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From Vision to Metrics: Validating the Building Blocks of Sustainable Tourism in Firms

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Cite: Travar, I.; Parra-López, E. & Tais Díaz-Padilla, V. (2027). From Vision to Metrics: Validating the Building Blocks of Sustainable Tourism in Firms. *PASOS. Revista de Turismo y Patrimonio Cultural*, 25(1), 202725008.
<https://doi.org/10.25145/j.pasos.2027.25.008>

Recibido: 27/12/2025 · Reenviado: 17/04/2026 · Aceptado: 04/05/2026 · Sometido a evaluación por pares anónimos

Abstract: This study is grounded in a novel approach of sustainable tourism through the concept of the Tourism Cooperative (TC). Its theoretical foundation lies in the broad understanding of the natural world and environment as well as their interconnectedness with human factors. In order to establish a balance between tourism sustainability and human actions, four constructs were examined: market orientation, circular economy, innovation, and Sustainable Development Goals (SDGs). A sample of 108 tourism firms in Tenerife was used to explore the theoretical and practical relevance of the four constructs and their role in shaping sustainable tourism practices. The reliability analysis confirmed the constructs' formulation. The TC model views sustainability as an ongoing and adaptive process that emphasizes knowledge sharing and power dynamics. Therefore, this research demonstrated that mutual cooperation among all tourism stakeholders is fundamental for tourism companies to adopt sustainable business models and thus contribute to tourist destinations being directed towards sustainable development. Limitations and future research directions concern mainly construct interrelations and the application of the study in different contexts.

Keywords: Tourism cooperative; Market orientation; Circular economy; Innovation; SDGs.

De la visión a las métricas: validación de los pilares del turismo sostenible en las empresas

Resumen: La sostenibilidad de los destinos turísticos ha adquirido gran importancia en la investigación turística. Por ello, este estudio pretende desarrollar un enfoque novedoso mediante el concepto de Cooperativa Turística (CT) como forma de gobernanza del destino. Su fundamento teórico reside en la interconexión entre el mundo natural y el medio ambiente, por un lado, y los factores humanos, por otro. Se examinan cuatro constructos: orientación al mercado, economía circular, innovación y Objetivos de Desarrollo Sostenible (ODS). El contexto de la investigación es Tenerife, donde participaron 108 empresas turísticas. El análisis de fiabilidad se empleó para confirmar la formulación de los constructos. La principal contribución del modelo radica en concebir la sostenibilidad como un proceso continuo y adaptativo que enfatiza el intercambio de conocimientos, la cooperación mutua entre todos los actores del turismo y las dinámicas de poder. Las limitaciones y futuras líneas de investigación se refieren principalmente a las interrelaciones entre constructos y a la aplicación del estudio en diferentes contextos.

Palabras Clave: Cooperativa turística; Orientación al mercado; Economía circular; Innovación; ODS.

1. INTRODUCTION

Sustainability is a concept that aims to equalize the differences between the developed and developing world and to create equal possibilities for people worldwide. It is defined as development that “meets the needs and aspirations of the present without compromising the ability to meet those of the future” (World Commission on Environment and Development [WCED], 1987). However, there is no consensus among scholars about the unique path that societies need to follow to achieve sustainable development (Butcher, 2017) because the main goal is quite complex. It implies obtaining a triple balance: environmental, social, and economic sustainability (UN, 2015). Therefore, it is quite challenging for any research to take into consideration all the three aspects simultaneously (Butcher, 2017). In addition, tourism development generates significant pressures on both the environment and society. This further highlights the urgent need to adopt sustainable strategies not only at the macro level, or the level of countries, but in tourist destination and firms as well (Organization for Economic Co-operation and Development [OECD], 2024; World Economic Forum [WEF], 2024; World Tourism Organization [WTO], 2018).

Considering macro-level analyses, the study by Díaz-Padilla et al. (2023) shows that the Travel and Tourism Competitiveness Index (TTCI) can be used by tourism destinations to measure the effectiveness of their sustainability approaches. Nevertheless, the potential catalysts for sustainability changes, widely recognized in the tourism literature, such as market orientation (MO), circular economy (CE) practices, and innovation (INN), have not yet been examined holistically (Haskas et al., 2021; Lučić, 2020; Strippoli et al., 2024). Accordingly, this study proposes the Tourism Cooperative (TC) model, based on ecological balance rather than purely anthropocentric mechanisms (Haraway, 2016), by introducing the three mentioned concepts as catalysts of tourism sustainability.

The implementation of the TC model implies several benefits. It aims to overcome the current role of Destination Management Organizations (DMOs) as crucial organizations for decision-making in destinations (Bichler & Lösch, 2019; OECD, 2024; WTO, 2023). Rather, the TC model places emphasis on other

stakeholders, such as local firms and communities, which are the main providers of tourism services (Jäckli & Meier, 2025; Jackson, 2025). Active participation of local communities is highly necessary in decision-making (Bichler & Lösch, 2019; Bramwell & Lane, 1993). Taking this a step further, the TC model consists of a central “core,” viewed as a sustainable tourism expertise institution, where tourism stakeholders would benefit from concrete insights. They are related to MO, CE, and INN practices with the aim of achieving Sustainable Development Goals (SDGs).

Based on the above-mentioned observations, the main aim of this study is to develop the TC framework in order to identify sustainability indicators and strategic orientations that directly or indirectly influence sustainability. In accordance to this, five objectives emerge:

1. Examining indicators of MO;
2. Developing indicators of CE;
3. Determining indicators of INN;
4. Establishing indicators of social, economic and environmental impacts, as well as global partnership;
5. Applying the TC framework to integrate sustainability drivers.

In summary, this study demonstrates how tourism destinations can be competitive and, at the same time, achieve sustainability. Reliability analysis will be used to confirm the formulation of constructs. Therefore, the contribution is threefold:

1. theoretical, by advancing ecological approaches over anthropocentric ones in tourism;
2. conceptual, by introducing the TC to support knowledge diffusion and shared governance;
3. methodological and practical, by providing validated tools to assess sustainability strategies and thus enhance destination competitiveness.

2. THEORETICAL FRAMEWORK: STATE OF THE ART

2.1. The conceptualization of the Tourism Cooperative (TC) framework

Tourist destinations face numerous challenges, with intense competition being one of the main priorities. Therefore, they must provide unique experiences tailored to the individual needs of visitors (Buhalis & Amaranggana, 2015; Tussyadiah & Sigala, 2018). The tourism industry, however, is fundamentally heterogeneous, as it encompasses a wide range of services such as accommodation, transportation, and attractions (Richards, 2018; Sainaghi & Baggio, 2017). At the same time, local communities play a crucial role: they are both residents and service providers (Richards & Marques, 2018), which makes it essential to establish effective cooperation among all stakeholders (Hall et al., 2020).

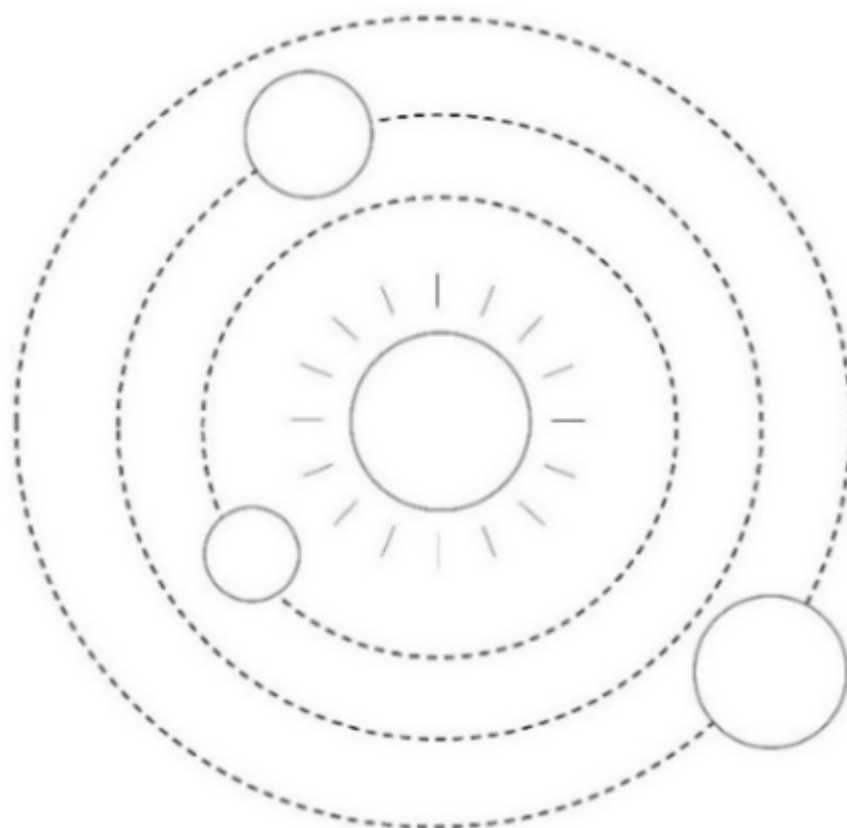
It has been proven that tourism firms face high risks and uncertainty due to their limited resources, as the majority of them are small and family-owned businesses (Williams & Baláž, 2015). Two theories can be used to explain their ability to adapt and remain competitive in the tourism market. The Resource-Based View (RBV) focuses on internal resources and their value (Barney, 1991), while Dynamic Capabilities (DC) place these assets within external conditions and emphasize their proper adaptation (Nguyen et al., 2023). In the context of the present study, DC would demonstrate how tourism firms that use strategic orientations, like MO, CE, and INN, achieve sustainable outcomes. This is actually the main role of the TC model, which is mutual cooperation and sharing of positive experiences. In other words, tourism firms will achieve a balance

between social, economic, and environmental principles (Elkington, 1997; Lozano, 2015) thereby contributing to the accomplishment of the SDGs (Chountalas et al., 2024; M. C. Santos et al., 2023).

Previous studies indicate a strong connection between these constructs. For example, the concept of MO contributes to the understanding of demand (Jaworski & Kohli, 1993; Slater & Narver, 1998) and encourages circular practices (Hoffmann & Marticke, 2024; Schmidt et al., 2021) and innovative solutions that align with both internal processes and dynamic competition (Čivre & Gomezelj Omerzel, 2015; Sari & Indriani, 2023). It is important to highlight that INN can contribute to the implementation of CE and the formation of sustainable business models (Nassanbekova et al., 2023; Segarra-Oña et al., 2024). Considering CE, it is viewed as a prerequisite for sustainability (Bosone & Nocca, 2022; Sharma et al., 2024). Overall, the TC concept, through its theoretical framework, incorporates the interrelationships between the MO, CE, and INN constructs and their connection with the SDGs, based on the RBV and DC theories. Additionally, it places the environment at the center of its core, but does not exclude the social, economic, or partnership dimensions (Purvis et al., 2019). As Haraway (2016: 55) notes, humans are “with and of the Earth,” highlighting the interconnectedness of all living and non-living things. Translating Haraway’s (2016) study into the context of this research, governments, communities, and firms are actors in the tourism ecosystem. It is necessary to prioritize the relationship between the human perspective and the needs of the environment instead of an anthropocentric approach (Castree, 2003; Jäckli & Meier, 2025; Pueyo-Ros, 2018), which prevails nowadays.

The TC model is based on the principles of Earth’s gravitational field (Figure 1). In the solar system, the planets constantly orbit the sun maintaining same distance. In the same way, tourism stakeholders are at the same distance from the core, which provides them with the necessary information and expertise, all with the aim of achieving environmental, economic, and social sustainability. It is important to point out that this process is dynamic and is based on collaboration and knowledge sharing (Chountalas et al., 2024; Lagioia et al., 2024).

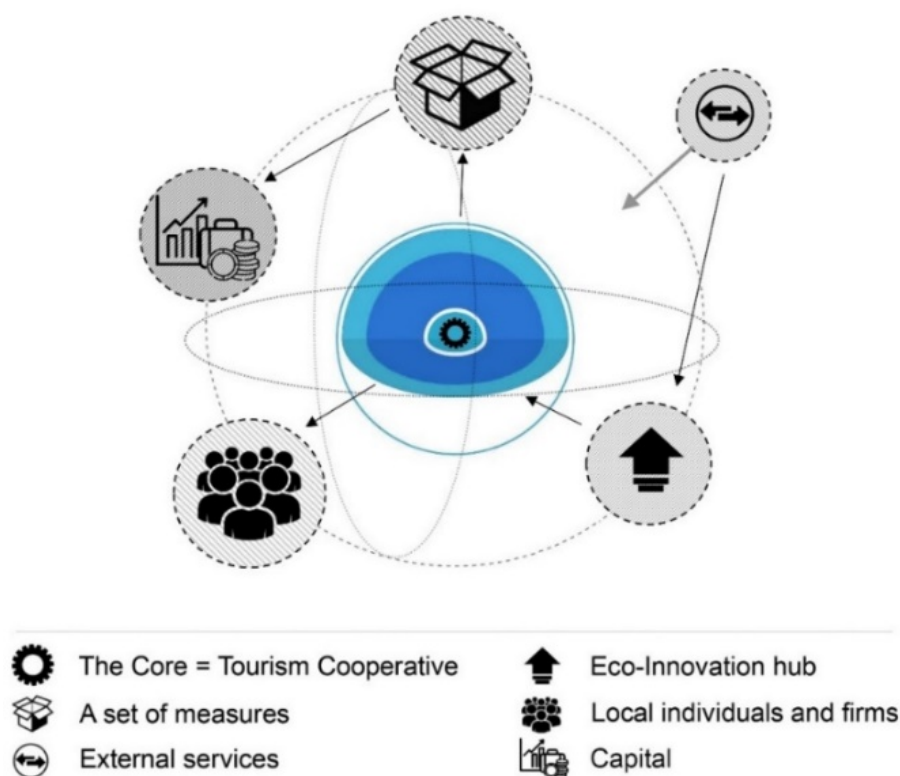
Figure 1. Conceptual Model of the TC Based on Earth's Gravitational Balance



Source: Authors' own elaboration

Looking at the detailed functioning of the TC (Figure 2), experts in MO, CE, INN, and SDGs are located at the center itself. They constantly monitor the needs of local communities in order to adequately focus on crucial strategic actions for tourism firms. Their role also includes monitoring events in the environment and the tourism market. Therefore, the cooperation of all tourism actors is necessary. The members, in this case tourism firms, would benefit from specialized and individually adapted sustainability guidelines, and they could also receive financial support. Local residents would have an active role in directing these activities. They would have the opportunity to participate in expressing their needs and encouraging themselves to become providers of certain tourism services.

Figure 2. The Core Model of TC – Linking MO, CE, INN, and SDGs



Source: Authors' own elaboration

Overall, this model would contribute to the better functioning of the entire tourism system at the destination level. This includes sharing positive experiences, constant learning and collaboration, while monitoring the needs of communities. In this way, the comprehensive SDGs approach would lead to balancing social, economic, and environmental sustainability, that is considered extremely challenging (Butcher, 2017).

2.2. Determinants of the Tourism Cooperative: Market orientation, Circular economy, Innovation, and SDGs

Previous studies have widely confirmed certain interconnections between the constructs of MO, CE, INN, and SDGs (Bosone & Nocca, 2022; Čivre & Gomezelj Omerzel, 2015; Hoffmann & Marticke, 2024; Nassanbekova et al., 2023). However, the existing tourism research lacks a comprehensive investigation that would include all these categories. Therefore, the concept of TC aims to integrate them, establishing MO, CE, and INN as fundamental pillars that enable destinations to effectively transition toward sustainable development.

Research evidence suggests that MO is essential for businesses to gain a competitive advantage (Narver & Slater, 1990) and create superior value (Crick, 2021). The foundations of MO can be traced back to the works of Narver & Slater (1990) and Kohli & Jaworski (1990). Even in the 1950s, it was recognized that business enterprises were successfully managed when they relied on marketing and INN (Drucker, 1954). A central feature of MO is the equal participation of all departments in making marketing decisions (Sargeant & Mohamad, 1999; Shapiro, 1998). It is also important to follow innovative developments in the market (Slater

& Narver, 1998; Zhou et al., 2009) and adapt to the dynamic and contemporary business environment (Line et al., 2019; Sett, 2018) in order to maintain a competitive advantage.

There are several scales used to measure the MO construct. For example, MARKOR demonstrates that MO is a form of innovative behavior (Kohli & Jaworski, 1990), while Narver & Slater (1990) emphasize customer, competitor, and inter-functional orientation. Furthermore, MORTN, developed by Deshpandé & Farley (1999), views MO as an aspect of organizational culture (Hernández-Linares et al., 2018). Recent MO measures also address technological and sustainability concerns (Lučić, 2020; Mitchell et al., 2013). Considering tourism, firms that adequately direct their MO goals have greater opportunities and are more inclined towards innovative solutions, which result in greater customer satisfaction and loyalty (Fernandes Sampaio et al., 2020; Grisseman et al., 2013). On the other hand, these firms adopt digital solutions more easily and therefore achieve rapid market responsiveness (Hadjielias et al., 2022; Lim et al., 2011).

It has been confirmed that MO influences CE (Hoffmann & Marticke, 2024; Schmidt et al., 2021). The concept of CE widely studied within scientific research. Nevertheless, there is no consensus among scholars on the accepted definition. This is mainly due to the different contexts in which it has been studied, as well as across different disciplines. However, the core idea remains consistent, focusing on the transition from a traditional linear economic model to a circular system.

The relationship between CE and sustainable development is highlighted by various authors who emphasize its potential to drive economic prosperity, environmental protection, and social equity (Kaszás et al., 2022; Kirchherr et al., 2017; Rodríguez et al., 2020). In this context, Kirchherr et al. (2017) identified three CE levels: micro (products, companies, consumers), meso (eco-industrial parks), and macro (cities, regions, nations). Globally, China represents a pioneer in adopting CE into national policy (Ogunmakinde, 2019; Qi et al., 2016; Zhang & Zhang, 2023). On the other hand, the EU, Japan, and the USA start from the micro level or changes concerning individual factors that later direct overall development towards sustainable practices (Manniche et al., 2018). Additionally, frameworks like the Ellen MacArthur Foundation (EMF) (2015) principles, ISO standards, the EU Green Deal, and the CE Action Plan, promote circularity and waste reduction, often in line with digital INN (Potting et al., 2017; Repáraz & Pérez, 2024).

Common to all mentioned systems is that effective CE adoption requires systemic change and collaboration among all stakeholders (Alharethi et al., 2024; Manniche et al., 2018; Şahin et al., 2024). Key dimensions of CE in tourism include energy, water, waste, employee, and customer management. There is extensive evidence that efficient resource use, recycling, and waste reduction minimize environmental impacts (Manniche et al., 2018; Menegaki, 2012; Rodríguez et al., 2020), while employees and customers have an important role in spreading environmental awareness and adopting responsible behaviors (Elshaer et al., 2024). In summary, CE represents a systemic approach. From a broader perspective, it coordinates micro, meso, and macro levels and integrates economic, environmental, and social objectives. Furthermore, it promotes collaboration, innovative solutions, and inclusive, resilient business models aligned with the SDGs.

All business systems nowadays must rely on innovative solutions. They allow firms to adapt to changing market conditions, improve efficiency, and create new products or services that meet consumer needs. INN not only improve competitiveness (Genç & Genç, 2017; Na et al., 2019) and profitability (Camisón & Villar-López, 2014; Nguyen et al., 2021; Thongsri & Chang, 2019), but also encourage creativity and motivation within firms (Singh & Aggarwal, 2022). In the context of tourism SMEs, INN is particularly important as it

allows them to stand out in the market and create loyal customers. These firms often have a more flexible structure that allows them to implement new ideas faster, resulting in quick reactions to changes and thus taking advantage of new opportunities (Sundbo et al., 2007). On the other hand, SMEs face a high level of uncertainty, which means that, despite improvements in INN diversity, uncertainty negatively affects firm performance (Verreynne et al., 2019). Recent research demonstrates the increasing use of innovative digital technologies (Maziliauske, 2024; Pilelienė et al., 2024), AI and the Metaverse (Dang & Nguyen, 2023; Hao et al., 2025) in addressing sustainability matters.

Defining INN has been the focus of a substantial number of researchers (Hjalager, 1997; Schumpeter, 1934; Singh & Aggarwal, 2022). According to the OECD (2005), INN are categorized into four distinct groups: product, process, organizational, and marketing INN. The first two categories are characterized as technological INN, as they primarily originated within the manufacturing sector. However, as the service industry has evolved, non-technological INN, particularly in organizational and marketing methods, have gained prominence.

Indicators of INN in tourism remain inconsistent, as different researchers use diverse indicators, often relying on qualitative research (Alsos et al., 2014; Santos et al., 2021). However, quantitative research is of great importance since it enables measuring the achieved results. INN in tourism includes several important aspects, among which the potentials to create value, apply technological achievements, enhance competitiveness and, as a crucial aspect, to achieve sustainable development with adequate resilience of tourism firms stand out (Organization for Economic Co-operation and Development, 2005; Singh & Aggarwal, 2022).

Over the past decade, sustainable development has gained major importance at the global level as it has the potential to establish an adequate connection between economic growth, social balance, and environmental protection (Harris et al., 2002; Strippoli et al., 2024). The UN's 2030 Agenda (UN, 2015) introduced 17 SDGs that represent the main foundation for transitioning toward sustainable development. Tourism plays a major role in achieving these goals, and as such is directly included in targets such as SDG 12.b on monitoring sustainable tourism and SDG 14.7 on the sustainable use of marine resources. Moreover, it has a cross-sectoral nature and is indirectly reflected through other goals (Harris et al., 2002; UN, 2017).

This study focuses on ten SDGs: social (SDG 1, 2, 11), economic (SDG 8, 9, 12), environmental (SDG 13, 14, 15), and global partnership (SDG 17). These were selected because they are relevant to tourism, have been previously studied, and facilitate the operationalization of the research model (Strippoli et al., 2024; UN, 2017). In addition, the Stockholm Resilience Center (2016) distinguishes the same four groups, supporting the previously mentioned selection of SDGs.

Research evidence highlights concrete SDGs and their relevance to tourism practices. For example, SDG 8 can be operationalized through training programs and local hiring. Thus, it follows the International Labor Organization's (ILO) recommendations aimed at employing skilled workers (ILO, 2016). SDG 12 can be implemented by hotels adopting CE principles, which can further contribute to reducing single-use plastics (Strippoli et al., 2024). On the other hand, SDG 14 is related to marine conservation programs, which can be applied in diving tourism (Forrest et al., 2023), while SDG 11 involves smart city tourism projects that manage tourist flows and protect cultural heritage (Lee et al., 2020).

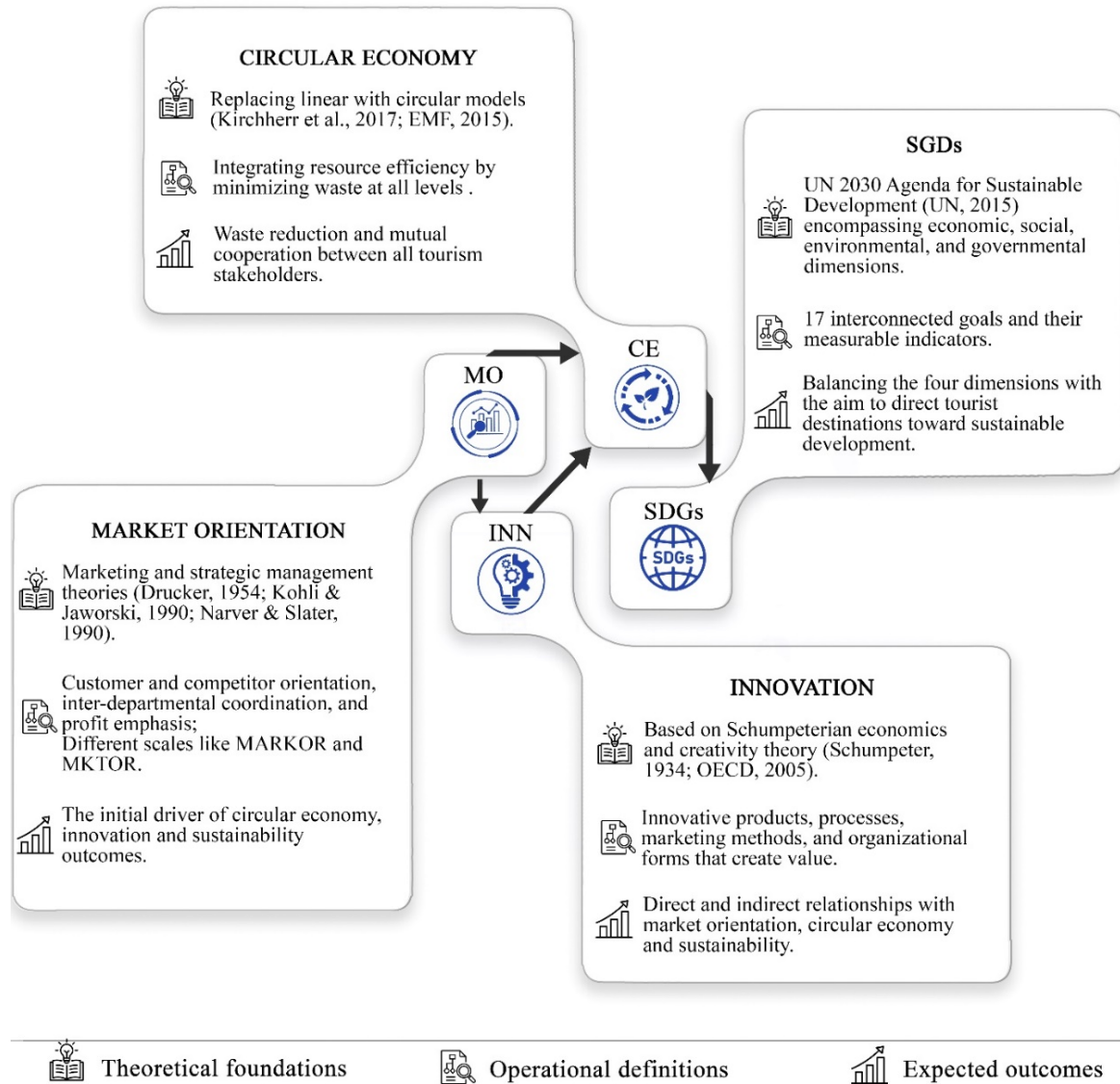
Despite their relevance, measuring SDG achievement in tourism remains challenging (Strippoli et al., 2024). The indicators are usually formulated to capture national impact. As a result, local impacts are neglected. At the local level, communities often lack adequate training, which can, for instance, complicate the measurement of SDG 8 (Jackson, 2025). In addition, it is particularly complex to measure environmental achievements that require long-term monitoring (Li et al., 2024).

There are several frameworks aimed at measuring the application of SDGs in the tourism context. For example, the Toolkit of Indicators for Projects (TIPs) by UNWTO and Japan International Cooperation Agency (JICA) provides context-specific indicators (WTO, 2023). In contrast, there are indicators for global monitoring, like the Statistical Framework for Measuring the Sustainability of Tourism (SF-MST) (WTO, 2024). However, applying these frameworks in firms requires additional adaptation that would include all the specific contexts in which firms operate.

2.3. Integrative theoretical framework: Linking constructs and outcomes

This section brings together the key constructs within the proposed TC framework. Figure 3 summarizes their theoretical foundations, operational links, and expected outcomes, with an emphasis on their interaction in shaping sustainable tourism. The framework is based on the notion that SDGs stem from the interaction of MO, INN, and CE practices.

Figure 3. Theoretical Framework Linking Constructs, Definitions, and Expected Outcomes



Source: Authors' own elaboration

3. METHODOLOGY

3.1. Research context and sampling

The economic picture of the island of Tenerife, located in the Canary archipelago, largely depends on tourism development. Therefore, it is necessary to direct the island's overall development in a way that balances between profitable goals on the one hand and environmental and social responsibility on the other. It is important to highlight that there are already certain sustainability initiatives, such as the Sustainability Charter for Activities in Nature (Web Tenerife, n.d.) and the designation of Tenerife as a Biosphere Destination (Biosphere Tourism, 2021).

The empirical study, conducted between April and August 2025, targeted tourism firms with established sustainability practices. Using a two-stage methodology, twelve expert interviews provided contextual insights and validated the constructs, followed by an online questionnaire. Firms were contacted via email invitations containing a link to the survey and an explanation of the study's purpose and confidentiality measures. The final sample of 108 firms was selected through a stratified convenience sampling method.

3.2. Respondent profile

Out of the 108 tourism firms that participated in the survey, the largest number operated in active/cultural tourism (43 firms, 39.8%). The second-largest group consisted of firms in the accommodation sector (41 firms, 38.0%), followed by travel agencies and tour operators (16 firms, 14.8%), and firms offering transport services (2 firms, 1.9%). The subgroup of others included 6 firms (5.6%). There is a division in the accommodation sector into hotels (37 firms, 90.2%) and rural houses (4 firms, 9.8%). When it comes to the size of the firms, most belonged to the group of small enterprises (<5 employees, 41 cases, 38.0%), followed by medium (5–30 employees, 34 cases, 31.5%), large (50+ employees, 27 cases, 25.0%), and medium-large (31–50 employees, 6 cases, 5.5%). Considering the establishment years, they ranged from 1959 to 2023.

3.3. Instruments and measures

Data were collected through a structured questionnaire measuring four constructs: MO, CE, INN, and SDG implementation. A 7-point Likert scale was used to rank the answers, as advised by several experts in the first phase of empirical research. To reduce potential common method bias, the questionnaire assured respondent anonymity and emphasized that the answers would not be evaluated in any way. Additionally, Harman's single-factor test was conducted, showing that the first factor explained 27.68% of the total variance, well below the 50% threshold, indicating that common method bias was not a serious concern (Podsakoff et al., 2003).

Following data collection, the reliability and validity of the measurement model were assessed. Considering the theoretical orientation of this study and the limited editorial space, the focus was placed on reporting internal consistency (Cronbach's α) and item refinement procedures. Cronbach's α is considered standard procedure in the research that uses multi-item scales to show that selected items measure the underlying construct (Taber, 2018). Since this research seeks to confirm whether the items measure the constructs of MO, CE, INN, and SDGs, this analysis is considered credible. Preliminary exploratory and confirmatory factor analyses (EFA/CFA) were performed but are not included here due to adjustments made to the CE construct. However, these analyses will be expanded in future research. Discriminant validity was verified through inter-construct correlations (<0.85) (Hair et al., 2017, 2022). As the data did not follow a normal distribution according to the Kolmogorov–Smirnov test ($N = 108$), Spearman's rank correlations were used to confirm this assessment.

After an adequate review of the literature and discussions with experts, measurement scales were established for each construct. It is worth mentioning that the scales for the constructs of MO and INN are widely used in academic literature and as such, with adequate wording, were also applied in this research (Deng & Dart, 1994; Kim et al., 2012; Sargeant & Mohamad, 1999; Thongsri & Chang, 2019; Zhou et al., 2009) (see Appendices A and C). In contrast, the scales for CE and SDGs are innovative in this study due to the lack of standardized measuring instruments. They were established after an extensive literature review.

CE was evaluated through five dimensions: circular energy systems, circular water systems, waste management, employee management, and customer management (Manniche et al., 2018; Marrucci et al., 2024; Menegaki, 2018; Rodríguez et al., 2020) (see Appendix B). SDG implementation was measured through four thematic areas: social sustainability (SDG 1, 2, 11), economic sustainability (SDG 8, 9, 12), environmental sustainability (SDG 13, 14, 15), and global partnership (SDG 17) (Agencia Española de Cooperación Internacional para el Desarrollo (AECID), 2018; UN, 2017; WTO, 2016) (see Appendix D).

4. ANALYSIS AND RESULTS

Overall, the four examined constructs: MO, CE, INN, and certain SDGs, were highly rated by the respondents. However, some deviations were observed, particularly in CE and SDG implementation. For example, circular water systems received the lowest ratings, indicating that this is the least implemented CE practice. Moreover, SDG 8 and 9 had to be excluded from further analysis because these variables showed low internal consistency ($\alpha = 0.528$ and $\alpha = 0.459$, respectively), implying the need to redefine these measurement scales in future research.

Descriptive statistics and Cronbach's α values are presented in Table 1. MO and INN showed excellent internal consistency ($\alpha = 0.908$ and $\alpha = 0.872$, respectively), which was expected since the measurement scales used in this study had already been empirically validated in previous studies. MO dimensions ranged from 0.799 to 0.952, and INN dimensions from 0.735 to 0.835, thus confirming acceptable reliability. Mean scores indicated generally favorable perceptions, with moderate variability, particularly for competitor orientation ($SD = 1.61$) and internal relations ($SD = 1.32$).

Novel measurement approaches were applied to the constructs of CE and SDGs. Considering CE, it demonstrated strong internal consistency ($\alpha = 0.920$). The highest reliability scores were observed in waste management ($\alpha = 0.941$) and customer management ($\alpha = 0.917$), while the lowest applied to circular water systems ($\alpha = 0.752$). Mean values ranged from 4.04 (circular water systems) to 5.49 (customer management). These results can be characterized as satisfactory, although it would be desirable to introduce more effective implementation measures for water-related practices.

Table 1. Descriptive Statistics and Reliability of Measurement Constructs

Construct	Level	Cronbach's α	Mean	SD	N of items
Market Orientation	Second-order	0.908	5.20	1.00	16
Customer orientation	First-order	0.799	5.95	0.83	4
Competitor orientation	First-order	0.915	4.66	1.61	4
Inter-functional coordination	First-order	0.876	5.34	1.34	4
Profit emphasis	First-order	0.952	4.86	1.53	4
Innovations	Second-order	0.872	5.40	0.91	14
Product/Service innovations	First-order	0.782	5.76	1.09	3
Process innovations	First-order	0.832	4.99	1.40	4
Internal relations	First-order	0.835	5.12	1.32	4
External relations	First-order	0.735	5.99	0.86	3
Circular Economy	Second-order	0.920	5.07	1.14	16
Circular energy systems	First-order	0.794	4.93	1.44	3
Circular water systems	First-order	0.752	4.04	1.48	3
Waste management	First-order	0.941	5.44	1.53	4
Employee management	First-order	0.762	5.32	1.32	3
Customer management	First-order	0.917	5.49	1.57	3
Social Sustainability	Second-order	0.879	4.72	1.33	8
SDG 1	First-order	0.788	4.47	1.59	3
SDG 2	First-order	0.812	5.14	1.52	3
SDG 11	First-order	0.779	4.56	1.69	2
Economic Sustainability	Manifest variable				
SDG 12	First-order	0.836	5.24	1.47	2
Environmental Sustainability	Second-order	0.887	5.40	1.15	9
SDG 13	First-order	0.818	5.56	1.17	3
SDG 14	First-order	0.706	5.53	1.27	3
SDG 15	First-order	0.798	5.12	1.50	3
Global Partnership	Manifest variable				
SDG 17	First-order	0.904	5.44	1.41	3

SDG-related constructs also showed satisfactory psychometric properties. Social sustainability (SDGs 1, 2, 11) demonstrated strong internal consistency ($\alpha = 0.879$), with first-order dimensions ranging between

0.779 and 0.812. Of all the constructs, the SDGs underwent the greatest modifications, which can be explained as a consequence of using a novel approach in this study. One item from SDG 11 and SDG 12 was removed due to low item-total correlation (0.235 and 0.129, respectively). A satisfactory reliability value was achieved for these variables by defining them as two-item scales ($\alpha = 0.779$ and $\alpha = 0.836$, respectively). The economic sustainability determinant also underwent another important modification, as low reliability in SDGs 8 and 9 led to their exclusion. Environmental sustainability (SDGs 13–15) and global partnership (SDG 17) showed high internal consistency ($\alpha = 0.887$ and $\alpha = 0.904$, respectively), with mean scores indicating generally positive perceptions and moderate variability.

In summary, the presented descriptive statistics and reliability analyzes support the robustness of all measured constructs in the tourism context. The greatest room for improvement in the implementation of sustainability practices is reflected in the areas of circular water management and institutional support for INN, which received the lowest ratings from the respondents.

5. DISCUSSION

The empirical results of this research confirmed the validity of the measurement scales for all four constructs: MO, CE, INN, and SDGs. This supports the initial conceptualization of sustainable tourism as an interconnected system that cannot be viewed in isolation. High values of Cronbach's α were obtained for almost all constructs. Although certain scales required refinements due to low reliability values, considering the specificity of the research context and novel approaches for CE and SDGs, such adjustments are justified in quantitative research (Hair et al., 2017).

Building upon these results, sustainability in tourism is a dynamic process influenced by internal and external factors. Firms, institutions, and communities should operate together and have the same ultimate goals in terms of sustainable tourism, as this is a reliable way to stay competitive on the tourism market (Aransyah et al., 2025; Elshaer et al., 2024). Tourism enterprises are not isolated actors but active participants within socio-ecological systems (Lagioia et al., 2024; Repáraz & Pérez, 2024; Rodríguez et al., 2020). At this point, the proposed TC model achieves its full function and application because it connects human and non-human actors in such a way that the environment becomes the main focus, and the long-term creation of value can only be achieved by respecting the ecological balance (Castree, 2003; Haraway, 2016; Latour & Porter, 2009). This model intensifies INN through the integration of digital tools into its system, which further enables the collective exchange of knowledge and the distribution of management mechanisms not only across government institutions but also among all tourism stakeholders in tourism destinations (Buhalis & Amaranggana, 2015; Hadjielias et al., 2022). The case of Tenerife as a Biosphere Sustainable Destination (Biosphere Tourism, 2021) illustrates how these interconnections can enhance resilience within global sustainability frameworks (WTO, 2023, 2024), providing a bridge between empirical outcomes and broader theoretical and policy-oriented discussions.

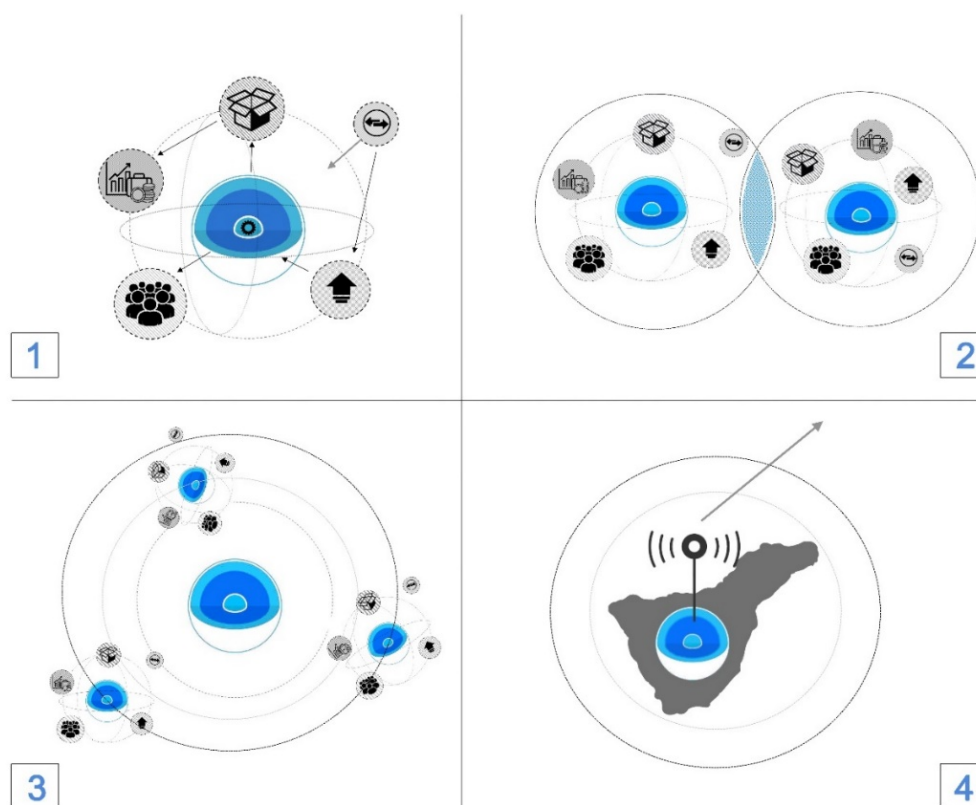
6. CONCLUSIONS

Extending these empirical findings, this study represents a further step towards understanding of tourism sustainability theory. The focus is on the nested approach where environmental sustainability plays a vital role, but it is also intertwined with other dimensions with which it remains in balance. These insights are in line with Hall et al. (2020), who emphasize the importance of cooperative tourism in achieving long-term

sustainability. It stands in complete contrast to existing approaches that are directed towards specific improvements in certain spheres of business (Sainaghi & Baggio, 2017). Therefore, the ultimate goal is obtaining comprehensive sustainability that will overcome another important barrier, collaboration among all stakeholders to achieve inclusive tourism governance (Bichler & Lösch, 2019). This extends the concept of the ambivalence of power, which highlights the necessity of distributing governance, i.e., power, among multiple actors (Castree, 2003; Radaev & Kotelnikova, 2022). In tourism, these actors are institutions, tourism firms, local communities, and even the tourists themselves. Furthermore, Castree's (2003) idea of hybrid politics is advanced. This concept refers to viewing all social and natural elements as a unified system, which may represent significant opportunities but at the same time may act as obstacles to sustainable transformation.

From a practical perspective, the proposed TC model represents a system that balances the needs of all actors in tourism with the environment. This study should, therefore, be of value to different types of tourist destinations with particular relevance to insular and regional destinations such as the Mediterranean, Caribbean, or Southeast Asia. Its crucial role lies in establishing collaboration and shared governance through the distribution of power. Since this study explored the insular tourist destination of Tenerife, Figure 4 illustrates the TC model applied in practice through four stages: (1) *Municipal Establishment*, (2) *Inter-Municipal Cooperation*, (3) *Gravitational Integration*, and (4) *Island-Wide Sustainability Leadership*. A special advantage of this approach is its adaptation to changes in accordance with the specific needs of tourist destinations and their orientation toward sustainable development. The emphasis is on constant monitoring that enables the successful overcoming of obstacles that tourism firms may face on the path toward a sustainable business model, which are often impossible to predict in advance.

Figure 4. The TC Model Applied in Practice on the Example of Tenerife



Source: Authors' own elaboration

The social side of sustainability is a central part of the model. Beginning with MO, it helps to raise awareness of the needs of both customers and employees. On the other side, INN encourages fair and cooperative relationships, while circular practices strengthen community involvement and ensure equal access to resources. This means that social inclusion, empowerment, and collective well-being are not only outcomes of sustainable tourism but also key factors that facilitate it. In line with RBV and DC perspectives, the TC model focuses on building strong, flexible, and adaptable relationships. It provides clear guidance for practical decisions and helps destinations to engage stakeholders more effectively.

Despite its valuable contributions, this study faces several limitations. First, the sample included 108 tourism firms. Although this sample size is considered satisfactory in quantitative research (Hair et al., 2022), it is challenging to generalize the findings to other types of tourist destinations since each destination faces different sustainability challenges (Baloch et al., 2023). Second, only certain SDGs were included in the research and certain measurement scales require additional refinement (e.g., SDG 8 and 9), indicating the complexity of researching tourism systems in the context of sustainability (Pearl, 2021). Third, the use of a cross-sectional design as a research method limits the interpretation of data and the generalization of findings. Finally, exclusive reliance on quantitative statistical analysis may overlook qualitative inputs that are important for understanding stakeholder perspectives (Creswell & Creswell, 2018).

To summarize the main insights, Table 2 presents an overview of key limitations and outlines future research directions along with new potential constructs. It also provides guiding questions that can expand the theoretical and empirical scope of the TC framework.

Table 2. Overview of Key Limitations and Future Research Directions

Key area	Main Limitation	Future Research Direction	New possible constructs	Research question
Refinement	Limited sample of SDGs and need for refinement of several measurement scales (e.g., SDG 8, SDG 9).	Further develop and validate the TC framework across diverse contexts.	Institutional coordination, adaptive governance, socio-ecological resilience.	How can tourism systems adapt to various governance mechanisms?
Methods	Quantitative design limits contextual and interpretive depth.	Investigate interconnectedness between MO, INN, CE, and SDGs.	Firm size and sector.	What are the interrelations among MO, INN, CE, and SDG constructs?
Digitalization	Cross-sectional design.	Explore how data-driven collaboration supports cooperative governance.	Digital cooperation, data-driven decision-making, smart governance.	How can digitalization foster sustainable tourism?
Broader implications	Sample limited to one island context.	Test scalability and expand the analysis to different geographical contexts.	Comparative governance, spatial sustainability, multi-level cooperation.	How does the TC model perform across different spatial and governance contexts?

Regarding future research, the proposed TC framework needs to be further investigated in other geographical, social, and political contexts. It is necessary to monitor changes over specific time frames as well as to use mixed methods as they yield to more comprehensive results. Since the constructs were investigated in isolation, future research could be directed toward exploring casual relationships between MO, CE, INN, and SDGs. Furthermore, in the era of digitization, it is crucial to examine its impact on the functioning of the TC model. The integration of digital tools into tourism systems can greatly improve collaboration and coordination among tourism actors. One of the main contributions of this study is that the SDGs were examined comprehensively, including the main four pillars: economic, social, environmental, and institutional. However, in order to strengthen the theoretical and practical contribution, it is recommended that further research assess a broader range of SDGs or even include all of them. In conclusion, the concept of sustainable tourism can be viewed through various research lenses. The TC framework is one of them representing a novel approach and a broad foundation for further research.

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APPENDIX A

Market Orientation (MO) Dimensions, Items, and Sources

Customer orientation

(Adapted from Deng & Dart, 1994; Sargeant & Mohamad, 1999; Zhou et al., 2009)

We continuously monitor our customers' needs to be ready to adapt our products/services accordingly.

We train our staff to provide satisfactory services.

We regularly measure customer satisfaction and take the necessary actions accordingly.

We encourage customer feedback, including complaints, because it helps us do a better job.

Competitor orientation

(Adapted from Deng & Dart, 1994; Sargeant & Mohamad, 1999)

We regularly analyze our competitors' marketing programs.

We frequently gather market data to guide our new product plans in order to differentiate ourselves from competitors.

We respond quickly to competitors' actions.

Our managers often discuss competitors' programs.

Inter-functional coordination

(Adapted from Deng & Dart, 1994; Sargeant & Mohamad, 1999; Zhou et al., 2009)

We hold interdepartmental meetings to discuss market trends and development.

Our departments share a great deal of information with each other.

All departments are involved in preparing the company's plans.

Our company's strategy emphasizes the coordination of various departments because it adds value to the customer.

Profit emphasis

(Adapted from Deng & Dart, 1994)

Our management system can quickly determine the profitability of each of our product lines.

Our management system can quickly determine the profitability of each of our markets.

Our management system can quickly determine the profitability of each of our target customer groups.

Our management system can quickly determine the profitability of each of our distribution methods.

APPENDIX B

Circular Economy (CE) Dimensions, Items, and Sources

Circular energy systems

(Adapted from Manniche et al., 2020; Marrucci et al., 2024; Menegaki, 2018; Rodríguez et al., 2020)

We have an appropriate energy-saving policy that includes clear actions (e.g., energy automation systems, ventilation systems instead of air conditioning, etc.).

We use renewable energy resources and aim to completely replace conventional energy with renewable energy.

We promote the use of eco-friendly transportation (e.g., electric vehicles, bicycles, etc.).

Circular water systems

(Adapted from Manniche et al., 2020; Marrucci et al., 2024; Rodríguez et al., 2020)

We have an appropriate water-saving policy that includes clear actions (e.g., encouraging customers to be mindful of water use, installing sensor faucets, etc.).

We have a wastewater treatment system or access to a regional wastewater treatment facility.

Our company manages its total water use through circular water systems (e.g., recycling, rainwater harvesting, reuse of greywater).

Waste management

(Adapted from Manniche et al., 2020; Marrucci et al., 2024; Menegaki, 2018; Rodríguez et al., 2020)

We reduce waste volume through recycling, reuse, or selling it to a third-party company.

We work to reduce the amount and volume of food waste.

We work to reduce the amount and volume of packaging waste.

We work to reduce the amount and volume of paper waste.

Employee management

(Adapted from Albrecht, 2023; Marrucci et al., 2024; Rodríguez et al., 2020)

Our employees are aware of the importance of the 3R principle: reduce, reuse, recycle.

We incentivize our staff to stay with the company by providing benefits to reduce employee turnover.

We encourage our staff to participate in environmental restoration activities (e.g., beach cleanups, tree planting, etc.).

Customer management

(Adapted from Rodríguez et al., 2020)

We promote sustainable leisure activities (e.g., hiking, cycling routes, stargazing, visits to natural parks, etc.).

Our customer focus is aimed at introducing tourists to the island's environment and its environmental challenges.

We encourage tourists to participate in environmental restoration activities (e.g., beach cleanups, tree planting, etc.).

APPENDIX C

Innovation (INN) Dimensions, Items, and Sources

Product/Service Innovations

(Adapted from OECD, 2005; Thongsri & Chang, 2019)

We continuously replace obsolete products/services and improve our offerings to stay competitive in the market.

Our business strategy is focused on developing environmentally friendly products.

Customers choose us because our products/services are unique and different.

Process Innovations

(Adapted from Kim et al., 2012; OECD 2005)

The use of technology helps us reduce response times to customers (e.g., AI assistants, intelligent chatbots, AI-powered flight forecasting apps, etc.).

Our strategic plan focuses on transitioning to mobile and cloud technologies (e.g., email, CRM, R&D, finance, online data storage, etc.).

We regularly perform data analysis to plan future actions, such as developing new products/services or identifying potential customers.

Our company records and analyzes customer information to personalize their experience (e.g., recognizing annual events like birthdays).

Internal relations

(Adapted from Kim et al., 2012; OECD, 2005; OECD 2005)

We continuously improve communication and collaboration between departments while encouraging creative and innovative ideas from our employees.

We improve working conditions to increase employee satisfaction and loyalty.

Our company has a clear equality policy that ensures fair treatment and equitable opportunities for all employees, regardless of their background or identity.

We have a risk management plan to address the loss of key talent and maintain a strong, innovative workforce.

External relations

(Adapted from Kim et al., 2012; OECD, 2005; OECD 2005)

We seek to establish cooperation with innovative suppliers to reduce environmental impacts.

We highly value the exchange and transfer of knowledge with other tourism companies.

Our company has the ability to quickly adapt to market changes to stay competitive.

APPENDIX D

SDGs Dimensions, Items, and Sources

SDG 1 – No poverty

(Adapted from UNWTO & UNDP, 2017)

We have tourism products and services adapted for lower-income customers.

We recruit and train members of the local community, including those living in poverty, and integrate them into the tourism value chain (e.g., as producers, suppliers, or vendors).

We have partnered with civil society organizations to provide education or training in entrepreneurial skills (e.g., tour guides, artisans, cooks).

SDG 2 – Zero hunger

(Adapted from UNWTO & UNDP, 2017; UNWTO & UN Global Compact Spain, 2016)

We work to strengthen collaboration with academic and scientific institutions to support sustainable agricultural suppliers.

We stimulate agricultural production through the consumption of local products in our company.

We provide tourists with information about where they can buy local products.

SDG 8 – Decent work and economic growth

(Adapted from AECID, 2017; UNWTO & UNDP, 2017)

We offer learning opportunities.

We have a fair hiring policy, treating all potential workers equitably regardless of their age, gender, race, disability, or migration status.

Our company pays not only the minimum wage but a living wage for all workers.

SDG 9 – Industry, innovation and infrastructure

(Adapted from UNWTO & UNDP, 2017; UNWTO & UN Global Compact Spain, 2016)

We are satisfied with government support for tourism innovations that help us offer creative solutions in sustainability.

We invest in sustainable facilities and infrastructure that allow universal access and use, especially for people with disabilities and other disadvantaged groups.

We invest in new technological solutions to provide easier access to information for tourists.

SDG 11 – Sustainable cities and communities

(Adapted from UNWTO & UNDP, 2017)

We always strive to improve the energy efficiency of our workspace.

We collaborate with the government to find better transportation solutions for tourists that minimize environmental impact and are more affordable for everyone.

We aim to reform investment strategies to support integrated and sustainable urban development, such as sustainable urban transport, low-carbon buildings, and resilient infrastructure.

SDG 12 – Responsible consumption and production

(Adapted from AECID, 2017; UNWTO & UNDP, 2017; UNWTO & UN Global Compact Spain, 2016)

We tend to significantly reduce waste and ensure that any unavoidable waste is used to its fullest extent (e.g., organic waste as fuel or fertilizer).

We carefully select products and suppliers to achieve sustainable production and/or consumption.

We offer shared transportation solutions to tourists (e.g., taxi sharing).

SDG 13 – Climate action*(Adapted from AECID, 2017; UNWTO & UNDP, 2017; UNWTO & UN Global Compact Spain, 2016)*

We participate in the fight against climate change by reducing energy consumption and using renewable energy sources.

We are aware of the negative impact of greenhouse gas (GHG) emissions and therefore tend to increase investment in innovation to improve the efficiency of energy, water, and waste.

We promote the use of public transportation, hybrid, and electric vehicles within the company as well as for our customers.

SDG 14 – Life below water*(Adapted from UNWTO & UNDP, 2017)*

We prevent poor waste management or litter that could pollute the marine environment.

We have campaigns to raise consumer awareness about effective ways to properly dispose of their waste, to discourage littering and promote responsible behavior.

We offer tourism practices that do not increase the risk of harm, exploitation, or depletion of marine species and resources.

SDG 15 – Life on land*(Adapted from UNWTO & UNDP, 2017)*

We participate in campaigns for the restoration of degraded lands for production and/or conservation purposes.

We educate consumers about appropriate behaviors when visiting forests or natural areas, including interaction with local cultures.

We create programs for tourists focused on how to preserve and care for the environment to minimize risks to ecosystems, biodiversity, and wildlife.

SDG 17 – Partnerships for the goals*(Adapted from UNWTO & UNDP, 2017)*

Our company collaborates with other organizations (e.g., local communities, government agencies, NGOs) to promote sustainable tourism practices.

Our company has formed partnerships with other tourism SMEs or stakeholders to share knowledge, resources, or best practices to achieve sustainability goals.

We actively participate in industry networks or associations aimed at promoting the SDGs in the tourism sector.
