

## Article

# Stakeholder Engagement and Triggers for Sustainable Development in Complex Fragile Ecosystems: Evidence from Alpine Trentino Region

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**Abstract:** This research digs into the dynamics of sustainable development in complex fragile ecosystems, with a focus on the Trentino alpine region in Northern Italy to identify the main triggers to foster it. In particular, this study emphasizes the critical role that Destination Management Organizations (DMOs) play in leveraging these triggers and designing sustainable development strategies. Using a Convergent Parallel Mixed Method that combines quantitative and qualitative data, this study identifies three strategies for stakeholder engagement—listen, meet, and collaborate—to align numerous actors towards common goals and encourage sustainable behaviors. Moreover, the results highlight the need to engage fringe stakeholders in sustainable destination development strategies. It also reveals the function of ‘triggers’—both internal and external—in implementing stakeholder engagement strategies. This research contributes to the literature by mapping stakeholders (core and fringe), suggesting three engagement strategies (listen, meet, and collaborate), and identifying triggers (internal and external) for destination sustainable development in complex fragile ecosystems.

**Keywords:** stakeholder engagement; triggers; complex fragile ecosystems; destination management organizations; sustainable development



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## 1. Introduction

In the dynamic realm of sustainable development, stakeholder engagement has emerged as a key focus area within contemporary scholarly debate [1–3]. Sustainable development refers to the ability of tourist destinations to take precautions against the environment and the continuity of natural resources while ensuring economic development [4]. In particular, it requires a collective effort, and it imposes the creation of meaningful and continuative engagement strategies with multiple key stakeholders [5,6]. In the tourism industry, individuals, firms, institutions, and policymakers play a crucial role in ensuring the conservation of natural resources, the social and economic development of the local area, and the safeguarding of cultural heritage, particularly when sustainable development is the priority focus. The literature on sustainability has explored its impact on tourism development, destination competitiveness [7–10], and stakeholder engagement [11–15]. Indeed, in the tourism sector, environmental preservation and sustainable development are becoming essential topics for both academics and practitioners and are becoming trending topics for research [16]. In this regard, destinations are an ideal context for exploring this issue since they embrace a multitude of actors who must necessarily collaborate to address the challenges posed by sustainability [17].

Complex and fragile ecosystems, such as alpine regions, make these dynamics remarkably evident because they are territories in which an intricate interdependent system of

environmental, social, and economic dynamics takes shape [18]. They occupy approximately one-quarter of all landmasses, are home to approximately one-sixth of the world's entire population, and provide critical resources such as water, minerals, and rich biodiversity [19,20]. Moreover, alpine regions are not only one of the most important natural attractions for contemporary tourism [21], but they also play a pivotal role in the global water cycle [22]. However, these regions are acutely susceptible to environmental degradation and the impacts of climate change, which makes their conservation a global priority [23]. This situation emphasizes the urgency of adopting at least adaptive and resilient environmental management practices that necessitate a multidimensional approach to stakeholder mapping and engagement, further emphasizing the importance of introducing inclusive collaborative strategies [24–26] to ensure sustainable outcomes. Furthermore, it is also necessary to recognize and integrate the different and sometimes conflicting interests of the various stakeholders and integrate them into a cohesive management strategy [27]. Stakeholder engagement, in fact, is not merely about sharing information but implies the ability to actively involve stakeholders in decision-making processes [28,29].

The management of tourism activities in a destination is usually in charge of a DMO (Destination Management Organization), a body established with the purpose of coordinating and giving direction to the multiple independent public and private local players [30]. This is needed because of the features of a tourism product [31], which include a large variety of assets and services that are managed by numerous independent actors and that need to be coordinated to create a coherent destination experience [32]. Moreover, customers evaluate the product system in its entirety, rather than single products and services. The key role played by DMOs emerges more and more clearly in this scenario that calls for a strong focus on sustainability, which requires a collective and joint effort [33]. Although initially the M of DMO stood for Marketing, its evolving role along with territorial needs is increasingly changing it into an M for Management [8,34]. While the literature has in fact already explored the role that sustainability plays in tourism development and destinations' competitiveness [7–10], and stakeholders' engagement processes [11–13,15], to our knowledge, the role that DMOs play in ensuring that sustainable goals are achieved remains an under investigated topic, especially in the managerial domain.

Although DMOs are often analyzed from a tourism point of view, this type of organization is also particularly interesting to observe through the lens of organizational science, as we believe that useful insights can be gained that can also be applied to non-tourism organizations. From the point of view of stakeholder engagement, investigating such organizations is interesting since DMOs are called upon to orchestrate the consensus of different independent local actors without, however, having the power to use economic or hierarchical levers, typically used at the firm level. Even if the literature has made clear the importance and difficulties inherent in stakeholder engagement within the management of complex and fragile ecosystems, to our knowledge, there is still room for further work to define the map of stakeholders that must be engaged and the ways in which this engagement is triggered and acts in complex fragile ecosystems to reach sustainable development goals. Therefore, this paper explores the question of what the role played by DMOs in complex fragile ecosystems is and how stakeholders should be engaged by them without the use of traditional levers such as hierarchical or economical levers in this context. Moreover, it aims to identify the main triggers for enabling this engagement [35].

This paper is structured as follows. Section 2 focuses on the theoretical background that underpins the empirical analysis. Section 3 presents the methodology applied to the investigated destinations. In Section 4, the results are presented and then discussed. Finally, conclusions, limitations, and future opportunities for research are described in Section 5.

## 2. Literature Background

### 2.1. DMOs and Complex Fragile Ecosystems

The term ecosystem was proposed by the botanist Arthur Roy Clapham in the 1930s to define "the physical and biological components of an environment considered in relation

to each other as a unit” [36] (p. 268). In the managerial field, according to Moore [37], a business ecosystem is a network of buyers, suppliers, and producers of products or services; the socio-economic environment in which they are embedded; and the institutional and regulatory frameworks. In this perspective, a destination can be seen as a tourism ecosystem since it is a network of interrelated public and private stakeholders [38]. According to Hillebrand [39], an ecosystem perspective on tourism is especially relevant in situations that are complex, such as in the case of technological innovation and sustainable tourism. In fact, the ecosystem concept has become a relevant topic in the areas of technology management and innovation, where the expression “smart tourism ecosystems” has been used quite frequently in recent studies to identify a set of relationships among stakeholders to produce tourism experiences through human organizations, technology, shared information and services, and resource exchanges [40]. Additionally, tourism studies focused on sustainability have centered on the ecosystem concept, since sustainability is a collective effort that requires collaboration among local stakeholders to preserve the local resources and, at the same time, to guarantee local development. In particular, complex fragile ecosystems are characterized by a significant and, at the same time, delicate interrelationship between biodiversity, climate, and topography, which necessitates meticulous conservation and prudent management strategies. The approach to these systems must therefore be able to address the multifaceted interactions at the environmental, socio-economic, and cultural levels [33]. Since these territories are often devoted to tourism, it is necessary that the tourism management of these areas is in charge of a dedicated organization. Indeed, DMOs in this sense play a central role in orchestrating sustainable tourism practices capable of mitigating the environmental impacts that are often caused and exacerbated by major tourism flows [41].

Within these territories, in fact, the role of DMOs transcends the boundaries of mere land promotion to become concerned with the preservation of natural resources, community involvement, and, above all, ensuring the long-term sustainability of the entire region [42]. The application of sustainable practices often implies the implementation of strategies that balance visitors’ satisfaction and value creation for local companies with land preservation efforts, which are directions that often point in opposite directions. This requires the management of visitor flows to prevent over-tourism that can lead to erosion, habitat destruction, and other environmental forms of degradation. In addition to this, DMOs also play a key role in educating tourists, local companies, and residents about the fragile nature of the complex alpine ecosystem and promoting sustainable tourism behavior [41]. However, DMOs not only have to deal with the last ring of the supply chain but must be present at multiple levels as they play a crucial role in forging partnerships and links with local communities to ensure that tourism brings them benefits, ensuring that cultural heritage and traditional knowledge are preserved [43]. Indeed, as stated by Hillebrand [39], DMOs in complex fragile ecosystems should not only engage core stakeholders but also fringe ones, which are part of the ecosystem and have few resources of minor importance to destination sustainable development and thus have little power. Engaging fringe stakeholders is beneficial for several reasons. First of all, they have a moral legitimacy since they are affected by tourism activities even if not all of them are directly involved. This attention to all stakeholders, regardless of their direct business impact, is what sets truly sustainable efforts apart. Second, paying attention to a wide range of stakeholders can lead eventually to enhanced business performance because such ethical conduct enhances the organization’s reputation and legitimacy, which have been shown to positively influence business success. Third, although fringe actors may not possess substantial resources individually, they can significantly amplify their influence by forming coalitions. In an era where public endorsement is increasingly important and social media is universally accessible, these fringe actors can indirectly gain power and impact the success of a product by mobilizing support and shaping public opinion [39].

In order to play this important role, DMOs need to be aware of their role and the impact they can generate with their actions [44]. DMOs are indeed required to possess

an intricate set of managerial knowledge and capabilities, such as being able to aggregate consensus and construct shared meanings regarding sustainability [45], to promote structured negotiation, and to utilize fruitful conflict resolution skills [27]. Therefore, in an environment that is constantly redefining and changing, DMOs are called to maintain a posture that can change and modify just as quickly [46]. Thus, embarking on this complex journey requires DMOs to continuously explore innovative approaches and new business opportunities while at the same time continuously redefining and improving on what has already been done. This duality of exploration and exploitation fully aligns with the concept of organizational ambidexterity [47,48]. However, achieving these results is a formidable challenge, particularly for DMOs, as they often share one of the main characteristics of SMEs, such as resource limitation and unstructured managerial capabilities [49]. To support a sustainable tourism development, DMOs should leverage on charismatic and visionary leadership capable of driving the systematic transformation required by the tourism industry [50]. Indeed, DMOs acting as orchestrators must be able to weave collaborative relationships with organizations that have different objectives and premises at their base, without, however, being able to rely on hierarchical or economic levers [51].

## *2.2. Stakeholder Mapping and Engagement in Complex Fragile Ecosystems*

DMOs play a key role in the development and management of fragile and complex territories as they are in the right position to balance the various interests and manage the different demands coming from the different regional institutions and stakeholder networks. This process is crucial for the legitimation of political power and for ensuring shared responsibility and vision within territorial decision-making processes [52,53]. Environmental, climatic, and socio-economic changes have in fact led to a shift in the balance of power, tipping the scales on the side of shared governance processes in the management of territories. Concepts such as the collaborative approach [54] and embodied governance [55] emphasize a participatory decision-making process that is crucial for the co-creation of value for all [42,55–58]. However, this democratization of processes requires DMOs to develop tools for effective stakeholder mapping, prioritization, and engagement [59]. The latter involves various instruments and forms such as conferences, workshops, and questionnaires [11,60]. However, engaging stakeholders without adequate levers presents several critical issues. The lack of formal mechanisms, in fact, can lead to problems in both mobilizing and communicating with stakeholders [61]. Moreover, without traditional (hierarchical or economic) levers, organizations struggle to build relationships of trust and mutual understanding of intentions [62,63]. Finally, managing conflicts and balancing stakeholder interests becomes even more complex in the absence of boundaries and limits dictated by formally used traditional engagement mechanisms [64,65]. Moreover, to foster sustainable development in fragile and complex ecosystems, merely engaging with stakeholders directly involved in an organization's interests is not sufficient. Sustainability requires an approach that holistically integrates multiple perspectives. By focusing only on core stakeholders, organizations might only partially respond to environmental threats when they emerge. Conversely, broadening the stakeholders involved by including fringe stakeholders ensures not only potentially more effective but also more timely responses and can lead to a proactive attitude toward future emergencies. Therefore, organizations must manage radical uncertainty by engaging with a diverse and dispersed range of stakeholders. This enables them to proactively address issues rather than simply reacting to events as they happen [66].

An interesting model proposed to map diverse and dispersed stakeholders to engage without the use of traditional levers is the one proposed by Hart and Sharma [66]. The Radical Transactiveness (RT) model is in fact a framework for stakeholder mapping that consists of a dynamic capability that implies the systematic identification, exploration, and integration of the visions of both core and fringe stakeholders with the aim of managing disruptive changes and creating, using the collective imagination, models capable of competitively facing future scenarios. RT is considered "transactive" because it seeks

to involve the firm in a two-way dialog with stakeholders, where each party influences and is influenced by the other. Engaging with a diverse range of stakeholders expands the firm's boundaries, offering opportunities for learning and growth. Consequently, RT enables a firm to understand the complex and evolving issues that could potentially affect the foundation of its future competitive advantage. This form of engagement consists of two complementary capabilities: 'fan out' and 'fan in'. Fanning out implies overturning traditional logics by identifying the voices of stakeholders at the edge of the network of relationships to anticipate their concerns and use this effort as a source of innovative and disruptive ideas. This part of the model specifically aims to map and engage remote, weak, isolated, non-legitimate, disinterested, and even non-human stakeholders. Fanning in, on the other hand, involves the creation of complex and empathic interaction mechanisms with these stakeholders to try to integrate and reconcile their knowledge with existing know-how to design new disruptive strategies. By establishing communication channels with previously untapped sources of intelligence, RT helps the firm dynamically align its strategy with a changing environment. The knowledge gained from fringe stakeholders signals to the organization where to invest in appropriate resources and capabilities, enabling it to generate new, value-creating strategies not only for the organization itself but also for the environment. Therefore, the RT model is of interest for application within fragile and complex ecosystems because it focuses on gaining access to the relationships with stakeholders that were previously considered marginal. Moreover, it is transactive because in attempting to influence, the organization remains at the same time open to being influenced, in an outside-in tension that effectively represents the approach that must necessarily be adopted to address multidimensional challenges such as those related to sustainability [34,67].

### *2.3. Role of Triggers in Stakeholder Engagement Processes*

To generate long-term change, it is necessary to focus on the triggers that can initiate the process. Triggers are defined as instances or events that support and drive a certain organizational change [68]. Recognizing that change represents a transition from one state to another, it is invariably influenced by both impediments and obstacles as well as facilitators and enablers. To overcome the obstacles' resistance, triggers play a crucial role, enabling the transformation to take place. Triggers could be divided into two macro-categories that are not mutually exclusive: internal, i.e., originating within organizational boundaries and generating external impacts; and external, which mainly emerge from the external environment and thus influence the organization in the opposite way to the previous ones [69]. Change should be viewed as an ongoing process, one that continuously incorporates learning and passes it forward. A trigger is identified as the moment when an action is set in motion, such as adapting in response to the challenges posed by climate change. Understanding the role of triggers in stakeholder engagement within fragile and complex ecosystems is crucial. In these contexts, triggers refer to specific events or conditions that catalyze the attention of stakeholders, spurring their engagement, changing power dynamics, and creating new opportunities for collaboration. This concept aligns with the importance of what are termed 'event triggers', i.e., events that can mobilize the organizational environment towards environmental issues [70]. These triggers can range from environmental disasters to regulatory changes, both of which have the potential to alter and rewrite stakeholder perceptions and actions [71,72]. However, the effectiveness of these triggers is based on the relational structure of the pre-existing stakeholder's network and their recognition of mutual interdependence within the ecosystem [73].

It is also necessary to emphasize that stakeholder engagement not only passes through obvious and concrete actions but also through abstract and cultural processes [74,75]. For instance, the concept of 'sensemaking' is fundamental within these contexts [76]. Indeed, when stakeholders are faced with these triggers, they engage in attribution and meaning-making processes to interpret and understand these events, which subsequently modify and shape their strategic responses [45]. This interpretative dynamic often generates

unexpected outcomes, generating, in turn, different and often conflicting engagement strategies [77,78]. Furthermore, the adaptive capacity of these complex ecosystems plays a critical role in determining how these triggers are absorbed in the first instance and addressed in the second instance [79]. Therefore, the role of communication in these scenarios is of crucial importance in aligning the different perspectives, orientations and actions of the local stakeholders.

### 3. Materials and Methods

This research is based on a comparative multiple case study methodology [80] (p. 13), since “it is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and the context are not clearly evident”. This is particularly fitting with the purposes of this research because it wants to identify key stakeholders to engage for sustainable development into complex fragile ecosystems and triggers that could foster this process, trying to answer the “how” questions related to a contemporary set of events, over which the investigators have no control [80]. The area under investigation is the alpine Trentino Region, where 12 local DMOs (in Italian APTs) are located. Even if the territory and the number of DMOs is limited, the authors decided not to enlarge the area to involve other Italian territories because belonging to the same administrative region is a relevant factor since the activities and responsibilities of the DMOs are stated and regulated at the regional level.

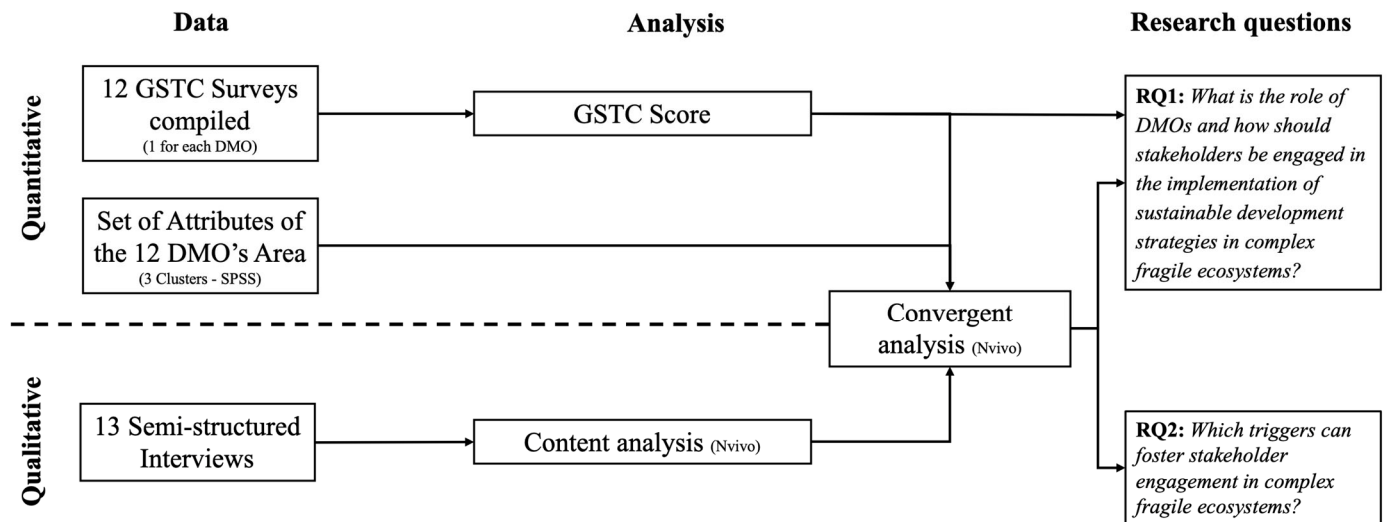
A Convergent Parallel Mixed Method was selected to guide the research [81]. This method aims to combine quantitative statistical data with data emerging from semi-structured interviews to ensure the most multifaceted, comprehensive, and profound understanding of the analyzed sample possible. Therefore, both quantitative and qualitative data are required in this technique [82].

The Convergent Parallel Mixed Method design is highly suitable for analyzing complex, fragile ecosystems due to its capacity to integrate both quantitative and qualitative data, providing a comprehensive understanding of the interactions within these environments. In this approach, qualitative and quantitative data are collected concurrently, analyzed separately, and then integrated to compare and contrast the findings, offering a nuanced view of the ecosystem’s complexity. This integration is critical in fragile ecosystems, where socio-ecological variables—such as community engagement and biodiversity indicators—are deeply intertwined and must be understood holistically [81]. Moreover, in fragile ecosystems, research findings often have a direct impact on conservation policies, resource management strategies, and community interventions. The Convergent Parallel Mixed Method design can link scientific findings with community expectations and policy needs, helping to create a balanced approach to sustainable management. Quantitative data, such as tourism indicators, population dynamics, and other ecological indicators, provide clear metrics for policymakers, while qualitative insights contextualize these metrics in terms of stakeholder needs and concerns, making the research more applicable and socially responsive [83].

In addition, this method is particularly effective for the aim of this study since the set of interviews covers all the DMOs in the region and all the actors engaged in the process, permitting researchers to have a complete snapshot of the entire ecosystem taken into consideration. According to the model, researchers are required to conduct qualitative and quantitative investigations in parallel and at the same stage of the research. However, to preserve the meanings emerging from the field, researchers are required to conduct the analyses and surveys independently and without contact or comparison. This ensures that the nature of the data remains balanced and that emerging findings do not influence each other. Once the data collection and analysis phases have been concluded, the researchers are now allowed to come together to conduct joint interpretation phases [81]. Strictly following these guidelines, four different researchers with four different areas of expertise (one statistician, two economists, one organizational scientist) took part in this study. The team of researchers was divided into two groups at the beginning of the research, with two

focused on the qualitative study and two on the quantitative study. After the collections and analyses, which were carried out independently, the team reconvened to pool the findings, thus creating a process of creative discussion and reflection that was able to bring out serendipitous and unexpected results from the data. For the sake of transparency and understanding of the process followed, a graphic representation of the method is shown below (Figure 1).

### Convergent Parallel Mixed Method Framework



**Figure 1.** Convergent Parallel Mixed Method adopted in the research (authors' own creation).

The research quality is ensured by following Yin's [80] guidelines regarding exploratory case studies: construct validity, external validity, and reliability. Construct validity requires establishing "correct operational measures for the concepts being studied" [80] (p. 35), and it is achieved using multiple sources of evidence. In our case, this goal is reached by combining quantitative data (statistics), interviews, and document analysis (DMO reports, strategies, and projects). By combining different data sources and research methods, the authors seek a convergence of evidence in the results. External validity relates to the generalizability of the findings beyond the specific case study and is pursued by referring to pre-existing theoretical frameworks with the aim to broaden them. In this study, we focus on the Radical Transactiveness framework applied to stakeholder engagement by Hart and Sharma [66]; in particular, we extend the framework identifying strategies to engage fringe stakeholders. This methodological choice is justified because the framework offers a robust approach for engaging with fringe stakeholders—those who are often overlooked yet can provide valuable insights and opportunities for sustainable development in complex fragile ecosystems. By concentrating on this framework, we aimed to address the critical need for organizations to incorporate diverse perspectives, especially from peripheral stakeholders who may influence or be affected by the organization's actions in unforeseen ways. Furthermore, we extend the original framework by identifying specific strategies to engage fringe stakeholders effectively in complex fragile ecosystems. This extension is important because while the Radical Transactiveness framework highlights the significance of these stakeholders, it does not focus on the particular context taken into consideration in this study. The pre-existence of this theoretical framework allows this study to achieve analytical generalization [80], even if it is acknowledged that generalization is not a straightforward process, particularly for the comparison of multiple case studies [80]. However, the exploratory nature of this research required the selection of one single area, where multiple embedded units (12 DMOs) under the same regulatory framework can be

fairly analyzed. The last element required to create a high-quality design for the case study is reliability, meaning the possibility of replicating the case study and achieving the same findings. The construction of a unique database to collect materials on the 12 DMOs is a valid tool to reach reliability [80]. For this paper, the dataset was created using NVivo 12. The software allowed the storage of all documentary and interview materials.

### *3.1. Data and Characteristics of the Territory*

The research focuses on all twelve DMOs located in a popular tourist area in Northern Italy (Trentino), famous for the UNESCO Dolomites site. Trentino is located in the southern Rhaetian Alps and the Dolomites. The nature is therefore typically mountainous, with more than 70% of the entire territory above 1000 m above sea level. The climate is that of the Alpine regions but is characterized by considerable variety. It ranges from the Mediterranean type, in the Lake Garda region, to the typical Alpine climate in the valleys at higher altitudes. The temperatures and precipitation, including snowfall, are therefore highly variable. The economy of Trentino presents a rather balanced set-up in the three productive sectors. The high mountains are characterized by a sylvo-pastoral economy, while in the less elevated and more fertile valleys, the cultivation of specialized and highly profitable agriculture (vineyards and orchards), forage and horticultural crops, and small fruits is practiced. Cattle breeding and activities related to the exploitation of forest resources are also important. In the industrial sector, manufacturing enterprises and electrical industries—exploiting substantial water resources—are widespread, as are handicrafts. Among the most dynamic sectors, tourism has a driving role in local development, as it generates an average of nearly 30 million overnight stays per year.

Trentino represents a suitable setting for our empirical research since it is exposed to numerous environmental emergencies, such as an average temperature increase over the entire territory, a significant reduction in the duration of snow cover and average seasonal snow height, a change in the water supply in the territory's watersheds, a reduction in the overall extent of glaciers, and the degradation of permafrost due to climate warming [84].

In order to thoroughly assess the potential differences and similarities existing between the 12 local DMOs, as they belong to the same territory, a cluster analysis was performed. This analysis allowed for the simplification and clarification of the characteristics present in the analyzed sample. To achieve this, a comprehensive selection of indicators of a different and varied nature, but at the same time highly predictive with respect to territorial morphology, was analyzed: territorial, demographic, economic, social, and tourism. Moreover, this comprehensive approach made it possible to capture, as far as possible, the complex and multifaceted nature of the territories taken into consideration.

The data on tourism areas were mainly taken from public sources provided by ISPAT (Statistical Institute of the Province of Trento). These data refer to three major agglomerations: ISPAT Monthly Census of Tourist Movement Data, ISPAT Statistical Yearbook, and ISPAT Yearbook of Tourism. To complete the sample, other data, extracted from ISTAT (Italian National Institute of Statistics), concerning the surface area, urbanization, altimetry, and digital mapping of the municipalities of Trento were then added. Where the precise data for a specific area were not directly available, they were extrapolated from the data broken down by the Valley Community. However, an attempt was made to use the most recent data available as far as possible, mainly using data from 2022 and 2021, and when not available, using those from the most recent year. After an initial correlational analysis of the available variables (as reported in Appendix A), in order to avoid collinearity and reduce the number of inputs to the cluster analysis given the limited size of the dataset (12 DMOs), the following were selected: number of local businesses per capita, current expenditures of municipal governments per capita, tourist rate (tourists/inhabitants), population-weighted average altitude, population-weighted average urbanization, and incidence of tourism expenditures on municipal expenditures. These five variables synthesized on the one hand the relevance of tourism and on the other hand, the morphological and economic features of the 12 territories. Hierarchical cluster analysis was conducted using SPSS (28 Version)



by applying several methods: normalization of input variables to the 0–1 interval, agglomerative approach, Euclidean distance, and Ward’s method, followed by a validation by ANOVA tests for the significance of differences between clusters. In the end, a three-cluster grouping was chosen to ensure a minimum of two observations per cluster. Alternative clusterings were attempted by the K-means procedure, resulting in similar results to the ones obtained from the hierarchical approach, which is to be preferred over non-hierarchical in a case such as this of few recognizable observations. For the purposes of confidentiality and pseudonymization of the DMOs that participated in this study and granted permission to write this paper, each of them was assigned a code that makes it possible for only the researchers to identify them. These identification codes are those that will be used throughout this paper, starting with the table below (Table 1).

**Table 1.** Cluster analysis of the 12 DMOs analyzed (authors’ own creation).

Tourism Clusters and Areas	Number of Local Businesses p.c.	Current Expenditures of Municipal Governments EUR p.c.	Tourist Rate Tourists/Inhabitants	Population-Weighted Average Altitude mt	Population-Weighted Average Urbanization 1 to 3 Index	Incidence of Tourism Expenditures on Municipal Expenditures %
<b>Cluster 1</b>	<b>115</b>	<b>2217</b>	<b>0.413</b>	<b>1123</b>	<b>2.957</b>	<b>3.092</b>
DMO B	134	2070	0.542	1320	3.000	3.53
DMO D	96	2363	0.285	925	2.915	2.66
<b>Cluster 2</b>	<b>89</b>	<b>1577</b>	<b>0.160</b>	<b>791</b>	<b>2.978</b>	<b>1.194</b>
DMO C	103	1632	0.112	893	2.914	1.05
DMO I	87	1456	0.180	707	3.000	0.85
DMO G	90	1671	0.124	624	3.000	2.18
DMO A	75	1547	0.225	940	3.000	0.70
<b>Cluster 3</b>	<b>69</b>	<b>1113</b>	<b>0.051</b>	<b>378</b>	<b>2.203</b>	<b>0.930</b>
DMO K	70	1083	0.037	689	2.699	0.41
DMO E	74	1051	0.095	332	2.408	1.80
DMO F	61	1000	0.122	249	2.445	1.09
DMO J	82	1356	0.005	248	1.205	0.49
DMO L	62	1051	0.045	505	2.325	1.17
DMO H	65	1140	0.004	245	2.138	0.63

This cluster categorization was also adopted as a reference for the following analyses, considered as a general, reliable, and objective classification of the DMOs directly derived from official sources. We used the three clusters’ features as attributes of the twelve cases on NVivo12 to check the existence of different sentiments and themes related to sustainability.

### 3.2. Procedures

Both the quantitative and the qualitative part of this study, although conducted separately and in parallel, were guided by a reference point that detailed the lines of investigation, namely, the GSTC (Global Sustainable Tourism Council) criteria. The GSTC criteria are directly connected to the Sustainable Development Goals (SDGs) and the Agenda 2030 for Sustainable Development. These criteria not only provide a picture of the sustainability maturity levels achieved by a given territory but can also be used to explore the stakeholder engagement capacities achieved by DMOs. In this study, we focused exclusively on the grid provided by the GSTC-D framework (where D stands for Destinations) as it can be applied to a wide range of both large (e.g., sizable cities or regions) and small (e.g., local community clusters, natural parks, etc.) destinations. In our research we did not apply the entire framework, but, following what has already been performed by Wagenseil, Wyss, and Huck [34] in a recent study that also focused on alpine destinations, we considered only 23 of the 38 criteria. The authors made this choice based on experts’ opinions on which criteria were deemed most relevant for European Alpine destinations, excluding those that did not fit this particular complex fragile ecosystem or

were assumed to be already adopted in all the territories or empowered by law. Therefore, the final framework consists of 9 criteria (out of 11) in the Sustainable Management Section, 2 criteria (out of 8) in the Socio-economic Sustainability Section, 3 criteria (out of 7) in the Cultural Sustainability Section, and 9 criteria (out of 12) in the Environmental Sustainability Section (Appendix B).

In addition, to further explore the topic and obtain more characterized insights, a set of 4 additional questions were added to the grid: the relevance of DMOs' role in the sustainable development of the destination; and the level of involvement of three key local stakeholders: firms, local public institutions, and residents. Respondents were asked to answer each question on a five-point Likert scale (1 = very low/5 = very high) (Appendix C).

The GSTC-D framework includes 4 dimensions of analysis: Sustainable Management (Section A); Socio-economic Sustainability (Section B); Cultural Sustainability (Section C); and Environmental Sustainability (Section D). Section A allows us to assess the extent to which and how DMOs engage stakeholders within their sustainability efforts by delving into the tools and techniques used. Section B, by delving into the contribution made by DMOs to economic development, assesses how they can act in orchestration with local stakeholders. In particular, the focus falls on the involvement of local businesses and communities within development planning and how they ensure that the fruits of their labor are then distributed. Section C instead explores how stakeholders are involved in the preservation and promotion of local culture and heritage. This section looks at how DMOs fit into the local fabric by engaging in dialog with local cultural groups, artisans, and heritage preservation bodies. Finally, Section D investigates the ability to involve environmental stakeholders, such as land conservation groups or local communities, in the protection of natural resources. Furthermore, thanks to the set of additional questions and by analyzing the entirety of the sections transversally, it was also possible to investigate the capacity to implement processes linked to continuous improvement, i.e., how DMOs are able to build partnerships and networks that can support sustainability in the long term, and finally, how DMOs use the common challenging terrain of sustainability to educate and train their stakeholders to create multiplicative dynamics that ensure the perpetuation of such practices even beyond the confines of the individual DMO.

Regarding the qualitative part, on the other hand, the research involved conducting interviews with all 12 DMOs in Trentino. We conducted 13 online (using the Microsoft Teams platform) video interviews with the 12 local DMOs and the Regional one (Trentino Marketing) since 'the quality of the interviews [conducted online] did not differ from face-to-face interviews' [85] (p. 1294). Following the logic of key interlocutors [86], the interviews were conducted with the General Managers and the Sustainability Managers of each of the DMOs. This led us to interview a total of 15 people. The choice of data collection method fell on semi-structured interviews [87], as this structure is indeed useful for the purposes of the research as it allows one to go in search of targeted information and at the same time remain open to potential unexpected and emerging meanings. Furthermore, thanks to the possibility of inserting serendipitous questions that vary according to the flow of the interview, the researchers were able to delve deeper into the issues under investigation to have a better understanding of the motivations behind the answers. Each interview was audio-recorded, re-listened to, and verbatim transcribed to generate further textual data for analysis in conjunction with the research notes taken in real time by the researchers. This process aims to preserve the original meanings within the interviews that can only be clearly read and understood through contextual notes that, without the audio recording or physical presence, would risk being lost [88]. For the analysis of the textual data, the choice fell on a Deductive Qualitative Analysis [89]. As the interviews were in fact written on the conceptual framework provided by the GSTC-D grid, this approach allowed the researchers to deductively examine the data through the lens of the theoretical framework used within this study while remaining open to the emergence of new insights. Therefore, the coding of the data was primarily informed by the dimensions indicated (deductive coding) by the grid and then remained open to the coding of a new node should

the emerging data not be strictly traceable to one of the categories already present (axial coding). All data analyses were carried out using the NVivo 12 platform, which enabled the organization, coding, and subsequent interpretation of the data [83]. Various techniques were used to interrogate the data, namely, matrix-coding queries, recurrence analysis, and content analysis [90]. The rigorous process followed also made it possible to take into account the participants' tones of voice, emphasis, and non-verbal and para-verbal emphases that respondents placed on certain topics from time to time. This made it possible to identify direct quotes that represented their perspective and position towards the topic.

Finally, within the analyses carried out, the hierarchical cluster analysis served instead as a test to understand whether there were any triggering territorial characteristics that could provide us with a deeper and more multifaceted perspective than what emerged from the quantitative and qualitative analyses. Indeed, by using economic, social, environmental, and demographic variables, we were able to obtain a multifaceted and detailed understanding of reality that allowed us to further contextualize both the interviews and the GSTC-D scores.

## 4. Results and Discussion

### 4.1. *The Role of the DMO in Complex Fragile Ecosystems*

The role of DMOs in engaging stakeholders within fragile and complex ecosystems emerges as central, especially when considering the challenges and dynamics that take life within these contexts. Given the heterogeneous features that characterize the 12 territories managed by Trentino DMOs, we used NVivo to check if those elements impact the role played by DMOs. Starting from the case classification performed using the cluster attributes, we then performed a cross-case analysis with the quotes and nodes derived from the deductive qualitative analysis. This allowed us to observe that there are no significant differences between the territories in terms of the role played by the DMOs.

DMOs act as key facilitators and mediators, orchestrating collaboration among the various interdependent stakeholders in the ecosystem to ensure that practices are carried out in a sustainable manner. The primary and principal role played by DMOs is to balance economic revenues from tourism with environmental conservation and social welfare. In fact, DMOs are peculiarly positioned at the most strategic point to lead this effort; they are perhaps the only actor within the area with a thorough and inclusive knowledge of both tourism and non-tourism organizations, local environments, and community needs [42,91,92]. These factors allow DMOs to align with the interests of the different actors in the field, an aspect that is of paramount importance especially in these tourism-driven areas where the impacts of tourism can be profound and difficult to track as noted by one of the interviewees: "DMOs are in a strategic position to act, in the middle ground, and more importantly they're not politicized, or at least shouldn't be." (DMO E). For example, measures such as access contingencies or mobility restrictions are necessary to limit overtourism and ensure a better quality of life for residents and the preservation of the environment in several of Trentino's areas such as Tenno and Molveno lakes. At the same time, it is also true that the same measures in the short-term reduce the turnover of some tourism businesses. The opposite impacts of overtourism could generate conflicts among destination players. Therefore, DMOs must ensure that economic development does not come at the expense of natural resources or of the locals' well-being.

It is also clear from the interviews how DMOs play a crucial role in stakeholder engagement through their ability to mediate and facilitate communication and collaborations between different groups. This is especially true for those DMOs that field dialogic and participatory processes that are critical for the development of sustainable tourism [61]. Indeed, by pushing a reflexive and inclusive approach, DMOs ensure that all the voices are heard and considered, as such ecosystems are composed of actors with different opinions, interests, and goals: "DMOs are fundamental since they're more and more strongly engaged in the governance of the territory. They play as glue and as a systemic actor." (DMO K). Indeed, local communities may experience negative impacts from tourism, such

as an increased cost of living or cultural modification. Thus, DMOs need to address these social concerns to maintain community support without, at the same time, conflicting with economic operators. This requires orchestrating capabilities to overcome communication barriers and foster trust and comprehension among stakeholders who not only traditionally do not work together but also have different and competing interests.

This pivotal role is well self-perceived by the DMOs themselves. Responses to the additional question number 1 (Appendix C) in our survey indicate that DMOs recognize their crucial role in the sustainable progress of their regions (2.  $n = 12$ ;  $\mu = 4.3$ ;  $\tilde{x} = 4$ ). However, the effectiveness of DMOs in playing these roles depends on their ability to navigate within complex power dynamics and stakeholder relationships. This unique challenge embodies the ability to balance diverse interests, manage conflicts, and ensure an equitable presence and stance within decision-making processes. This requires structured and in-depth diplomatic, negotiation, and conflict resolution skills [61]: “DMOs are very important, but they’ve to remember that they’re not alone, to achieve great results they must collaborate with all the actors in the territory.” (DMO G). The tourism ecosystem comprises a wide range of stakeholders that often have conflicting interests—for example, businesses may prioritize economic growth, while environmental groups focus on landscape conservation—and to navigate these tensions, DMOs must be able to address paradoxes and conflicts to achieve a workable certainty through which trust is built and consensus reached among them.

Therefore, the role played by DMOs is multifaceted and critical when considering stakeholder engagement within fragile and complex ecosystems. Their responsibilities range from facilitating collaboration and communication among different stakeholders so that they put in place sustainable tourism practices; educating and generating awareness through ad hoc campaigns; to finally attracting and raising the necessary funds and resources to make the previously mentioned elements come to life. This critical role requires the DMOs to develop a set of specific capabilities that Hillebrand [39] named as follows: (i) stakeholders mapping, to gain an in-depth understanding of all actors within the ecosystem, their interests, and the relationships between them; (ii) tension management, cultivating norms of empathy and reflectivity, developing paradoxical thinking skills among employees, and employing managerial systems such as issue advocates; (iii) stakeholder engagement, to determine which actors to involve, on what issues, and how to weigh their input; and (iv) flexible approach to find a convergence among stakeholders’ points of view, which means starting with available resources, setting initial goals, and being open to adapting both as new actors commit and contribute.

#### *4.2. Stakeholder Mapping and Forms of Engagement Within Complex Fragile Ecosystems*

The main stakeholders’ categories identified by the DMOs are many (Table 2). They include both public and private players, within but even outside the tourism domain. This diversity illustrates the multifaceted nature of the engagement necessary for sustainability in fragile ecosystems. Tourism companies and local public institutions stand out with full representation, indicating their crucial roles in economic and policy spheres. The high mention of transports reflects its significance in managing the ecological impact of accessibility. Ski-lift companies, cultural organizations, and trade associations signify the operational and cultural stakeholder’s integral to the tourism experience. The engagement of residents and non-tourism companies at 50% suggests a broadening of the DMOs’ scope to include community and cross-sectoral interests. Meanwhile, wildlife, education, natural landscapes, and natural parks, though less frequently cited, are acknowledged as essential components of the ecosystem, highlighting once again the need for their conservation and educational potential to be interwoven into the tourism narrative.

**Table 2.** Frequency analysis of stakeholders mentioned by DMOs (authors' own creation).

Stakeholder Categories	Mention/Number of Interviews	%
Tourism companies	12/12	100%
Local public institutions	12/12	100%
Transports	11/12	91.67%
Ski-lift companies	9/12	75%
Cultural organizations	7/12	66.67%
Trade associations	6/12	58.33%
Residents and locals	6/12	50%
Non-tourism companies	5/12	50%
Wildlife	4/12	41.67%
Education	4/12	33.33%
Natural landscapes	4/12	33.33%
Natural parks	4/12	33.33%

Empirical evidence from our study (Table 3) indicates that the current state of stakeholder engagement is not homogeneous. Among the different groups, local public institutions are the most engaged in DMO activities (3.  $n = 12$ ;  $\mu = 3.8$ ;  $\tilde{x} = 4$ ). The engagement of firms is marginally less (2.  $n = 12$ ;  $\mu = 3.0$ ;  $\tilde{x} = 3$ ), and the participation of residents is the least (4.  $n = 12$ ;  $\mu = 2.9$ ;  $\tilde{x} = 3$ ).

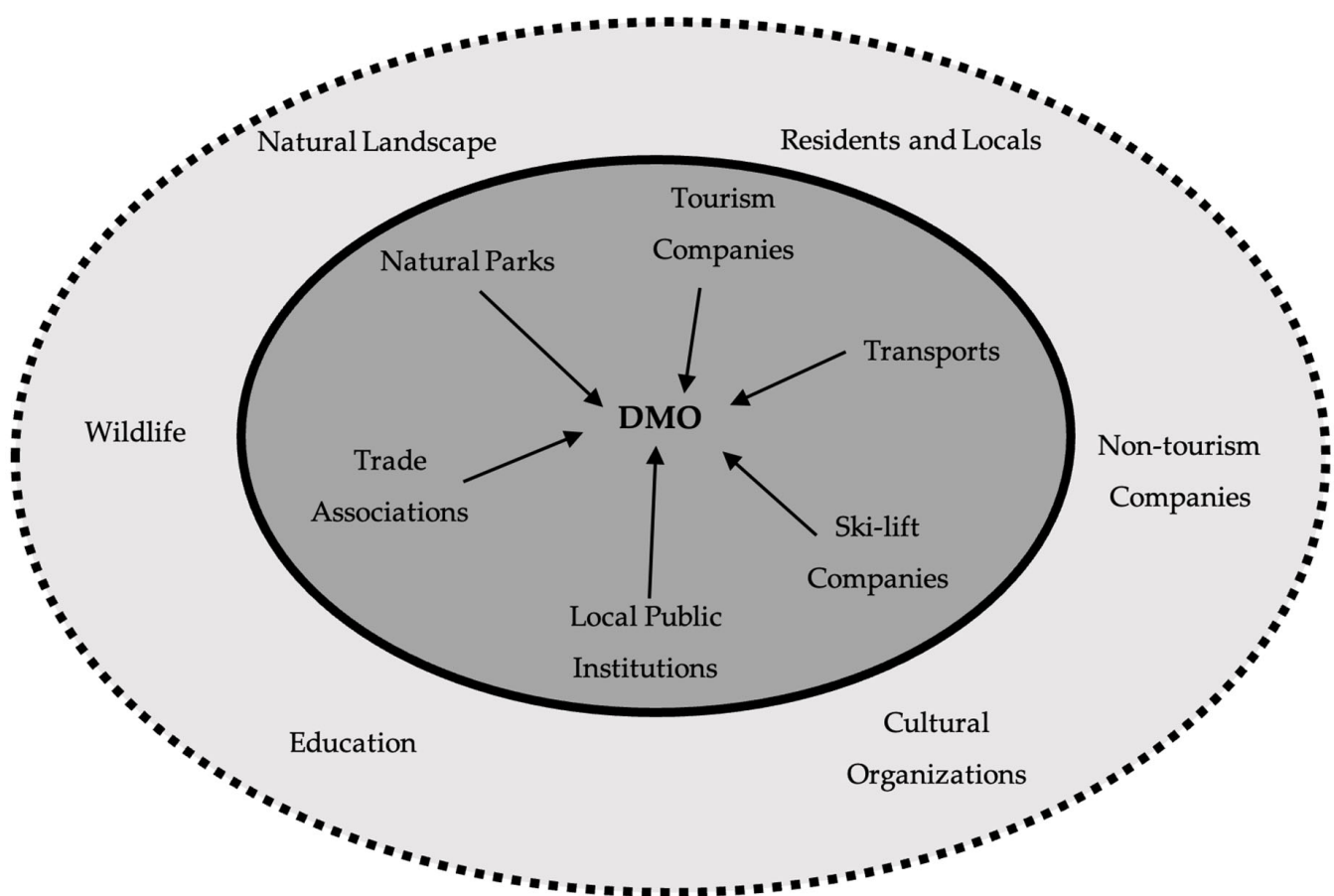
**Table 3.** The average levels of stakeholders' participation achieved by the DMOs (authors' own creation).

	Average	Median
2. What level of local firms' participation has been achieved?	3.0	3
3. What level of local institutions' participation has been achieved?	3.8	4
4. What level of local residents' participation has been achieved?	2.9	3

Within fragile and complex ecosystems, to achieve sustainability results, the role of DMOs extends to resource allocation and political advocacy. Indeed, DMOs might create a bridge between the public and private domains. Our results show that some DMOs can play a role as an aggregating platform for collective action as they are positioned between the lines. Since the management of complex fragile ecosystems requires the involvement of numerous independent actors, each of them pursuing their own strategies and objectives, gathering consensus becomes particularly crucial for the achievement of sustainable goals [93]. To best represent the intricate map of stakeholders in which DMOs are embedded in complex fragile ecosystems, we used the Radical Transactiveness framework provided by Hart and Sharma [66] (Figure 2).

The framework underscores the importance of engaging not only with traditional, salient stakeholders but also with fringe stakeholders who may be powerless, non-legitimate, isolated, or disinterested. In the context of fragile ecosystems, these fringe stakeholders—such as residents and locals, cultural and educational organizations, non-tourism companies, or even non-human entities such as wildlife or natural landscapes—significantly impact and are impacted by the DMOs activities. By employing the Radical Transactiveness framework, DMOs can create a comprehensive and accurate map of all stakeholders. This ensures that the perspectives and needs of all parties are considered in decision-making processes, which is crucial for sustainable management. The framework's concepts of "fan-out" and "fan-in" are particularly relevant. "Fan-out" involves divergent thinking, encouraging managers to network from the core to the periphery and to put the last first. This means expanding the focus from immediate stakeholders to those on the periphery and consciously reversing

traditional stakeholder priorities. For DMOs, this approach uncovers unmet needs and innovative opportunities essential for managing complex fragile ecosystems sustainably. “Fan-in”, on the other hand, involves knowledge integration and building bridges with stakeholders. By establishing deep, empathetic relationships with fringe stakeholders, DMOs can facilitate the transfer of tacit knowledge, which is vital for understanding the intricacies of complex fragile ecosystems. This process often requires reframing the organization’s dominant logic, allowing for the reconciliation of conflicting perspectives and fostering innovation. Moreover, engaging with a wide range of stakeholders enhances competitive advantage by fostering innovation through diverse insights. It enables DMOs to discover new, disruptive technologies and business models that allow them to deliver value more effectively than competitors. Additionally, maintaining an ongoing two-way dialog with stakeholders helps DMOs anticipate potential conflicts and address them proactively, ensuring long-term viability and resilience.



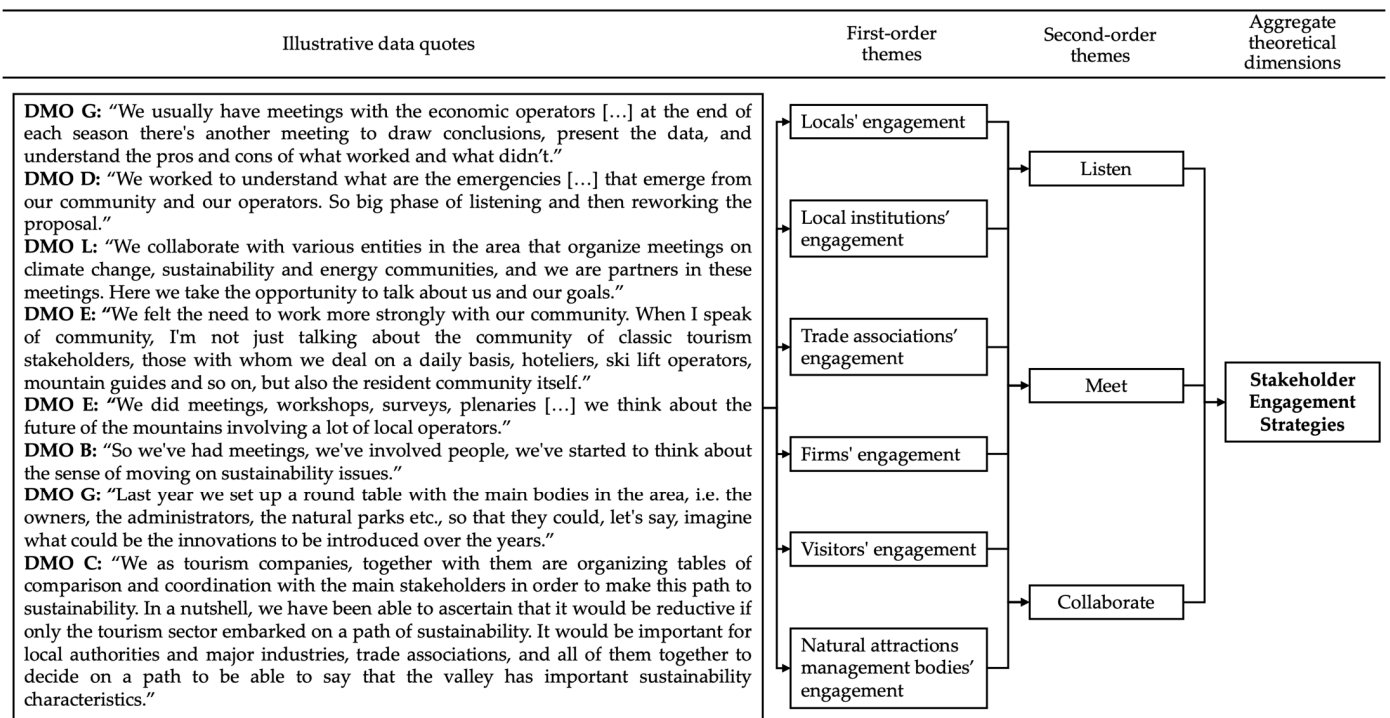
**Figure 2.** Radical Transactiveness framework applied to the context analyzed (authors’ own creation).

Starting from these premises, as shown in Figure 2, we considered as core stakeholders those responsible for the core components of the tourism product (transports, tourism ski-lift companies), natural parks because when present they are fundamental tourism attractions, local public institutions because of their regulatory power, and trade associations since they represent the voice of the main local businesses. All the other stakeholders mentioned by those interviewed are considered as fringe as they have few resources of minor importance to destination sustainable development and thus have little power. The DMOs are positioned at the center of the map, acting as a hub capable of connecting the various entities in the ecosystem, regardless of their nature or goals. Through the model, our goal is to represent not only the difficulties inherent in moving in such an arena but also the opportunities that can arise from innovative and unexpected collaboration with

fringe stakeholders. The DMOs' positioning gives them a playmaker role that allows them to circulate communication and collaborative impetuses across sectoral boundaries to align the goals of all stakeholders toward environmental conservation, achievable local community benefits, and tourism development. By engaging, for example, stakeholders such as wildlife parks and conservation agencies, DMOs can support their activities and increase sensitivity towards ecological integrity among the other stakeholders. Indeed, the presence of the organizations in charge of tourism and ski-lift companies reflects a now-achieved awareness that the economic goals of an area must necessarily be coupled with sustainability goals. Moreover, the collaboration between trade associations and local institutions fostered by DMOs underscores the importance of integrating both local and sector-specific expertise within decision-making processes. These connections are crucial because they allow for not only collective efforts to be translated into practice but also to reach a general agreement on shared values, policies, and practices. Residents and locals, in fact, even if belonging to the fringe stakeholder's category, are critical stakeholders as both their livelihoods and quality of life are directly impacted by tourism, conservation, and sustainability practices. Residents and locals' participation is indicative of an inclusive community-based strategy in engagement that not only seeks input and feedback from local people but also prioritizes their well-being in destination sustainable development strategy. Moreover, some studies pointed out how tourism becomes more sustainable in all aspects when locals and residents can co-create visitors' experiences and develop a sense of place [91,94]. However, it is important to notice that in spite of their potential role, the data in Table 3 show that they are less engaged with the DMO than local institutions and firms. Similarly, private organizations are engaged to leverage their resources and innovative capacity to achieve sustainable development, while cultural associations are instead involved to preserve and promote the local cultural heritage. The goal is to co-create value around the destination; in fact, many studies have confirmed the usefulness of the co-creation concept [95], showing that such collaboration could lead to the preservation of local values, greater economic benefits, and an increased market visibility.

Although organizations are often inclined to focus on the elements belonging to the narrow circle, in the case of complex fragile ecosystems such as alpine ones, attention must also be paid to the "fringe" circle. Indeed, the elements belonging to the "fringe" sphere represent the key elements that characterize the uniqueness of a system and, above all, the need to protect and integrate these elements into a cohesive and inclusive strategy. In essence, Figure 2 captures and illustrates how DMOs are not just organizations that facilitate tourism but also how they are both stewards of sustainability and responsible for weaving together the various stakeholder threads called upon in a tapestry that can support both ecosystem resilience and community prosperity [90]. Therefore, DMOs, lacking a formal hierarchical or economic relationship with stakeholders, must employ alternative engagement strategies.

The forms of engagement deployed by DMOs to engage traditional and fringe stakeholders are heterogeneous. By coding and analyzing the interviews on NVivo, we have identified the main stakeholders categories and three different engagement strategies, characterized by a progressive level of complexity: Listen (surveys, panels etc.), Meet (workshop, assemblies, etc.), and Collaborate (joint activities and decision-making processes). Starting from these standpoints, Figure 3 makes clear the data coding process and synthesizes the main results emerging from the collected data.



**Figure 3.** Data coding process and results: stakeholder engagement strategies (authors' own creation).

“Listen” is a quite common one-way form of engagement, implemented with the aim of receiving information about stakeholders needs, expectations, and opinions. Typical tools of a “listen” strategy are surveys, interviews, and focus groups to capture the views of one or more categories of fringe stakeholders. One example is DMO D, which conducts recurrent surveys of residents with the aim of capturing the residents' personal point of view. Recently, the same DMO also created an event called “from dreams to projects” to point out residents' perspectives about their future and the future of the destination. On the contrary, the other two modalities are interactive. “Meet” is a strategy that not only allows the DMO to gather information but also to discuss, negotiate ideas, and generate common consensus towards projects and future strategies. DMO L provides an effective example of the “meet” strategy based on multiple meeting moments with local core and fringe stakeholders. From the end of 2023 and up to the end of the 2024 summer season, there have been several meetings with members, businesses, and local stakeholders to define the tourism local offerings and bring to awareness some data, but above all, to remind everyone of the achievement of the destination certification milestone, which was also renewed for the year 2023, and the new goal just achieved: the first group certification for accommodation facilities. In addition, several meetings were organized in local schools to raise students' awareness of sustainability, as well as residents, local associations, and businesses.

Listen and meet are two strategies mainly based on the “fan out” capability, meaning the ability to extend the scope of the organization to include peripheral but still meaningful stakeholders. This reverses the rule of stakeholder salience by identifying and engaging with actors who might be powerless, non-legitimate, isolated, or disinterested in the DMO.

“Collaboration” is the most powerful and advanced strategy since it generates both collective actions and collaborative decision-making processes, achieving the strongest level of stakeholder engagement.

“DPFL”, implemented by DMO E, is a project designed to think about the changes that the territory is experiencing, to make the local community more resilient and able to imagine the future, elaborating development models consistent with the current challenges. It was set up as an evolving platform, unique in Italy, to define a vision of balanced long-term tourism development together with the community, based on livability and quality



of life for residents and guests. The work path is divided into several listening phases, involving the local community and tourists, in order to build together and share a vision of development that allows for the pursuing of value for the area over time. One of the first outputs of the project was the drafting of the future-oriented “Charter of Values” of the local community, structured on 10 guiding principles, valid for individuals, companies, and organizations but also public institutions with the aim of helping to build a community based on shared values, where tourism is the engine for planning and developing the future. Starting by listening to the community’s perspectives and aspirations and using the 10 principles of the “Charter of Values” as a guide, 10 forward-looking projects were defined that will help the destination become a more balanced tourist destination for residents and tourists over time. Four years after the implementation of the project, there is a shared sensitivity and mutual commitment of visitors, residents, and the entire tourism community to adopt sustainable behaviors. This shift changed the way the destination measures its success: from numerical analysis of arrivals and presences alone to deeper metrics such as the socio-economic impact of tourism, the quality of life of residents, and a different concept of seasonality.

Again, DMO D, in its 2024 strategic and operational plan called “Back to the Future,” has summarized within a compass the questions and issues facing the territory on its path to sustainable development. This tool, rather than representing a destination for them, serves to indicate the direction in which they should be heading. Specifically, the compass allowed the DMO to divide the complex issues into five strategic axes divided by areas of focus. For each strategic axis, fringe stakeholders are involved with the goal of listening to as many perspectives as possible to achieve a holistic approach to the issues. A clear example of this is the “Digital wellness” section where nature parks and university institutions were involved to gather perspectives on the issue that are as diverse as possible.

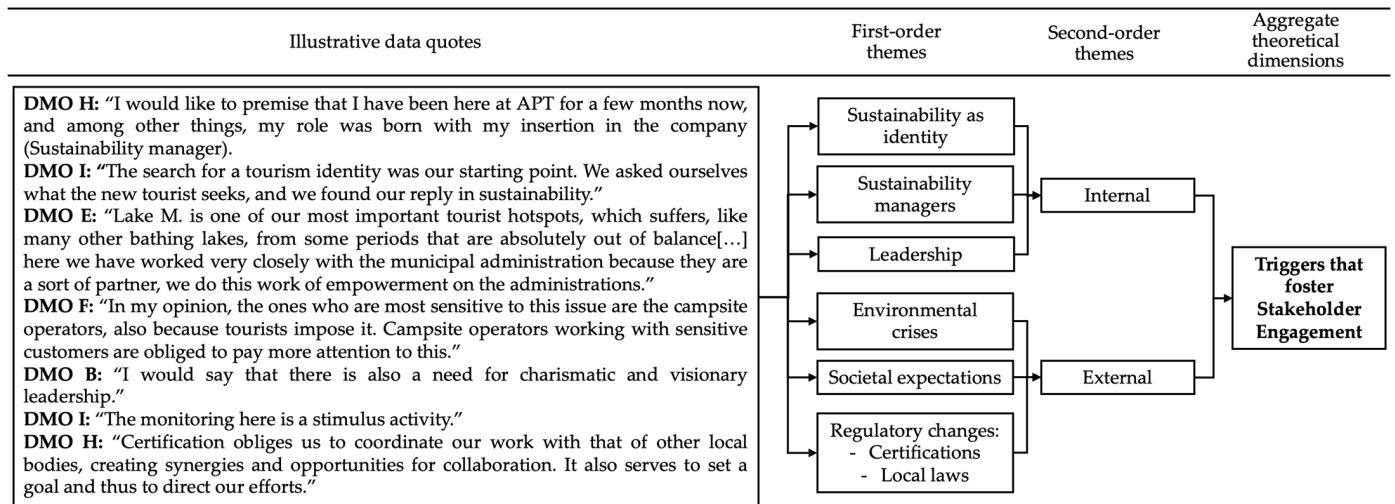
Unlike the other two strategies, the collaboration strategy relies not only on the “fan out” but also on the “fan in” capabilities, meaning the ability to integrate different and not necessarily conciliatory points of view into a shared and unique strategy. This gives both the DMO and all the stakeholders involved a sense of belonging and responsibility that fosters a positive feedback loop that reinforces participation and engagement over time.

In line with De Carlo et al. [24], our results demonstrate the importance of including numerous and heterogeneous actors, even those belonging to other industries (e.g., education, environmental bodies, energy and waste companies). Indeed, achieving sustainable goals require the involvement of a broad spectrum of actors’ collective actions to nurture an inclusive and expanded engagement strategy [42]. DMOs, in implementing these three strategies, play a pivotal role. DMOs can educate stakeholders, including tourists, about the fragilities of both the territory and the ecosystem in which it is embedded, thus promoting responsible behaviors. This educational role is vital in generating and sustaining an environmentally friendly culture of sustainability [96,97]. These kinds of activities are strictly related to the three strategies mentioned above. To educate, DMOs must in fact listen (to know the state of the art in which stakeholders are operating), meet (to discuss and share meaning around the topic and to foster trust), and collaborate (to influence them through actions). Additionally, DMOs can leverage their position to attract funds and resources needed for conservation and the development of sustainable efforts. By demonstrating the value—economic, social, and environmental—of sustainable tourism, DMOs can secure support from both the private and public sectors and then move as a middle actor able to continually reinforce the connection between these two worlds: “DMOs primary and most important role is to create synergies and function as an orchestration body”. (DMO C)

#### *4.3. Triggers for Stakeholder Engagement in Complex Fragile Ecosystems*

Triggers are categorized into two types: those that originate within an organization to create external effects, and those that arise from outside the organization, impacting it from the outside in. They play a crucial role in signaling the commencement of an action or process [69]. In the context analyzed, the intricate balancing of internal and

external triggers is critical for stakeholder engagement, especially for DMOs that must spur stakeholders toward sustainability initiatives. Not only are internal and external triggers usually not mutually exclusive, but they are both present in the path towards the sustainability of the majority of the DMOs analyzed. Even for the analysis focused on triggers, we began with case classification using cluster attributes, followed by a cross-case analysis that incorporated quotes and nodes derived from the deductive qualitative analysis. This approach showed that there are no notable differences deriving from the territories' characteristics concerning internal and external triggers influencing the development of sustainable strategies. Figure 4 describes the data coding process and the main themes.



**Figure 4.** Data coding process and results: triggers for stakeholder engagement (authors' own creation).

Internally, both organizational culture and visionary leadership inside DMOs play a significant role. In DMOs, a culture that prioritizes environmental stewardship and social responsibility can facilitate the adoption of sustainable practices across all levels of operation [98]. Indeed, DMOs with a strong sustainability-oriented culture are more effective in promoting sustainable tourism development [99]. This culture encourages employees to engage in eco-friendly practices, supports innovation in sustainability, and enhances the organization's overall commitment to sustainable development [100]. Regarding visionary leadership, it is critical to steer organizations towards sustainability goals. Leaders who articulate a clear and compelling vision for sustainability can inspire and mobilize employees to adopt sustainable practices. In the context of DMOs, visionary leaders can champion sustainability initiatives, allocate necessary resources, and influence stakeholders to support sustainable tourism strategies [101]. It appears that the incorporation of a sustainability manager and the influence exerted by visionary leadership are significant triggers in driving sustainability efforts [102]. In particular, employing a sustainability manager or specialist is a relatively straightforward yet effective action. Indeed, sustainability managers bring expertise in environmental and social issues, helping to integrate sustainability into organizational processes and decision-making [103]. For example, they can coordinate sustainability initiatives, monitor progress, and ensure compliance with environmental regulations. Moreover, the presence of a dedicated sustainability professional signals the organization's commitment to sustainability, potentially improving its reputation among stakeholders and customers. Therefore, this role represents an investment that must be leveraged, providing the organization with a dedicated person capable of fostering internal awareness and driving external sustainability initiatives. The case of DMO H is a clear example of this dynamic, where the hiring of a sustainability manager represented the concretization of the DMO's willingness to implement sustainable development strategies. By including within its payroll a figure hired and paid to implement these strategies, DMOs

can be spurred on to take advantage of these resources that, by simply performing their role, will enable them to reach new sustainability goals.

Regarding visionary leadership committed to sustainability, particularly for medium-small organizations such as DMOs with limited resources, embedding sustainability in their strategies presents a significant challenge due to the required initial investments and potential short-term losses before benefits materialize. Overcoming these hurdles necessitates visionary leadership committed to sustainability. Such leadership is crucial for managing initial setbacks, maintaining a clear vision of long-term advantages, and guiding the organization toward making sustainability a viable and strategic goal. Effective leaders inspire confidence, allocate resources wisely, commit employees, and navigate the organization through the complexities of adopting sustainable practices despite resource constraints.

In addition to this, it is interesting to note that some DMOs, by making sustainability their hallmark, have generated an internal identity trigger that can provide energy and impetus to actions promoted in this direction [104,105]. In the absence of a clear strategic and identity direction, the interviews reveal that sustainability can be elevated to an organizational identity element, impacting both internal management methods and external activities. Elevating sustainability to this level is a powerful internal trigger, as it necessitates embedding sustainability into both the organization's activities and strategies. The integration of sustainability into a DMO's identity can fill the void created by the absence of a clear strategic direction, providing at the same time a unifying purpose that guides decision-making and behavior [106]. While difficult to implement top-down, this internal trigger is a significant stimulus when it naturally emerges bottom-up since it fosters a culture where sustainability is not just a goal but a fundamental value that shapes the organization's mission and practices [107]. Such an identity-driven approach ensures that sustainability initiatives are consistent, authentic, and deeply rooted in the organization's ethos [108]. Moreover, when sustainability becomes a defining aspect of a DMO's identity, it transforms internal management by promoting sustainable policies, employee engagement in environmental practices, and continuous improvement in sustainability performance [42]. Externally, on the other hand, it influences how the DMO interacts with stakeholders, markets destinations, and develops tourism products, ensuring that sustainability principles are upheld throughout the tourism value chain. Nonetheless, elevating sustainability to an organizational identity element requires overcoming challenges such as aligning diverse stakeholders' interests and reallocating resources toward sustainable initiatives [12]. However, the long-term benefits include an enhanced reputation, competitive advantage, and the ability to meet the growing demand for sustainable tourism experiences. In the cases analyzed, DMOs E, I, and L made sustainability one of their identity traits by giving concrete evidence of the dynamics just described. In particular, DMOs I and L, within their strategic renewals, consciously chose to establish sustainability as their identity trait in order to transform the organization and steer it in this direction. DMO E, on the other hand, being born from the beginning with this sensibility, has made it possible to observe how much the effects of this identity choice are amplified and strengthened over time. Indeed, it has to date initiated a listening and sharing workshop with various stakeholders with whom it works with regarding the future of the territory in a sustainable way.

Regarding external triggers, environmental crises, regulations and certifications, and societal expectations are of crucial importance. The trigger of environmental crises highlights a sense of urgency toward sustainability through visible and perceptible impacts. Indeed, they can lead to immediate and long-term consequences for tourism destinations. The visible destruction caused by these events, such as the Vaia storm in 2018 and the great drought in 2023 for Trentino, underscores the vulnerability of tourism to environmental factors and emphasizes the need for sustainable practices that enhance resilience. Moreover, visible environmental degradation, such as pollution and habitat destruction, can diminish the attractiveness of destinations and harm the tourism experience [41]. For example, over-tourism leading to waste accumulation and water pollution can trigger public attention and demand for sustainable management. These perceptible impacts motivate DMOs and

policymakers to prioritize sustainability to protect environmental assets and ensure the long-term viability of tourism. The immediacy of environmental crises creates a sense of urgency that can accelerate the adoption of sustainability measures, and stakeholders become more receptive to implementing changes when faced with tangible threats [100]. In particular, this urgency led to collaborative efforts among governments, businesses, and communities to develop and enforce sustainable tourism policies and practices.

Additionally, regulatory changes are particularly potent, as they mandate compliance under the threat of penalties, making them effective in most cases. However, they can also stifle creative and divergent thinking within organizations. Two specific forms of this trigger emerged from the interviews: certifications and local laws. Certifications serve as continuous stimuli for organizations to maintain and improve their sustainability performance. They require ongoing compliance with established standards, fostering a culture of continuous improvement. Moreover, certifications can drive market differentiation, attracting tourists who are increasingly seeking environmentally and socially responsible destinations [109]. Within the sample, DMOs A, E, H, J, and L represent concrete examples of the strength of this trigger. In fact, the certification, thanks to the criteria it imposes in order to be achieved, not only spurred these DMOs in reaching the levels required by the accreditation but also allowed them to understand concretely what strategic directions they needed to work on in order to be sustainable. In this sense, then, the effect is twofold: the goals set by the certification not only spur their achievement but also make concrete and operationalizable the actions that lead in this direction. In addition, certifications require establishing permanent activities related to stakeholder consultations, namely, with firms, firms associations, residents, and the entire local community and visitors, in order to design collective and holistic sustainable strategies. On the other hand, local laws impose rigid requirements that organizations must respond to reactively. In particular, it emerges how the regulatory changes faced by DMOs after 2021 and certifications (GSTC and BCorp) have had an important influence in generating public–private synergies and encouraged considerable public participation [10]. These regulations may include environmental laws, waste management policies, and zoning laws that necessitate sustainable operations [41]. While compliance with local laws ensures a baseline level of sustainability practices, it may also limit organizations' flexibility to implement innovative solutions. Indeed, while regulatory changes enforce compliance, they can inadvertently hinder creative and divergent thinking within organizations [101]. To mitigate this effect, DMOs can adopt a proactive approach by integrating sustainability into their core strategies rather than merely responding to regulations [13]. Indeed, encouraging innovation within the regulatory framework can lead to unique sustainability initiatives that exceed compliance standards. In Trentino, for example, during the implementation of events, DMOs have to meet the expected sustainability criteria to receive funds and support from the regional DMO. This control mechanism, although basic, turns out to be very effective since it links the implementation of sustainable strategies to a direct, immediate, and tangible return.

Finally, societal expectations, also evolving toward increasing awareness of environmental issues, further underscore the power of external triggers. Even though less pronounced than the other triggers, they also play a significant role in driving sustainable practices. Stakeholders—both fringe and core—hold expectations that tourism organizations will operate responsibly and sustainably [11]. When these expectations are unmet, it can lead to stakeholder disengagement and a reduced willingness to collaborate, which can adversely affect an organization's operations and reputation [106]. This potential for disengagement serves as a powerful motivator for organizations to adopt sustainable solutions to maintain positive stakeholder relationships. In addition, among social expectations, tourists' needs are particularly important because their growing sensitivity toward sustainability issues puts this topic at the center of managerial and political actions. Modern tourists are more environmentally conscious and prefer destinations and services that demonstrate a commitment to sustainability [97]. This shift in consumer preferences places sustainability at the center of managerial and political actions within the tourism

sector. Tourism organizations are thus motivated to implement sustainable practices to meet tourist expectations and enhance their competitive advantage. The increasing societal and tourist expectations for sustainability drive managerial decisions and policy-making in tourism. DMOs and policy makers prioritize sustainable development to attract tourists, satisfy stakeholders, and ensure long-term viability [12]. This involves integrating sustainability into strategic planning, marketing, and operations, reflecting the central role of societal expectations in shaping the tourism industry's approach to sustainability.

Internal and external triggers interact dynamically, influencing each other. Indeed, it happens that the internal commitment that DMOs pour into sustainability is then able to modify and shape the expectations of external stakeholders. This dynamic adds a layer of complexity to stakeholders' engagement for DMOs. Managing and aligning the diverse interests and expectations of various stakeholders require sophisticated engagement strategies [11]. DMOs must navigate potential conflicts, foster open communication, and build trust to ensure that sustainability efforts are collaborative and effective. Recognizing the dynamic interaction between internal and external triggers is crucial for DMOs aiming to enhance their sustainability performance. By proactively shaping stakeholder expectations through internal commitment, DMOs can create a positive feedback loop that advances sustainability goals. This approach not only strengthens internal drivers but also fosters a supportive environment where stakeholders are engaged and invested in the destination's sustainable future [101]. Using these lenses, it is interesting to look at DMOs E and L. For DMO E, an internal trigger has "triggered" an external one. Indeed, having focused on a collective destination identity (internal trigger) based on sustainability has led the DMO not only to pursue sustainable goals in the area but also to certify itself as a B-Corp (external trigger) to give further account of its commitment in this direction. These two triggers have activated a virtuous circle that feeds each other. For DMO L, however, the exact opposite happened. The lack of a defined identity led it through certification (external trigger) to place sustainability as their core identity (internal trigger). This acted on the expectations of stakeholders that now have different and more sustainable expectations on them (external trigger).

## 5. Conclusions, Limitations, and Future Research

This study focuses on stakeholder engagement and triggers for destination sustainable development and presents an exploratory analysis focused on the complex fragile ecosystem of the alpine Trentino Region. The objective of this work is to point out the role played by the DMO in complex fragile ecosystems, which stakeholders in complex fragile ecosystems should be engaged by the DMOs and how to do so, and the main triggers for enabling this engagement.

The results related to the role played by the DMO in complex fragile ecosystems highlight its orchestrator role, given by its pivotal central position in the ecosystem. The numerous connections between the DMO and all the ecosystem players make it a mediator and a facilitator, meaning a conflict and tension manager. In addition, since it acts on behalf of the entire ecosystem, it gives a direction, that is, a strategy, that represents the point of convergence between the single strategies and set of objectives pursued by the local stakeholders.

This research contributes to the debate on stakeholder engagement in complex fragile ecosystems by mapping stakeholders and engagement strategies with the aim of integrating multiple interests into cohesive management plans. First, the results highlight the need to identify fringe stakeholders in complex fragile ecosystems. These results offer destination managers interesting insights to extend the boundaries of the DMO and design broad collective strategies. The engagement of fringe stakeholders thus allows DMOs to understand the complex and evolving issues that may potentially affect the basis of their future sustainable development, making them more effective and proactive. Second, this study identifies three stakeholder engagement strategies—listen, meet, and collaborate—to gather consensus also among fringe stakeholders, encouraging sustainable behaviors. Ad-

ditionally, the results eventually identify internal and external triggers that might foster both core and fringe stakeholder engagement toward sustainable development strategies.

The latter is the most original contribution to the academic debate brought by this research. In particular, it sheds light on the role played by ‘triggers’, both internal (leadership, identity, presence of sustainability managers) and external (regulatory changes, environmental crisis, social expectations), to foster stakeholder engagement. Moreover, this study underscores the necessity for DMOs to engage stakeholders without relying on conventional mechanisms, attributed to the unique characteristics of the tourism product. Furthermore, it highlights the exigent sustainability challenges facing the tourism industry, advocating for a unified, collective effort to address the unpredictability of future benefits.

This research, however, is not without limitations. The focus on a specific region (the alpine Trentino Region of Northern Italy) and the concentration of DMOs may limit the generalizability of our findings. However, we believe that the strategies and triggers identified possess a good degree of transferability. The idiosyncratic characteristics of the investigated region enable the insights that emerged to be useful for other complex fragile ecosystems but also other contexts that are facing the same challenges. Indeed, complex fragile ecosystems are territories found in different areas of the world. Although they present differences from the point of view of their size or geographical characteristics, they share a strong urgency for sustainability management to deal with the threats that put them at risk. Therefore, they are particularly effective case studies for studying and addressing the issue of sustainable development, which, to varying degrees, affects all ecosystems on the planet. Moreover, these regions are not only rich in biodiversity but also offer vital ecosystem services and resources crucial to both local and global communities. This makes them especially intriguing for researchers. The unique attributes of alpine regions create a zone where an intricate network of environmental, social, and economic processes converge [18]. Future research steps should test the transferability of those results by focusing on a different set of ecosystems. In addition, the rapid and changing nature of environmental and social challenges in these ecosystems necessitates research that is constantly redefining and adjusting. For example, future studies could focus on the role that technology and innovation play in improving stakeholder engagement and examine how global environmental changes impact local ecosystems and how they are managed.

In conclusion, while this study contributes significantly to understanding the dynamics of stakeholder engagement within fragile and complex ecosystems, it simultaneously opens new research directions and horizons. As these ecosystems face increasing pressure, innovative and adaptive management strategies, supported by ongoing research processes, will become crucial to the sustainability and well-being of the communities these organizations support.

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**Data Availability Statement:** The data presented in this study are available on request from the corresponding author.

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## Appendix A

The variables considered for the analysis are listed and described below:

- Area (square kilometers)
- Resident population
- Resident population density
- Aging index
- Hospital admissions in the province of Trento per capita
- University of Trento student resident in the province per capita
- Public reading libraries: loans per capita
- Number of local businesses per capita
- Number of employees of local businesses per capita
- Number of craft businesses per capita
- Number of retail trade locations per capita
- Total employment services enrollees per capita
- Number of agricultural business employees per capita
- Interventions on existing buildings aimed at energy conservation per capita
- Current expenditures of municipal governments per capita
- Status of civil sewage treatment: pollution rate lowered
- Natura 2000 network: (%) Sup. valley community affected by S.P.Z. and/or S.C.Z.
- Accommodation rate
- Tourist rate (tourists/inhabitants)
- Index of maximum anthropization
- Population-weighted average altitude
- Population-weighted average urbanization
- Incidence of tourism expenditures on municipal expenditures
- Seasonality of monthly tourist overnights
- Incidence of summer season on tourist overnights

## Appendix B

**Table A1.** GSTC-D framework applied in this study.

Dimension	Categories	Criteria	
<b>SECTION A: Sustainable management</b>	<i>A(a) Management structure and framework</i>	A1 Destination management responsibility	
		A2 Destination management strategy and action plan	
		A3 Monitoring and reporting	
	<i>A(b) Stakeholder engagement</i>	A4 Enterprise engagement and sustainability standards	
		A5 Resident engagement and feedback	
		A6 Visitor engagement and feedback	
		A8 Managing visitor volumes and activities	
	<i>A(c) Managing pressure and change</i>	A10 Climate change adaptation	
		A11 Risk and crisis management	
	<b>SECTION B: Socio-economic sustainability</b>	<i>B(a) Delivering local economic benefits</i>	B1 Measuring the economic contribution of tourism
	B8 Access for all		
<b>SECTION C: Cultural sustainability</b>	<i>C(a) Protecting cultural heritage</i>	C1 Protection of cultural assets	
		C3 Intangible heritage	
	<i>C(b) Visiting cultural sites</i>	C6 Visitor management at cultural sites	

Table A1. Cont.

Dimension	Categories	Criteria
SECTION D: Environmental sustainability	D(a) Conservation of natural heritage	D1 Protection of sensitive environments
		D2 Visitor management at natural sites
		D3 Wildlife interaction
	D(b) Resource management	D5 Energy conservation
		D6 Water stewardship and D8 Wastewater
		D9 Solid waste
		D10 GHG emissions and climate change mitigation
		D11 Low-impact transportation
		D12 Light and noise pollution

## Appendix C

Table A2. Additional questions added to GSTC-D framework.

Additional Questions
1. How important do you think the DMOs are as responsible subjects for the sustainable development of Trentino?
2. What level of local firms' participation has been achieved?
3. What level of local institutions' participation has been achieved?
4. What level of local residents' participation has been achieved?

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