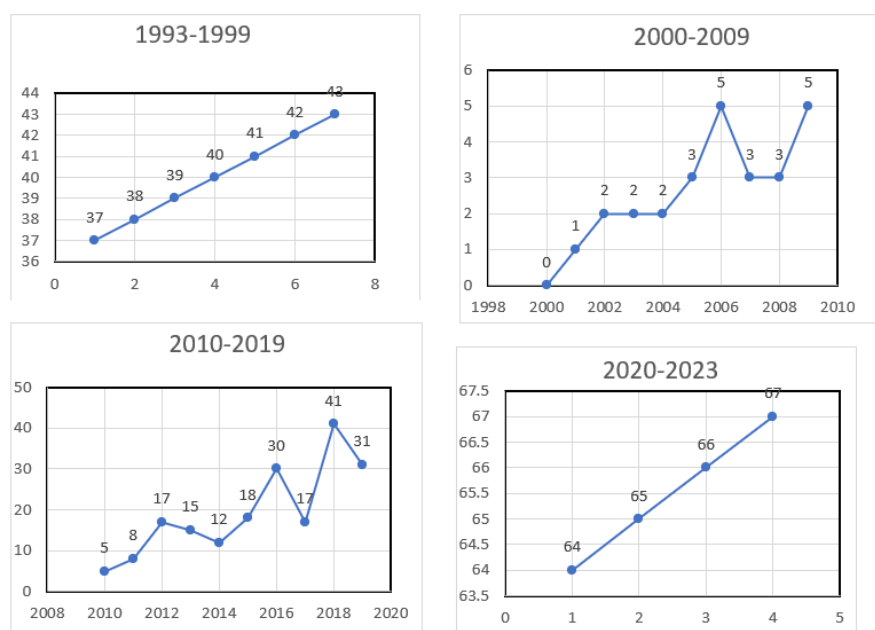


Figure 2. Trend Analysis

Source: Constructed by the authors

The trend analysis of article publications spanning three decades offers valuable insights into the evolving discourse and engagement with spirituality and sustainability. From its nascent beginnings to its current prominence, the intersection of spirituality and sustainability has emerged as a dynamic and indispensable field of inquiry, inviting ongoing exploration, dialogue, and transformative action. As we navigate the complexities of the 21st century, integrating spiritual wisdom with ecological stewardship holds the promise of fostering resilience, regeneration, and reverence for the intricate web of life upon which our collective well-being depends.

Source Analysis

Bradford's Law, named after Samuel C. Bradford, is a bibliometric principle used to analyze the distribution of scholarly publications within a specific field (Leimkuhler, 1967). This law suggests that the number of journals publishing a significant portion of the articles in that field follows a predictable pattern. In the context of spirituality and sustainability, Bradford's Law can offer insights into how research outputs are distributed among different journals.

Figure 03 provided data related to spirituality and sustainability, we can observe the application of Bradford's Law across three zones:

1. **Zone 1:** This zone represents the core journals in the field, which publish a substantial number of articles on spirituality and sustainability. In this case, 35 journals contribute to 128 publications. These journals are likely to be prestigious, widely recognized, and highly regarded within the academic community for their research quality and impact in the field.
2. **Zone 2:** Zone 2 includes journals that publish a moderate number of articles on spirituality and sustainability but do not have the same level of influence as those in Zone 1. In this zone, there are 120 journals contributing to 130 publications. These journals may cover a broader range of topics related to spirituality and sustainability, catering to various subfields or interdisciplinary approaches within the overarching theme.
3. **Zone 3:** This zone encompasses journals with a lower publication output compared to Zones 1 and 2. Despite their lower frequency of publications, these journals still contribute significantly to the discourse on spirituality and sustainability. In Zone 3, there are 126 journals contributing to 126 publications, indicating a more diverse array of sources that may focus on specialized or emerging topics within the field.

Overall, Bradford's Law applied to spirituality and sustainability research helps researchers understand the distribution of scholarly output across different tiers of journals. It highlights the core journals driving the field's discourse, as well as the broader spectrum of journals contributing to the dissemination of knowledge in this interdisciplinary area. This understanding can guide researchers in identifying key outlets for publication and staying informed about developments in the field.

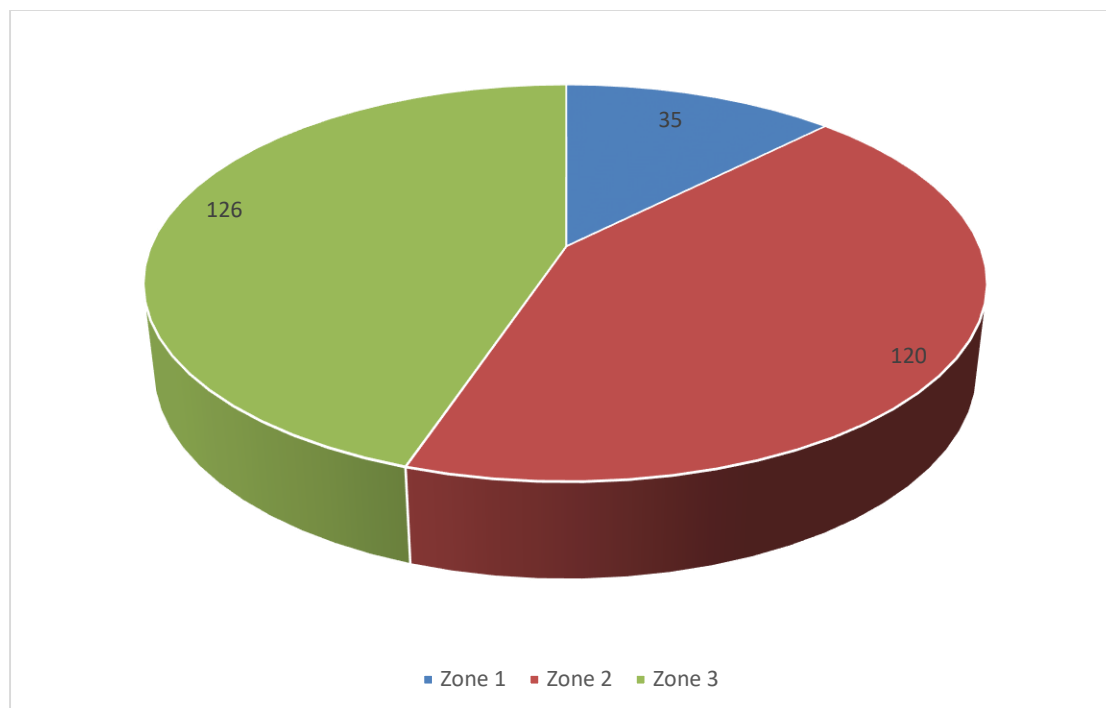


Figure 3. Journals Zones according to Bradford Law

Source; Constructed by the authors

Table 2 depicts the Source Impact data with the highest cited sources.

Table 2. Source Impact Analysis

Source	h_index	g_index	m_index	TC	NP	PY_start
Sustainability Science	4	5	0.571	384	5	2018
Sustainability (Switzerland)	11	17	1.571	299	22	2018
Ecological Economics	2	2	0.286	231	2	2018
Journal Of Health Management	1	1	0.2	186	1	2020
Ambio	1	1	0.2	161	1	2020
Journal of Management, Spirituality and Religion	4	6	0.364	131	6	2014
The Oxford Handbook of Positive Organizational Scholarship	1	1	0.077	129	1	2012
Journal of Organizational Change Management	2	2	0.077	90	2	1999
Journal of Business Ethics	3	3	0.25	81	3	2013
Annals of The American Association of Geographers	1	1	0.125	79	1	2017

Source: Constructed based on Biblioshiny Software

The synergy between spirituality and sustainability has become a focal point in contemporary discourse on environmental conservation and societal well-being. Among the plethora of scholarly contributions, "Sustainability Science" and "Sustainability (Switzerland)" stand out as prominent platforms fostering rigorous inquiry into the interconnectedness of spirituality and sustainable practices. With respective h-indexes of 4 and 11, and cumulative citation counts exceeding 384 and 299 since their inception in 2018, these journals provide vital forums for interdisciplinary dialogue, enriching our understanding of how spiritual values can inform and catalyze sustainable development efforts. Through empirical research, theoretical explorations, and practical case studies, they illuminate the intricate dynamics between spirituality, environmental stewardship, and social responsibility, offering insights that resonate across academic, policy, and grassroots communities.

Moreover, the scholarly landscape is enriched by journals like "Ecological Economics" and "Journal of Management, Spirituality and Religion," each bringing unique perspectives to the nexus of spirituality and sustainability. "Ecological Economics," with an h-index of 2 and a total citation count of 231 since 2018, delves into the economic dimensions of environmental sustainability, often incorporating spiritual considerations into its interdisciplinary analyses. Meanwhile, the "Journal of Management, Spirituality and Religion," boasting an h-index of 4 and a citation count of 131 since 2014, serves as a hub for exploring how spiritual and religious principles inform sustainable organizational practices. Together, these publications contribute to a rich tapestry of knowledge that transcends disciplinary boundaries, paving the way for holistic approaches to addressing the complex challenges of our time.

Author Analysis

Lotka's Law, a principle often applied in bibliometrics, finds relevance in analyzing the distribution of scholarly productivity within the domains of spirituality and sustainability (Lotka, 1926). According to the provided data, the law manifests in the unequal distribution of scholarly contributions among authors in these fields. The data indicates that the majority of authors, approximately 93.5%, have produced only one article, reflecting a pattern where a large proportion of contributors make minimal contributions to the literature. Conversely, a small fraction of authors, accounting for less than 1% of the total, have authored two or more articles, indicating a concentration of productivity among a select group of prolific authors. This distribution aligns with Lotka's Law, which posits that a small percentage of authors produce the majority of scholarly output, while the majority contribute minimally. In the context of spirituality and sustainability, understanding this distribution sheds light on the dynamics of scholarly productivity, emphasizing the prevalence of both highly productive authors and those who contribute sporadically. Recognizing this pattern is crucial for fostering a balanced scholarly ecosystem that acknowledges and supports the diverse contributions of authors across the spectrum of productivity.

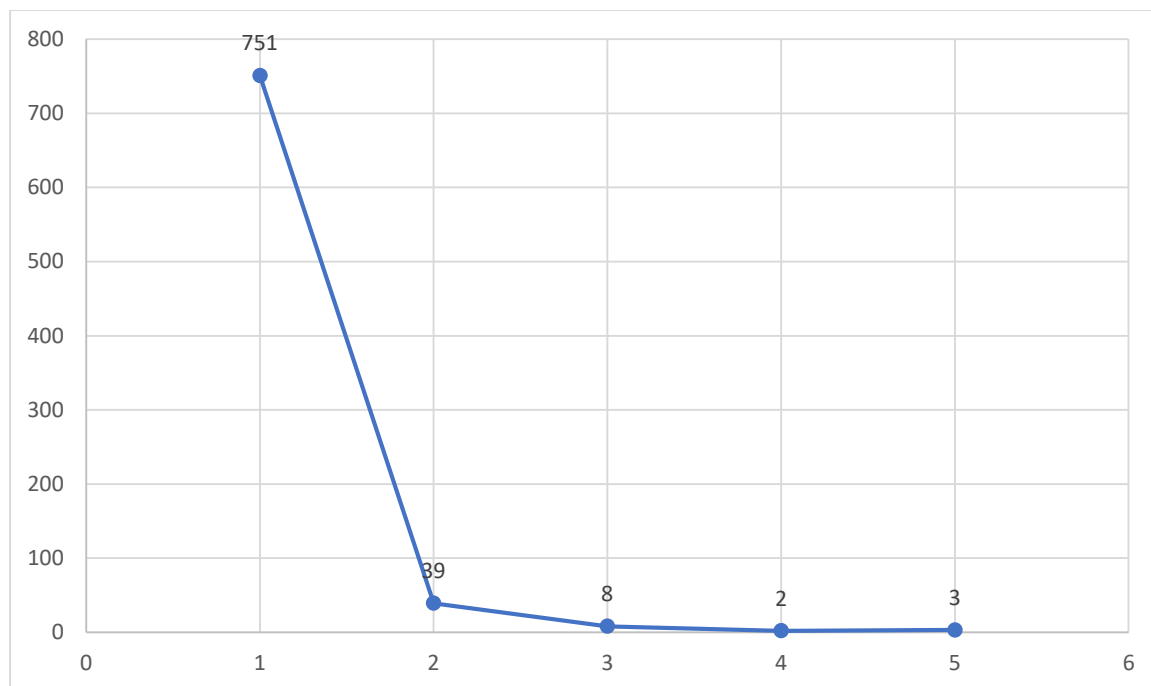


Figure 4. Lotka Law

Source: Constructed by the authors

In the realm of spirituality and sustainability, understanding the key authors and their contributions is essential for gaining insights into the evolving discourse within these interdisciplinary fields. The provided author analysis offers a glimpse into the scholarly landscape through various metrics such as h-index, g-index, and m-index, among others. Table 3 illustrates the author's impact analysis.

Wamsler C emerges as a notable figure with an h-index of 4, indicating that they have authored at least four papers that have been cited four times each. This suggests a substantial impact within the scholarly community. Similarly, Ives CD demonstrates a notable presence with an h-index of 2, reflecting a significant influence despite a smaller number of publications.

Table 3. Author Impact Analysis

Authors	h_index	g_index	m_index	TC	NP	PY_start
Wamsler C	4	4	0.571	334	4	2018
Ives Cd	2	2	0.333	242	2	2019
Mehta S	1	1	0.2	186	1	2020
Purohit N	1	1	0.2	186	1	2020
Saxena T	1	1	0.2	186	1	2020
Fischer J	1	1	0.2	161	1	2020
Freeth R	1	1	0.2	161	1	2020
Brossmann J	1	1	0.143	145	1	2018
Hendersson H	1	1	0.143	145	1	2018
Kristjansdottir R	1	1	0.143	145	1	2018

Source; Constructed based on Biblioshiny Software

Moreover, Mehta S, Purohit N, Saxena T, Fischer J, and Freeth R, among others, each exhibit a modest yet noteworthy contribution to the literature with an h-index and m-index of 1. While their impact may be relatively limited compared to more prolific authors, their collective efforts enrich the diversity of perspectives within the discourse on spirituality and sustainability. Furthermore, authors such as Brossmann J, Hendersson H, and Kristjansdottir R, while having lower h-indices, contribute to the breadth of the literature with their unique insights. Despite their smaller publication output, their work adds depth to the interdisciplinary exploration of spirituality and sustainability. Overall, this author analysis underscores the multifaceted nature of scholarly contributions in spirituality and sustainability, highlighting both prominent voices and emerging perspectives that collectively shape the trajectory of research and discourse in these fields.

Country Analysis

The analysis of research output and citation impact across different countries provides valuable insights into the global landscape of spirituality and sustainability studies (See Table 4). India emerges as a significant player in this field, with 81 publications and 534 total citations, indicating both a substantial volume of research and considerable impact. The high average article citation rate of 19.8 underscores the quality and relevance of Indian contributions. Meanwhile, the United States, despite its higher number of publications (145), exhibits a lower average article citation rate of 11.1, suggesting a broader spectrum of research topics and impact levels. In contrast, the United Kingdom and Australia demonstrate strong engagement with the subject matter, with 44 publications and 383 citations, and 72 publications and 351 citations, respectively. Their average article citation rates of 19.1 and 14.6 highlight the significant impact of research originating from these countries in shaping the discourse on spirituality and sustainability.

Table 4
Country Analysis

Country	TP	TC	Average Article Citations
India	81	534	19.8
USA	145	522	11.1
United Kingdom	44	383	19.1
Australia	72	351	14.6
Sweden	11	252	84
Malaysia	67	170	10.6
South Africa	17	122	17.4
New Zealand	33	86	10.8
Thailand	5	77	38.5
Spain	13	73	18.2

Source; Constructed based on Biblioshiny Software

Sweden stands out among the countries analyzed, with only 11 publications but a remarkably high total citation count of 252, resulting in an average article citation rate of 84. This suggests that Swedish research in spirituality and sustainability is highly impactful, despite its comparatively lower volume. Other countries such as Malaysia, South Africa, New Zealand, Thailand, and Spain also make notable contributions to the field, each with its own level of research activity and citation impact. Malaysia and South Africa maintain moderate levels of research output, while New Zealand and Spain demonstrate higher average article citation rates, indicating the significant impact of their research within the field. Overall, this country analysis illustrates the diverse global engagement with spirituality and sustainability studies, highlighting the varying contributions and impact levels across different regions.

Keyword Analysis

The word frequency analysis depicted in Table 5 comparing author keywords and titles related to spirituality and sustainability provides insights into the key themes and concepts emphasized in both.

In the author's keywords, "workplace spirituality" emerges as the most frequent term, indicating a significant focus on spirituality within organizational contexts. This is followed by "sustainable development" and "climate change," reflecting the prevalent discourse on environmental sustainability. Other prominent keywords include "business ethics," "sustainable consumption," and "corporate social responsibility," underscoring the ethical dimensions of sustainability in business practices.

Table 5. Keyword Occurrence Analysis

Author Keywords		Titles	
Words	Occurrences	Words	Occurrences
workplace spirituality	18	spirituality	110
sustainable development	11	sustainability	92
climate change	9	sustainable development	25
business ethics	4	workplace spirituality	22
sustainable consumption	4	religion	20
bottom line	3	values	12
corporate social	3	climate change	11
covid- pandemic	3	mindfulness	10
mediating role	3	culture	8
missing link	3	environment	7
social responsibility	3	leadership	7
social sustainability	3	consciousness	6
spiritual leadership	3	education	6
spirituality sustainability	3	ethics	6

st century	3	India	6
sustainability management	3	spiritual leadership	6
sustainable performance	3	well-being	6
Benedictine monasteries	2	Buddhism	5
business education	2	corporate social responsibility	5
change adaptation	2	development	5

Source; Constructed based on Biblioshiny Software

WordCloud -AuthorKeywords



WordCloud -Titles



Figure 5. Word Cloud

Source; Constructed based on Biblioshiny Software

In contrast, the titles predominantly feature broader terms such as "spirituality" and "sustainability." "Spirituality" appears most frequently, suggesting a general exploration of spiritual concepts across various contexts. "Sustainability" follows closely, reflecting the overarching theme of sustainable practices and development. Additionally, titles include terms like "sustainable development," "workplace spirituality," and "religion," highlighting specific areas of focus within the broader discourse.

Notably, while certain keywords like "climate change" and "business ethics" are also present in titles, their frequency is relatively lower compared to broader terms like "sustainability" and "spirituality." This suggests that titles may encompass a wider range of topics and discussions beyond the specific keywords highlighted by authors.

Overall, this analysis highlights the complementary nature of author keywords and titles in capturing the diverse themes and concepts within spirituality and sustainability research, with keywords providing more specific insights into focused areas of interest and titles offering a broader overview of the subject matter.

The trend topics exhibited in Figure 6 highlight key areas of focus and interest within the intersection of spirituality and sustainability over time:

1. Environment and Climate Change:

- Both "environment" and "climate change" have seen consistent attention, with "environment" showing a relatively stable frequency over time, while "climate change" experienced a notable increase in frequency from 2014 to 2021, indicating heightened scholarly interest in understanding and addressing environmental challenges within the context of spirituality and sustainability.

2. Mindfulness and Well-being:

- The term "mindfulness" saw a peak in 2018, suggesting a significant focus on mindfulness practices within the study of spirituality and sustainability. Similarly, "well-being" experienced a gradual increase in frequency from 2021 onwards, indicating growing recognition of the importance of mental health and holistic well-being in sustainable living practices.

3. Leadership and Workplace Spirituality:

- "Leadership" and "workplace spirituality" demonstrate a varied trajectory, with "leadership" experiencing peaks in 2015 and 2018, while "workplace spirituality" saw a steady increase in frequency from 2018 to 2022. These trends suggest ongoing interest in incorporating spiritual principles into organizational leadership and workplace environments to foster sustainability-oriented practices and values.

4. Sustainability and Sustainable Development:

- The terms "sustainability" and "sustainable development" show a steady rise in frequency, with "sustainability" experiencing peaks in 2017, 2020, and 2022, and "sustainable development" showing a notable increase from 2018 to 2021. These trends reflect sustained scholarly attention to foundational concepts in sustainability science and practice.

5. Ethics, Religion, and Culture:

- Keywords like "ethics," "religion," and "culture" highlight the ethical, moral, and cultural dimensions of sustainability and spirituality research. "Ethics" saw peaks in 2014 and 2019, while "religion" and "culture" showed steady increases in frequency from 2017 to 2022. These trends indicate growing interest in exploring how diverse belief systems and cultural practices intersect with sustainability goals.

6. Education and Innovation:

- The emergence of terms like "education" and "innovation" in recent years underscores a focus on the role of education in promoting sustainability literacy and the importance of innovative approaches in addressing complex sustainability challenges. "Education" saw an increase in frequency from 2020 to 2022, while "innovation" experienced peaks in 2020 and 2023.

Overall, these yearly trends highlight the evolving landscape of spirituality and sustainability research, characterized by a multidimensional approach encompassing environmental, social, cultural, and organizational perspectives to foster holistic understandings and solutions for a sustainable future.

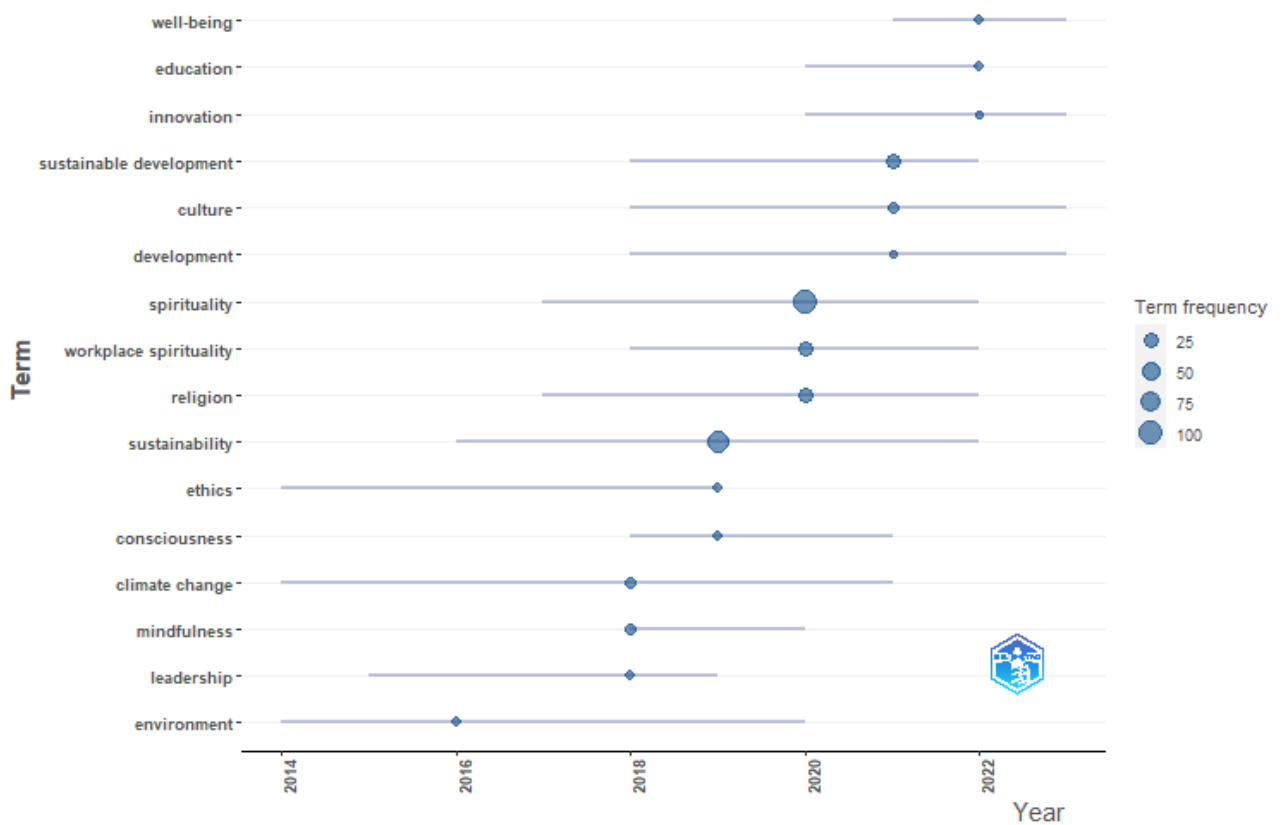


Figure 6. Trend Topics

Source; Constructed based on Biblioshiny Software

Thematic Analysis

Figure 7 depicts the themes related to spirituality and sustainability, this study identified several distinct clusters, each shedding light on different aspects of these interconnected concepts. 11 clusters identified for the four quadrants in the map. This map is prepared based

on the development degree and relative degree. Bottom-right part of the map shows the basic themes representing the well-established research issues in this area. The main themes are grouped into three clusters. One cluster name is culture which include culture, governance and paradigm. Second cluster name is Leadership which include leadership, community, compassion. Third cluster label is spirituality include spirituality, sustainability and sustainable development.

The themes gaining importance in the recent past are presented in the top-right part of the map. It mainly includes five clusters: well-being, Mindfulness, Anthropocene, Ethics and Ecology. Well-being cluster include social sustainability, tourism, wellbeing, nature, and mental health. Mindfulness cluster include inner transition, inner transformation, consciousness, adaptation, transformation, interiority and sustainability science. Anthropocene cluster include Anthropocene and consumption. Ethics cluster include knowledge management, ethics, corporate social responsibility, business education, organizational spirituality, buddhism, entrepreneurship and christianity. Last cluster includes ecology and eco-spirituality.

The niche themes includes one cluster which is cultural ecosystem services. Bottom left hand corner illustrates emerging or declining themes include four clusters namely triple bottom line, COVID-19, pilgrimage, development and innovation.

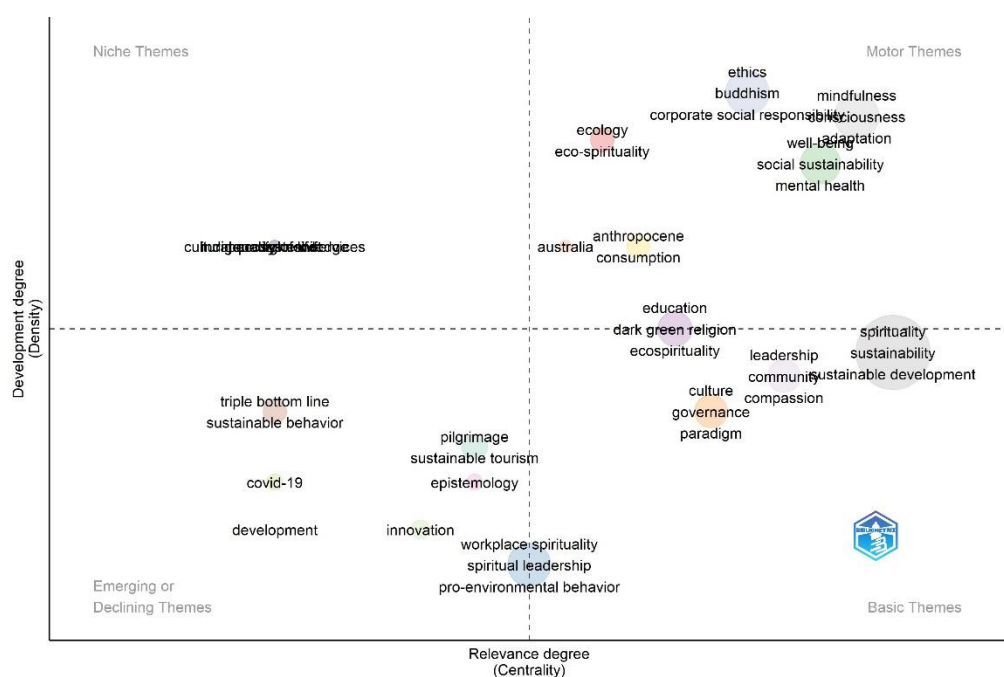


Figure 7. Thematic Analysis

Source; Constructed based on Biblioshiny Software

Author Keyword Co-Occurrence Analysis

In our exploration of author keyword co-occurrence within distinct clusters of spirituality and sustainability discourse, we uncover intricate patterns that shed light on the interconnectedness of key concepts and themes. Leveraging metrics such as closeness

centrality, betweenness centrality, and PageRank, we gain insights into the relative importance and influence of different keywords within each cluster.

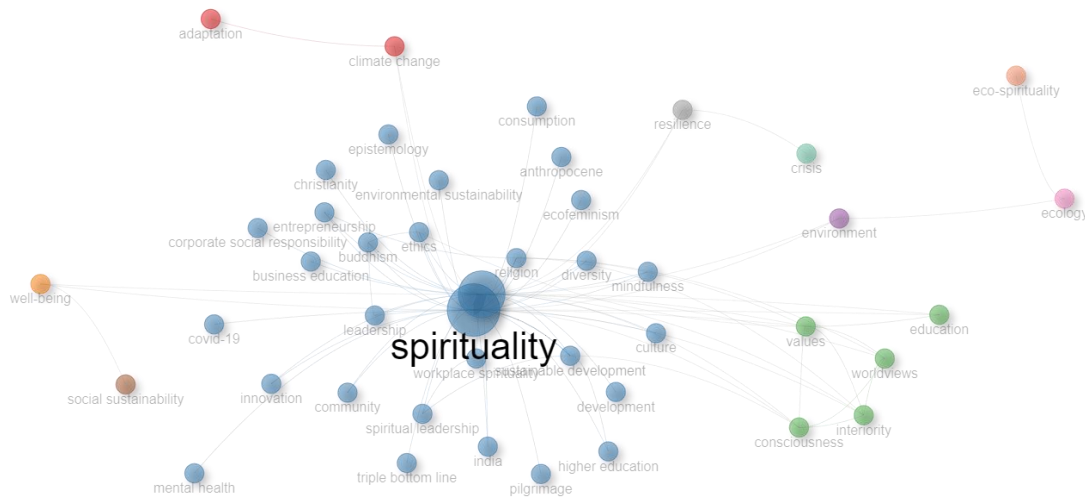


Figure 8. Word Co-Occurrence Map

Cluster 1: Climate Change and Adaptation Within this cluster, keywords like "climate change" and "adaptation" emerge as central nodes, reflecting their pivotal roles in discussions surrounding environmental resilience and mitigation strategies. With moderate levels of betweenness centrality, these keywords serve as bridges connecting other terms within the cluster, while their high closeness centrality underscores their proximity to other nodes. Interestingly, despite its low betweenness centrality, "climate change" maintains a relatively high PageRank, indicating its significance in shaping the discourse on spirituality and sustainability.

Cluster 2: Spirituality, Sustainability, and Related Concepts This cluster encompasses a diverse array of keywords ranging from "spirituality" and "sustainability" to "leadership," "culture," and "ethics." Here, "spirituality" and "sustainability" emerge as central nodes with the highest betweenness and PageRank scores, highlighting their overarching importance in the discourse. Additionally, keywords like "mindfulness," "religion," and "spiritual leadership" exhibit notable closeness centrality, indicating their proximity to other terms within the cluster and their potential to influence broader discussions on spirituality and sustainability.

Cluster 3: Values and Consciousness In this cluster, keywords such as "values" and "consciousness" take center stage, reflecting a deeper exploration of ethical frameworks and inner awareness within the context of sustainability. While "values" demonstrates high betweenness centrality, suggesting its role in connecting disparate themes, "consciousness" exhibits notable PageRank centrality, indicating its significance in shaping scholarly discourse. Moreover, keywords like "education" and "worldviews" contribute to the diversity of perspectives within this cluster, reflecting the interdisciplinary nature of spirituality and sustainability research.

Cluster 4: Environment and Ecology Keywords like "environment" and "ecology" anchor this cluster, emphasizing the interconnectedness of ecological systems and human well-being. With moderate levels of betweenness and pagerank centrality, these terms serve as focal points

for discussions on environmental sustainability and resilience. Additionally, keywords like "well-being" and "resilience" underscore the importance of holistic approaches that prioritize both ecological and social dimensions of sustainability.

Cluster 5: Social Sustainability and Crisis This cluster highlights keywords related to social dimensions of sustainability and responses to crises. While "social sustainability" and "crisis" emerge as central nodes, their relatively low betweenness and pagerank scores suggest a narrower focus within the broader discourse. Nonetheless, these terms play critical roles in addressing issues of social equity, community resilience, and adaptive governance in the face of environmental and societal challenges.

Cluster 6: Eco-Spirituality Keywords like "eco-spirituality" represent a distinct thematic cluster within the discourse on spirituality and sustainability, underscoring the significance of spiritual connections to nature and the environment. Despite its low betweenness centrality, "eco-spirituality" exhibits a notable pagerank score, indicating its influence in shaping discussions on holistic approaches to ecological stewardship.

In summary, the author keyword co-occurrence analysis reveals the multifaceted nature of spirituality and sustainability discourse, highlighting the interconnectedness of key concepts and themes across distinct clusters. By leveraging metrics such as closeness centrality, betweenness centrality, and pagerank, researchers can gain deeper insights into the relative importance and influence of different keywords within specific domains, informing future scholarship and interdisciplinary dialogue in this dynamic field.

Future Research Directions

The trend analysis of scholarly publications on spirituality and sustainability not only provides insights into the historical trajectory of discourse but also offers valuable cues for future research directions. As we reflect on the evolving landscape of this interdisciplinary field, several areas emerge as potential avenues for further exploration and inquiry.

One promising direction for future research lies in the intersectionality of spirituality and social justice. While existing literature has touched upon the ethical dimensions of sustainability (Mukherjee & Ghosh, 2022; Shearman, 1990), there remains a need to delve deeper into how spiritual principles can inform efforts to address systemic inequities and promote social inclusion. Understanding how spirituality intersects with issues of race, gender, and socioeconomic status can enrich our understanding of sustainable development and foster more inclusive and equitable practices.

Moreover, as technological advancements continue to reshape our world, there is a growing interest in exploring the role of spirituality in navigating the digital age (Mukherjee & Ghosh, 2022). Research could investigate how digital technologies, such as artificial intelligence and virtual reality, can be harnessed to cultivate spiritual awareness and foster connection with nature and community in an increasingly digitized society. Additionally, studies examining the ethical implications of technology-driven sustainability initiatives and the potential for digital platforms to facilitate spiritual practices and mindfulness could yield valuable insights. Another area ripe for exploration is the integration of indigenous wisdom and traditional knowledge systems into sustainability efforts (De Angelis, 2018; Kakoty, 2018).

Indigenous cultures around the world have long-held spiritual beliefs and practices that emphasize harmonious relationships with nature. Future research could focus on collaborative partnerships with indigenous communities to co-create sustainable solutions grounded in indigenous cosmologies and values. By centering indigenous perspectives, researchers can contribute to decolonizing sustainability discourse and fostering culturally responsive approaches to environmental stewardship.

Furthermore, there is a need for longitudinal studies that assess the long-term impact of spirituality-oriented interventions on individual and collective well-being. While anecdotal evidence suggests that spiritual practices such as mindfulness meditation and nature-based rituals can enhance resilience and foster a sense of connection, rigorous empirical research is needed to validate these claims and understand the mechanisms underlying their effects. Longitudinal studies tracking participants over extended periods could provide valuable insights into the sustained benefits of spirituality for mental health, community cohesion, and ecological consciousness.

Finally, interdisciplinary collaborations between scholars, practitioners, and policymakers will be essential for advancing the field of spirituality and sustainability. By bridging disciplinary silos and fostering dialogue across diverse perspectives, researchers can co-create innovative solutions to complex sustainability challenges. Future research should prioritize participatory approaches that engage stakeholders from various sectors, including academia, government, business, and civil society, to ensure the relevance and impact of research outcomes on real-world practice and policy.

In summary, the future of spirituality and sustainability research holds immense promise for addressing the interconnected ecological, social, and spiritual challenges of our time. By embracing interdisciplinary perspectives, centering marginalized voices, and fostering inclusive and participatory approaches, researchers can contribute to building a more sustainable and spiritually fulfilling world for current and future generations.

Discussions and Conclusions

Over the past two decades, Spirituality and Sustainability research has gained significant traction, with rapid growth in scholarly publications reflecting increasing awareness of sustainability in spirituality practices. While early studies established foundational concepts, later research expanded to practical applications, interdisciplinary perspectives, and regional adaptations. Journals like "Sustainability Science," "Sustainability (Switzerland)," and "Ecological Economics" have become key platforms for Spirituality and Sustainability discourse, known for publishing high-impact articles and driving academic interest in the field. Notable authors, including Wamsler C, Ives CD, and Mehta S, have significantly influenced Spirituality and Sustainability with their frequently cited studies, advancing the understanding of sustainable strategies. Their work highlights the importance of integrating ethical, environmental, and social considerations into corporate policies. Countries like India, the United States, the United Kingdom, and Australia lead Spirituality and Sustainability research, each contributing unique regional insights. India's high citation rate and Sweden's impactful research stand out, emphasizing the global and interdisciplinary nature of this field.

Future research in Spirituality and Sustainability should delve deeper into the intersection of spirituality and social justice, uncovering how ethical frameworks and spiritual principles can help address systemic inequalities (Shearman, 1990). Digital technologies, such as Artificial Intelligence (AI) and Virtual Reality (VR), also offer promising new tools for fostering sustainable, mindful practices (Zhanbayev et al., 2023). Additionally, collaboration with indigenous communities can yield valuable insights into traditional knowledge systems that emphasize harmonious coexistence with nature (Kakoty, 2018). Researchers are encouraged to pursue longitudinal studies to assess the long-term impact of spiritual practices on sustainable behavior and engage in interdisciplinary collaborations across sectors to develop holistic and culturally responsive solutions.

In conclusion, the trend analysis of scholarly publications spanning three decades offers valuable insights into the dynamic evolution of discourse on spirituality and sustainability. From its nascent beginnings to its current prominence, the intersection of spirituality and sustainability has emerged as a dynamic and indispensable field of inquiry, inviting ongoing exploration, dialogue, and transformative action. As we navigate the complexities of the 21st century, integrating spiritual wisdom with ecological stewardship holds the promise of fostering resilience, regeneration, and reverence for the intricate web of life upon which our collective well-being depends. By fostering interdisciplinary collaborations, promoting ethical values, and embracing diverse perspectives, we can chart a course toward a more sustainable and spiritually fulfilling future.

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