

REVIEW ARTICLE

Sustainable tourist behavior: A systematic literature review and research agenda

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Abstract

Sustainable tourist behavior is a rapidly growing field within sustainable tourism. This study contributes to this emerging body of knowledge through a systematic literature review combining bibliometric and qualitative analysis of 331 publications. Key themes in sustainable tourist behavior research, including intended and actual behaviors, were identified with scholarly debates in this field discussed critically. Sustainability topics widely studied in other disciplines have been overlooked from a tourist behavior perspective, including waste classification and recycling, as well as applications of sustainable design to the management of the visitor economy. Additionally, this analysis revealed imbalances in sustainable development practice and research related to the visitor economy and gaps in theory development. This study builds on these findings and discusses an agenda for future research in sustainable tourist behavior. The findings contribute to shaping the conceptualization of sustainable tourist behavior, recognizing its dynamic nature, providing an overview of theories and antecedents, and underscoring the significance of considering diverse factors in future research. They also suggest that decision-makers in tourism should prioritize understanding tourist sustainable behavior through market segmentation, incorporate design and technology into sustainable initiatives, and align strategies with the specific needs and requirements of tourists for effective and sustainable tourism development.

KEYWORDS

sustainable, sustainable tourism, systematic literature review, tourist behavior, tourist behaviorsustainability

1 | INTRODUCTION

The COVID-19 pandemic caused tragic damage to human society and the economy but also pushed shifts and rethinking in industries, including tourism. Despite the nearly devastating blow to the tourism sector caused by the COVID pandemic since 2020, a steady recovery

has been reported with evidence in the creation of jobs, GDP generation as well as domestic and international visitor spending (WTTC, 2023). In addition to the revitalization in economic impacts, the number of world international tourist arrivals has seen a significant stable increase since 2020 (UNWTO, 2023). Although the recovery in tourism has not reached the 2019 level yet, a continuing

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recovery and sustainable development in tourism and travel is emphasized by NGOs such as the United Nations World Tourism Organization (UNWTO) and World Travel & Tourism Council (WTTC).

Academic interests are also shifting to growth in sustainable development and sustainability in the tourism discipline. The concept of sustainable development emerged in the 1970s (Bramwell & Lane, 1993; Serrano et al., 2019), with early studies being conducted by geographers discussing sustainable development from an environmental perspective (Butler, 1999). In the late 1980s, sustainability became increasingly important and started being deeply embedded in tourism research since the emergence of the official definition of sustainable development (Espiner et al., 2019; Liu, 2003). In the 1990s, scholars pointed out that the term sustainable tourism was being applied often without clear definitions; however, gradually definitions and objectives of sustainable tourism were proposed (Butler, 1999; Cater, 1993). Among the critiques, Liu (2003) highlighted the loose and interchangeable adoption of the terms sustainability, sustainable development and sustainable tourism in the literature. Besides the definitions suggested by scholars, UNWTO (2005, p. 12) defined sustainable tourism as “Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities”, a definition predominantly in use due to its official and United Nations' origin. In a search of tourism literature on Scopus, the most consistent and accurate databases for social science publications (Falagas et al., 2008), the proportions of journal articles that discuss sustainable development and sustainability have increased significantly from 4.04% to 5.99% and nearly doubled from 3.85% to 6.57% respectively.

Although adopting sustainability goals in tourism remains a laudable target, research has shown that sustainability issues are often rooted in human behavior and that changing (unsustainable) behaviors remain crucial to implementing longer-term solutions (Schultz, 2014). To achieve sustainable tourism, all stakeholders in sustainable tourism development, namely, the present visitors, future visitors, present host community, future host community, the host community including residents, business owners, and government officials are called to be involved (Byrd, 2007). To obtain the goals in sustainable tourism development, all stakeholder groups are urged to share their involvement and responsibilities in the process.

As a result, sustainable tourist behavior has emerged as a growing body of knowledge, with visitor attitudes and behavior attracting much interest among scholars between 1993 and 2007 (Lu & Nepal, 2009). The focus on environmental sustainability tended to dominate the early stages of research in this field (Wearing et al., 2002). It evolved towards a more holistic interpretation of sustainable tourist behavior that included other dimensions of sustainability, including economic, social, and cultural ones (Passafaro, 2020). Today, sustainable tourist behavior remains a contested and somewhat elusive concept (John, 2020), partly due to the complexity and uniqueness of issues affecting different tourism destinations and the variety of tourism typologies (Gong et al., 2019; Stanford, 2008). Many alternative labels refer to sustainable tourist behavior (Juvan & Dolnicar, 2016). They include—but are not

limited to—tourist behaviors referred to as “ethical”, “pro-environmental”, “environmentally responsible”, “environmentally significant”, “green,” “environmentally friendly”, “low carbon,” or promoting “stewardship” (Kim & Filimonau, 2017; Kuo & Dai, 2012; Lee & Jan, 2019; Mobley et al., 2010). Regardless of these nuances, sustainable tourism behavior tends to refer to actions and consumption that contribute to social, natural, or environmental benefits and reduce harmful effects (Alazaizeh et al., 2019) in a “green”, “ethical, and responsible” (Ganglmair-Wooliscroft & Wooliscroft, 2017; Tussyadiah & Miller, 2019), “eco-friendly” or “sustainable” context (Hanna & Adams, 2019), while conserving resources (Cheng et al., 2013; Cottrell, 2003; Halpenny, 2010; Han & Hyun, 2017; Kollmuss & Agyeman, 2002; Lee et al., 2013; Miller et al., 2015; Ong & Musa, 2011; Sivek & Hungerford, 1990; Zhao et al., 2018). This article interprets sustainable tourist behavior holistically as contributing to sustainable development and economic, social, and environmental sustainability.

Despite the role tourists should be playing, there is a lack of conceptualization and comprehensive view towards the sustainable behavior of present and future tourists. Previous studies have reviewed sustainable tourism development (Streimikiene et al., 2021), institutional antecedents of sustainable development in cultural heritage tourism (Mzembe et al., 2023), reasons for tourists' environmental behavior (Budeanu, 2007) and attitudes towards tourists' sustainable choices (Passafaro, 2020). However, the concept and understanding of sustainable tourist behavior remains chaotic; an overview addressing sustainable development from the demand side is overlooked. Given that sustainable tourist behavior plays a crucial role in academic research and achieving sustainability, this article delivers a systematic overview of sustainable tourist behavior research using a bibliometric and thematic literature analysis, incorporating a quantitative content analysis. Overall, 331 peer-reviewed scholarly articles were included in this systematic literature review. The objectives of this systematic literature review of sustainable tourist behavior were as follows: (1) to clarify and redefine sustainable tourist behavior; (2) to elicit key themes emerging from this body of research and establish the main theoretical perspectives adopted by scholars during this process; and (3) to suggest potential directions for further research in this nascent body of scholarly research. The findings of this study aim to deliver an improved understanding of sustainable tourist behavior and suggest a research agenda for this field.

Through a systematic review, this research extensively explored literature on sustainable tourism behavior, summarizing associated tourist behaviors, applied theories, and antecedents, and subsequently providing recommendations for future research (Grant & Booth, 2009). The findings offer significant contributions to the conceptualization of sustainable tourist behavior by highlighting its dynamic nature, necessitating an innovative and adaptive approach in future research. The research provides a comprehensive list of theories and antecedents, advocating for a broader and flexible theoretical framework in exploring sustainable tourist behavior. Additionally, the study suggests the importance of considering broader factors (i.e., cultural and emotional) in understanding and predicting such behavior. The insights derived from the systematic literature review also offer valuable guidance for tourism

practitioners and policymakers. Key considerations include acknowledging the needs and requirements of tourists, with a specific focus on market analyses through destination-based market segmentation. Furthermore, the study recommends enhancing the development of sustainable tourism products and initiatives by leveraging design and technologies. These insights provide a nuanced understanding of sustainable tourist behavior, offering practical implications for decision-making processes in tourism.

2 | METHODOLOGY

This section outlines the methodology adopted for the systematic literature review carried out as part of this study, which involved a bibliometric analysis of the published academic literature on sustainable tourist behavior. The PRISMA approach (Moher et al., 2009) was adopted to provide a reliable and objective basis for this analysis (Eusébio et al., 2020; Tranfield et al., 2003). This process is outlined visually in Figure 1. Following an analysis of key journal articles on sustainable tourism (e.g., Comerio & Strozzi, 2019; Niñerola et al., 2019), the data for this analysis of the literature was collected from two key bibliographic databases—Scopus and the Web of Science, which are deemed to provide more consistent and accurate results than Google Scholar (Falagas et al., 2008).

To systematically capture published research concerning sustainable tourist behavior, search terms including “sustainable”, “tourist”,

and “behavior” were applied to article titles, abstracts, and keywords. It is acknowledged that there exist alternative expressions related to sustainable tourist behavior, including eco-, green, new moral, ethical, responsible, pro-environmental, environmentally responsible, environmentally significant, conservation, green, environmentally-friendly, stewardship, conservation, and low-carbon tourists/tourism behavior (Kim & Filimonau, 2017; Kuo & Dai, 2012; Lee & Jan, 2019; Mobley et al., 2010; Stanford, 2008). While sustainable tourist behavior and these terminologies share common ground, they exhibit a narrower focus and necessitate an all-encompassing reflection of sustainability. For instance, terms such as eco- and pro-environmental tourist behaviors singularly concentrate on the environmental facet, disregarding the social and economic dimensions. Responsible and ethical tourist behaviors primarily concern impacts on others, particularly the reduction of adverse effects on hosts (Torelli, 2021), often signifying short-term strategies or actions. In contrast, sustainable tourist behavior stems from intrinsic willingness and values, embodying a more comprehensive and long-term vision of the planet and the well-being of its inhabitants (Torelli, 2021). There is a lack of clarity among these concepts; whether these alternative terms and behaviors are sustainable remains unclear and is debatable. For instance, only 20 items remained in a recently developed scale of sustainable tourist behavior (Chandran et al., 2021), while there are other tourist behaviors associated with sustainable development in the knowledge body, such as revisits (Jin et al., 2020). Therefore, the search approach was designed to avoid the assumption that these alternatives are synonymous with

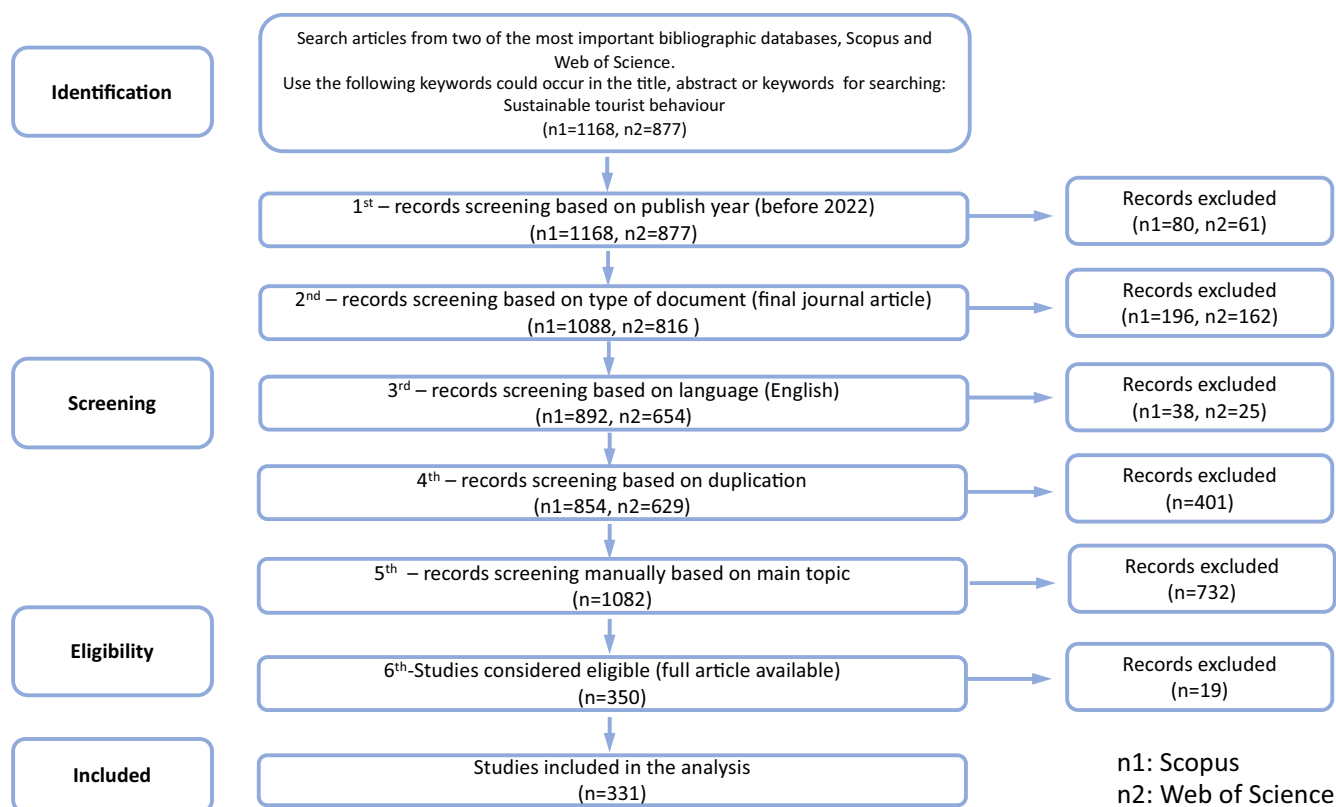


FIGURE 1 PRISMA process for systematic literature searching.

nor irrelevant to sustainable tourist behavior or contribute to sustainable development. As this research emphasizes sustainability in general and sustainable tourist behavior specifically, exclusively “sustainable tourist behavior” was employed as a search criterion. Moreover, the search terms were designed to encompass literature at a broader level, with the terms ‘sustainable’, ‘tourist’, and ‘behavior’ not necessarily confined to a single phrase. This focused approach enhances clarity in comprehending this term or concept of sustainable tourist behavior. Consequently, studies on alternative concepts were also incorporated when the search terms “sustainable,” “tourist,” and “behavior” were identified in titles, abstracts, and keywords.

Initially, 1168 journal articles were found on Scopus and 877 on the Web of Science. This research only included articles published in English in academic journals up to 2022. Other documents such as conference papers, book reviews, book chapters, books, and conference reviews were excluded from this analysis as articles tend to be peer-reviewed and, as such, considered as “certified knowledge” (Ramos-Rodríguez & Ruiz-Navarro, 2004). After an initial screening, which included deleting unintended duplications across these two databases, 1082 articles were kept for further screening and selection. The main criterion for this selection was whether the behavior/action of tourists/visitors was the main research subject or one of the research foci. Abstracts and full papers, with particular attention to research objectives, theoretical frameworks, conceptual models, and measurement scales, were thoroughly examined. Articles were retained for analysis if specific tourist behaviors were identified in any of these sections. Due to the search approach encompassing the terms ‘sustainable’, ‘tourist’, and ‘behavior’, not necessarily confined to a single phrase, some publications retrieved were unrelated to sustainable tourist behavior. Instead, they addressed sustainable development or sustainable tourism from various behavioral areas (e.g., general tourist behavioral patterns, the influence of tourism on animals' behavior, resident behavior, business behavior). Following the elimination of irrelevant studies, 331 articles were downloaded for further analysis. It should be noted that literature studying actual behavior/stated behavior/intended behavior/willingness to adopt behavior were all kept for analysis. The process of selecting documents and the number of documents included after each screening stage is illustrated in Figure 1.

Bibliometric analysis, thematic analysis, and content analysis were adopted to identify research trends, clusters/themes, theoretical frameworks adopted, and research methodologies utilized. The bibliometric analysis using VOSviewer software was adopted to analyze and visualize co-authorship and keyword co-occurrence (van Eck & Waltman, 2010). Specifically, the VOSviewer's clustering function was used to identify the connectedness or relationship between authors and keywords. Using NVivo software with an inductive approach, the thematic analysis was applied to search for key themes through theme identification (Fereday & Muir-Cochrane, 2006). The six phases of thematic analysis, proposed by Braun and Clarke (2006), were followed, including (1) Familiarizing yourself with your data, (2) Generating initial codes, (3) Searching for themes, (4) Reviewing themes, (5) Defining and naming themes and (6) Producing the report. This

method can provide a rich and complex nuanced interpretation of the data (Vaismoradi & Snelgrove, 2019). The full articles were downloaded for coding. The codes were developed based on research subjects, research type, key theories, contexts and geographic regions, methodological approaches and analytical techniques, and key findings. The codes were then reviewed to identify themes. 15 themes were then defined and cross-validated between authors, including intention/behavior/willingness; sustainability pillar; theme of behavior; type of research; theories and models; context; methodology; data analysis technique; data collection approach; the geographical region where the research was conducted; items used for measurement; sampling; antecedents; consequences; and moderators. Additionally, quantitative content analysis, where frequencies are counted within categories (Stepchenkova et al., 2009; Weber, 1990), was used to provide the frequencies and percentages of sustainable tourist behavior publications in terms of themes identified in the thematic analysis.

3 | FINDINGS

3.1 | Number of publications

The number of publications over the years shows that sustainable tourist behavior is an emerging topic. After a stable early development stage of ten years, steady growth occurred. Only 20.5% of the articles were published within the first 15 years. A more rapid increase started in 2015, and the number of publications for each year since 2018 has more than doubled compared to 2015 (Figure 2). The growth continued in recent years, reaching a peak in 2021 ($n = 63$). This indicates a continuous and increasing interest in research on sustainable tourist behavior.

3.2 | Co-authorship and keyword occurrence analysis

Co-authorship was analyzed using VOSviewer (Van Eck & Waltman, 2010, 2011). In total, 876 authors contributed to the

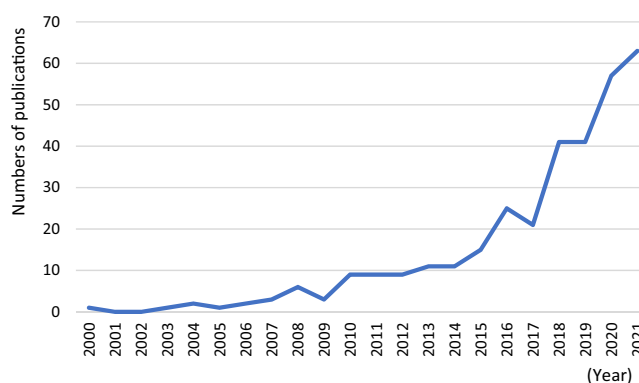


FIGURE 2 Number of publications on sustainable tourist behavior, 2000–2021.

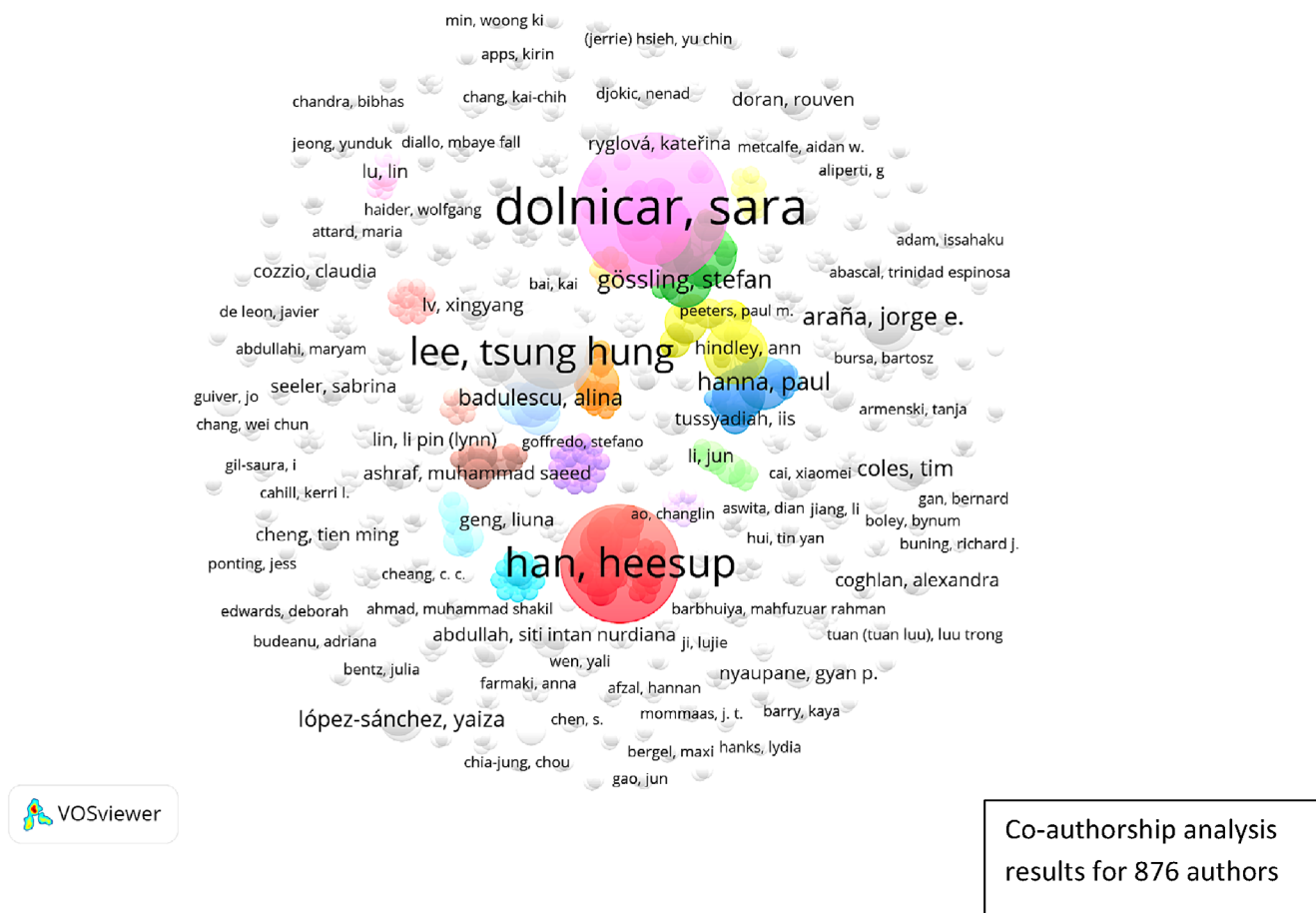


FIGURE 3 Co-authorship analysis results.

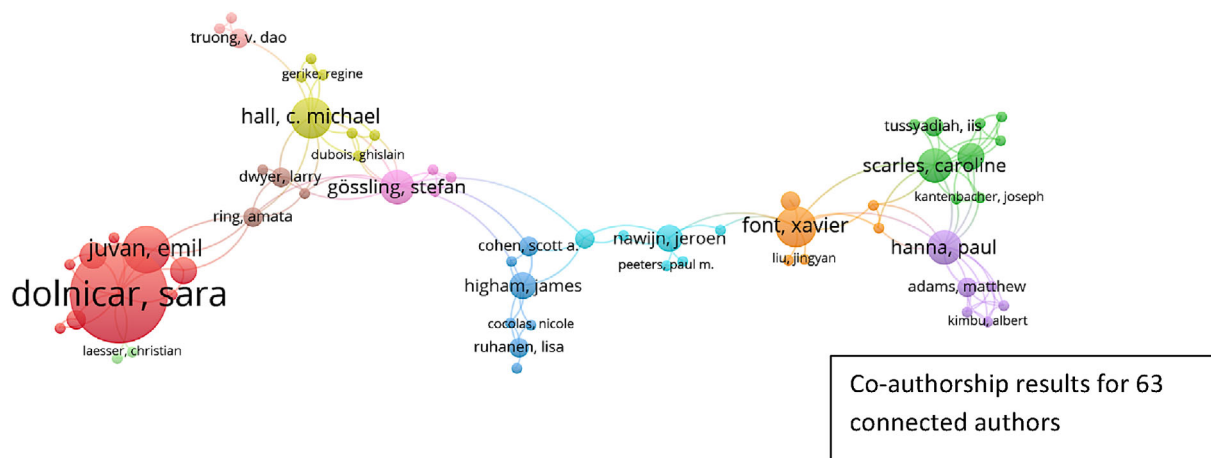


FIGURE 4 Co-authorship analysis results with major clusters.

sustainable tourist behavior literature before 2022, as shown in Figure 3. Most of the authors were not institutionally associated with each other. The most extensive set of connected authors comprised 63 scholars (Figure 4). Some 29 authors contributed at least three articles, of which the seven most productive scholars contributed more than five publications (i.e., Dolnicar, S.; Han, H.; Lee, T. H.; Jan, F. H.; Juvan, E.; Font, X.; Hall, C. M.).

A keyword co-occurrence analysis using the same software was employed to illustrate the keywords and the connections of keywords within the reviewed articles. Forty-five most frequently co-occurring keywords were identified, with at least five occurrences among 1097. VOSviewer then grouped these 45 keywords into seven clusters according to the connection strength. The possible topic for each cluster was proposed by researchers based on the

TABLE 1 The clusters of frequently co-occurring keywords in reviewed sustainable tourist behavior publications.

Cluster	Number of keywords	Keywords	The proposed topic for cluster	Sample studies
1	9	Air travel; attitude; behavior; behavior change; climate change; ethical tourism; service quality; sustainable consumption; tourism	Aviation sustainability	Büchs, 2017
2	8	Ecotourism; environmental awareness; environmental knowledge; pro-environmental behavior; social media; structural equation modeling; sustainable tourism development; tourist behavior	Environmental sustainability and ecotourism	Adam et al., 2019
3	8	Behavioral intention; destination image; destination loyalty; perceived value; revisit intention; rural tourism; satisfaction; tourist satisfaction	Destination sustainability	Line & Hanks, 2016
4	7	China; destination management; responsible tourism; sustainability; sustainable development; theory of planned behavior; willingness to pay	Sustainable tourism in China	Liu et al., 2020
5	6	Environmental behavior; interpretation; national parks; sustainable tourism; tourist behavior; wildlife tourism	Wildlife and national park sustainability	Zhang et al., 2018
6	4	Environmental attitude; market segmentation; place attachment; pro-environmental behavior	Market studies	Lee & Jan, 2019
7	3	Environmental attitude; environmental responsible behavior; Taiwan	Environmentally sustainable tourism in Taiwan	Lee & Jan, 2015

understanding of keywords; detailed information on clusters is shown in Table 1.

The overlay visualization from VOSviewer demonstrating the frequency of keywords by the size of nodes (Van Eck & Waltman, 2010, 2011) is presented in Figure 5. In this visualization, colors are used to indicate the score of the node (Van Eck & Waltman, 2011); in this case, the score was set to be calculated based on the average number published per year. This setting revealed not just popular keywords but also the trend of themes in sustainable tourist behavior research shifting from purple and green nodes (i.e., climate change, ecotourism, environmentally responsible) towards yellow nodes (i.e., destination loyalty, sustainable development, rural tourism, satisfaction).

3.3 | Contexts and geographic regions

Among the 331 reviewed articles, 90.9% were empirical studies focusing on exploring and understanding the factors impacting sustainable tourist behavior. The numbers of conceptual studies and review papers were substantially fewer than empirical studies, with 16 articles (4.63%) and 14 articles (4.23%), respectively. Overall, different behaviors were studied in more than 40 contexts among empirical studies, as shown in Table 2.

The analysis results on geographic regions (as shown in Table 3) indicated that the coverage of continents and regions was highly focused, with Asia and Europe leading scholarly outputs. Other parts of the world, including Oceania, the Americas, Africa, and Antarctica, have received limited attention. Meanwhile, the eight most studied regions include Mainland China, Taiwan, Australia, Spain, the UK, South Korea, the USA, and Italy.

3.4 | Key concepts and terms used to describe sustainable tourist behavior

Only 39.2% of the articles analyzed actual or stated behaviors. The remaining empirical studies investigated future behavioral intentions or willingness (59.8%) and choices or preferences (7.31%). Although sustainable development should merge economic, social, and environmental sustainability, environmental perspectives have largely dominated scholarly research in sustainable tourist behaviors, even if a keyword co-occurrence analysis carried out as part of this study (Figure 5) indicates a progressive shift from this perspective towards social and economic sustainability, particularly since 2019. Similarly, some of the studies analyzed lacked a precise alignment with any of the three sustainable development pillars, even if sustainability was at the core of their argument. For example, tourists' loyalty to a destination was one of the significant behaviors discussed in this literature (see Cai et al., 2021; Chen et al., 2020; Lee et al., 2020). The loyalty constructs (i.e., recommend, revisit, WOM) are consistent with several practical tips for sustainable tourists, such as providing honest reviews and sharing and promoting travel experiences with others (CREST, 2021; GSTC, 2021; UNWTO, 2021). However, beyond the arguable positive impact on the economic sustainability of destinations that benefit from visitor loyalty and repeat visits (Arasli et al., 2021; Ashraf, Hou, et al., 2020), it is difficult to establish whether a higher sense of place attachment by these visitors (Dwyer et al., 2019; Gross & Brown, 2006) would necessarily make them more prone to display behaviors that could be classed as environmentally and/or socially sustainable (see Tonge et al., 2015). In line with this, 32.33% of the reviewed articles were coded as non-specified multiple pillars.

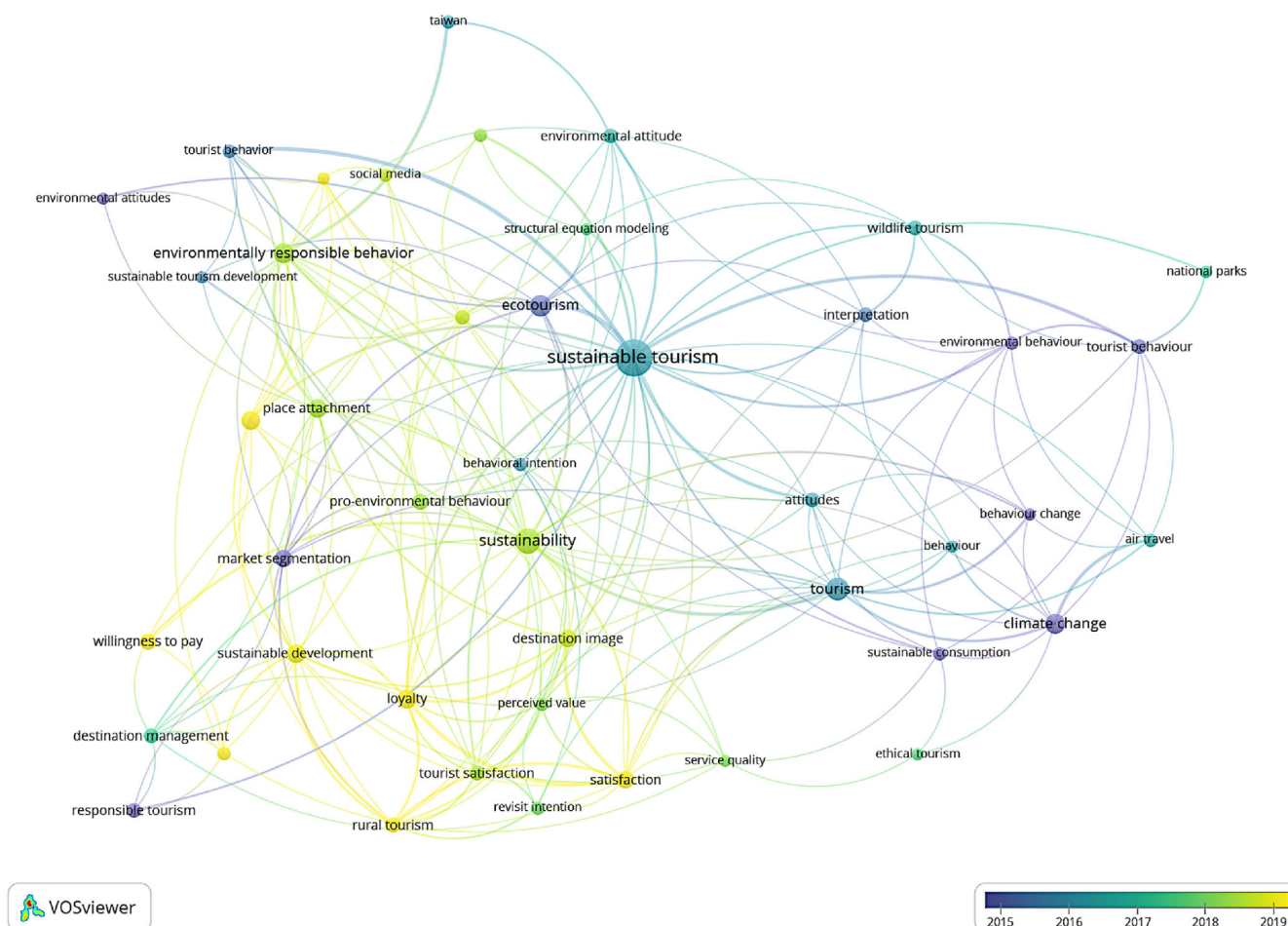


FIGURE 5 Keyword co-occurrence analysis.

In total, 81 terms describing behaviors were obtained. The terms ‘sustainable behavior’ and ‘sustainable tourist behavior’ were not frequently applied; instead, the most frequently occurring terms were pro-environmental behavior, destination loyalty, environmentally responsible behavior, and willingness to pay (charges linked broadly to sustainability issues, including eco-taxes, carbon offsetting and similar). ‘Sustainable behavior’ was only used in 6.04% of the articles. The terms covering multiple sustainability issues together were noted in 6.64%, including responsible behavior (Blackstock et al., 2008; Diallo et al., 2015; Mihalic, 2016; Saarinen, 2021); ethical behavior (Teng et al., 2021); civilized behavior (Liu et al., 2020); helping behavior (Kim & Yoon, 2020); pro-social and protective behavior (Chi et al., 2021); mindful behavior (Jirojukul et al., 2021); and coping behavior (Seong et al., 2021). This concurs with Mihalic (2016)’s assertion that sustainability is often referred to as the principle of long-term development, while more action-related or practical terms, such as ‘responsible’, were frequently linked to tourist behaviors. However, as demonstrated in the definition and argued by scholars, sustainable tourist behavior serves a more holistic and long-term vision (Torelli, 2021), contributing to the sustainable development of tourism and destinations from environmental, cultural, social, and economic perspectives (Chandran et al., 2021). Although the alternative terms were frequently found in the literature, they should have considered

comprehensive sustainability pillars and long-term development. The contributions to sustainable development need to be made clearer. These studies labeled behaviors contributing to sustainable tourism or sustainability without using the term ‘sustainable tourist behavior’ may suggest that although sustainable tourist behavior is an important research topic, the relation between alternative terms and sustainable tourist behavior requires more careful investigation. In contrast, the terminology and understanding of ‘sustainable tourist behavior’ need further clarity. In addition, longitudinal studies investigating the long-term impact of these behaviors on sustainability are requested.

Given that some terms were interchangeably used to reflect similar concepts, the terms were then classified into four groups (Table 4):

1. *Analogous sustainable tourist behavior*: Terms similar to ‘sustainable tourist behavior’, usually general and covering multiple sustainability pillars.
2. *Environmental pillar*: Terms claimed to be beneficial for achieving sustainable development, however, with a clear focus on environmental issues.
3. *Non-specific sustainability pillar*: Specific behaviors or actions claimed to benefit sustainable development.
4. *Unsustainable tourist behavior*: Behaviors of tourists that are unsustainable or irresponsible.

TABLE 2 Study contexts of sustainable tourist behavior publications.

Study contexts	No. of publications	%
Non-specified tourism context	77	25.58
Natural contexts <i>National Park/Protected area (21); Nature-based tourism (15); Wildlife tourism (14); Ecotourism sites / Eco-friendly destination (13); Island tourism (12); Coastal (8); Marine (6).</i>	89	29.57
Socio-cultural contexts <i>Cultural tourism & heritage sites (18); Cities (15); Rural tourism (10); Smart/Digital tourism (8); Community tourism (6).</i>	57	18.94
Hospitality contexts <i>Accommodation (30); Aviation (7); Food/restaurant related (5)</i>	42	13.95
Outdoor contexts <i>Sport/Golf/Bicycle/Outdoor adventure/Ski/Fishing tourism (11); Festival / Events (8).</i>	19	6.31
Others <i>Last chance tourism (3); Wine tourism (3); Youth tourism (3); Cruise (3); Archeological sites (3); Night tourism (3); Voluntourism (3); Religious tourism (3); Convention tourism (3); Wellness tourism (3). Zoos and aquariums (2); Slow tourism destination (2). Tourism program (1); Supply chain (1).</i>	36	11.96
Total empirical studies reviewed	301	

Note: Numbers in brackets are the numbers of publications.

Among the four groups, environmental pillar-related terms were the most frequently investigated. Following environmental behavior, destination loyalty and willingness to pay for sustainability-related charges were also widely studied. Economic issues attracted the greatest attention in the current research, mainly due to damage caused by COVID-19 to the entire tourism industry.

3.5 | Methodological approaches and analytical techniques

A total of 301 empirical sustainable tourist behavior publications were reviewed for their methodological approaches and analytical techniques. The results are shown in Figure 6. The methods adopted in sustainable tourist behavior articles were mainly quantitative, with much more research than qualitative and mixed research. Regarding data analysis methods, surveys were the most popular approach, and the studies that applied experimental methods tended to use questionnaires rather than field experiments. Structural equation modeling (SEM) was widely applied to examine the complex relationships among sustainable tourist behavior and its antecedents.

TABLE 3 Geographic regions of sustainable tourist behavior publications.

Geographic region	No. of publications	%
Asia	132	43.85
Mainland China	48	15.95
Taiwan	27	8.97
South Korea	16	5.32
India	8	2.66
Indonesia; Malaysia; Vietnam	5 (each)	1.65
Bangladesh; Nepal	3 (each)	1.00
Hong Kong; Pakistan; Japan; Thailand; Turkey	2 (each)	0.66
Maldives; Israel	1 (each)	0.33
Europe	90	39.9
Spain; UK	17 (each)	5.65
Italy	10	3.32
Germany	9	2.99
Portugal	6	1.99
Austria; Norway; Serbia; Slovenia.	3 (each)	1.00
Greece; Iceland; Ireland; Finland; Sweden; Czech Republic; Netherlands.	2 (each)	0.66
Poland; Croatia; Switzerland; Montenegro; Alpine region	1 (each)	0.33
Oceania	25	8.31
Australia	20	6.64
New Zealand	4	1.33
Kingdom of Tonga	1	0.33
America	20	6.64
US	12	3.93
Brazil	3	1.00
Canada	2	0.66
Mexico; Costa Rica; Dominican Republic	1 (each)	0.33
Africa	9	2.99
East Africa; Egypt; Ghana	2 (each)	0.66
Antarctica	1	0.33
Antarctica	1	0.33
Others	24	7.97
Cross-regional	22	7.31
Non-specified	2	0.66
Total empirical studies reviewed	301	100

3.6 | Theoretical foundations and key sustainable tourist behavior theories

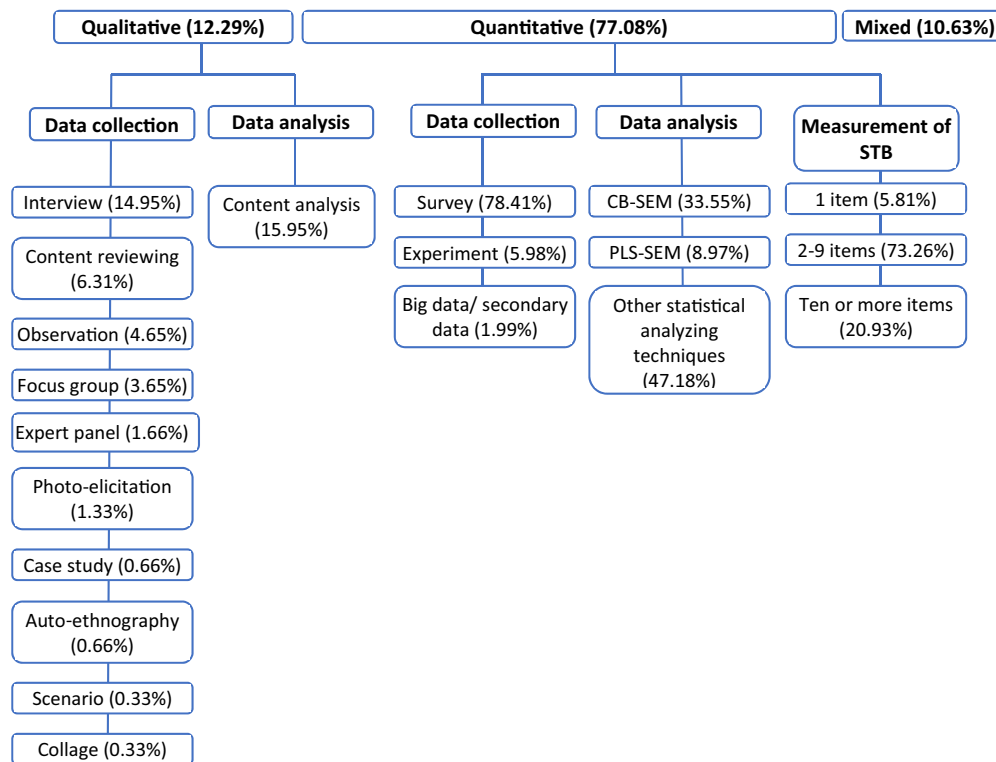
Given that sustainable tourist behavior is multi-faceted, influenced by a wide range of complex and interlaced variables directly or indirectly (Stanford, 2008; Stern, 2000), various theories from diverse disciplines

TABLE 4 Concepts and terms describing sustainable tourist behavior.

Concepts describing sustainable tourist behavior	No. of publications	%	Most frequently used terms
Analogous sustainable tourist behavior	42	12.68	
Sustainable behavior	20	6.04	Sustainable behavior (11)
Responsible behavior	10	3.02	Responsible behavior (10)
Ethical behavior	5	1.51	Ethical behavior (3)
Other alternative terms	7	2.11	
Environmental pillar related	174	52.56	
Environmental behaviors	111	33.53	Pro-environmental behavior (43); Environmentally responsible behavior (28); Environmentally friendly behavior (10)
Mobility/transportation	41	12.39	Sustainable transport (17); Sustainable travel (5)
Waste reduction, energy saving, recycling	16	4.83	Recycling (3)
Green consumption	6	1.81	
Non-specific sustainability pillar related	140	44.41	
Loyalty, revisit, WOM	62	18.73	Loyalty, WOM, recommend, revisit, repeat (62)
Willingness to pay	28	8.46	Willing to pay (28)
Sustainable consumption	26	7.85	
Other specific behavior/action	24	9.37	
Unsustainable tourist behavior	6	1.81	
Unsustainable behavior	5	1.51	Non-compliant behavior (2)
Environmental Unsustainable	1	0.3	Environmental unsustainable behavior (1)
Total number of publications reviewed	331		

Note: Numbers in brackets are the numbers of publications.

FIGURE 6 Methodological approaches and analytical techniques used in sustainable tourist behavior publications.



have been introduced into sustainable tourist behavior research. Over 50 theories and models were employed. The most applied theory in sustainable tourist behavior studies was the theory of planned

behavior (TPB) (Ajzen, 1991; Ajzen & Fishbein, 1980), a practical theory in human behavior studies with empirical verification. Two commonly used theories emphasizing the role of norms in predicting and

TABLE 5 The theories and models used in sustainable tourist behavior publications.

Theories, models and frameworks	Main constructs and original sources	No. of publications	Sample studies
Theory of planned behavior (TPB)	Subjective norms, attitude, perceived behavioral control, intention (Ajzen, 1991; Ajzen & Fishbein, 1980)	49	Clark et al., 2019
Norm-activation theory (NAT)	Awareness of consequences, ascription of responsibility, personal norms, behavior (Schwartz, 1977)	19	Qiao & Gao, 2017
Value belief norm theory (VBN)	Values, beliefs, personal norms, behavior (Stern et al., 1999)	18	Denley et al., 2020
Schwartz's value theory	Individual values (Schwartz, 1992)	7	Kim & Stepchenkova, 2020
Social identity theory	Perceived group status differences, perceived legitimacy and stability of those status differences, perceived ability to move from one group to another, intergroup behavior (Tajfel, 1974, 1979, 1988)	6	Lee & Jan, 2019
Stimulus-organism-response (S-O-R) framework	Stimulus, organism's internal evaluation, response (Mehrabian & Russell, 1974)	4	Hu et al., 2019
Attribution theory	Dispositional (internal cause) attributions, situational (external cause) attributions (Heider, 1958)	3	Dolnicar et al., 2019
Theory of cognitive dissonance	Inconsistency between attitude and behavior, psychological tension, approaches taken by individuals to eliminate the dissonance (Festinger, 1957)	3	Juvan et al., 2016
Others			
Construal level theory (2); Model of responsible environmental behavior (REB) (2); Theory of interpersonal behavior (2); Model of goal-directed behavior (MGB-an extended model based on the TPB and the TRA) (2); Unified Theory of Acceptance and Use of Technology (UTAUT) (2); Values-Identity-Personal norms (VIP) model (2); Social practices approach (2); Attitude-behavior-context theory (ABC) (1); Cognitive-experience self-theory (1); Communication theory (1); Deficit model (1); Elaboration likelihood model (1); Equity theory (1); Expectancy theory (1); Folk-conceptual theory of behavior explanation (1); Game theory (1); Habit theory (1); Hierarchy of effects model (1); Hierarchy of needs (1); Knowledge-attitude-behavior theory (KAB) (1); Leisure constraint model (1); Mehrabian and Russel model (MR model) (1); Neutralization theory (1); Nudge (1); Pierre Bourdieu's framework (1); Prospect theory (1); Protection motivation theory (PMT) (1); Rational choice theory (1); Self-efficacy theory (1); SERVQUAL (1); Social cognitive theory (1); Social comparison theory (1); Social learning theory (1); Supplementary services model (1); Technology acceptance model (1); The transtheoretical model (TTM) (1); Theory of consumption values (1); Theory of emotional solidarity (1); Theory of environmentally significant behavior (1); Theory of social capital (1); Tri-component attitude model (1).			

Note: Numbers in brackets are the numbers of publications.

changing the behavior of tourists followed, namely, norm-activation theory (NAT) (Schwartz, 1977) and value-belief-norm theory (VBN) (Stern et al., 1999). As a general theory of altruism, NAT by Schwartz (1977) denotes that personal norms, that is, internalized moral beliefs, are a necessary influence and predictor of human altruistic behavior. The VBN theory was proposed by Stern et al. (1999) and Stern (2000) for environmentally significant behavior. This theory combines NAT and Values Theory, indicating the significant influences of values, beliefs, and pro-environmental personal norms on environmentally significant behavior. This theory is therefore mainly used for sustainable tourist behavior concerning the environmental aspect, such as tourists' environmental behaviors (Kiatkawsin & Han, 2017; Sharmin et al., 2020); hotel guests' recycling behavior (Grazzini et al., 2018); and tourists' intention to visit last chance tourism (Denley

et al., 2020). While the above theories are often used separately, it is acknowledged that the predictive power significantly increases when merging different theories or when theories are extended with other factors (Han et al., 2019; Kiatkawsin & Han, 2017).

Apart from the widely applied TPB, NAT, and VBN, another 48 theories, models, and extended theories were found in this literature. Some indicate the interaction among variables that influence behavior (Festinger, 1957; Homer & Kahle, 1988; Vroom, 1964). Other theories and models suggest behavior can be influenced by a variety of factors, such as intentions, habits, and facilitating conditions (Triandis, 1977), external environmental backgrounds (Wilson & Kelling, 1982), tourist satisfaction (Oliver, 1980), previous experiences (Sherif et al., 1958), and social identity (Tajfel, 1979). Some theories explain the formation stages or processes of behavior (Prochaska

et al., 1992; Sykes & Matza, 1957). The theories and models that have been applied to understand sustainable tourist behavior and main constructs are listed in Table 5.

3.7 | Antecedents, consequences, and moderators

Based on TPB, sustainable tourist behavior is significantly influenced and can be predicted by understanding perceived behavioral control, attitudes towards the behavior, and subjective norms (Ong & Musa, 2011). However, some studies found that the predictive power of TPB variables is not strong enough or is no longer important within a specific context (Clark et al., 2019; Hu et al., 2019). More specifically, in the discussion of perceived behavioral control, the results showed that the degree of its influence on tourist behavior was inconsistent (Kuo & Dai, 2012). Although most studies found a significant positive impact of perceived behavioral control on behavioral intentions (Wang et al., 2019), there was a trend level of relationship between perceived behavioral control and lower pro-environmental intentions in a marine context (Clark et al., 2019). Another TPB variable, attitudes towards behavior, was argued as one of the strongest predictors of sustainable tourist behavior (Zhang et al., 2018), which had significant positive direct or indirect impacts on sustainable tourist behavior (Line & Hanks, 2016; Cheung et al., 2017; Patti, 2017; Penz et al., 2017; Wang et al., 2019). However, some studies indicated that attitudes were not always the most essential or reliable factors (Kim, 2012; Reiser & Simmons, 2005). This means the original TPB theory has not always applied to all sustainable tourist behavior studies and all contexts. Thus, extended TPB models were tested, and other variables, for example, moral norms, personal backgrounds, past experiences, past behavior, environmental identity, and attractiveness of unsustainable alternatives, were indicated to be stronger in predicting sustainable tourist behavior (Clark et al., 2019; Han et al., 2017; Hu et al., 2019; Poudel & Nyaupane, 2017).

The analysis of sustainable tourist behavior antecedents confirmed the complexity of the relationships among behaviors and other influential variables. Over 150 variables influencing sustainable tourist behavior, directly or indirectly, were identified. These were in two categories, internal subjective factors such as cognitive, affective, psychological, and external factors comprised of objective characteristics of tourists or external environments. It is difficult to categorize these factors as direct or indirect antecedents since many sustainable tourist behavior studies examine behavioral intentions rather than actual behaviors. In addition, mediating and moderating roles are also difficult to specify as these roles need to be identified considering factors included in the specific model. Nevertheless, norms (five types), awareness (four types), tourist perceptions (14 types), satisfaction, attitudes, values (18 types), affective/emotions (12 types), past experience/behaviors, and perceived behavioral control were the most influential variables analyzed in more than 20 articles. However, the research did not always produce the same results; for instance, 38 variables had insignificant relationships with sustainable tourist behavior (i.e., attitudes, subjective norms, place attachment, and engagement).

Some 20 barriers to adopting sustainable behaviors among tourists were determined, the main restrictions being price and availability or accessibility of facilities. The studies investigating similar antecedents or barriers did not consistently deliver the same results. These differences were caused by study contexts, cultural groups, specific behaviors studied, and research methodologies. The consequences of sustainable tourist behavior were researched more infrequently; the results indicated that sustainable tourist behavior might lead to satisfaction, purchase intentions, and memorable experiences. Table 6 summarizes the main antecedents, barriers, and outcomes of sustainable tourist behavior and their frequencies.

4 | IMPLICATIONS

4.1 | Theoretical implications

This research identified and summarized all tourist behaviors associated with sustainable development. Given the debates and the lack of conceptualization of sustainable tourist behavior, this investigation provided a comprehensive list of behaviors that contribute to the conceptualization of sustainable tourist behavior, drawing on previous relevant foundations, including themes of a responsible tourist (Stanford, 2008) and the conceptual framework of responsible tourism behavior (Gong et al., 2019). Furthermore, this research visualized changes in the keyword co-occurrence analysis, indicating that the sustainable behavior of tourists is complex and not neutral, with unavoidable subjective elements and changing trends (Hansen, 2005; Henderson, 2011). This finding reveals that sustainable tourist behavior is a dynamic concept requiring an innovative and adaptive approach in future research.

Over 50 theories and models have been used by scholars to investigate sustainable tourist behavior, along with over 150 variables influencing sustainable tourist behavior directly or indirectly. However, the dominant theoretical frameworks adopted by scholars for research related to sustainable tourist behaviors were limited to the theory of planned behavior (49), the norm-activation theory (19), the value belief norm theory (18), and Schwartz's Value Theory (7), suggesting a greater accumulation of theories and antecedents were under investigation in the area of sustainable tourist behavior. Inevitably, to assess tourist behavior with acceptable reliability, a combination of theoretical frameworks and flexible application of theories can be advantageous (De Canni re et al., 2009; Ong & Musa, 2011). For instance, an extended theory of planned behavior with other variables, for example, moral norms, individual backgrounds, past experiences, past behavior, environmental identity, and the attractiveness of unsustainable alternatives, were stronger in predicting sustainable tourist behavior (Clark et al., 2019; Han et al., 2017; Hu et al., 2019; Poudel & Nyaupane, 2017).

Additionally, wider antecedents should be researched. First, studies need to take cultural differences into theoretical consideration. There is a lack of consideration of Eastern and minority cultural antecedents which are influential, for instance, the typical Eastern cultural

TABLE 6 Main antecedents, barriers and consequences of sustainable tourist behavior.

Relation to sustainable tourist behavior	Factors	No. of publications
Positive antecedents	Internal factors	416
	Attitude	50
	Perception-evaluative	47
	Awareness	46
	Norms (including subjective and personal norms)	42
	Satisfaction	41
	Values	40
	Affective	29
	Past experience and behaviors	29
	Perceived behavioral control	22
	Place attachment	14
	Knowledge	13
	Belief	10
	Intention	7
	Specific motivation (i.e., cultural, environmental)	5
	Others ($n = 13$)	21
	External factors	119
	Engagement/Involvement	20
	Destination image (green/cultural)	15
	Socioeconomic status (i.e., age, gender, occupation)	15
Informative appeals/communication strategies	6	
Others ($n = 39$)	63	
Negative antecedents (barriers)	Internal factors	12
	Quality value; Anti-environmental attitude; Luxury belief; Preference for authenticity; Anger; Changing habits; Perception of distance; Lack of knowledge of public transport systems; Psychosocial organization of denial; Age; Number of visits; Educational level	1 (each)
	External factors	11
	Costs (i.e., time, inconvenience, price)	3
	Unavailability of necessary infrastructures	2
Environmental destination social responsibility; Weather patterns (rainfall); Elevation; Strengthening regulations; Air pollution; Neutralization techniques.	1 (each)	
Consequences	Satisfaction	2
	Purchase intention	1
	Memorable tourist experience	1
	Sustainable visit intention	1
	Loyalty to organic agricultural tourism	1
	Acceptance of individual behavior makes a contribution to climate change	1
	Relationship between environmental practices and financial performance.	1

elements such as face value, collective face value, and other traditional Chinese values such as Taoism and Confucianism (Su et al., 2018; Zhang et al., 2019; Wu et al., 2022;). Given the traditional hegemony of Western culture in behavioral research in tourism, marketing, and other business and management fields, part of the challenge for future research will be to validate these theories and models among some of the emerging geographical sources of outbound tourism, including the Asia-Pacific region, Africa, South America, and the Middle East. The adoption of theoretical frameworks that take

communities into account will render new insights. Second, many of the theoretical frameworks adopted by scholars to date in research on sustainable tourist behaviors assume that rational decisions and behaviors dominate. Nevertheless, it is known that this is not always the case. Choices related to sustainability are often emotional (Araña & León, 2016), and practice in social marketing has often tapped into emotional triggers to get its message across—the role of emotions in decision-making and actual tourist behaviors in sustainability merits further research. This analysis provides a full overview

of theories and antecedents in sustainable tourist behavior that could be used to form theoretical foundations for future studies.

4.2 | Practical and policymaking implications

From a practical point of view, the insights gained from this systematic literature review suggest that tourism practitioners and policymakers should take the following considerations in their decision making process. First, sustainable tourism management should take the needs and requirements of tourists into consideration. Studies find codes and regulations are ineffective, instead, a more effective way for policymakers to change behaviors effectively is to focus communication on individual benefits rather than collective ones (Ballantyne et al., 2021; Hardeman et al., 2017) particularly in the use of mechanisms such as local eco-taxes payable by visitors (Cárdenas-García et al., 2022; Palmer & Riera, 2003). The price payable and the way key decision makers locally frame options can have a considerable influence on willingness to pay for initiatives related to climate change, whereas opt-out alternatives and lower prices tend to find higher levels of support (Araña et al., 2013). This has important implications for policymaking and research in this field, which recently has started investigating the governance of these schemes, their transparency and, at times, their integrity (Guix et al., 2022).

Second, the needs of tourists should be understood specifically via market analyses based on the market segmentation in destinations. Scholarly research has found that personal values such as openness to change, self-enhancement, self-transcendence and conservation can be influential in people's behaviors. For example, in wildlife tourism, the environmental behavior of visitors who prioritized openness to change was found to be triggered by discovering new ways of helping the environment, while tourists who leaned towards self-enhancement sought individual benefits instead as a compromise for helping the environment (Ballantyne et al., 2021). Therefore, superficial assessments of the relationship between values and behaviors should be avoided. Policymakers should seek a more nuanced approach as regards different market segmentation approaches with often differing value sets.

Lastly, in the development of sustainable tourism products and initiatives, destinations and practitioners should enhance the use of design and technologies. Despite limited numbers and emergence of esthetic physical appearance and smart tools in the STB literature, they were found useful in enhancing STB (Hou & Wu, 2021; Portman et al., 2019; Shen et al., 2020).

5 | RESEARCH AGENDA

5.1 | What should be classed as sustainable tourist behavior?

More consensus on a definition of sustainable tourist behavior remains a challenge. Given that the majority (61.6%) of research on sustainable tourist behavior analyzed in this systematic literature

review focused solely on behaviors related to environmental sustainability, there is a need for further scholarly inquiry about behaviors that foster economic sustainability and social sustainability. Moreover, a discernible shift has emerged in sustainable tourist behavior studies towards greater emphasis on economic and social dimensions. Given the complexities associated with achieving sustainable development, as well as the inherent conflicts between tourists, residents, and tourism employees, addressing the intricate nature of tourist behavior necessitates a broader perspective. Future research endeavors should extend beyond the scope of tourism and forge interdisciplinary collaborations to explore subjects that are integral to a wider context of sustainable consumer behavior, such as well-being and social equity.

If sustainable tourist behaviors are to be interpreted more holistically, addressing all three pillars of sustainable development should be incorporated formally into the definition of this concept. These issues deserve further discussion among tourism scholars and practitioners. Similarly, although measurement scales have been developed for sustainable tourist behaviors (Chandran et al., 2021; MacInnes et al., 2022), more specific and comprehensive measurement scales are required for socially sustainable tourist behaviors (Li et al., 2022). This will contribute to the advancement of this field, mainly through quantitative research.

5.2 | Critiques and monitoring sustainable tourist behavior

A growing body of knowledge is emerging linked to civilized tourist behavior, particularly in Mainland China (Qiu et al., 2022;). Despite the differentiation in terminology and definition, the items used for measuring civilized tourist behavior (i.e., be willing to protect the ecological environment, be willing to protect tourism resources, be willing to obey public order) are overlapped with sustainable tourist behavior (see Liu et al., 2020). Similarly, there is an established line of research on responsible tourism and responsible tourist behavior (Mihalic et al., 2021). Given the parallels between these interpretations of tourist behavior, future research should address the demarcations and overlaps of civilized versus responsible behavior compared to sustainable behavior.

Additionally, there are obvious trade-offs and contradictions between economic growth and other goals (Hickel, 2019). There is a growing debate about whether sustainable development is realistic and if the SDGs are achievable (Dawes, 2020). As seen in other disciplines, recent studies have discussed the interactions within SDGs (Hickel, 2019; Vladimirova & Le Blanc, 2015; Weitz et al., 2014), while some other research has focused on subsets of goals as a consequence of the large number of targets and broad remit of the SDGs (ICSU, 2017; Le Blanc et al., 2017). It is necessary to pursue the development of integrated goals as well as measure the actual progress towards the SDGs and evaluation of the overall success of the 2030 Agenda (Dawes, 2020; Diaz-Sarachaga et al., 2018). In sustainable tourist behavior studies, the discussion on specific contributions to SDGs and the links with SDGs is usually unclear. Therefore it is difficult to justify, among all the interchangeably applied terms that

co-occur with sustainable development and sustainability, which behaviors are truly sustainable or they are just good behaviors. Moreover, although Target 12.4 of SDG12 is to 'develop and implement tools to monitor sustainable tourism', there is a lack of studies monitoring or tracing the outcome of sustainable tourist behavior (UNWTO, 2020).

5.3 | Contextual and cross-cultural considerations in sustainable tourist behavior research

Research has shown that sustainable behaviors tend to be associated primarily with place-specific contexts such as natural parks, spaces with wildlife, hotels, and, to a lesser extent, cities (Edwards & Griffin, 2013) and heritage sites (Buonincontri et al., 2017). Although previous studies (Daryanto & Song, 2021; Li & Wu, 2020) indicate that places can influence behavior, other factors are at play. One includes social norms (Dolnicar, 2020; Wang & Zhang, 2020), the behavior of other people in the same location, and whether a person is there as part of a group or on an individual basis. One of the limitations of sustainable tourist behavior research to date has been that tourists have been studied individually, often using surveys and with little consideration of the environment and people around them. For instance, an individual's sustainability-related behaviors may differ depending on whether they are at a destination on business, with their young children, or on a city break with partners. These are important issues yet to be addressed by scholarly research.

Another avenue deserving attention for future research is the exploration of cross-cultural studies. This is not solely grounded in differences observable among tourists from diverse cultural backgrounds but also arises from the variance in the prioritization of sustainable development across different destinations, influenced by cultural and geographical factors. Cross-cultural studies would contribute by examining sustainable tourist behavior and related subjects from a multifaceted array of perspectives, thus enhancing the broader objective of sustainable development.

5.4 | Methodological innovation in researching sustainable tourist behavior

The majority of publications have focused on studying sustainable behavioral intentions and behaviors through survey questionnaires. Recognizing the existing gaps between intentions and behaviors, as well as between attitudes and behaviors, it is evident that the actions of tourists do not consistently align with their expressed attitudes and intentions. Therefore, forthcoming research could greatly benefit from incorporating experimental studies, particularly field experiments, which remain limited within the current body of knowledge. These studies would provide substantial contributions by observing the actual sustainable behavior of tourists and assessing the efficacy of techniques for inducing behavioral change.

6 | CONCLUSION AND LIMITATIONS

This research has systematically analyzed the literature on sustainable tourist behavior with a combination of bibliometric and qualitative analysis of 331 publications. The most dominant themes in this emerging field of knowledge were pro-environmental behaviors, willingness to pay for sustainability-related charges, destination loyalty, conscious consumption, environmentally responsible behaviors, and revisit intentions. In addition to a lack of qualitative research in this field, it was found that sustainability topics that are somewhat established in other disciplines, such as waste classification and recycling, as well as applications of sustainable design to the management of the visitor economy, appear to have been overlooked mainly within sustainable tourist behavior research. Similarly, it was found that one of the factors hindering research in this field is the need for more consensus on an agreed definition of what constitutes sustainable tourist behavior. It is posited here that only tourist behaviors with clear and demonstrable impacts on the ground in terms of sustainability should merit being considered "sustainable behaviors", regardless of the definition adopted. Moreover, developing more conceptual research and, more specifically, creating a measurement scale for some of the less researched aspects of sustainable tourist behavior, such as the social ones, would greatly benefit future scholarly inquiry. Studies such as this one, where research from different geographical regions are analyzed and discussed, will help to ensure that parallel approaches, such as Mainland Chinese scholars' inquiries into civilized tourist behaviors, are included in the broader research framework for sustainable tourist behavior. Similarly, research in this field needs to move beyond behavioral intentions and stated behaviors to validate what is happening on the ground with tourists regarding actual behaviors. Observed and actual behaviors should be prioritized in further scholarly inquiry, particularly given that sustainability is often a sensitive subject where (nearly) everyone would prefer to be seen as making a positive contribution, even if, as we all know from New Year's resolutions, there is often a substantial gap between intentions and actual delivery.

This review is subject to certain limitations inherent in its focus on peer-reviewed journal articles, excluding other publication types such as conference papers, books and book chapters. The research exclusively considered articles retrieved from Scopus and WoS databases, excluding publications not encompassed by these platforms. Additionally, only articles published in the English language were incorporated, introducing potential linguistic bias. A further limitation arises from the challenges in literature selection, given the absence of a universally agreed-upon definition of sustainable tourist behavior. The manual screening process, based on whether the behavior or action of tourists/visitors constituted the primary research focus, may introduce certain constraints.

ACKNOWLEDGMENTS

There are no acknowledgements. No research funding received.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

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How to cite this article: Li, J., Coca-Stefaniak, J. A., Nguyen, T. H. H., & Morrison, A. M. (2023). Sustainable tourist behavior: A systematic literature review and research agenda. *Sustainable Development*, 1–19. <https://doi.org/10.1002/sd.2859>