

The Consciousness of Nature Tourists and Their Commitment to Destination Sustainability

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ABSTRACT

This study explores the nature of sustainable tourist awareness and its potential role as a determinant of tourists' commitment to the sustainable development of the destinations they visit. Data were collected through a survey administered to individuals aged 18 or older who had engaged in nature-based tourism within the previous 12 months. Exploratory and confirmatory factor analyses, along with structural equation modelling, were employed to test the proposed hypotheses. The findings show that sustainability awareness among nature-based tourists encompasses the traditional economic, sociocultural and environmental dimensions, while also revealing a fourth component related to the negative consequences of nature tourism. The results validate the four corresponding measurement models and confirm a positive relationship between the traditional dimensions of sustainability awareness and overall sustainability; however, this relationship does not extend to the newly identified dimension. The analysis further supports several hypotheses, including a cause-and-effect relationship between overall sustainability awareness and the sustainable behaviour of nature-based tourists towards the destination, pointing to the emergence of an "aware tourist" whose behaviour is consistent with their sustainability consciousness. As pioneering research on the awareness and behaviour of nature-based tourists, this study is limited by its focus on a specific tourism segment and geographical context, suggesting the need for replication in other cultural and territorial settings to enhance generalisability. The originality of this work lies in its early exploration of the role of nature-based tourists in sustainable development through their behaviour, addressing the critical question of how tourists act in accordance with their awareness to support destination sustainability.

Keywords: Tourist sustainable awareness, Tourist sustainable behaviour, Nature-based tourism, Measurement Models, Structural Equation Models.

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1. INTRODUCTION

Nature-based tourism, which includes ecotourism, rural tourism, and adventure tourism, comprises trips whose primary motivation is the observation and appreciation of biodiversity, accompanied by an understanding of local cultures and traditions (Font and Mpamba, 2006). This is a type of tourism in which the motivation for travel or the selection of a destination is driven by a need to get close to and enjoy nature.

The three basic pillars of sustainable development — environment, economics, and socio-culture — have recently been extended to include the company's commitment. The ESG model encompasses environmental, social, and governance factors (Dmuchowski et al., 2023). These criteria provide a framework for evaluating the business's environmental impact, community relationships, and leadership and internal practices. Governance includes a corporate structure, ethics, transparency, anti-corruption measures, and decision-making. It means a more holistic and participatory approach to the matter, focusing on the company's responsibilities. Another extension is the 5 P's model (2030 Agenda): people, planet, prosperity, peace, and partnership, which offers, among other things, a critique of the role of culture in the 17 SDGs (Leichtweis and Soares, 2022). Hariram et al. (2023) proposed a new socio-economic theory of sustainalism that prioritizes quality of life, social equity, culture, world peace, social justice, and well-being.

Another recent research highlights the importance of sustainable tourism development in natural destinations. The assessment of the sustainability of destinations (Pérez-León, 2024), the support of residents for sustainable development (Han et al., 2023), the importance of ecological, economic, socio-cultural, and institutional sustainability in protected tourism destinations (Trišić et al., 2023) and that of community participation under the effective implementation of balanced policies and approaches in tourism practices (Bishwokarma et al., 2023), are examples of studies

that highlight the multifaceted nature of sustainability in tourism and the importance of considering different stakeholders and their impacts.

However, there is a lack of studies focusing on tourists, specifically on how they act in accordance with their conscience to support the sustainability of the destinations they visit. Despite advances in research that, among other findings, have proven the influence of environmental sustainability in shaping memorable experiences (Moliner-Tena et al., 2021), that environmental responsibility is a consequence of memorable nature-based tourism experiences (Obradovic et al., 2023), and that the socio-cultural motivations of rural tourists determine their satisfaction (López-Sanz et al., 2021), more studies focusing on nature-based tourism and the role of tourists in sustainable development through their behaviour are called for (Obradovic et al., 2023).

Gomes and Lopes (2023) reveal that pro-sustainable habits and behavioural changes among tourists require reliable information on the sustainability of destinations, which encourages the adoption of conscious travel behaviour. Despite these advances, further research is needed on sustainable tourist behaviour that considers the three strands of sustainable development (Assaker, 2024), and does not rely solely on measuring a general commitment to sustainability. Thus, this work aims to fill this gap and explore the nature of tourists' sustainable consciousness, through its three traditional branches mentioned above, and its potential as a determinant of commitment to the sustainable development of the visited destination.

2. LITERATURE REVIEW

Sustainable development "meets the needs of the present without compromising the ability of future generations to meet their needs" (Brundtland, 1987, p. 41). Subject to constant evolution, it extends the scope of action and can alter the behaviour of societies and organisations seeking to balance the economic, environmental, and social dimensions of development (Serafini et al., 2022).

It is the basis of sustainable tourism, which extends to conscious tourism (broad scope) and active awareness (considering specific issues)¹. It is not enough for tourist destinations to be greener, environmentally aware, and more circular; it is necessary to encourage pro-sustainable behaviour among tourists (Gomes and Lopes, 2023). Thus, conscientious tourism emphasizes personal

¹ There is a subtle difference between consciousness and awareness. One can be conscious (awake) but not actively aware of anything specific. It means move from a broad scope (consciousness) to a specific one (awareness) (Deshmukh, 2022).

growth and ethical principles, building on the foundations of sustainable tourism. It incorporates social responsibility, economic sustainability, and environmental awareness (Castillo-Montesdeoca et al., 2020).

Rural tourism, and by extension nature-based tourism, are often seen as the most significant contributors to tourism destination sustainability. However, their practice can also increase economic precariousness, alter the social balance of the community, and generate negative environmental impacts (Anderek et al., 2005; Marzo et al., 2015; Chen and Chen, 2010; Rasoolimanesh et al., 2017; Sanagustin et al., 2018). While it can yield many benefits, natural resource-based tourism raises concerns about its negative consequences, contributing to debates about over-tourism (Honey and Frenkiel, 2021).

Research, such as Gómez-Bruna and Thiel-Ellul (2024), recognizes the need for adequate governance to advance sustainability and highlights the relevance of “smart” destination management as a new governance focus for tourism destinations, which could be extended to nature tourism.

Nevertheless, the development of governance towards sustainability needs to first consider an overall sustainability focus. Prior research has mainly focused on environmental sustainability, while other studies highlight the importance of considering all the sustainability dimensions. Aziz and Niazi (2025) examined green destinations and found that awareness, image, quality, and loyalty positively influence tourists’ environmentally responsible behaviour. Assaker (2024) finds a significant positive impact of tourists' awareness of the United Nations' Sustainable Development Goals (SDGs, 2030) on overall sustainable behaviour. The work of Ngamcharoen et al. (2025) is a pioneer in confirming a measurement model of responsible tourism behaviour (a second-order variable) for Generation Y tourists in Thailand, based on the classical dimensions of environmental, socio-cultural, and economic elements. These works reinforce the need to study tourists' overall sustainability consciousness to move towards a more conscious tourist, by examining the influence of sustainable awareness across all the basic branches of sustainable development on tourist behaviour after the experience.

The present work aims to achieve this goal by analysing sustainable tourism, with a focus on nature-based tourism. A sustainably conscious tourist is a knowledgeable traveler who understands the impact of their actions on the sustainable development of the visited destination, with active awareness in environmental, economic, and socio-cultural terms. This definition involves not just

tourist attitudes (acknowledgment) but also tourist behaviours (actions). Effective support for the sustainable development of the destination from its visitors requires sustainable actions.

The nature tourist's sustainability encompasses these three dimensions. Environmental (ecological) awareness is nurtured by tourists' concern for the natural environment they visit. Environmentally responsible behaviour implies a commitment to conserving the natural environment and addressing environmental problems (Schultz, 2000; Li and Wu, 2020). Tourists' awareness of economic sustainability indicates the impact of their actions on economic aspects such as employment, income, services offered, and local development (Sanagustin et al., 2018; Sthapit et al., 2022). Finally, socio-cultural awareness adds to the tourist's responsibility to preserve local culture and community identity (Marzo et al., 2015).

Thus, tourists' attitudes and behaviours are a consequence of their experiences in and interactions with the destination. So that, if experiences are positive and memorable, they will lead to desirable behaviours (Hosany et al., 2022). Sustainable behaviour towards the destination after the experience reflects the tourist's commitment to the destination's subsequent sustainable development. The work by Cajiao et al. (2023) reminds us that nature-based tourism has been shown to foster positive behaviours of tourists at the destination and in other environments after the experience.

All in all, this research argues that the tourist's sustainable consciousness across its three dimensions (economic, environmental, and socio-cultural development) determines the tourist's sustainable behaviour towards the nature destination after the visit experience. Considering the reviewed knowledge of the matter, the hypotheses of the research, regarding the tourism destination visited by the tourist, are as follows:

H1. *“Tourists' economic sustainability awareness positively influences their overall sustainability consciousness.”*

H2. *“Tourists' environmental sustainability awareness positively influences their overall sustainability consciousness.”*

H3. *“The socio-cultural sustainability awareness of tourists positively influences their overall sustainability consciousness.”*

H4. *“There is a positive relationship between (general) tourist sustainability consciousness and tourists' sustainable behaviour towards the destinations they visit.”*

The relationships considered in the formulated hypotheses might be represented in a model (see Figure 1).

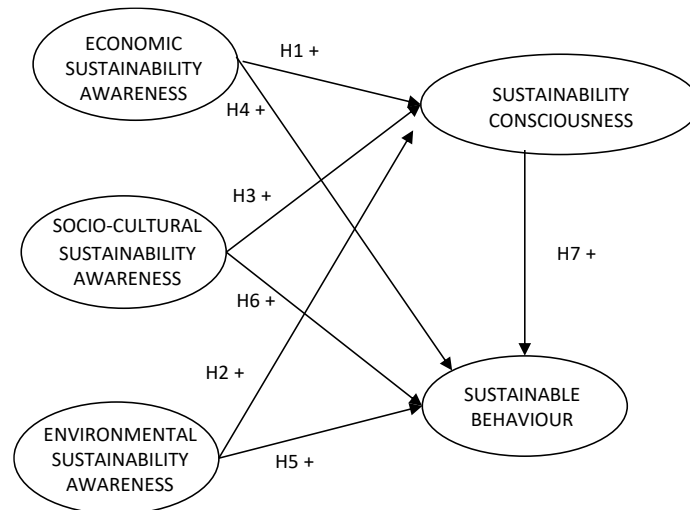


Figure 1. Model and research hypotheses

3. METHODOLOGY

3.1. Database

The database was obtained from an online survey conducted in Qualtrics, addressed to individuals aged 18 or older living in Spain who have participated in nature-based tourism within the last 12 months. The presentation of the questionnaire included the definition of nature-based tourism of Font and Mpamba (2006).

Fieldwork was conducted between December 2023 and January 2024. All indicators in the questionnaire were derived from prior literature. A valid questionnaire is one in which all questions have been answered. Thus, of the total completed questionnaires, the valid questionnaires for the study's objectives total 342.

The demographic characteristics of the final sample are 58.8% men and 41.2% women, with an average age of 30.4 years. Generation Z is the most present, at 61.4%, among the other generations, which are distributed similarly. According to a recent survey by EFEverde (2025), the global environmental platform of the EFE agency, sustainable awareness is more pronounced among young Spanish people aged 18 to 30. They are a strategic audience, influential people, for policies and projects aimed at changing social habits for sustainability.

More than a quarter of those surveyed carried out their tourist experience in February, followed by June and December. The destination is a regular one for more than half of respondents (51.2%), with 34.8% spending 2-3 nights there. 26.9% of the sample are excursionists, meaning they have no overnight stays. These features indicate that nature tourists are generally loyal to their destinations, as evidenced by repeat visits and more extended stays. The most frequently used accommodation options are hostels, camping, and caravans (26.9%), and 4-star hotels or more (20.8%), reflecting the coexistence of two types of tourists at the extremes of expenditure, based on this variable. Nature trips are mainly made with the family (36.3%) and with friends (29.2%). The primary objective is enjoying the landscape (56.4%), followed by participating in sports (30.7%).

3.2. Measurement of variables and data analysis

The questionnaire items used to measure the variables involved in the proposition, drawn from previous work, are measured on a seven-point Likert scale ranging from "strongly disagree" to "strongly agree". Economic sustainability is measured by ten specific items and one more generic, based on the works of Marzo et al. (2015), Sanagustin et al. (2018), and Sthapit et al. (2022); socio-cultural sustainability is measured by one general indicator and six more, two of them collecting adverse effects, obtained from Marzo et al. (2015), Chen and Chen (2010), and Rasoolimanesh et al. (2017); environmental sustainability by three specific items and one more general, used by Sthapit et al. (2022), Jiang et al. (2022), and Obradovic et al. (2023)².

The items used to measure sustainable behaviour regarding the destination visited are based on the indicators of tourist environmental responsible behaviour, used by Cheng et al. (2013, 2015), Sthapit et al. (2022), Jiang et al. (2022), and Obradovic et al. (2023)³.

The statistical techniques to analyze the data will include exploratory factor analysis to identify possible underlying structures in nature tourists' sustainability consciousness (IBM SPSS Statistics 29), followed by confirmatory factorial analysis to test the existence of measurement models, and structural equation models (EQS 6.1) to test the hypotheses.

² The three specific items to measure sustainability consciousness throughout its three criteria are: "I am aware that, as a tourist in this destination, I contribute to generating benefits for the companies involved and for the community". "I am aware that nature tourism in this destination should favour the sustainable socio-cultural development of the area, benefiting others". "In general, in my behaviour as a tourist, I visit destinations whose tourist activities favour the sustainable development of the area, conserving the environment".

³ "In general, in my behaviour with the destination visited: I am concerned about its sustainable development of the visited destination visited; I keep an eye out for news and events at my destination; If I can contribute to the (sustainable) development of the destination I have visited, I do it without hesitation."

4. RESULTS

The underlying structure of the sustainability aspects of nature tourism is obtained from exploratory principal component analysis and Varimax rotation (Table 1). The component's reliability is indicated by its Cronbach's alpha value (Nunnally, 1994). Four components are obtained, explaining 72.51% of the variance. The first component, the economic dimension (SUSA_EC), has a Cronbach's alpha of 0.944. The second component, reflecting socio-cultural effects (SUSA_SC1), gets an alpha of 0.852. The third component, environmental sustainability (SUSA_EN), has an alpha value of 0.878. The fourth component (SUSA_SC2) complements the socio-cultural aspect of sustainability by including two items on the negative consequences of nature tourism. The correlation of these indicators is 0.667.

Table 1. Tourist sustainable awareness (SUSA) main components.

| | SUSA_EC | SUSA_SC1 | SUSA_EN | SUSA_SC2 |
|--|---------|----------|---------|----------|
| In the nature destination ... | | | | |
| ... I comply with existing regulations so as not to destroy the environment. | | | 0.881 | |
| ... I try to preserve its natural resources (fauna, flora, etc.). | | | 0.890 | |
| ... I deposit the waste I generate in the appropriate containers. | | | 0.816 | |
| I am aware that, as a tourist, I contribute to... | | | | |
| ... to the promotion of services in the area | 0.620 | | | |
| ... to increase demand for new services and infrastructures | 0.763 | | | |
| ... to promote innovative activities in the area | 0.771 | | | |
| ... to the development of local products and handicrafts | 0.792 | | | |
| ... to job creation in the area | 0.847 | | | |
| ... to achieve additional income for residents | 0.833 | | | |
| ... to create new opportunities for young people and women | 0.840 | | | |
| ... to reduce the rural exodus | 0.752 | | | |
| ... local endogenous development (enhancing local capacities) | 0.841 | | | |
| ... to increase their quality of life | 0.821 | | | |
| Nature tourism favours... | | | | |
| ... the preservation, recovery and revitalisation of local culture | | 0.820 | | |
| ... increasing the community's sense of identity | | 0.780 | | |

| | | | | |
|--|--------|--------|--------|--------|
| ... the appearance of destination | 0.789 | | | |
| ... the production of intercultural exchanges between bys and visitors | 0.735 | | | |
| ... the creation of ethical-commercial and crime problems in the destination. | | | | 0.904 |
| ... the creation of traffic problems and construction problems that are not integrated into the landscape. | | | | 0.910 |
| % Variance Explained Cumulative | 34.862 | 50.639 | 63.592 | 72.510 |

Next, a confirmatory factorial analysis checks the identified structure. The estimation of this model presents the statistics and overall goodness-of-fit indices shown in Figure 2. The R-RMSEA and the goodness-of-fit index are considered adequate. Furthermore, the reliability coefficients of the observed variables (R^2) exceed 0.5 in most cases (see Figure 2). The reliability coefficients for the dimensions (CF1 and CF2) provide evidence of the latent variables' reliability and convergent validity.

It should be emphasized that, given the values of the correlations between the four dimensions, it is not appropriate to establish any second-order. This result indicates that the dimensions of sustainable development work independently, consistent with previous findings, such as those of Marzo et al. (2015). The novelty lies in the role of SUSA_SC2, which appears distinct from classic socio-cultural sustainability.

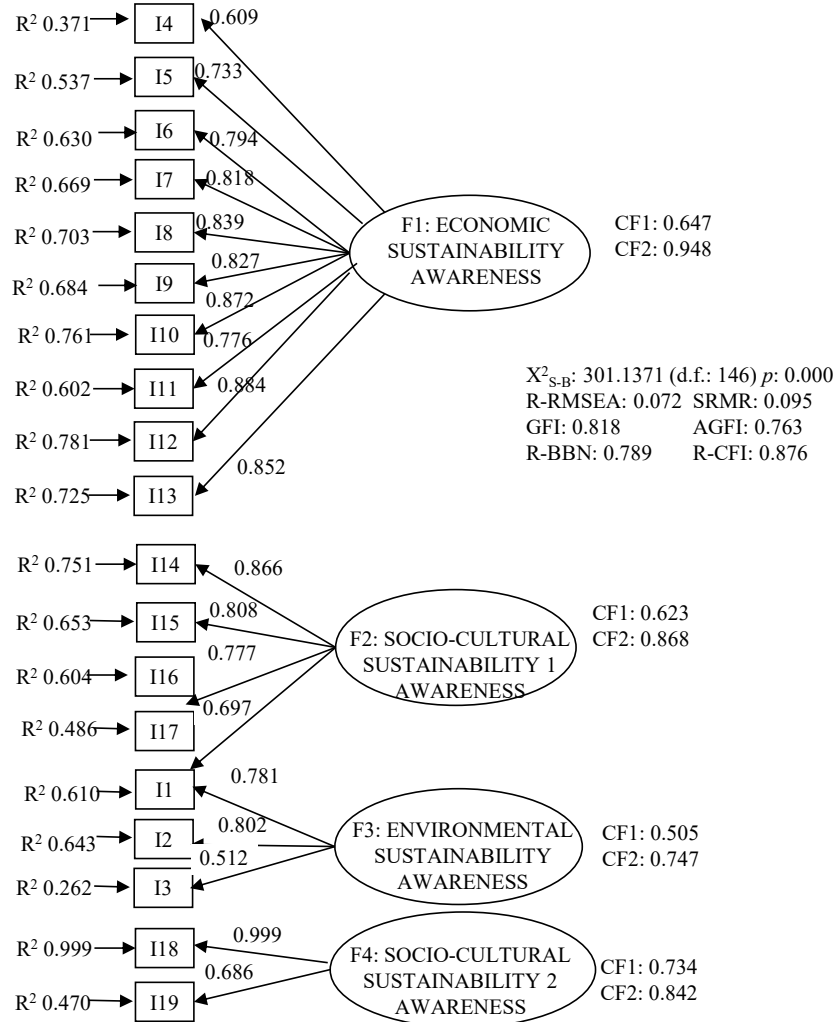


Figure 2. Measurement Model of Sustainability Dimensions

Figure 3 presents the results of the complete model contrast. Although it was not hypothesized, the newly identified socio-cultural dimension does not significantly determine sustainability consciousness. The model yields contrasting results, indicating both a good fit and a limited role for SUSAS_SC2 in explaining sustainability consciousness.

Although the p -value (overall model fit) is less than 0.05, it is a typical result when testing complex models. This result affects the values of other indices that appear below the recommended 0.9 value (nevertheless above 0.5). Anyway, there is a significant cause-and-effect relationship between sustainability consciousness and the sustainable behaviour of nature-based tourists towards the destination that supports the consistency of their actions. This proven relationship is encouraging because of what it means for nature destinations striving to enhance tourists' sustainable consciousness.

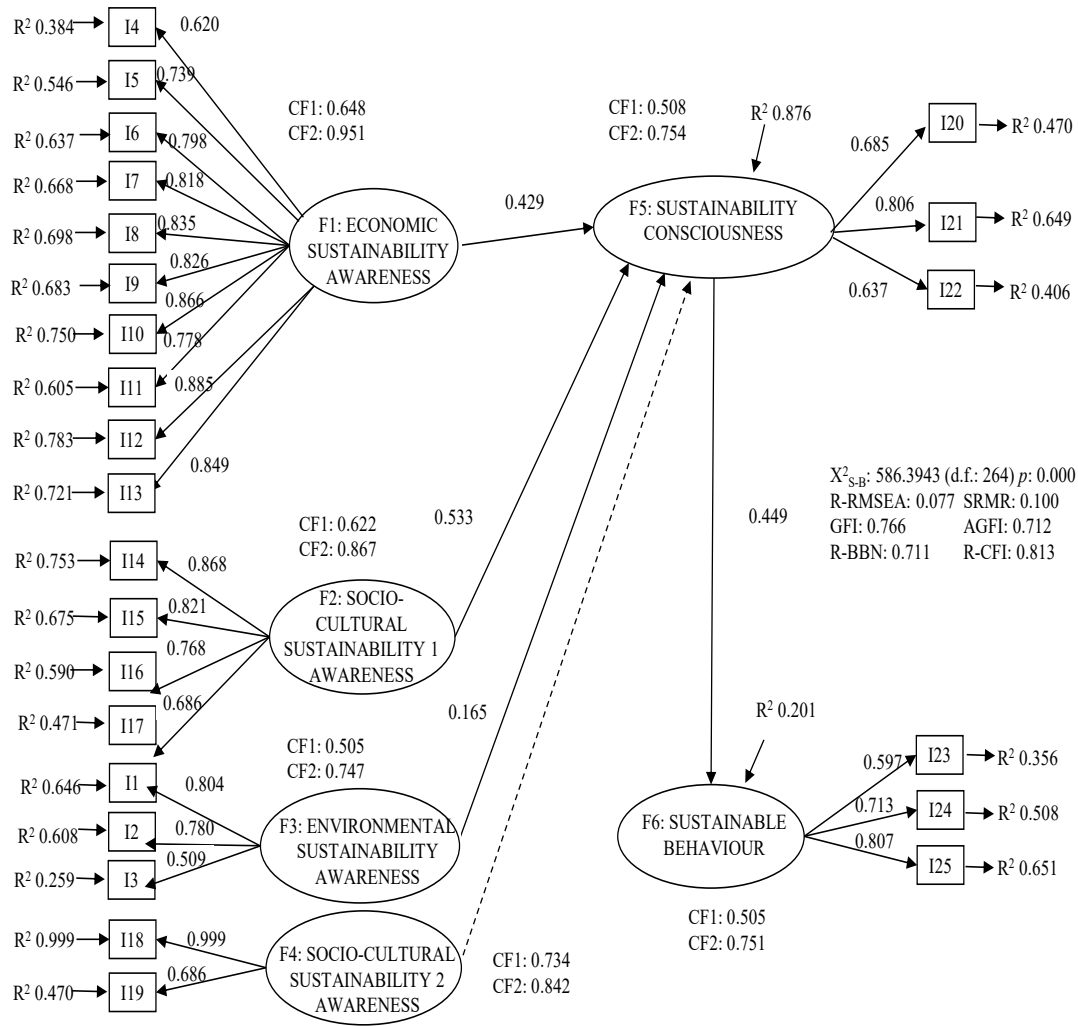


Figure 3. Results of the complete proposed model

To delve deeper into the structural relationship between tourists' sustainability consciousness and their sustainable behaviour, a cause-and-effect model focused solely on these two variables is tested. The results indicate a high goodness-of-fit for the model (X^2_{S-B} : 14.2027; d. f.: 8; p : 0.07663; R-RMSEA: 0.061; SRMR: 0.053; GFI: 0.974; AGFI: 0.930; R-BBN: 0.940; R-CFI: 0.972). A more conscious tourist is more engaged with the destination's sustainability. These results also show that fewer parameters to estimate lead to better fit indices. Nevertheless, obtaining information on the role of awareness dimensions warrants their inclusion in the model. All in all, the hypotheses can't be rejected.

4. CONCLUSIONS

Using measurement and confirmatory analysis models, this research identifies the composition of nature tourists' sustainability consciousness. Furthermore, this research contributes to the body of knowledge showing a positive and direct relationship between a conscious nature-based tourist and their behaviour, as well as indirect relationships from traditional dimensions of sustainability awareness. As they were considered, conscious tourists are more engaged and aligned with the sustainable development needs of the destination they visit. The empirical evidence supports these relationships; nevertheless, it does not fully confirm the existence of a consolidated profile of a conscious tourist.

On the one hand, the three traditional aspects of sustainability—economic, socio-cultural, and environmental—are confirmed as components of a conscious tourist. The novelty lies in identifying a fourth component that encompasses the adverse situations that visits to the destination can cause. This underscores the importance of studying sustainable development by measuring its three basic branches to avoid losing useful information.

On the other hand, the research finds that the new socio-cultural dimension does not determine the overall sustainability consciousness of nature tourists in the sample or their level of commitment to the destination they visited. This result is consistent with the observed behaviour of questions formulated in the negative, such as the Discord dimension (distraction and confusion that a destination can cause in tourists), which Letho (2013) identified as one of the components of the variable Perceived restorative qualities of the destination. According to Chen et al. (2017), this dimension does not determine tourist behaviour.

The concept may not have been well considered and is too new, which could lead to misunderstanding. Its position might still be latent in the tourist, or the specific conditions of the sample could confuse this component as a determinant of sustainable behaviour. Nevertheless, culture may play an extended role in sustainable development. From the classic one, which considers it simply one of its dimensions, to another different component, even as an umbrella factor, as noted in works such as Hariram et al. (2023), as previously mentioned. Anyway, the fact that this dimension does not influence behaviour deserves more in-depth research, including alternative hypotheses (cognitive denial, normalization of impacts, lack of information). This is a matter for future research.

Destination managers responsible for the strategic planning, development, and promotion of a specific location as a tourist destination must focus on attracting tourists while ensuring the destination's sustainability. In conclusion, particularly for nature-based destinations, it is essential to promote economic, socio-cultural, and environmental sustainability. Furthermore, they need to consider the negative consequences of tourism practices. However, they do not determine, in the context of the study, whether tourists are consciously sustainable. Still, these circumstances can lead to social issues, such as unethical business practices, increased crime, opportunism, and undesirable changes to the landscape. Local infrastructure plays a vital role in encouraging sustainable behaviour in nature-based tourism (Cândido et al., 2024). Ensuring sustainable destination development also requires supporting public policies that promote the sustainable integration of tourists. These include sensitization campaigns, eco-friendly services, the development of a strong and positive image, and loyalty programs based on sustainable practices, as noted by Aziz and Niazi (2025).

Regarding the model's application, it could be adapted to specific destinations. Professionals could use it to assess the level of consciousness among their tourists to support the sustainable development of the destination. They could even use indicators of specific actions that contribute to the destination's sustainable development during the stay, rather than the general indicators of post-visit behaviour used in this research. In this way, the conclusions regarding the effectiveness of the actions implemented at the destination and the tourists' commitment can be more comprehensive.

Although this research makes a significant contribution to the literature on the topic, it is worth refining the model further. Reviewing changes in the relationships among exogenous variables will facilitate the observation of the evolution of tourist behaviour in actions aimed at the destination's sustainability, rather than merely verifying that attitudes are appropriate. Going deeper into the identification of more than two indicators of the new socio-cultural factor should also be a subject of research. Perhaps two items do not fully capture the component's complexity, and more information is needed to include in its measurement.

In addition, this study is cross-sectional, so longitudinal studies should be conducted, and it focuses only on nature-based tourists, residents of Spain, which may limit the applicability of the findings to other cultural or geographical settings. Hence, different cultures in various natural locations used as tourism destinations should be explored. That is, it would be helpful to repeat the analysis

in other contexts. Moreover, analyzing the role of demographics, such as age, is of interest because this work receives many opinions from members of the Z Generation.

Future research should also consider inclusive models, explore diverse types of tourism and compare them, and examine the psychological mechanisms underlying positive experiences that influence sustainable behaviour. This line of research could be further developed by analyzing how to improve governance and promote the sustainable development of natural and smart nature destinations. It is also interesting to explore the effects of sustainable development consciousness among tourism stakeholders and to consider potential new scenarios resulting from changes in climate patterns. In any case, nature destinations should foster sustainability consciousness among their visitors and provide resources that encourage them to take committed actions toward the destination after their visit, thus increasing its value.

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