




RESEARCH ARTICLE

What do we know about business strategy and environmental research? Insights from *Business Strategy and the Environment*

Satish Kumar^{1,2}  | Riya Sureka¹ | Weng Marc Lim^{2,3}  |
Sachin Kumar Mangla^{4,5}  | Nisha Goyal⁶

¹Department of Management Studies,
Malaviya National Institute of Technology
Jaipur, Jaipur, Rajasthan, India

²School of Business, Swinburne University of
Technology, Kuching, Sarawak, Malaysia

³Swinburne Business School, Swinburne
University of Technology, Hawthorn, Victoria,
Australia

⁴Jindal Global Business School, O.P. Jindal
Global University, Sonapat, Haryana, India

⁵Plymouth Business School, University of
Plymouth, Plymouth, United Kingdom

⁶Department of Finance, Jain University,
Bengaluru, Karnataka, India

Correspondence

Sachin Kumar Mangla, Jindal Global Business
School, O.P. Jindal Global University, Sonapat,
Haryana, India and Plymouth Business School,
University of Plymouth, Plymouth, United
Kingdom.

Email: sachin.kumar@plymouth.ac.uk;

smangla@jgu.edu.in;

sachinmangl@gmail.com

Abstract

Business Strategy and the Environment (BSE) is a premier journal dedicated to interdisciplinary research that advances business practice leading to improvements in environmental performance. Using big data analytics, this review examines the intellectual structure and the drivers of research impact of *BSE* in the scholarly domain. The bibliometric results suggest three major findings. First, the top three countries contributing to *BSE* are the United Kingdom, the United States, and China. Second, *BSE*'s research manifests through five thematic clusters, namely, business strategy and sustainability; corporate governance and sustainability reporting; green marketing and pro-environmental behavior; innovation and environmental policy; and environmental management systems. Finally, *BSE*'s research impact in terms of citations is significantly influenced by author affiliation (United States); article age (older), appearance (lead article and special issue), length (longer), and method (mix methods); title length (shorter title); and number of keywords (more keywords) and references (more references). Implications for *BSE*'s readers and future contributors are discussed.

KEYWORDS

big data, business strategy, corporate governance, environmental management, environmental policy, innovation, sustainability, sustainable development

1 | INTRODUCTION

In the foreword of *Business Strategy and the Environment's (BSE)* inaugural issue, Faulkner (1992), a co-founder of the Business Council for Sustainable Development and a former minister in the Canadian government, highlighted that concern for the environment, particularly environmental degradation, was one of the defining characteristics of the 20th century that has evolved and deepened over time. Yet the awareness and understanding of the causes and effects of environmental degradation, especially among the business community and society at large, were lacking. Recognizing these gaps,

governmental and intergovernmental organizations such as the United Nations embarked on initiatives such as "Our Common Goals" to encourage global partnerships for sustainable development. Similarly, *BSE* recognized the need of the hour and was therefore established in 1992 by founding editor Denis Smith to curate interdisciplinary research dedicated to advancing business practice leading to improvements in environmental performance.

Today, *BSE*, under the current editorship of Richard Welford, is widely recognized as the leading home for scholarly research at the nexus of business strategy and environmental management. Indeed, the journal, which seeks to provide original contributions that add to

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the understanding of business responses to improving environmental performance, has fared commendably across the major indicators of journal quality. Specifically, *BSE* receives a rank of “A” in the Australian Business Deans Council's 2019 Journal Ranking List, a rating of three in the Chartered Association of Business Schools' 2018 Academic Journal Guide, an impact factor of 5.483 from Clarivate Analytics' 2019 Journal Citations Report, and a rank of 21 out of 427 journals listed under the category of “Strategy and Management” on Scopus based on a CiteScore of 8.4 in 2019.

Moving forward, this review endeavors to examine the intellectual structure and drivers of research impact of *BSE* in order to curate a state-of-the-art overview of existing research and an agenda for future research on business strategy and environmental management. To do so, this review relies on the entire corpus of 1245 articles published in *BSE* between 1992 and 2020 using big data analytics, a method that exemplifies the analysis of large datasets to identify hidden patterns or linkages (Chen et al., 2012; George et al., 2014). In other words, the study conducted herein represents a literature review by means of big data analytics.

According to Tranfield et al. (2003), literature reviews are the most used method for synthesizing and summarizing a domain in the scientific body of knowledge. Among the many ways to conduct literature reviews (e.g., domain-, theory-, or method-based reviews; Paul & Criado, 2020), bibliometric reviews, which rely on big data analytics in the form of bibliometric analysis, are arguably one of the most scientific and sophisticated methods for reviewing literature. In essence, bibliometric reviews analyze bibliographic data of a scientific corpus (Broadus, 1987; Pritchard, 1969), wherein the trends (e.g., patterns and linkages) of constituents and themes in a research domain are established and scrutinized (Cobo et al., 2011; Ramos-Rodríguez & Ruiz-Navarro, 2004).

Ideally, bibliometric reviews should be all encompassing—that is, they should not only describe but also flag the pertinent factors that significantly contribute to explaining observed trends. However, most bibliometric reviews contribute to the former but neglect or overlook the latter. For example, the recent bibliometric review of *BSE* by Farrukh et al. (2020) describes the trends in publications and citations in terms of authors, institutions, and countries, whereas a similar review by Kabongo (2020) reveals the authors and teams contributing to research published in the journal.

Building on the fundamental insights shed by Farrukh et al. (2020) and Kabongo (2020), the present review extends those insights by focusing on the context (e.g., country, industry, and method) and content (e.g., themes) of business strategy and environmental research published in *BSE*, including the journal's evolution and the drivers of its research impact in the field. In doing so, this review answers three overarching research questions:

1. Where have business strategy and environmental research been conducted in *BSE*?
2. What are the thematic clusters in the intellectual structure of business strategy and environmental research, how have they evolved over the years, and how should they evolved in the future in *BSE*?
3. What are drivers of research impact of business strategy and environmental research in *BSE*?

The retrospective insights from this review should be useful for readers and potential contributors of *BSE* to gain an understanding about the intellectual structure and drivers of research impact of business strategy and environmental research in the journal. The ensuing agenda emerging from this review should also be useful to the Editorial Board members of *BSE*, who can use the insights herein to curate and shape future discussions around the thematic clusters that characterizes the journal's contributions to the nexus of business strategy and environmental management.

The result of this paper is structured as follows. First, the paper explains the methodology guiding its review of the *BSE* corpus. Second, the paper presents the context (e.g., country, industry, and method) of business strategy and environmental research in *BSE*. Third, the paper reveals the thematic clusters in the intellectual structure of the *BSE* corpus. Fourth, the paper sheds light on the drivers of research impact of *BSE*. Finally, the paper concludes with a summary of key takeaways and an agenda for future business strategy and environmental research in *BSE*.

2 | METHODOLOGY

2.1 | Data

The data for this review—that is, the *BSE* corpus—were obtained from Scopus, which is one of the largest scholarly database of peer-reviewed literature (Bartol et al., 2014; Norris & Oppenheim, 2007). Scopus is also a widely accepted database for big data analysis (Donthu et al., 2021; Durán-Sánchez et al., 2019; Guerrero-Baena et al., 2014; Silveira & Zilber, 2017), thereby justifying its suitability for this review.

Specifically, the search for the *BSE* corpus on Scopus using “Business Strategy and the Environment” in the search title returned 1459 documents consisting of articles, editorials, erratum, and notes published from 1992 to 2021. To provide a more accurate representation of the journal's performance, this review sought to use full year data, and thus, only the bibliometrics, citations, keywords, and abstracts of articles published in the journal from 1992 to 2020 were extracted and recorded for review (i.e., total of 1229 articles).

2.2 | Analysis

The analysis in this review is predicated on bibliometric analysis, which is a form of big data analytics performed on bibliometric data to gain high-level granular insights into a review domain (Norder et al., 2018), and in the present review, insights into the intellectual structure and drivers of research impact of business strategy and environmental research in *BSE*. Specifically, bibliometric analysis analyzes bibliometric data of a large corpus of literature to identify

major themes and thematic shifts, thereby providing a comprehensive overview of the literature under study (Crane, 1972; Donthu et al., 2021).

Indeed, there is substantial literature opting to use bibliometric analysis to analyze the thematic structure and evolution of journals and research fields (Donthu et al., 2021). For instance, Werner (2002) explored the major trends and developments in international management using bibliometrics, whereas Backhaus et al. (2011) studied the same but for business-to-business research using citation and co-citation analysis. Similarly, Baker et al. (2021a) used bibliometric coupling and keyword co-occurrences to plot the intellectual structure of *Small Business Economics*, whereas Kumar et al. (2021) explored the intellectual structure and development of *Electronic Commerce Research* using co-authorship, bibliographic coupling, keyword, and performance analyses. More importantly, bibliometric analysis, which is an analysis capable of handling large datasets, is suitable for reviews such as the present one, where the bibliometric data and corpus are substantially large and therefore not practical for a manual review (Donthu et al., 2021).

This review begins with a *descriptive analysis* of bibliometric data pertaining to the context of business strategy and environmental research in *BSE*—namely, the countries, industries, and methods prevalent in existing research published in the journal.

Next, the review maps the intellectual structure of business strategy and environmental research in *BSE* using *bibliographic coupling*, which is a widely employed bibliometric method to map the intellectual structure of a research domain (Aria & Cuccurullo, 2017). In essence, bibliographic coupling is a technique to form bibliographic couples that emerge from documents that refer to common documents (or same references), wherein the assumption is that documents forming bibliographic couples are inclined to share a similar intellectual structure, and thus, the strength of association between two documents is reflected through the number of common references that they share (Donthu et al., 2021; Kessler, 1963). Specifically, the thematic clusters that form the intellectual structure of *BSE* are identified through bibliographic coupling using VOSviewer, which is a software that uses common reference counts to compute the association and the strength of association between nodes (articles) as inputs for modularity illustration (Newman & Girvan, 2004; van Eck & Waltman, 2017).

Subsequently, the review maps the thematic evolution of business strategy and environmental research in *BSE* using *keyword co-occurrence analysis*. Past research suggests that keywords are an insignia of themes in scientific publications (Strozzi et al., 2017; Zou et al., 2018), as they represent research intent (Comerio & Strozzi, 2019), and thus, they can effectively reveal the thematic development of research fields (Callon et al., 1983). Articles that share common keywords can therefore reflect the convergence of research themes (Ding et al., 2001; Schiuma et al., 2021). Using the bibliometric data on article title (before 2005) and author keywords (from 2005) retrieved from Scopus, the review identifies the co-occurrence of keywords over different periods using RStudio.

Finally, this review examines the drivers of research impact of business strategy and environmental research in *BSE* through the lens of citations. In essence, the citations that an article receives represent the influence or impact of that article in the scientific community (Donthu et al., 2021; Tsay, 2009). Indeed, citation analysis is commonly undertaken in scientific literature to gauge the impact of articles in the field (Kumar et al., 2021). However, this review does not intend to replicate the citation analysis of past reviews of *BSE* (e.g., Farrukh et al., 2020; Kabongo, 2020). Instead, this review endeavors to extend insights in this direction through an examination of the drivers of article citations in *BSE*, as a proxy of the journal's research impact. Specifically, the predictive factors of article citations are drawn from prior studies and taken as independent variables (Dang & Li, 2020; Meyer et al., 2018; Stremersch et al., 2007), the total citations of each article are taken as the dependent variable, and the relationship between the independent and dependent variables is analyzed using *negative binomial regression analysis*.

3 | COUNTRY, INDUSTRY, AND METHODOLOGY OF *BSE* RESEARCH THROUGH DESCRIPTIVE ANALYSIS

3.1 | Country

Unlike the review by Farrukh et al. (2020) that shed light on the countries that (1) cited *BSE* articles the most and that (2) used similar literature in their *BSE* articles, this review concentrates on revealing country-level insights on the basis of research samples—that is, samples of participants in research published by *BSE* (see Table 1).

Interestingly, we found that most studies (20.67%) in *BSE* have considered research samples from multiple countries, thereby indicating high diversity in research samples at the article level. Similarly, we noted research samples from more than 50 countries in the *BSE* corpus (i.e., articles specifying samples from either 55 countries or four regions [i.e., Africa, Europe, Latin America, or multiple countries]), which suggests that research samples are highly diverse at the journal level.

Moreover, we observed that most business strategy and environmental research in *BSE* have relied on research samples from the United Kingdom (9.85%), the United States (8.62%), and China (7.57%). This observation coincides with the prominence of the United Kingdom and the United States in the review by Farrukh et al. (2020), which revealed that the two countries cited *BSE* articles the most and have used similar literature the most in research published by *BSE*, and the rise of China as a global superpower.

Nevertheless, we noticed that business strategy and environmental research in developing countries (e.g., Bangladesh, Indonesia, and Nigeria) and regions (e.g., Africa and South Asia) are substantially less in numbers as compared to that coming from developed countries (e.g., United Kingdom and United States) and regions (e.g., America and Europe), which indicates a contextual gap that could spur

TABLE 1 Country-wise distribution of research samples in BSE research between 1992 and 2020

Country	Article count	Percentage	Country	Article count	Percentage
Multi-country	254	20.67	Latin America	3	0.24
United Kingdom	121	9.85	Malaysia	3	0.24
United States	106	8.62	Thailand	3	0.24
China	93	7.57	Belgium	2	0.16
Europe	66	5.37	Egypt	2	0.16
Australia	41	3.34	Jamaica	2	0.16
Spain	40	3.25	Kenya	2	0.16
Germany	33	2.69	Philippines	2	0.16
Sweden	30	2.44	Russia	2	0.16
Italy	27	2.20	Sri Lanka	2	0.16
Canada	25	2.03	Tunisia	2	0.16
Netherlands	26	2.12	United Arab Emirates	2	0.16
South Korea	16	1.30	Vietnam	2	0.16
New Zealand	15	1.22	Argentina	1	0.08
India	14	1.14	Austria	1	0.08
Taiwan	13	1.06	Bangladesh	1	0.08
Greece	12	0.98	Cambodia	1	0.08
Finland	11	0.90	Chile	1	0.08
Japan	11	0.90	Colombia	1	0.08
Denmark	10	0.81	France	1	0.08
Norway	9	0.73	Hungary	1	0.08
South Africa	9	0.73	Indonesia	1	0.08
Switzerland	8	0.65	Malawi	1	0.08
Brazil	7	0.57	Myanmar	1	0.08
Portugal	6	0.49	Nigeria	1	0.08
Turkey	5	0.41	Peru	1	0.08
Ghana	4	0.33	Poland	1	0.08
Ireland	4	0.33	Siberia	1	0.08
Pakistan	4	0.33	Slovenia	1	0.08
Africa	3	0.24	Unspecified	161	13.10

additional business strategy and environmental research in these underexplored countries and regions in BSE in the future.

3.2 | Industry

This review finds that 23.52% ($n = 289$) of business strategy and environmental research in BSE are industry specific (see Figure 1). The most studied industry is the energy industry ($n = 38$), followed by the automotive, banking and finance, and chemical industries, with 23 articles each. Industries that are underexplored are those with single-digit articles (e.g., biotechnology, engineering, diary, education, fashion, and logistics) and thus can be further explored in future research intending to unpack industry-specific insights pertaining to business practices and environmental performance. Indeed, industry-specific research can be beneficial for developing business strategies that improve environmental performance in ways that resonate with

the unique peculiarities of the industry under study (e.g., accounting for carbon emissions for manufacturing-based industries and cost savings from energy efficiency for service-based industries).

3.3 | Methodology

The methodology underpinning the research of each BSE article was manually coded for analysis. Manual coding is a common technique to record methodology in literature reviews as such information are not captured through bibliometric databases such as Scopus. Specifically, the research approach, data collection method, and data analysis technique used in each BSE article were coded to allow us to obtain in-depth insights on the methodological trends in BSE research. Findings from the review suggest that most research in BSE have relied on quantitative methods (50%), followed by qualitative (35%), review (12%), and mixed (3%) methods (see Figure 2). Interestingly,

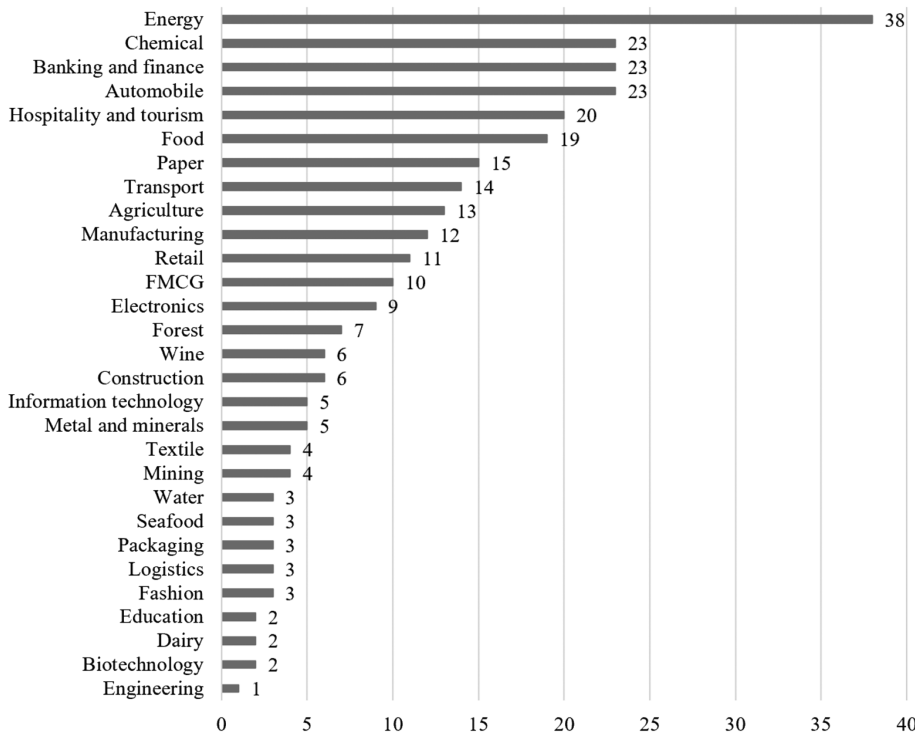


FIGURE 1 Distribution of industries in BSE research

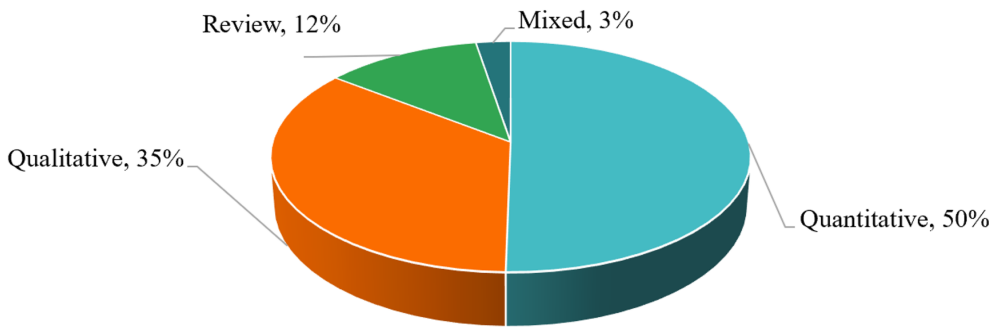


FIGURE 2 Distribution of research approaches in BSE research [Colour figure can be viewed at wileyonlinelibrary.com]

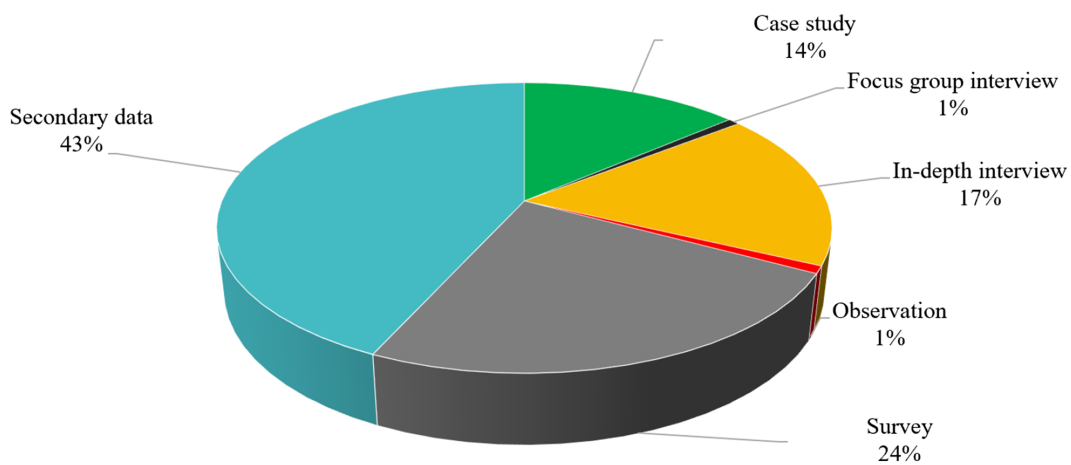
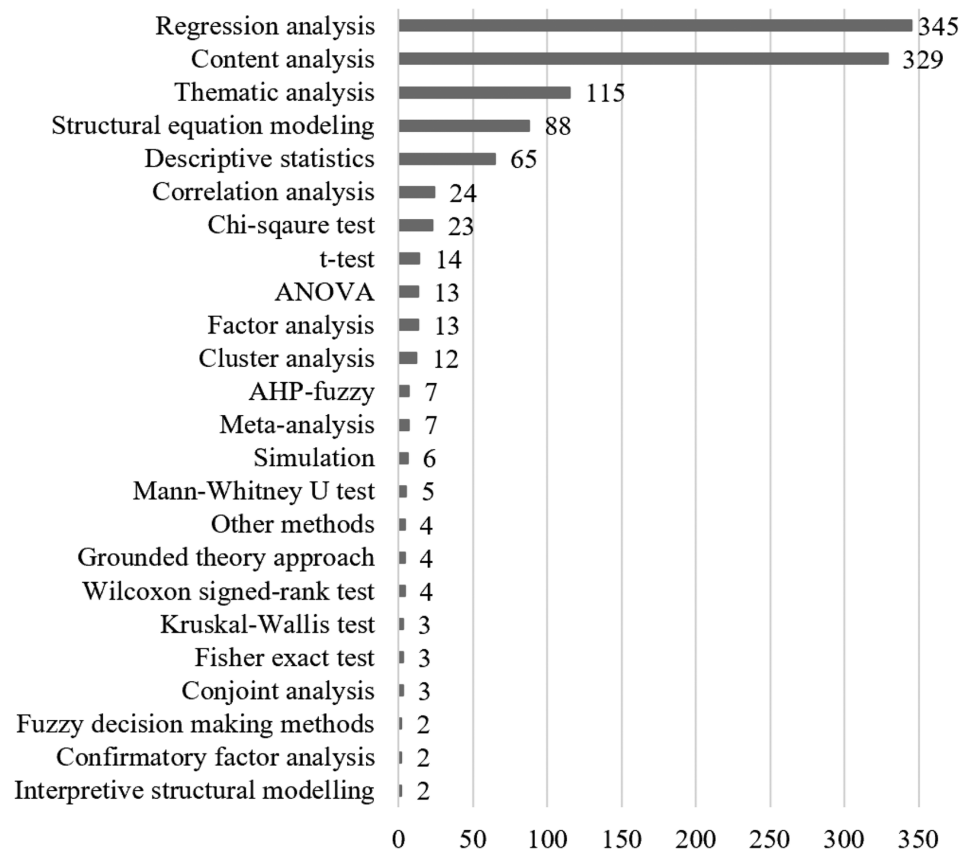


FIGURE 3 Distribution of data collection methods in BSE research [Colour figure can be viewed at wileyonlinelibrary.com]

most research in BSE have used secondary data (43%). Survey was used the most to gather primary data (24%), whereas in-depth interviews (17%) were most popular for gathering qualitative data, as

opposed to focus group interviews and observations, which represented 1% each in BSE (see Figure 3). Finally, most research in BSE have employed regression analysis ($n = 345$), followed by content

FIGURE 4 Distribution of data analysis techniques in *BSE* research



($n = 329$) and thematic ($n = 115$) analyses (see Figure 4). Importantly, despite the dominance of the quantitative approach, the data collection methods and data analysis techniques vary considerably, and thus, research in *BSE*, as a whole, are generally free from methodological bias.

4 | INTELLECTUAL STRUCTURE OF *BSE* RESEARCH THROUGH BIBLIOGRAPHIC COUPLING

The intellectual structure of the *BSE* corpus is explored through bibliographic coupling. In particular, the bibliographic coupling of 1229 articles in *BSE* between 1992 and 2020 reveals five thematic clusters that account for more than 80% of research in the journal. The descriptive statistics and the most influential articles of each cluster are presented in Tables 2 and 3, respectively. The summary of each cluster is provided in the next subsections.

4.1 | Cluster 1: Business strategy and sustainability

The largest cluster of research in *BSE* contributes to *business strategy and sustainability*. In particular, this cluster composes of 386 documents that yield 16,993 citations, with 92.75% of articles in this cluster being cited by others in the scientific community. Most research during 1992 to 2001 came from this cluster ($n = 66$). The

publications in this cluster have also grown considerably and consistently over the next two periods ($n = 160$ in each period between 2002 and 2011 and between 2012 and 2020). The most influential article in this cluster is authored by Dyllick and Hockerts (2002), who championed and reasoned the need for companies to pursue corporate sustainability beyond business reasons. The topics covered in this cluster include corporate sustainability, sustainable balanced scorecard, sustainable development, sustainable entrepreneurship and ecosystem, sustainable innovation, and sustainable supply chain management, among others.

4.2 | Cluster 2: Corporate governance and sustainability reporting

The second largest cluster of research in *BSE* contributes to *corporate governance and sustainability reporting*. More specifically, this cluster consists of 210 articles that have amassed 6069 citations, with 85.24% of articles in this cluster being cited by others in the scientific community. Few studies were published in this cluster during the first two periods of the journal (i.e., between 1992 and 2001 and between 2002 and 2011). Instead, most studies (81.43%) in this cluster have appeared only between 2012 and 2020. In fact, this cluster has contributed the highest number of articles in this period ($n = 171$). Taken collectively, these statistics indicate that corporate governance and sustainability reporting research is most popular and important in recent times. The most influential article in this cluster is authored

Descriptive/cluster	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
TP	386	210	157	125	114
NCP	358	179	139	101	108
SoP	102	31	29	20	19
CoP	284	179	128	105	95
NLA	359	191	147	110	108
PPC	92.75	85.24	88.54	80.80	94.74
TC	16,993	6069	4587	2998	5896
C/P	44.02	28.90	29.22	23.98	51.72
C/CP	47.47	33.91	33.00	29.68	54.59
CT25	172	45	37	24	49
CT50	60	26	24	12	28
CT100	30	12	11	7	13
CT200	9	6	1	3	3
NAY	26	20	26	14	20
PAY	14.85	10.50	6.04	8.93	5.70
CAY	585.97	209.28	158.17	103.38	203.31
P(1992–2001)	66	6	15	1	5
P(2002–2011)	160	33	40	15	40
P(2012–2020)	160	171	102	109	69
<i>h</i> -index	65	40	39	26	41

TABLE 2 Descriptive statistics of thematic clusters in BSE emerging from bibliometric coupling

Abbreviations: C/CP, citations per cited publication; C/P, citations per publication; CAY, citation per active year; Cluster 1, business strategy and sustainability; Cluster 2, corporate governance and sustainability reporting; Cluster 3, green marketing and pro-environmental behavior; Cluster 4, innovation and environmental policy; Cluster 5, environmental management systems; CoP, co-authored publications; CT25, CT50, CT100, CT200, papers with minimum of 25, 50, 100, and 200 citations, respectively; NAY, number of active years; NCP, number of cited publications; NLA, number of lead authors; P(1992–2001), P(2002–2011), P(2012–2020), count of publications across different time periods; PAY, productivity per active year; PPC, productivity per citation; SoP, sole authored publications; TC, total citations; TP, total publications.

by Brammer and Pavelin (2008), who shed light on the factors that influence the quality of voluntary corporate environmental disclosure of large firms in the United Kingdom. The topics manifested in this cluster include board diversity, corporate governance and responsibility, environmental accounting and auditing, environmental disclosure, environmental reporting, and voluntary disclosure, among others.

4.3 | Cluster 3: Green marketing and pro-environmental behavior

The third largest cluster of research in BSE contributes to *green marketing and pro-environmental behavior*. In particular, this cluster composes of 157 articles out of which 139 are cited in the scientific community. As a collective, articles in this cluster have received a total of 4587 citations. Though this cluster contributes the second most number of articles in the early years of the journal ($n = 15$ between 1992 and 2001), particularly in terms of greening of organizations, organizational environmental commitment, and the impact of organizations on the environment, most studies in this cluster have only appeared between 2012 and 2020 ($n = 102$). Yet the most influential article in

this cluster appeared at the end of the first period—that is, Peattie's (2001) article on green consumers, which has received more than 200 citations. Some of the most prominent topics in this cluster include corporate greening, eco-labeling, eco-innovation adoption, environmental marketing, green consumers, green consumer behavior, green electricity, green marketing, and green products, among others.

4.4 | Cluster 4: Innovation and environmental policy

The fourth largest cluster of research in BSE contributes to *innovation and environmental policy*. More specifically, this cluster consists of 125 articles out of which 101 articles are cited in the scientific community. Taken collectively, articles in this cluster have accumulated only 2998 citations—the least number of citations among the five major clusters. Upon detailed scrutiny, we observed that most articles in this cluster have appeared between 2012 and 2020—only one article emerged between 1992 and 2001 and only 15 articles were published between 2002 and 2011. The most influential article in this cluster is authored by Schaltegger and Wagner (2011), who

TABLE 3 Most influential articles of thematic clusters in BSE emerging from bibliographic coupling

Cluster	Key focus	Top article	Article title	AC
1	Business strategy and sustainability	Dyllick and Hockerts (2002)	Beyond the business case for corporate sustainability	1384
		Tukker (2004)	Eight types of product-service system	1021
		Figge et al. (2002)	The sustainability balanced scorecard—Linking sustainability management to business strategy	492
2	Corporate governance and sustainability reporting	Brammer and Pavelin (2008)	Factors influencing the quality of corporate environmental disclosure	327
		Kolk (2008)	Sustainability, accountability and corporate governance	314
		Kolk (2003)	Trends in sustainability reporting by the Fortune Global 250	283
3	Green marketing and pro-environmental behavior	Peattie (2001)	Golden goose or wild goose? The hunt for the green consumer	215
		Sammer and Wüstenhagen (2006)	The influence of eco-labelling on consumer behaviour—Results of a discrete choice analysis for washing machines	193
		Marshall et al. (2005)	Exploring individual and institutional drivers of proactive environmentalism in the US wine industry	189
4	Innovation and environmental policy	Schaltegger and Wagner (2011)	Sustainable entrepreneurship and sustainability innovation	476
		Handfield et al. (2005)	Integrating environmental management and supply chain strategies	323
		Fronzel et al. (2007)	End-of-pipe or cleaner production? An empirical comparison of environmental innovation decisions across OECD countries	227
5	Environmental management systems	Delmas and Toffel (2004)	Stakeholders and environmental management practices	599
		Darnall et al. (2008)	Environmental management systems and green supply chain management	424
		González-Benito and González-Benito (2006)	A review of determinant factors of environmental proactivity	376

Abbreviation: AC, article citation.

TABLE 4 Most occurring author keywords in BSE between 1992 and 2020

Keyword	Occurrences	Keyword	Occurrences
Sustainable development	202	Financial performance	22
Sustainability	128	ISO 14001	21
Environmental policy	98	Environmental	20
Environmental management	64	SMEs	20
Stakeholder engagement	60	Environment	19
Environmental performance	57	Green innovation	18
Corporate social responsibility	51	Stakeholders	18
Climate change	43	Sustainability reporting	18
Corporate sustainability	43	Eco-innovation	16
China	30	Business strategy	15
Institutional theory	28	Content analysis	15
Environmental strategy	24	Corporate governance	15
Environmental innovation	23	Environmental management systems	15
Innovation	23	Integrated reporting	15
Circular economy	22	Strategy	15

contributed a framework for sustainable entrepreneurship in relation to sustainability innovation. The topics emerging from this cluster revolve around carbon emission, clean technology, eco-innovation, energy, environmental regulation, green supply chain integration, and sustainable development, among others.

4.5 | Cluster 5: Environmental management systems

The fifth largest cluster of research in *BSE* contributes to *environmental management systems*. This cluster composes of 114 articles out of which 108 are cited by the scientific community. Despite being the smallest cluster out of the five major clusters, we observed that this cluster has a relatively high citation per year ratio of 203.31, which reflects the popularity and importance of this cluster among business strategy and environmental research scholars. The most influential article in this cluster is authored by Delmas and Toffel (2004), who curated insights on stakeholders and environmental management practices. Importantly, this cluster is focused on increasing compliance and reducing waste, wherein its prominent topics include environmental behavior, environmental communication, environmental management practices, environmental performance, environmental proactivity, environmental strategies, ISO 14001, and stakeholder environmental pressure, among others.

5 | EVOLUTION OF BSE RESEARCH THROUGH KEYWORD CO-OCCURRENCE ANALYSIS

The thematic evolution of business strategy and environmental research in *BSE* corpus is mapped using keyword co-occurrence analysis. It is important to note that keywords of articles in *BSE* did not appear before 2005, and thus, the titles of such articles were tracked instead, wherein the words that appeared in the title of these articles were mapped and their frequencies were calculated; whereas, author keywords were mapped and have their frequencies computed for *BSE* articles published from 2005 onwards.

In essence, the co-occurrence analysis indicate that keywords captured the major topics of the *BSE* corpus over its lifespan, with newer terms or topics added over time. In total, this review identifies 572 keywords in *BSE* that had a minimum of two occurrences. The top 30 keywords appearing in *BSE* between 1992 and 2020 are presented in Table 4.

In general, the findings of the analysis suggest that most business strategy and environmental research in *BSE* are related to sustainable development ($n = 202$) and sustainability ($n = 128$), followed by environmental policy ($n = 98$) and environmental management ($n = 64$). To scrutinize the evolution of topics in the *BSE* corpus, the co-occurrences of keywords are studied over three periods (i.e., 1992 to 2001, 2002 to 2011, and 2012 to 2020). The next

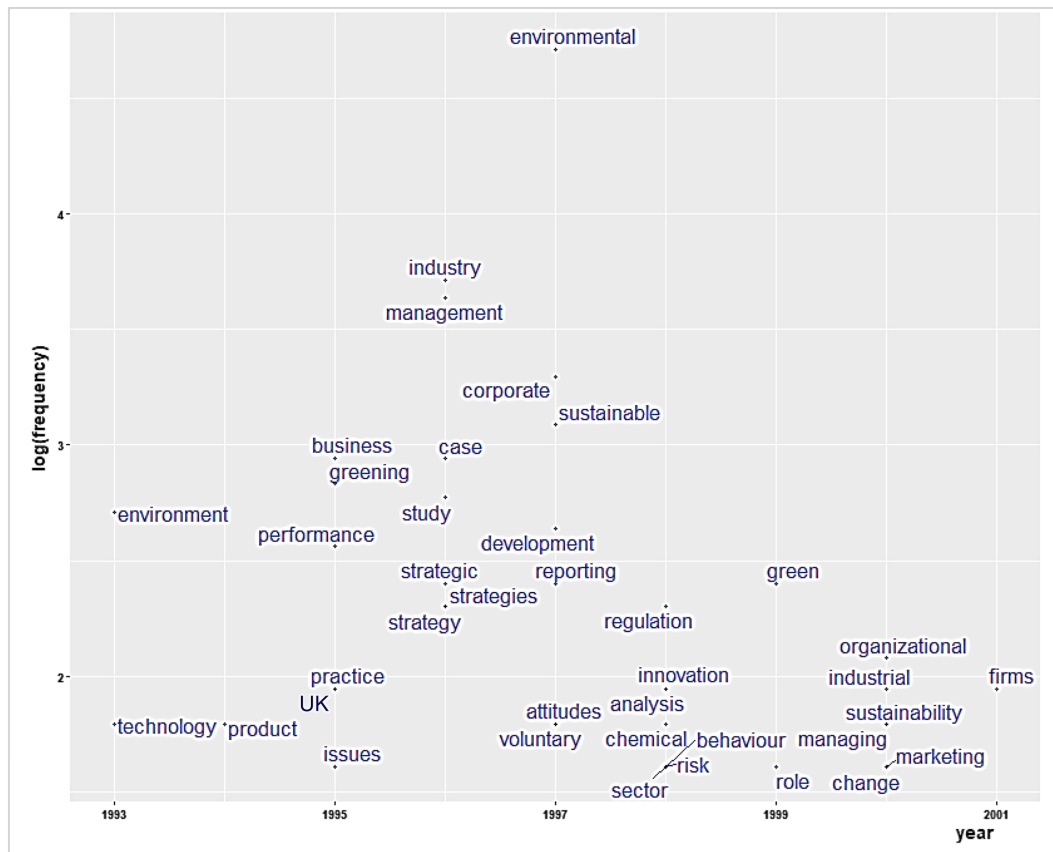


FIGURE 5 Most occurring keywords in *BSE* between 1992 and 2001 [Colour figure can be viewed at wileyonlinelibrary.com]

subsections articulate the temporal emergence and development of topics in *BSE*.

5.1 | Topics between 1992 and 2001

The first decade of *BSE*, which was between 1992 and 2001, began with research focusing on business strategies incorporating environmental considerations (e.g., “environment,” “issues,” and “practice”), followed by the sustainability of these strategies (e.g., “development,” “sustainable,” and “sustainability”), with an emerging focus on industry-specific insights (e.g., “chemical,” “industrial,” and “sector”). Indeed, environmental concern appears to be a consistently prominent theme throughout this decade, as seen through the manifestation of associated keywords such as “environment,” “environmental,” and “green.” This evaluation of evolution is predicated on the observations of the trending keywords in Figure 5, which illustrates the topic evolution of *BSE* research between 1992 and 2001.

5.2 | Topics between 2002 and 2011

The second decade of *BSE*, which was between 2002 and 2011, appears to be a breakthrough decade for the journal given the emergence of topics that synthesize business strategy and the

environment. Specifically, though environmental concerns and sustainability remained steadfast (e.g., “environment,” “environmental,” and “sustainability”), we observed new topics pertaining to the business (e.g., “SMEs” and “strategy”), the environment (e.g., “climate change” and “sustainable consumption”), and a hybrid of the two (e.g., “corporate social responsibility,” “environmental management,” “environmental management systems,” “environmental policy,” “industrial ecology,” and “ISO 14001”). Indeed, the emergence of new topics in this decade reflect the pursuit of novelty in research accepted and published by *BSE*. This evaluation of evolution is predicated on the observations of trending keywords in Figure 6, which illustrates the topic evolution of *BSE* research between 1992 and 2001.

5.3 | Topics between 2012 and 2020

The third decade of *BSE*, which was between 2012 and 2020, represented a period of significant growth, where proliferation in the quantity and variety of keywords pertaining to business strategy and the environment was most prominent as compared to the preceding decades. In particular, we observed the extension of research topics from the previous two decades (e.g., “climate change,” “corporate social responsibility,” “environmental management,” and “sustainability”), which suggests that business actions to improve environmental performance are not a “one-off” but rather a continuing endeavor.

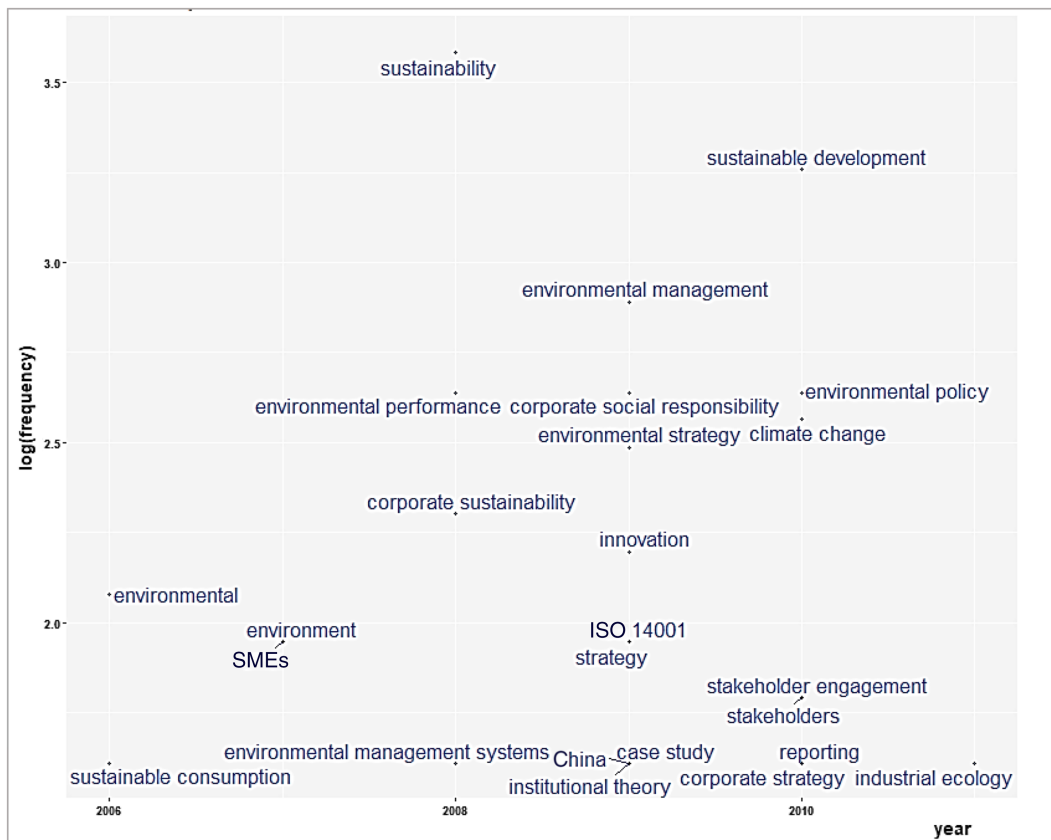


FIGURE 6 Most occurring keywords in *BSE* between 2002 and 2011 [Colour figure can be viewed at wileyonlinelibrary.com]

We also noted the emergence of new research topics, whereby the initial years of *BSE* in this decade concentrated on topics such as “board of directors,” “eco-efficiency,” “environmental reporting,” “pollution prevention,” and “supply chain management,” whereas the later years focused on topics such as “circular economy,” “eco-innovation,” “gender diversity,” “green innovation,” “green-washing,” “integrated reporting,” and “legitimacy theory,” among others. Taken collectively, these observations suggest that *BSE* has remained steadfast with current issues and topics of interest and that the journal remains committed to its mission to act as a curator of business strategies that improve environmental performance. This evaluation of evolution is predicated on the observations of trending keywords in Figure 7, which illustrates the topic evolution of *BSE* research between 2012 and 2020.

6 | DRIVERS OF RESEARCH IMPACT IN *BSE*

The drivers of research impact of *BSE* articles are examined through the lens of citations, wherein the total citations of each article are treated as a dependent variable that objectively measures research impact (Hota et al., 2020). The total citations of a *BSE* article are defined as the number of citations credited to that article since publication, which range from 0 to 1384 based on bibliometric data retrieved from Scopus. Negative binomial regression, which is widely

used in past studies (Baker et al., 2021b; Dang & Li, 2020; Stremersch et al., 2007, 2015; Valtakoski, 2019), is used to examine the significance of the drivers of research impact in *BSE*, as the dependent variable—that is, total citations—has overdispersion given that its mean is smaller than its variance.

Prior research highlights three perspectives relevant to the examination of research impact through citations: universalist, social constructivist, and presentation (Dang & Li, 2020; Meyer et al., 2018; Stremersch et al., 2007). The universalist perspective suggests that the primary driver of an article's citation is its content (Chan et al., 2009; Dang & Li, 2020; Meyer et al., 2018; Schwert, 1993; Stremersch et al., 2007, 2015; Valtakoski, 2019). In contrast, the social constructivist perspective deals with author and author affiliations of an article, wherein an article's citation count is said to be dependent on the author's reputation (Chan et al., 2009; Dang & Li, 2020; Meyer et al., 2018; Stremersch et al., 2007; Valtakoski, 2019). Whereas, the presentation perspective suggests that an article's citation depends on its presentation (e.g., title and number of keywords) (Chan et al., 2009; Dang & Li, 2020; Meyer et al., 2018; Stremersch et al., 2007; Valtakoski, 2019).

This review considers 12 factors from the universalist, social constructivist, and presentation perspectives that could drive research impact in terms of citations based on the recommendation of prior studies (Chan et al., 2009; Russell-Bennett & Baron, 2016; Schwert, 1993; Stremersch et al., 2007; Valtakoski, 2019). Factors

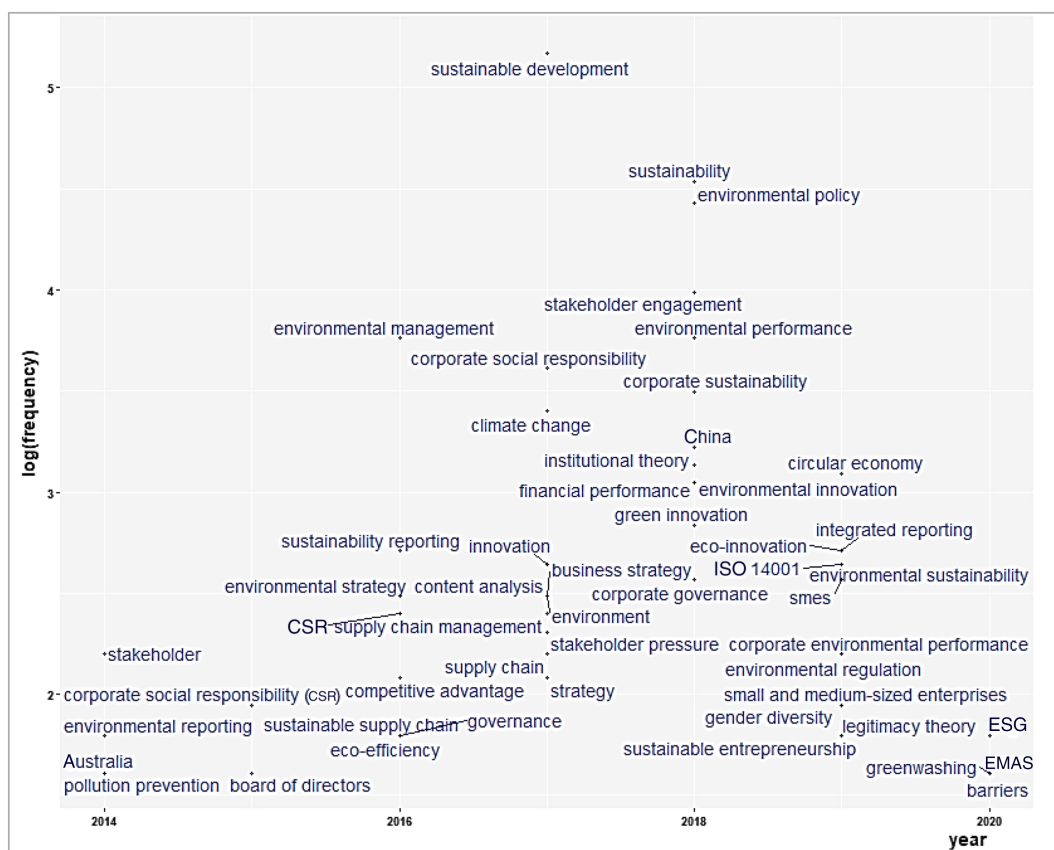


FIGURE 7 Most occurring keywords in *BSE* between 2012 and 2020 [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

from the universalist perspective pertain to *qualitative study*, *quantitative study*, *mix method study*, *lead article*, *special issue article*, and *article age*, whereas factors from the social constructivist perspective pertain

to *number of authors*, *number of references*, and *author affiliation to the United States*, and factors from the presentation perspective pertain to *article length*, *title length*, and *number of keywords*.

TABLE 5 Coding the drivers of research impact

Driver of research impact	Code
Universalism	
Qualitative study	Articles using qualitative research methodology are assigned "1," otherwise "0."
Quantitative study	Articles using quantitative methodology are assigned "1," otherwise "0."
Mixed method study	Articles using mixed methodology are assigned "1," otherwise "0."
Lead article	Articles appearing as lead article of any issue are assigned "1," otherwise "0."
Special issue article	Articles appearing in special issues are assigned "1," otherwise "0."
Article age	Number of years since the article is published.
Social constructivism	
Number of authors	Number of authors credited in the article.
Number of references	Number of documents cited in the article.
USA affiliation	Articles having at least one author affiliated to USA institution are assigned "1," otherwise "0."
Presentation	
Article length	Number of pages in the article.
Title length	Number of words in the title of the article.
Number of keywords	Number of keywords that authors list in the article.

Table 5 reveals how articles were coded, whereas Table 6 shows the descriptive statistics of the independent (i.e., drivers of research impact) and dependent (i.e., total citations as a proxy of research impact) variables, and Table 7 presents the results from the negative binomial regression.

TABLE 7 Results of negative binomial regression

Independent variables	β	Standard error
(Intercept)	.423	(.268)
Quantitative	.062	(.097)
Qualitative	.094	(.098)
Mixed	.950	(.200)***
Lead article	.250	(.084)***
Special issue	.280	(.106)***
Article age	.130	(.008)***
Number of authors	-.023	(.027)
Number of references	.002	(.001)*
USA affiliation	.420	(.095)***
Article length	.109	(.011)***
Title length	-.039	(.008)***
Number of keywords	.114	(.018)***
(Scale)	1	
(Negative binomial)	1	
N	1229	
AIC	10,600.39	
Log likelihood	-5278.195	

* $p < .10$. ** $p < .05$.

*** $p < .01$.

TABLE 6 Descriptive statistics of independent and dependent variables

Variable	Minimum	Maximum	Mean	Standard deviation	
Dependent ($n = 1229$ articles)					
Total citation	Count	0	1384	35.87	75.773
Independent					
Qualitative	Dichotomous	0	1	0.348	0.477
Quantitative	Dichotomous	0	1	0.498	0.500
Mixed	Dichotomous	0	1	0.026	0.159
Lead article	Dichotomous	0	1	0.150	0.357
Special issue	Dichotomous	0	1	0.093	0.290
Article age	Count	1	29	10.118	8.366
Number of authors	Count	1	7	2.430	1.217
Number of references	Count	4	186	59.301	32.397
USA affiliation	Dichotomous	0	1	0.111	0.314
Article length	Count	1	35	13.047	3.963
Title length	Count	2	33	12.244	4.207
Number of keywords	Count	0	11	4.094	2.609

The results of the negative binomial regression indicate that four factors from the universalism perspective significantly explain the total citations received by articles in *BSE*. In particular, mixed methodologies ($\beta = .950, p < .01$), lead articles ($\beta = .250, p < .01$), special issue appearances ($\beta = .280, p < .01$), and article age ($\beta = .130, p < .01$) produce positive and highly significant impacts on article citations. Additionally, the results show that two factors from the social constructivism perspective significantly explain the total citations received by articles in *BSE*. Specifically, USA affiliation ($\beta = .420, p < .01$) exerts a positive and highly significant impact, whereas number of references ($\beta = .002, p < .10$) produces a positive but mildly significant impact on article citations. Finally, the results suggest that all three factors from the presentation perspective significantly explain the total citations received by articles in *BSE*. In particular, article length ($\beta = .109, p < .01$) and number of keywords ($\beta = .114, p < .01$) demonstrate positive and highly significant impacts, whereas title length ($\beta = -.039, p < .01$) shows a negative and highly significant impact on article citations. Implications of the findings are discussed in the next section.

7 | CONCLUSION

To this end, this review has provided a retrospection on the intellectual structure and the drivers of research impact of *BSE*. The key takeaways from this retrospection can be summarized as follows.

First, this review indicates that most business strategy and environmental research in *BSE* originate from America and Europe, especially from the United Kingdom and the United States, as well as China, which indicates an opportunity to enrich the literature through the lens of developing regions (e.g., Africa and South Asia) and countries (e.g., Bangladesh, Indonesia, and Nigeria). Thus, we propose the following research question (RQ) for future research to consider:

- RQ1. How can businesses in developing regions and countries improve environmental performance, and to what extent can they adopt or adapt existing strategies practiced by businesses in developed regions and countries?

Second, this review shows that industry-specific research in *BSE* is emerging (23.52%), with automotive, banking and finance, chemical, and energy industries taking center stage. Given that industry-specific research is useful for developing business strategies that account for environmental issues characterized by the unique peculiarities of different industries and that such research is welcomed in *BSE*, we encourage future research to conduct industry-specific research, particularly cross-industry research, which can extend the generalizability and impact of such research endeavors. Thus, we propose the following RQ for future research to explore:

- RQ2. How are business strategies that account for environmental performance similar and different across industries, and to what extent can such strategies be adopted or adapted?

Third, this review reveals that *BSE* publishes research relying on a wide range of methodologies (e.g., case studies and reviews; quantitative, qualitative, and mix methods; and primary and secondary data). However, we encourage future research to consider employing a variety of methodologies in their business strategy and environmental research given that our negative binomial regression results indicate that mixed methodologies have a positive and highly significant impact on article citations in *BSE* and that such methodologies typically allow for triangulation and thus improve the rigor (reliability and validity) of research findings. Thus, we propose the following RQ for future research exploration:

- RQ3. How can business strategy and environmental research be designed using mix methodologies logically, pragmatically, and scientifically to produce the richest and most rigorous findings for theory, practice, and public policy?

Fourth, this review sheds light on five thematic clusters underpinning the intellectual structure of business strategy and environmental research in *BSE*—namely, (1) business strategy and sustainability, (2) corporate governance and sustainability reporting, (3) green marketing and pro-environmental behavior, (4) innovation and environmental policy, and (5) environmental management systems. Most research in *BSE* contribute to business strategy and sustainability irrespective of time (e.g., 1992 to 2001, 2002 to 2011, and 2012 to 2020), which indicates that generalist research that extends our core understanding of business and the environment can continue to be targeted by future researchers who wish to publish in *BSE*. Further, research on corporate governance and sustainability reporting, green marketing and pro-environmental behavior, and innovation and environmental policy have only proliferated exponentially in recent years (2012 to 2020), which suggests that specialist research in the areas of accounting, marketing, and management that can influence business response to improve environmental performance is viewed favorably by *BSE* and thus highly encouraged. Insights from the keyword co-occurrence analysis further corroborate the pollination of new research topics informed by various disciplines. Finally, research on environmental management systems have generally plateaued in recent years, which may be due to the complexity of translating such research from theory to practice given the complexities in implementation, magnitude of investment, and unique peculiarities and needs of different industries. Future research intending to contribute to this cluster should therefore be focused on resolving these barriers and challenges in order to stand a good chance of publishing in *BSE*. Thus, we propose the three additional RQs for future research exploration:

- RQ4. How can business strategies that improve environmental performance continue to evolve with agility, creativity, and impact to succeed in highly volatile, uncertain, complex, and ambiguous environments, and in the process of doing so, acquire transient and maintain sustainable competitive advantages?
- RQ5. How can the latest theories, models, or frameworks that avail in disciplines such as accounting, marketing, and management be

adopted, adapted, or employed as an impetus to innovate strategies and solutions that contribute to sustainability agendas that focus on improving prosperity (i.e., financial resilience—e.g., income and wealth equality, and social mobility), planet (i.e., natural resilience—e.g., energy mix and intensity), and people (i.e., social resilience—e.g., human capital and public health)?

- RQ6. How can environmental management systems be designed pragmatically with clarity for cost-effectiveness, mass adoption, maximum impact, and sustainability, and what efficiency gains will such newly developed systems have over their existing counterparts?

Finally, this review reveals the drivers of research impact for business strategy and environmental research published in *BSE*. In particular, the review shows that author affiliation (United States); article age (older), appearance (lead article and special issue), length (longer), and method (mix methods); title length (shorter title); and number of keywords (more keywords) and references (more references) significantly contribute to increasing article citations. Scholars intending to submit their research to *BSE* should therefore strive to collaborate with authors from the United States; target special issues, where appropriate and when available; leverage on the maximum word limit as stipulated in the author guidelines; design research using mix methods; craft sharp and succinct article titles; include the maximum number of keywords allowed by the journal; and use references generously, where appropriate and when possible.

As a whole, this review hopes that the insights herein, which advance and supplement the insights derived from past reviews of *BSE* (e.g., Farrukh et al., 2020; Kabongo, 2020), will be useful to the readers and future contributors of *BSE*. The state-of-the-art retrospection of the intellectual structure of *BSE* in terms of its context and content should help future research to locate their contributions in the appropriate thematic cluster(s) and equivalent discussion in the journal. Importantly, the research agenda that was curated through research questions for future exploration as well as the significant drivers of research impact should help future research to design courageous, rigorous research and thus to increase its publication success in *BSE*.

ORCID

Satish Kumar  <https://orcid.org/0000-0001-5200-1476>

Weng Marc Lim  <https://orcid.org/0000-0001-7196-1923>

Sachin Kumar Mangla  <https://orcid.org/0000-0001-7166-5315>

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How to cite this article: Kumar, S., Sureka, R., Lim, W. M., Kumar Mangla, S., & Goyal, N. (2021). What do we know about business strategy and environmental research? Insights from *Business Strategy and the Environment*. *Business Strategy and the Environment*, 30(8), 3454–3469. <https://doi.org/10.1002/bse.2813>