



# **Unveiling the Path to Sustainable Behavior in Tourism through a Systematic Literature Review**

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## **Authors' contributions**

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

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## **ABSTRACT**

Environmental sustainability is a crucial focus in the contemporary tourism and hospitality industry due to its potential to protect the environment and benefit society. Despite extensive research on the environmental impact on the industry, there is a need for a comprehensive analysis. The lack of relevant studies on pro-environmental behavior of hospitality and tourism consumers underscores the importance of thorough review. This study utilized the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) protocol to conduct a systematic literature review, focusing on areas such as Local Communities' Commitment, Small Firms in Tourism, Consumer Behavior, and Sustainability Communication. The results of the studies suggest that various independent variables can influence sustainable behavior in tourism, including Difficulty Perception, Eco Concern, Effort Perception, and others. The dependent variables identified in this study are divided into three groups: Technology Adoption, Environmental Attitudes and Beliefs, and Self Expression and Well-being.

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## 1. INTRODUCTION

### 1.1 Sustainable Tourism Review

Tourism can have a negative impact on the environment, leading to depletion of natural resources and environmental degradation in tourism-rich regions. The growing need for more environmental-friendly practices in tourism is the result of an increased knowledge and concern about tourism impacts and environmental quality in general [1]. Waste disposal, air pollution and climate change are some of the activities that have a significant effect on the environment [2]. The WHO claims that air pollution is linked to the deaths of around seven million individuals each year. According to the organization, around nine out of ten people worldwide are affected by harmful air pollutant [2].

Environmental sustainability is the foremost topic in the contemporary tourism and hospitality industry, and an important aspect of environmental protection, which eventually benefits society, and an important aspect of environmental protection [3]. The environmental and social impacts of the tourism industry are reviewed globally in five categories: peace, prosperity, protection, population, and pollution. Although the industry is still not close to being sustainable, it is expected to play a significant role in the expansion of protected areas. Other research priorities include improving the accounting techniques used in the tourism industry, as well as the effects of climate change on individual perceptions [1].

The major academic concern over the negative impacts of tourism dates back at least to the 1960s and to the tradition of research into carrying capacity. Back then, the goal was to develop solutions that could be offered at the local level, and this was eventually replaced by the sustainable tourism concept during the 1990s [1]. Sustainable tourism refers to any type of activity that aims to protect the environment, economic integrity, and socio-cultural aspects of a given region. It involves getting policies that are in line with the region's environmental policies, as well as improving the welfare of the host community [1].

The increasing number of studies on the sustainability of tourism marketing has led to the development of a wide range of literature on this

subject. However, there are still a few bibliometric studies in this field that are available [4]. According to Santos-Roldo, in [5], sustainable tourism is a vital component of the industry's future survival [5]. Alonso et al (2023) found that the research on sustainable tourism is still open [6]. There has been a lot of research on the influence of the environment on the hospitality and tourism sectors, but it is still not enough to provide a comprehensive analysis of the current knowledge on this subject. According to Petticrew and Roberts, a systematic review provides researchers with an opportunity to identify areas of their expertise that are not yet covered [7,8]. Due to the lack of relevant studies on the pro-environmental behavior of hospitality and tourism consumers, it is important that these studies are thoroughly reviewed [1].

Referring to reviews of the prior literature on the topic, Sukmasetya et al. [9] introduce a systematic literature review, applying the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement and content analysis and employing user experience frameworks to analyze the findings with the aim of promoting sustainable consumption and environmental sustainability by identifying gaps in the literature and providing guidelines for further research. This exercise is fundamental as a background as the authors perform a systematic literature review using the PRISMA methodology [9]. Ernawati et al. (2020) undertook a review to investigate methodological perspectives, factors, and conceptual approaches to visitor behavior during the COVID-19 epidemic. Articles focusing on risk perception, responsibility, compassion, and attitudes were categorized in the review. The literature review classifies articles that focus on perceptions of risk, responsibility, compassion, and attitudes. The main findings indicate that there are behavioral antecedents that are rarely studied, such as antecedents related to environmental responsibility (perceived response to effort), compassion (desire, perceived self-efficacy), and attitudes (non-pharmaceutical intention operations) [10].

A comprehensive literature review is needed in sustainability studies to provide a deeper understanding of the factors that influence sustainable behavior. It also helps identify the conceptual framework that has been used in previous research [7,8]. A systematic literature

review of sustainability behavior in tourism can offer several valuable insights, including assessing the extent to which tourism research has considered sustainability as a success factor for tourism destinations, delivering guidelines for further research in sustainable tourism area, and identifying key indicators for sustainable tourism [1].

The paper begins by reviewing the literature on the subject of sustainability behavior in tourism. It then explains the methods utilized in the review. Following this, the results of the study are analyzed based on the characteristics of the multiple studies that were conducted on the topic. The article concludes by providing a comprehensive analysis of the limitations of the research [1]. We strive to find answers to the following research questions to provide useful insights:

1. What kinds of theories and research designs are used by scientists?
2. What are the measured variables which reflect sustainability behavior in the tourism area?
3. What are the independent and dependent variables in the research area of sustainable behavior in tourism?
4. What are the various directions expected to be pursued in the field of research?

This study will contribute to the literature by providing a comprehensive review of the various sustainability behaviors in tourism. It also identifies the types of sustainability behavior in tourism. In addition, it offers a variety of future research opportunities for aspiring researchers.

The findings of this review will help educators, policymakers and practitioners develop effective approaches. It also identified research topics that could serve as future directions. This article is divided into five sections, containing; first, the research background; second, the method applied in the systematic literature review; third, the main results of the research analysis; fourth, the discussion, conclusions and directions for future lines of research; and, finally, the reference [11].

## **2. MATERIALS AND METHODS**

This research used a pragmatic paradigm with deductive reasoning. This research conducted a systematic review of articles on sustainability behavior in tourism to reach a conclusion on the

concept. Sweet and Moynihan (2007) have defined systematic review as "to provide a systematic, transparent means for gathering, synthesizing and appraising the findings of studies on a particular topic or question [11]. The aim is to minimize the bias associated with single studies and non-systematic reviews." Therefore, the systematic review starts with an objective and explicit question which needs to be addressed via systematic and transparent data collection and synthesis. The current study adopted the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) proposed by Moher, Liberati, Tetzlaff, and Altman [11].

PRISMA provides a roadmap to report a systematic review in a transparent, objective, and explicit way. Although it was initially developed for researchers within the healthcare industry, it has since been adopted by marketing and business professionals [12]. Furthermore, the PRISMA statement suggests the flow of information in four phases: identification, screening, eligibility, and inclusion [12].

The first step in implementing the PRISMA protocol involves identifying records. This process involves several factors, such as the kind of record that's stored, how it's retrieved, and where it's located. To make sure that the procedure is carried out correctly, we have developed key terms that deal with the research questions that will be studied. The electronic search for these topics was performed in August, 2018. The study was carried out through the multiple platforms that are used for scholarly research, such as Google Scholar, Science Direct, ScienceDirect, and Web Science. These platforms provide a variety of coverages for different disciplines. We then checked the records to make sure that there are no gaps in the data [11,12].

Following the initial screening, the remaining full-text articles were evaluated to determine if they should be included in the qualitative analysis. The eligibility criteria used were based on the study's objectives. The review also aims to explore the literature on sustainability [13]. The main objective of the review was to identify relevant articles from leading journals. In addition, we included those from impact factor journals that are part of the social science citation index (SSCI). This strategy was consistent with previous studies in the area. The selection of these journals was based on their

academic quality and impact factor [14]. SSCI journals are regarded as one of the most prominent and representative journals in the social sciences field. Since these are the latest records of the field's knowledge creation, we excluded books, conference papers, and articles published in other languages. We also included relevant articles from 2010 to 2023 due to the pandemic's impact on behavior.

### 3. RESULTS

The search strategy resulted in a total of 11 full-text records. One study was excluded for other reasons, and 10 studies were screened after reading the titles and abstracts. After screening, 10 full-text articles were found for assessment. After applying exclusion criteria to the full-text records, no further studies were excluded, one article was not taken, and 9 articles were assessed for eligibility. Finally, there were 4 studies that were included in the qualitative assessment and synthesis, resulting in 5 articles that were included in the review. The systematic approach used in this study ensured that all relevant articles were identified and assessed for eligibility, contributing to the rigor and validity of the review see Fig. 1.

The qualitative synthesis resulted in several findings and themes. These findings are grouped

into five categories, major findings (year, and country-wise publications, underpinning theories, and elements of research design), sustainability behavior factors identified, antecedents and consequences, and future research directions).

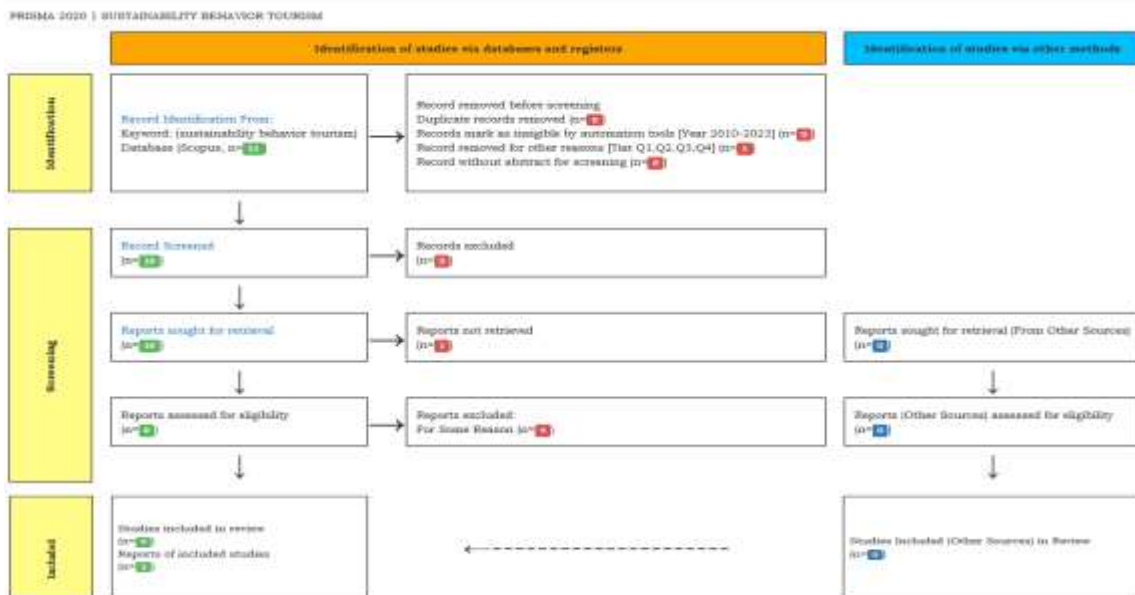
**Table 1. Key terms used in the search strategy**

Block	Keyword of search
Primary variable	“sustainability behavior tourism OR sustainability”
Context	And “Sustainability” OR “green tourism” OR “pro-environmentally” OR “responsibility” OR “preservation”

### 3.1 Major Findings

#### 3.1.1 Characteristics of studies

We included research spanning the years 2010 to 2023 in the final group. Fig. 2 depicts the yearly evolution of publications. In both 2019 and 2021, 55% of the total research were published in the same quantity. In 2019 and 2021, two publications were released, resulting in a total of 36%. The minimum number of published studies was one, and it was published in 2010. No studies were found between 2011 and 2018.



**Fig. 1. The phases of identification, screening, eligibility, and inclusion are critical in a systematic literature review. This sequence of operations aids in the scientific process of selecting records**

It is worth noting that awareness of writing about sustainable conduct in tourism appears to have arisen just after the COVID-19 pandemic in 2021. Prior to this, despite the acknowledgement of the need for tourist operations to become more sustainable, the volume of academic research on sustainable behavior in tourism between 2010 and 2020 was negligible. However, the COVID-19 pandemic has reignited interest in sustainable tourism, with several research investigating the role of visitors in responsible behavior and the possibility for sustainable tourism to be a solution to the pandemic's dilemma see Fig. 2. The scarcity of studies on the topic of sustainability behavior in tourism revealed that research opportunities in this area are still wide open and require further investigation.

The publication countries of published articles in quantitative approach can be viewed in Table 2. There are five countries of publication for the research on sustainable tourism behavior: China, Japan, Korea, Portugal, and Taiwan. The research context areas of the publications can be grouped into three categories of behavior: (1) factors influencing sustainable tourist behavior, (2) pro-environmental behavior of visitors and (3) tourism destination residents. Korea and Taiwan share an interest in the context of factors influencing sustainable tourist behavior, while Japan, Portugal, and China share an interest in the context of pro-environmental behavior of visitors and tourism destination residents.

The findings of these studies highlight the diverse interests and contributions of different countries in the area of sustainability behavior in tourism. The publication countries that have contributed to these studies provide valuable

insight into the global nature of the research being conducted in this field. The various categories of behavior exhibited in these studies highlight the complexity of tourism's sustainability.

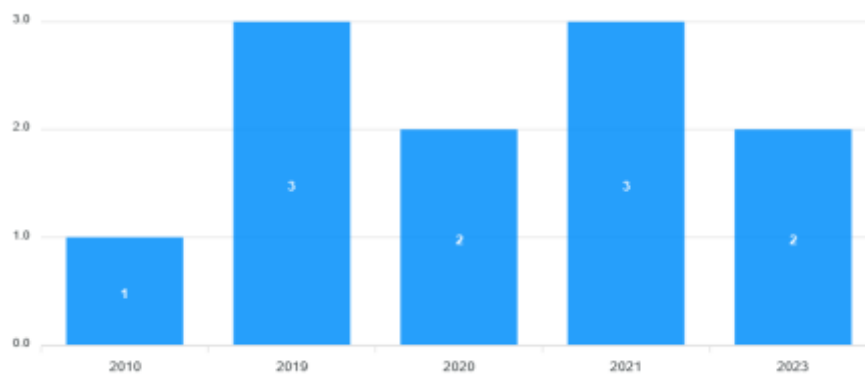
**Table 2. The publication country of quantitative approach articles varies across different studies**

Numner	Country	Quantity of Publications
1	China	1
2	Japan	1
3	Korea	1
4	Portugal	1
5	Taiwan	1

The publication countries of the articles in the qualitative approach can be viewed in Table 3. There are four publication countries: Italy, Greece, Korea, and Germany.

The research context areas in the qualitative approach can be categorized into two groups based on behavior: (1) Commitment to Sustainability and (2) Pro-Environmental Behavior. The specific research areas include: Local Communities' Commitment, Small Firms in Tourism, Consumer Behavior, and Sustainability Communication.

Within the Commitment to Sustainability category, we have Local Communities' Commitment and Small Firms in Tourism. These areas focus on understanding and promoting sustainable practices and commitment within local communities and small businesses in the tourism industry. In the Pro-Environmental



**Fig. 2. All studies included in the area of sustainability behavior in tourism are separated on a yearly basis, providing a yearly progression of research; the largest number of publications is in 2019 and 2021, while the minimum publications are in 2010**

Behavior category, we have Consumer Behavior and Sustainability Communication. These areas explore the behaviors and attitudes of consumers towards the environment and how effective communication can promote pro-environmental actions. By studying these research areas, we can gain insights into the factors influencing sustainable behavior and develop strategies to encourage commitment to sustainability and pro-environmental behavior. Understanding the dynamics within local communities and small firms in tourism is crucial for fostering sustainable development and promoting responsible tourism practices.

**Table 3. The publication country of qualitative approach articles varies across different studies**

Numner	Country	Quantity of Publications
1	Italy	1
2	Greece	1
3	Korea	1
4	Germany	1

Several studies have highlighted the importance of promoting sustainable tourism practices and involving local stakeholders in environmental awareness and commitment to protect the environment. This is because tourism has the potential to support environmental protection and sustainable development [1]. Specifically, the adoption of sustainable business practices among small tourism enterprises is influenced by factors such as self-efficacy and contextual constraints [15]. This emphasizes the need for policy interventions to promote sustainable behavior among small businesses in the tourism industry.

In line with this, it is crucial to promote sustainable tourism practices and engage local stakeholders in environmental awareness and commitment to protect the environment. The study by Vellecco and Mancino [1] supports this notion, as it highlights the potential of tourism to support environmental protection and sustainable development. Additionally, Han (2021) emphasizes that environmentally-friendly consumer behavior is an important aspect of environmental protection in the tourism and hospitality industry [3]. Effective sustainability communication is the key to bridging the gap between supply and demand for sustainable tourism products, underscoring the importance of collaboration and policy interventions to promote pro-environmental consumption and

environmental sustainability in the field of tourism and hospitality [16].

The articles found by PRISMA during 2010-2023 on the topic of Sustainability Behavior in Tourism cover various areas, including international surf tourism expenditure, self-efficacy, attitudes of managers, residents' perceived sustainability-related climate, green attitudes, social norms, eco-concern, personal moral obligation, strategic orientation, owner/managers personal characteristics, social influence, participatory event consumers' behavior change after COVID-19, sustainability effective communication, and conflicts and tensions inside the local community that paralyze innovative environmental behaviors.

The literature suggests that involving local communities, empowering them, and promoting sustainable behavior are essential for sustainable tourism development [1,17]. Effective sustainability communication is key to bringing together the supply and demand of tour operator products [16]. Additionally, green attitudes, social norms, eco-concern, and personal moral obligations were significant determinants of delegates' green behavioral intentions [18]. The attitudes, social norms, and perceived behavioral controls of the managers inform 56% of the sustainability behavioral intention [19]. Residents' perceived sustainability-related climate directly affects their engagement in pro-environmental behaviors [18]. Overall, the literature suggests that promoting sustainable behavior and empowering local communities are essential for sustainable tourism development.

Overall, these studies provided valuable insights into the importance of promoting sustainable practices, engaging local stakeholders, and implementing policy interventions to foster sustainable behavior in the tourism industry. By considering factors such as self-efficacy and contextual constraints, and by raising awareness among all tourism stakeholders, it is possible to achieve a more sustainable and environmentally-conscious approach to tourism development.

Previous researchers have also identified how sustainability behavior in tourism has been applied in various contexts, research focus, and methods which are presented in Fig. 3. Fig. 3 also shows that the studies on sustainability behavior in tourism is conducted by comparing secondary data with primary data (i.e., observation, interview, focus group discussion, and questionnaires to local communities).

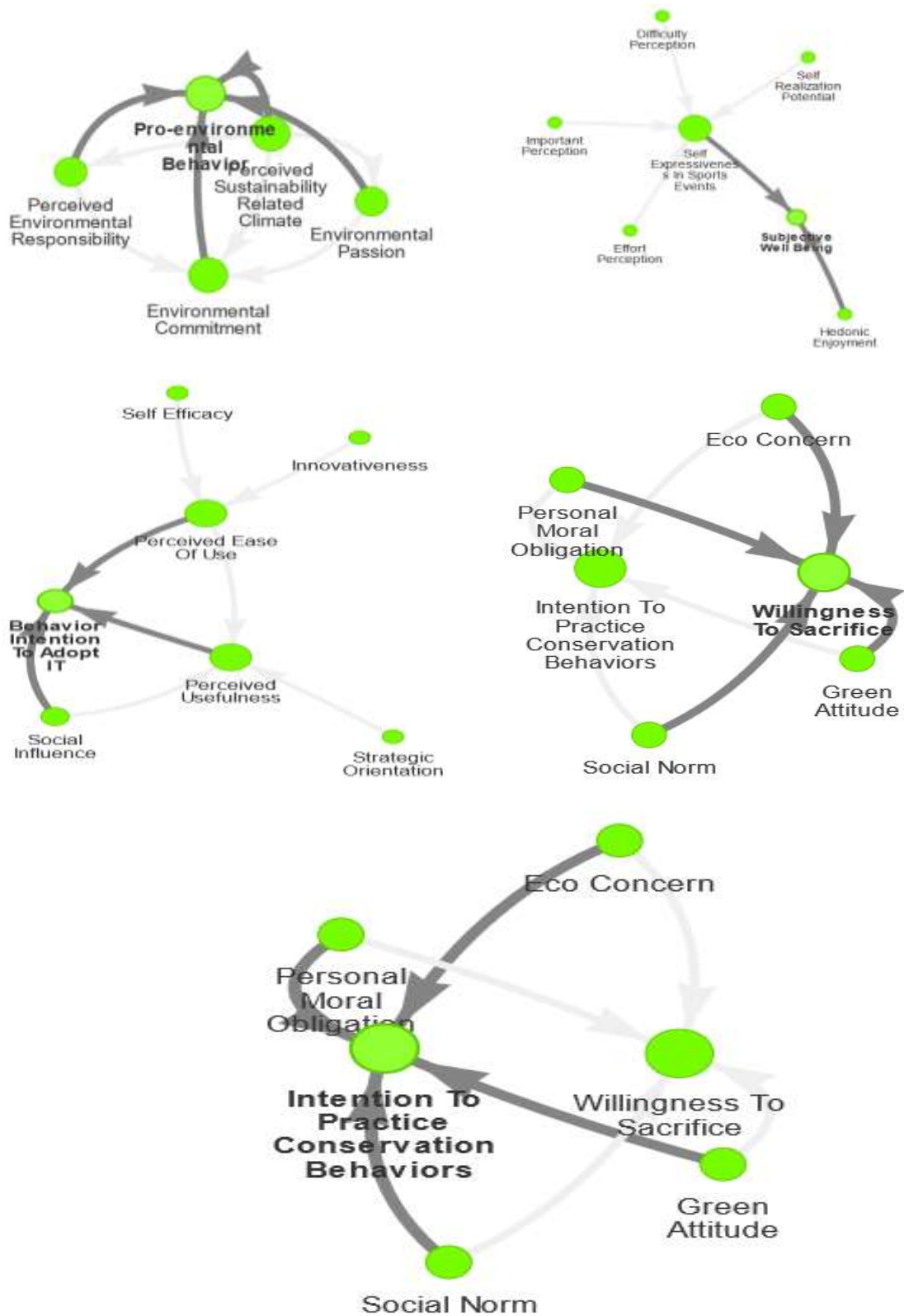


Fig. 3. Social network analysis



Table 4 provides information on the theory, context, focus, and method used in research articles on sustainability behavior in tourism from 2010 to 2023. The articles cover various topics, including the relationship between air quality and tourism sustainability, self-efficacy, green behavioral intentions of delegates, perceived sustainability related climate, adoption of blockchain technology, social comparisons and vicarious experiences, environmentally sustainable consumer behavior, and information processing of advertised product attributes. The methods used in the research include focus group discussion interviews, measures of variables and survey questionnaires, structured equation model data analysis, case studies, structured survey questionnaires, theoretical coding, literature reviews, and semi-structured interviews. The literature suggests that involving local communities, empowering them, and promoting sustainable behavior are essential for sustainable tourism development. Furthermore, good sustainability communication is critical for connecting tour operator supply and demand.

According to the research, 44% of the methods used were qualitative, which included semi-structured interviews, focus group discussions, and literature reviews. Qualitative research is a subjective and structured approach that explores the complexity, depth and richness of a particular situation from the perspective of the informants. It is generally preferred when the clinical question centers around life experiences or meaning. On the other hand, 56% of the methods used a quantitative approach with data analysis methods using the Structured Equation Model.

Vellecco and Mancino [1] conducted a case study to evaluate local communities' commitment to protecting the environment. Kornilaki et al. [19] focused on social comparisons and vicarious experience to summarize the influence of task difficulty and effort on sustainability of self-efficacy. Han (2021) conducted a systematic literature review to provide a sound conceptualization of environmentally-sustainable consumer behavior and presented perspectives on established theories in tourism and environmental psychology. Tölkes (2018) conducted in-depth interviews to investigate beliefs, meanings, and understandings of sustainability communication in the attitude-behavior gap.

The studies by Vellecco and Mancino [1] and Tölkes (2018) both used qualitative research

methods to explore different aspects of sustainability. Meanwhile, Kornilaki et al. (2019) focused on the influence of task difficulty and effort on sustainability of self-efficacy, and Han (2021) provided a conceptualization of environmentally-sustainable consumer behavior based on established theories. Overall, these studies provide valuable insights into different aspects of sustainability, including local communities' commitment to protecting the environment, sustainability self-efficacy, and environmentally-sustainable consumer behavior. These studies give a complete knowledge of sustainability and its numerous components by combining qualitative and quantitative research approaches.

### **3.2 Synthesizing the Factors of Sustainable Behavior in Tourism**

The systematic literature review discovered that there are five types of sustainability behavior in tourism have been identified through a literature review as shown in Fig. 3, these include (1) pro-environmental behavior, (2) subjective well being, (3) behavioral intention to adopt IT, and (4) willingness to sacrifice, and (5) intention to practice conservation behaviors.

Fig. 3 shows that the variables of Subjective Well-Being (SWB) and Behavioral Intention to Adopt IT have been rarely studied, as indicated by the smallest circle area among the five circles of other behavior variables. SWB relates to how people perceive and assess their life, as well as specific categories and activities, encompassing their emotions, moods, and overall sense of well-being, and is a way to understand and measure how people perceive their own quality of life and level of happiness [20,21] SWB is essential for creating and maintaining healthy, productive societies[20,21]. Behavioral intention to adopt IT refers to the willingness of tourists to adopt information technology to reduce the negative impact of tourism activities on the environment [2]. A sustainable behavior measure usually includes the reporting of activities that are aimed at protecting the environment. Effective communication is also important when it comes to bringing together tour operators' products [2].

The efforts made by tourists during tourism activities to reduce the negative influence on the destination are referred to as pro-environmental behavior in tourism [17], while the willingness to sacrifice refers to the willingness of tourists to make sacrifices to protect the environment and



promote sustainable tourism practices [18]. Intention to practice conservation behaviors refers to the willingness of tourists to engage in activities that promote conservation and

sustainability [18], including actions such as responsible waste disposal, energy conservation, and supporting local sustainable initiatives [18].

**Table 4. Theory, context, focus, and method used in the research topics of sustainability behavior in tourism (2010 – 2023) in Q2 and Q1 Scopus indexed**

No.	Author	Theory	Context	Focus on	Method
1	Eusébio 2023.	Theory Of Planned Behavior	Air Quaity	There is a lack of studies on how consumers of hospitality and tourism behave when it comes to the environment.	Interview focus group discussion (FGD)
2	Du 2023.	Eudaimonistic Identity Theory	Sports Tourism	This study explores the link between self-expression and satisfaction in the perspectives of consumers engaged in participatory sports..	Measures of the Variables and Survey Questionnaire. Structured equation model data analysis
3	Han 2019.	No Specific Theory	Convention Tourism	The variance in the green behavioral intentions of Delegates was accounted for by four key constructs.	Measures of the Variables and Survey Questionnaire. Structured equation model data analysis
4	Wang 2021.	Stimulus Organism Theory	Climate	The degree to which people in China view sustainability as a vital part of their local environment is linked to their pro-environment behaviors and environmental attitudes when it comes to tourism.	Measures of the Variables and Survey Questionnaire. Structured equation model data analysis
5	Nuryyev 2020.	Technology Acceptance Model	Blockchain technology	The rapid emergence and evolution of blockchain technology which has raised questions regarding the sustainability of some organizations in the tourism industry, particularly those involved in the digital currency trade.	Measures of the Variables and Survey Questionnaire. Structured equation model data analysis
6	Vellecco and Mancino, 2010	No Specific Theory	Local Communities	Tourism sustainability and environmental policies	Case study, survey structured questionair.
7	Kornilaki et al. 2019.	Grounded theory	Small Firms In Tourism	This article looks into the role that vicarious experiences and social comparisons play in helping businesses adopt sustainable practices.	Interview, theoretical coding,

No.	Author	Theory	Context	Focus on	Method
8	Han, 2021.	No Specific Theory	Consumer Behavior	Providing a comprehensive analysis of the theories related to environmental psychology and tourism, and promoting a sound understanding of the behavior of consumers in sustainable environments.	Literature review
9	Tölkes, 2018.	Value belief norm	Sustainability Communication	The customer data collected by certified tour-operators is processed according to their contract terms and conditions.	semi-structured interviews

### 3.3 Dependent and Independent Variables

Based on the research hypothesis result as viewed at Table 5, it is impossible to determine the exact number of groups that can be generated from the independent variables listed. However, the studies suggest that there are several independent variables that can influence sustainable behavior in tourism, including: Difficulty Perception, Eco Concern, Effort Perception, Environmental Commitment, Environmental Passion, Green Attitude, Hedonic Enjoyment, Important Perception, Innovativeness Perceived Ease Of Use, Perceived Environmental Responsibility, Perceived Sustainability Related Climate.

These dependent variables in this study may be classified into three groups. The first group included elements that were associated to 'the adoption of sustainable business practices among small tourism enterprises'. The second group were related to 'environmentally-friendly consumer behavior', the third group group were related to 'sustainable destination information'

The independent variables related to environmentally-friendly consumer behavior are 1) Eco Concern, 2) Environmental Passion, 3) Green Attitude, and 4) Hedonic Enjoyment. Han (2021) emphasizes that environmentally-friendly consumer behavior is an important aspect of environmental protection in the tourism and hospitality industry [3].

The independent variables related to sustainable destination information behavior are 1) Important Perception, 2) Perceived Ease of Use, 3) Perceived Environmental Responsibility, and 4) Perceived Sustainability Related Climate. The study by Tölkes (2020) emphasizes the

importance of effective sustainability communication in bridging the gap between supply and demand for sustainable tourism products [16]. The study by Maciness et al., (2022) highlights the importance of environmental commitment in developing sustainable behavior among residents of rural destinations [7].

The study identified three groups of dependent variables, namely Technology Adoption, Environmental Attitudes and Beliefs, and Self Expression and Well-being. The dependent variable related to Technology Adoption is Behavior Intention to Adopt Information Technology. The dependent variables related to Environmental Attitudes and Beliefs include (1) Perceived Usefulness, (2) Environmental Commitment, (3) Environmental Passion, (4) Perceived Environmental Responsibility, (5) Pro-environmental Behavior, (5) Intention to Practice Conservation Behaviors, and (7) Willingness to Sacrifice. Lastly, the dependent variables related to Self expression and Well-being are Self Expressiveness In Sports Events and Subjective Well Being. These variables were identified in various studies related to technology adoption, cognitive dissonance, innovation, and virtual teams.

### 3.4 Theory

Between 2020 and 2023, three grand theories were utilized in research on sustainability behavior in tourism, as published in Q1 and Q2 Scopus indexed journals, as shown in Table 6. Du and Zheng (2023) employed the Eudai-monic Identity Theory to predict "Subjective Well Being, with Self Expressiveness in Sports Events as a mediating variable". Wang et al. (2021) utilized the Stimulus Organism Theory to predict "Pro-

**Table 5. Research hypothesis in the sustainability behavior in tourism context**

No	Independent	Dependent	Quantity	Author
1	Difficulty Perception	Self Expressiveness In Sports Events	1	[21]
2	Eco Concern	Intention To Practice Conservation Behaviors	1	[3]
3	Eco Concern	Willingness To Sacrifice	1	[3]
4	Effort Perception	Self Expressiveness In Sports Events	1	[21]
5	Environmental Commitment	Pro-environmental Behavior	1	[17]
6	Environmental Passion	Environmental Commitment	1	[17]
7	Environmental Passion	Pro-environmental Behavior	1	[17]
8	Green Attitude	Intention To Practice Conservation Behaviors	1	[17]
9	Green Attitude	Willingness To Sacrifice	1	[17]
10	Hedonic Enjoyment	Subjective Well Being	1	[21]
11	Important Perception	Self Expressiveness In Sports Events	1	[21]
12	Innovativeness	Perceived Ease Of Use	1	[2]
13	Perceived Ease Of Use	Behavior Intention To Adopt IT	1	[2]
14	Perceived Ease Of Use	Perceived Usefulness	1	[2]
15	Perceived Environmental Responsibility	Environmental Commitment	1	[17]
16	Perceived Environmental Responsibility	Pro-environmental Behavior	1	[17]
17	Perceived Sustainability Related Climate	Environmental Commitment	1	[17]
18	Perceived Sustainability Related Climate	Environmental Passion	1	[17]
19	Perceived Sustainability Related Climate	Perceived Environmental Responsibility	1	[17]
20	Perceived Sustainability Related Climate	Pro-environmental Behavior	1	[17]

environmental behavior". Nuryyev et al. (2020) employed the Technology Acceptance Model (TAM) to predict "Behavior Intention To Adopt IT", which included six independent variables. On the other hand, Han et al. (2019) measured "Willingness to Sacrifice" with no specific theory.

Difficulty Perception, Effort Perception, Important Perception, Hedonic Enjoyment, Self Expressiveness in Sports Events, and Self Realization Potential are the independent variables of Subjective Well Being in the Eudaimonic Identity Theory framework, as shown in Table 5 and Table 6. Among these variables, Difficulty Perception, Effort Perception, Hedonic Enjoyment, and Important Perception have a direct effect on Subjective Well Being.

The Stimulus Organism Theory framework suggests that Environmental Commitment, Environmental Passion, Perceived

Environmental Responsibility, and Perceived Sustainability Related Climate can predict Pro-environmental Behavior, and they have a direct effect on it.

The Technology Acceptance Model framework uses Innovativeness, Perceived Ease of Use, Perceived Usefulness, Self Efficacy, Social Influence, and Strategic Orientation as variables to predict Behavior Intention to Adopt IT. Among these variables, only Perceived Ease of Use has a direct effect on Behavior Intention to Adopt IT.

On the other hand, Willingness to sacrifice is predicted by Eco Concern, Green Attitude, Intention to practice Conservation Behaviors, Personal Moral Obligation, and Social Norm without a specific theoretical framework. Among these variables, Eco Concern and Green Attitude have a direct effect on Willingness to Sacrifice.

**Table 6. Research variables from theory**

No	Theory	Variabel	Peneliti
1	Eudaimonistic Identity Theory	Difficulty Perception Effort Perception Hedonic Enjoyment Important Perception Self Expressiveness In Sports Events Self Realization Potential Subjective Well Being	Wu and Zheng, 2023
2	No Specific Theory	Eco Concern Green Attitude Intention To Practice Conservation Behaviors Personal Moral Obligation Social Norm Willingness To Sacrifice	Wang et al., 2019
3	Stimulus Organism Theory	Environmental Commitment Environmental Passion Perceived Environmental Responsibility Perceived Sustainability Related Climate Pro-environmental Behavior	Wang et al., 2021
4	Technology Acceptance Model	Behavior Intention To Adopt IT Innovativeness Perceived Ease Of Use Perceived Usefulness Self Efficacy Social Influence Strategic Orientation	Uryyev et al., 2020

### 3.5 Gaps and Future Research

The Commitment to Sustainability category encompasses several research areas, including Local Communities' Commitment and Small Firms in Tourism, as well as Pro-Environmental Behavior. However, the research methods used to study these areas have been limited. Specifically, Local Communities' Commitment and Small Firms in Tourism have only been studied using qualitative approaches, such as Focus Group Discussions and systematic literature reviews. In contrast, Pro-Environmental Behavior has been studied using both qualitative and quantitative approaches, such as survey analysis and path analysis techniques.

The limited use of quantitative methods in the study of Local Communities' Commitment and Small Firms in Tourism suggests the need for further research using a mixed-method approach that includes quantitative methods. This could involve the use of data analysis methods such as regression analysis, correlation analysis, and

factor analysis, among others. Such an approach could provide a more comprehensive understanding of the factors influencing sustainable tourism development in these areas.

Moreover, the use of ethnography as a qualitative method has not been explored yet in the study of Local Communities' Commitment and Small Firms in Tourism. Ethnography can provide a deeper understanding of the cultural and social context of sustainable tourism development in these areas. Therefore, researchers should consider using ethnography in future studies to gain a more comprehensive understanding of the factors influencing sustainable tourism development.

In contrast, the use of both qualitative and quantitative approaches in the study of Pro-Environmental Behavior suggests that researchers have recognized the importance of using a mixed-method approach to investigate sustainability behavior in tourism. This approach could be further enhanced by exploring the

identified independent and dependent variables using different data analysis methods.

The limited use of quantitative methods in the study of Local Communities' Commitment and Small Firms in Tourism suggests the need for further research using a mixed-method approach that includes quantitative methods. This could involve the use of data analysis methods such as regression analysis, correlation analysis, and factor analysis, among others. Such an approach could provide a more comprehensive understanding of the factors influencing sustainable tourism development in these areas.

Existing literature has investigated and confirmed relationships between independent and dependent variables, as well as sustainable behavior components. However, the literature has identified several gaps in the study of sustainability behavior in tourism, including: 1) Rare studies of sustainability behavior in tourism for the last 13 years (2010-2023), 2) No use of the mixed method yet., 3) Used of only Focus Group Discussion and systematic literature review as qualitative methods. 4) Used of only Structured Equation Model as the data analysis method in the quantitative approach. 5) Rare studies of sustainability behavior independent variables, including (1) independent variables related to the adoption of sustainable business practices among small tourism enterprises, (2) independent variables related to environmentally friendly consumer behavior, and (3) independent variables related to the impact of sustainable destination information on pro-sustainable tourist behavior. 6) Rare studies of sustainability behavior dependent variable related to Technology Adoption.

From 2020 to 2023, researchers used three theories to study sustainability behavior in tourism and published their findings in Q1 and Q2 Scopus indexed journals. Du and Zheng (2023) used the Eudaimonic Identity Theory to predict "Subjective Well Being". Wang et al. (2021) used the Stimulus Organism Theory to predict "Pro-environmental behavior". Nuryyev et al. (2020) used the Technology Acceptance Model (TAM) to predict "Behavior Intention to Adopt IT". However, more research is needed to understand the determinants of eco-friendly tourist behavior, including the role of willingness to sacrifice. Other studies have explored the relationship between willingness to sacrifice and pro-environmental behavior. Future research could also explore other relevant theories to

better understand sustainability behavior in tourism.

The literature on sustainability behavior in tourism is still limited. The gaps identified in the literature suggest the need for further research using a mixed-method approach that includes ethnography and other qualitative methods, as well as the exploration of the identified independent and dependent variables using different data analysis methods. There is clear evidence that research on environment and sustainable development requires a holistic approach, able to analyze and frame different behaviors and needs.

The review identified a considerable number of potential future research directions. Future study should be expanded to additional areas and nations to validate the findings in different geographical and cultural situations. It would be fascinating to study the discrepancies between self-reported and real behaviour utilizing research approaches such as observation and experimentation. Additionally, it would be interesting to analyze the influence of other factors such as (i) other travel characteristics (e.g., travel distance); (ii) sanitary crises (e.g., the COVID-19 pandemic); (iii) people's knowledge of environmental problems (e.g., climate change or loss of biodiversity); (iv) other contextual factors such as the AQ index of the destination; and (v) the destination's infrastructures, facilities, and policies that may promote pro-environmental behavior [22].

Other variables, such as the nature of affiliation and environmental identification, could also be the determinants that provide insight into this relationship. Additional explorations should be developed to clarify the impact of perceived sustainability-related climate on the pro-environmental behaviors of local residents in the destination management field. Similarly, greater research into the boundary conditions of this connection is required. To properly assess the adoption of pro-environmental behavior, future directions should collect data from a broader range of tourism sites [17].

Attitudinal change must be the beginning point for a practice whose goal is to achieve sustainability requirements in a stable and long-term manner. This socio-cultural change process can also be used to support the environmental challenges that society faces [1]. Destinations, governments, and local communities should be

aware of what to expect from visiting guests, as they are frequently unaware of environmentally inappropriate behaviors and lack knowledge and awareness of the environmental repercussions of tourism. Visitors should then be instructed on the 'dos' and 'don'ts'. Tourists may be involved in future research as stakeholders. More research is needed to identify how stakeholders' activities and demands influence destination governance. To that purpose, a study of places where environmental culture is well-established, as well as best practices for combining tourism destination expansion with environmental protection, would be appropriate [1].

Future study might improve the suggested theoretical framework's prediction ability by including anticipated guilt/pride, ascription responsibility, attachment, image [18], investigate the broader implications of blockchain technology among SMEs as a means of attracting and responding to consumer requests, as well as maintaining pressure from major established and emerging companies (e.g., Airbnb) in tourism and hospitality, and utilize additional analytical approaches, such as geographical analysis [2].

#### **4. DISCUSSION AND CONCLUSION**

The interest in sustainable tourism has grown following the COVID-19 pandemic, with a significant increase in research on sustainable behavior in tourism starting in 2021. Prior to this, the volume of academic research on sustainable behavior in tourism was negligible between 2010 and 2020, with only one study published in 2010 and no research done between 2011 and 2018.

The publication countries of articles on sustainable tourism behavior include China, Japan, Korea, Portugal, Taiwan, Italy, Greece, and Germany, highlighting the diverse interests and contributions of different countries in the area of sustainability behavior in tourism. The quantitative approach to this field focuses on the factors influencing sustainable tourist behavior, pro-environmental behavior of visitors, and tourism destination residents. The qualitative approach is used to investigate the commitment to sustainability and pro-environmental behavior, focusing on local communities' commitment, small firms in tourism, consumer behavior, and sustainability communication. The studies provide valuable insights into different aspects of sustainability, including local communities' commitment to protecting the environment,

sustainability self-efficacy, and environmentally-sustainable consumer behavior.

The results of the studies suggest that several independent variables can influence sustainable behavior in tourism, including Difficulty Perception, Eco Concern, Effort Perception, Environmental Commitment, Environmental Passion, Green Attitude, Hedonic Enjoyment, Important Perception, Innovativeness, Perceived Ease of Use, Perceived Environmental Responsibility, and Perceived Sustainability Related Climate. These variables can be divided into three groups related to (1) the adoption of sustainable business practices among small tourism enterprises, (2) environmentally-friendly consumer behavior, and (3) the impact of sustainable destination information on pro-sustainable tourist behavior. The literature suggests that involving local communities, empowering them, and promoting sustainable behavior are essential for sustainable tourism development.

The dependent variables identified in this study are divided into three groups, namely (1) Technology Adoption, (2) Environmental Attitudes and Beliefs, and (3) Self Expression and Well-being. The studies provide valuable insights into different aspects of sustainability, including local communities' commitment to protecting the environment, sustainability self-efficacy, and environmentally sustainable consumer behavior.

The findings of the studies highlight the complexity of tourism's sustainability and the need for policy interventions to promote sustainable behavior among small businesses in the tourism industry. The gap between the demand and supply of sustainable products can be overcome through effective communication. Green attitudes, social norms, eco-concern attitudes, and personal moral obligations are significant determinants of sustainable behavior.

Various grand theories, such as the Eudaimonic Identity Theory, Stimulus Organism Theory, and Technological Acceptance Model, have been used to predict different dependent variables in research on sustainability behavior in tourism, including Subjective Well Being, Pro-environmental Behavior, and Behavior Intention to Adopt IT. The Stimulus Organism Theory suggests that Environmental Commitment, Environmental Passion, Perceived Environmental Responsibility, and Perceived

Sustainability Related Climate can predict Pro-environmental Behavior, while the Technology Acceptance Model framework uses Innovativeness, Perceived Ease of Use, Perceived Usefulness, Self Efficacy, Social Influence, and Strategic Orientation as variables to predict Behavior Intention to Adopt IT. Willingness to sacrifice is predicted by Eco Concern, Green Attitude, Intention to Practice Conservation Behaviors, Personal Moral Obligation, and Social Norm without a specific theoretical framework.

The study of Local Communities' Commitment and Small Firms in Tourism has been limited to qualitative approaches, such as Focus Group Discussions and systematic literature reviews, suggesting the need for further research using a mixed-method approach that includes quantitative methods. Ethnography, as a qualitative method, has not been explored in previous studies, and its use could provide a deeper understanding of the cultural and social context of sustainable tourism development in these areas.

In contrast, the use of both qualitative and quantitative approaches in the study of Sustainability Behavior in Tourism suggests that researchers have recognized the importance of using a mixed-method approach to investigate sustainability behavior in tourism. The literature on sustainability behavior in tourism is still limited, and there are gaps that need to be addressed through further research. Future research should aim to fill these gaps and provide a more comprehensive understanding of sustainability behavior in tourism. These gaps include the lack of studies on sustainability behavior in the past 13 years, limited use of mixed methods, and rare studies on certain independent and dependent variables.

The study had limitations due to the small number of publications on sustainability behavior in tourism, which resulted in limited findings from the path analysis. Future research directions include assessing real behaviors using observation and experiments, and analyzing the influence of other factors such as travel characteristics, sanitary crises, and people's knowledge of environmental problems. Further research is needed to explore the determinants of eco-friendly tourist behavior, including the role of willingness to sacrifice, and consider theories other than Eudaimonic Identity Theory, Stimulus Organism Theory, and

Technology Acceptance Models that are relevant to better understand sustainable behavior in tourism.

## **CONSENT**

As per international standards or university standards, respondents' written consent has been collected and preserved by the author(s).

## **RESEARCH CONTRIBUTION**

This research contributes to the literature on sustainability behavior in tourism by providing a comprehensive review and identifying behavioral measured variables that reflect sustainability behavior in tourism. These variables include pro-environmental behavior, subjective well-being, behavioral intention to adopt IT, willingness to sacrifice, and intention to practice conservation behaviors.

The study also highlights several independent variables that can influence sustainable behavior in tourism. These variables include difficulty perception, eco concern, effort perception, environmental commitment, environmental-mental passion, green attitude, hedonic enjoyment, important perception, innovativeness, perceived ease of use, perceived environmental responsibility, and perceived sustainability-related climate

Furthermore, the study identified three groups of dependent variables related to tourism sustainability behavior. The first group is related to the adoption of sustainable business practices among small tourism enterprises. The second group is related to environmentally-friendly consumer behavior, and the third group is related to sustainable destination information behavior/

The independent variables related to environmentally-friendly consumer behavior are eco-concern, environmental-mental passion, green attitude, and hedonic enjoyment. The study emphasizes the importance of environmentally friendly consumer behavior in environmental protection in the tourism and hospitality industry.

The independent variables related to sustainable destination information behavior are important perception, perceived ease of use, perceived environmental responsibility, and perceived sustainability-related climate. Effective sustainability communication is highlighted as



important in bridging the gap between supply and demand for sustainable tourism products.

In conclusion, the research contributes to the literature by providing a comprehensive review of sustainable behavior in tourism and identifying various variables that reflect this behavior. It also highlights the importance of environmentally-friendly consumer behavior and effective sustainability communication in the tourism industry. The study suggests future research opportunities for aspiring researchers, particularly in the areas of subjective well-being and behavioral intention to adopt IT, which have been rarely studied.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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