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ARTÍCULO

SUSTAINABILITY AS A TRANSVERSAL DIMENSION IN TOURISM COMPETITIVENESS: A CRITICAL REVIEW OF THE TTDI EVOLUTION

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ABTRACT

The new Travel and Tourism Development Index (TTDI) of the World Economic Forum (WEF), an update of the previous Travel and Tourism Competitiveness Index (TTCI), raises expectations. It represents a first step that suggests a greater concern for addressing tourism's contribution to the sustainable development of countries. This study reviews the main changes introduced in the index's evolution, which adopts a different methodological approach by incorporating more dimensions, pillars, and variables. It seeks to address some previously existing criticisms and provides an updated measure of destination development and competitiveness. Hence, the inclusion of sustainability as a new dimension in the TTDI reflects this concern, as it has become a crucial issue for destination development in recent years. The main conclusions highlight that, despite efforts to integrate and offer a broader approach to competitiveness with a focus on development, adopting a truly holistic perspective on sustainability across all its measures remains an essential and unresolved challenge.

KEYWORDS

tourism competitiveness, sustainability, Travel and Tourism Development Index, World Economic Forum

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LA SOSTENIBILIDAD COMO DIMENSIÓN TRANSVERSAL EN LA COMPETITIVIDAD TURÍSTICA: UNA REVISIÓN CRÍTICA DE LA EVOLUCIÓN DEL TTDI

RESUMEN

El nuevo Índice de Desarrollo de los Viajes y el Turismo (TTDI) del Foro Económico Mundial, una actualización del anterior Índice de Competitividad Turística (TTCI), representa un avance inicial hacia una mayor preocupación por abordar la contribución del turismo al desarrollo sostenible. Este estudio revisa los principales cambios introducidos en la evolución del índice, que adopta un enfoque metodológico distinto al incorporar más dimensiones, pilares y variables. Se busca responder a críticas anteriores y ofrecer una medida actualizada del desarrollo y la competitividad de los destinos. La inclusión de la sostenibilidad como una nueva dimensión refleja esta preocupación creciente. A pesar de los esfuerzos por ofrecer una visión más amplia con un enfoque en el desarrollo, adoptar una perspectiva verdaderamente holística sobre la sostenibilidad sigue siendo un desafío aún pendiente.

PALABRAS CLAVE

competitividad turística, sostenibilidad, Índice de Desarrollo del Turismo y Viajes, Foro Económico Mundial

A SUSTENTABILIDADE COMO DIMENSÃO TRANSVERSAL NA COMPETITIVIDADE TURÍSTICA: UMA REVISÃO CRÍTICA DA EVOLUÇÃO DO TTDI

RESUMO

O novo Índice de Desenvolvimento do Turismo e Viagens (TTDI) do Fórum Econômico Mundial, uma atualização do anterior Índice de Competitividade em Turismo (TTCI), representa um primeiro passo e sugere uma maior preocupação em abordar a contribuição do turismo para o desenvolvimento sustentável dos países. Este estudo revisa as principais mudanças introduzidas na evolução do índice, que adota uma abordagem metodológica diferente ao incorporar mais dimensões, pilares e variáveis. Busca-se responder a críticas anteriores e fornecer uma medida atualizada do desenvolvimento e da competitividade dos destinos. A inclusão da sustentabilidade como nova dimensão reflete essa preocupação. Apesar dos esforços para integrar e oferecer uma abordagem mais ampla da competitividade com foco no desenvolvimento, adotar uma perspectiva verdadeiramente holística da sustentabilidade continua sendo um desafio essencial e não resolvido.

PALAVRAS CHAVE

competitividade turística, sustentabilidade, Índice de Desenvolvimento do Turismo e Viagens, Fórum Econômico Mundial

Introduction

The Travel & Tourism Competitiveness Index (TTCI) has long been a benchmark for analyzing destinations' competitiveness, covering approximately 97% of the world's direct travel & tourism Gross Domestic Product (GDP) (Croes & Kubickova, 2013; Kunst & Ivandic, 2021; Pérez-León et al., 2022; Wu et al., 2012). However, the evolving global tourism landscape has demanded a rethinking of how competitiveness is measured. This shift is exemplified by the World Economic Forum (WEF)'s transition from the TTCI to the Travel & Tourism Development Index (TTDI), which reflects an effort to align competitiveness metrics with sustainability and resilience goals.

Other indicators that measure different tourism-related variables include the European Tourism Indicator System (ETIS), the Indicators for Measuring Competitiveness in Tourism developed by the Organisation for Economic Co-operation and Development (OECD), and the Tourism Sustainability Development Index (TSDI), initially designed by the University of Surrey and later incorporated into the TTCI framework and, more recently, the TTDI of the WEF indicators. These provide valuable and complementary perspectives for assessing tourism performance. However, among all these indices, the TTDI of the WEF stands out for its extensive geographic coverage, encompassing virtually all countries with significant tourism activity worldwide, which grants it a unique representativeness at the global scale. Furthermore, its significance lies in the index's ability to articulate a comprehensive and multidimensional vision of tourism competitiveness that transcends conventional indicators.

The TTDI represents a significant evolution in tourism competitiveness measurement, aiming to benchmark the set of factors and policies that enable the sustainable and resilient development of the T&T sector, which contributes to the development of a country (WEF, 2022). Among its key changes is the introduction of sustainability as a fifth pillar, increasing its weight from 6,25% in the TTCI to 17,64% in the TTDI. Additionally, new measures such as environmental sustainability, socioeconomic resilience, and tourism demand pressure have been incorporated to reflect a more comprehensive approach to tourism development.

Sustainability has become an essential issue for tourism destinations in recent years due to the growing recognition of tourism's environmental and social impacts, coupled with increasing global challenges. This context has made it imperative to incorporate sustainability-related elements into the assessment of destination competitiveness.

Thus, TTDI now considers socioeconomic resilience, recognizing the importance of tourism in supporting local communities and economies. Additionally, the inclusion of tourism demand pressure as a metric acknowledges the need to balance tourism growth with the capacity of destinations to sustainably manage visitor numbers. These modifications collectively represent a more comprehensive approach to assessing tourism development, emphasizing the critical role

of sustainability and resilience in the sector's long-term success and its broader contribution to national development.

This shift raises critical questions about how effectively competitiveness indices can measure tourism's contribution to broader sustainable development goals. Sharpley (2020) distinguishes between "sustainable tourism," which focuses on sustaining activities within the tourism sector itself, and "sustainable tourism development," which positions tourism as a vehicle for achieving broader developmental objectives. The TTDI's approach to this distinction—and its ability to capture these broader impacts—requires careful examination.

By integrating sustainability more prominently into its framework, the TTDI marks a paradigm shift in how tourism competitiveness is assessed. However, this evolution also introduces methodological challenges that warrant scrutiny. The updated framework not only modifies how competitiveness is measured but also leads to significant shifts in country rankings based on strengths or weaknesses that were previously undervalued.

Tourism research confronts a fundamental theoretical dilemma in reconciling the interconnected yet often competing objectives of sustainable practices, competitive advantage, and development across multiple dimensions including social, economic, geographical, and environmental factors. Academic discourse reveals ongoing scholarly disagreement regarding these core concepts, with researchers continuously adapting theoretical frameworks to address shifting tourist behaviors and destination-specific obstacles, though comprehensive theoretical unity remains elusive—a phenomenon documented in sustainability research by Lu and Nepal (2009) and Quian et al. (2018), while competitiveness discussions show similar fragmentation as noted by Medina-Muñoz et al. (2013).

The theoretical landscape demonstrates a gradual integration between sustainable development principles and competitive tourism frameworks, particularly in conceptual formulations. Tourism sustainability analysis has undergone significant transformation, expanding beyond Butler's (1999) initial focus on physical and human factors to incorporate comprehensive economic considerations as McKercher (2003) advocated. Contemporary tourism competitiveness scholarship increasingly recognizes sustainability indicators as fundamental components within comprehensive analytical models, evident in the integrated methodologies developed by Crouch and Ritchie (1999) and Enright and Newton (2004), alongside quality-perception frameworks such as those proposed by Cracolici and Nijkamp (2009). Furthermore, competitiveness research progressively embraces responsible tourism elements including economic prosperity and long-term viability as essential theoretical components, reflecting broader shifts in academic thinking as Bhawsar and Chattopadhyay (2015) have observed.

Destination performance cannot be assessed solely through visitor arrival statistics, as the spatial distribution and management of tourist flows prove equally significant in determining out-

comes for both communities and visitors. Contemporary research recognizes that destinations experiencing lower absolute tourist numbers may nonetheless face considerable challenges when visitors concentrate within limited geographical areas, while locations managing higher overall tourist volumes can maintain equilibrium through effective distribution strategies and comprehensive planning approaches. The academic literature increasingly emphasizes how community receptiveness, economic diversification levels, and destination management capabilities collectively influence the perceived benefits or burdens of tourism activity, as evidenced in foundational works by Haralambopoulos and Pizam (1996) and subsequent analyses by Andereck et al. (2005) or Ramón-Rodríguez et al. (2021), thereby expanding theoretical frameworks beyond simple quantitative measures toward more nuanced assessments of tourism's multifaceted impacts.

This study critically examines the modifications introduced in the TTDI to assess their implications for measuring destination competitiveness and sustainable development. By analyzing how its structure and indicators influence ranking adjustments, this research explores whether the TTDI effectively captures the complex relationship between competitiveness and sustainability.

Index Methodology Evolution and Results

The evolution of tourism competitiveness indicators reflects the urgent need to adapt measurement frameworks to the profound transformations reshaping the global tourism landscape. These transformations are driven by interrelated factors such as the pervasive influence of new technologies on tourism dynamics (Sigala, 2018), shifting demand patterns (Kusumaningrum & Wachyuni, 2020), geopolitical instabilities (Hailemariam & Ivanovski, 2021; Balli et al., 2019), labor market disruptions (Joppe, 2012), and economic pressures including supply chain challenges and inflation (Khalid et al., 2020). Together, these factors have altered the operational and strategic priorities of the tourism sector, requiring a redefinition of how competitiveness is conceptualized and measured.

The TTDI emerges as an evolution of its predecessor, the TTCI, rather than as an entirely new framework. While retaining its core objective of benchmarking tourism competitiveness, the TTDI offers a restructured approach that better reflects contemporary challenges and priorities in the tourism sector. It responds to the growing demand for frameworks that capture not only economic performance but also broader developmental impacts.

Both the TTCI and its successor, the TTDI, are constructed from a diverse array of international data sources and specialized surveys. This endeavor was carried out in collaboration with the University of Surrey and with contributions from leading stakeholders and organizations across the travel and tourism sector. Among the data providers are AirDNA, Bloom Consulting, Euromonitor International, IATA, ICAO, the International Labour Organization (ILO), the International Te-

lecommunication Union (ITU), the International Union for Conservation of Nature (IUCN), CoStar, Tripadvisor, UNESCO, the United Nations Statistics Division, UN Tourism, the World Health Organization (WHO), the World Bank, the CIA World Factbook, the World Trade Organization (WTO), the World Travel & Tourism Council (WTTC), and the World Database on Protected Areas (WDPA).

Moreover, the construction of the index integrates a significant portion of subjective data derived from surveys of global experts and key stakeholders, thereby incorporating qualitative perceptions alongside hard statistical data. This comprehensive approach allows the TTDI to be calculated through successive aggregations, from individual indicators to pillars and overarching dimensions.

One of the most recent updates in the methodology is the creation of the new TTDI, with an important restructuring of the index architecture. It now comprises 5 dimensions and 17 pillars, compared to the TTCI's 4 dimensions and 14 pillars. However, the role of dimensions has shifted; they now primarily serve classification purposes rather than being part of the calculation methodology. This change addresses previous criticisms about the arbitrary weighting of dimensions (Mazanec & Ring, 2011; Wu et al., 2012).

The number of variables in the index has also increased from 90 to 112, with only 52 carried over from the previous version. This expansion enables the inclusion of new metrics that more effectively capture aspects of sustainability and resilience. For example, the TTDI now includes measures such as the Red List Index for species conservation and protected area coverage, highlighting a stronger emphasis on environmental sustainability.

Despite these advancements, certain methodological challenges persist. The reliance on subjective data from the Executive Opinion Survey remains significant, accounting for 29,46% of variables compared to 34,44% in the TTCI. While this reduction improves objectivity, concerns about consistency remain unresolved. Furthermore, long-standing issues such as difficulties in comparing countries at different stages of development (Croes & Kubickova, 2013) and the use of variables without robust theoretical foundations (Crouch, 2007) continue to affect the reliability of the rankings.

The recalibration of the index has led to notable shifts in country rankings, as illustrated in Table 1. A retrospective application of the TTDI methodology to 2019 data reveals significant changes in hypothetical rankings. Destinations with strong environmental policies and diversified tourism offerings have generally benefited under the new framework. For instance, Japan emerged as the global leader in tourism competitiveness in 2021 and would have ranked second if the TTDI methodology had been applied in 2019. Similarly, Switzerland, the leading destination in tourism competitiveness before Spain's dominance in the rankings, has improved its position significantly, rising from tenth place in the TTCI to sixth under the TTDI.

Conversely, traditional leaders such as Spain have experienced declines under the updated methodology. Spain, which dominated TTCI rankings in 2015, 2017, and 2019, drops to third place in 2021 under TTDI rankings and would have ranked fifth if recalculated for 2019 data. This decline reflects a shift away from metrics that previously favored Spain toward those aiming to emphasize sustainability and resilience.

Table 1. Main country ranking changes on tourism indexes.

Country	TTDI ranking 2021	TTCI ranking 2019	TTDI recalculation 2019
Japan	1	4	2
United States	2	5	1
Spain	3	1	5
France	4	2	6
Germany	5	3	4
Switzerland	6	10	7
Australia	7	7	8
UK	8	6	3
Singapore	9	17	9
Italy	10	8	8
Austria	11	11	11
China	12	13	15
Canada	13	9	9
Netherlands	14	15	14
Korea, Rep	15	16	n.a.

Source: WEF (2022).

These ranking adjustments underscore how changes in measurement criteria can reveal previously overlooked strengths or weaknesses among destinations. While advanced economies continue to dominate the top positions due to their infrastructure, labor conditions, and cultural resources (Hanafiah et al., 2017), the integration of sustainability dimensions has introduced a paradigm shift in how competitiveness is assessed. However, as both indexes remain closely correlated with national economic prosperity (Perles-Ribes et al., 2014; WEF, 2022), this raises questions about whether such frameworks can fully decouple tourism competitiveness from broader economic development levels.

From Competitiveness to Development: the role of sustainability

The WEF's shift from measuring tourism competitiveness to assessing tourism development through the new TTDI represents a significant transformation that warrants careful analysis, as it reconfigures and reshapes the global tourism leadership framework. This evolution reflects the growing recognition of the relationship between sustainability and economic development in tourism (Ahmed et al., 2022; Le et al., 2019).

The TTDI introduces sustainability as its fifth dimension, adopting a multidimensional approach that considers environmental, socio-economic, and territorial aspects in alignment with the UN 2030 Agenda for Sustainable Development. This new dimension, measured through three pillars (environmental sustainability, socio-economic resilience, and demand pressure), now accounts for 17,64% of the total index weight, a substantial increase from the previous 6,25%. Some of these variables are basic social protection coverage, workers' rights and seasonality of international tourist arrivals or the geographical dispersion of tourism, among others.

However, the integration of sustainability appears more as an addition rather than a holistic application of the concept. Ideally, sustainability principles should be embedded across all variables and dimensions, reflecting the cross-cutting and transversal approach advocated by the UN 2030 Agenda.

Table 2. Weight changes in indexes methodologies (%)

TTDI Dimensions	TTDI weights (%)	TTCI weights (%)	Weight changes (%) Weights TTDI-TTCI
Dimension 1: Enabling environment			
Business environment	5,88	5	0,88
Safety and security	5,88	5	0,88
Health and hygiene	5,88	5	0,88
Human resources and labour market	5,88	5	0,88
ICT readiness	5,88	5	0,88
Dimension 2: T&T Policy and Enabling Conditions			
Prioritization of T&T	5,88	6,25	-0,37
International Openness	5,88	6,25	-0,37
Price Competitiveness	5,88	6,25	-0,37
Dimension 3: Infrastructure			
Air Transport infrastructure	5,88	8,33	-2,45
Ground and port infrastructure	5,88	8,33	-2,45
Tourist service infrastructure	5,88	8,33	-2,45
Dimension 4: T&T Demand Drivers			
Natural resources	5,88	12,5	-6,62
Cultural resources	5,88	12,5	-6,62
Non-Leisure resources	5,88	/	5,88
Dimension 5: T&T Sustainability			
Environmental sustainability	5,88	6,25 (*)	-0,37
Socioeconomic resilience and conditions	5,88	/	5,88
T&T Demand pressure and impact	5,88	/	5,88

Source: Own elaboration from WEF (2022).
Note: * Environmental sustainability was a fourth pillar of the Second Dimension.

Table 2 illustrates the most significant changes in the methodological evolution of the tourism competitiveness indicator. A notable shift is observed in the infrastructure dimension, which includes airports, roads, and tourism services. Its importance has decreased from 25% of the index to 17,6%, represented by three pillars, marking a 7,4% reduction. This reduction in the importance of infrastructure represents a significant shift in how tourism competitiveness is conceptualized. While infrastructure remains crucial, its decreased weight allows for a more balanced consideration of other factors contributing to sustainable tourism development. By de-emphasizing large-scale infrastructure projects, the index encourages destinations to focus on the quality and efficiency of existing facilities, potentially reducing negative environmental impacts. This change also creates space for increased attention to local community needs, cultural preservation, and more efficient use of resources. However, it is important to note that this shift alone does not guarantee sustainability.

The most significant change is the decreased relevance of natural and cultural resources (a 6,62% reduction), including UNESCO World Heritage sites and protected natural or cultural areas. Countries whose main strengths lie in these pillars face setbacks in the new TTDI. While this reduction may aim to avoid duplication when integrating the new sustainability dimension, it could potentially weaken key aspects of sustainable development, such as the endowment and preservation of cultural and heritage resources.

Dimension 4, "T&T demand drivers", previously comprising two pillars each allocated 12,5%, has undergone a significant transformation with reduced relative weight. A new pillar, "non-leisure resources", has been introduced, encompassing the prestige of multinational companies, global cities, and top universities. This addition captures increasingly relevant travel motivations previously underrepresented, such as MICE tourism, health tourism, and language-related travel. The new index also addresses the other two additional sustainability dimensions, beyond environmental concerns. The "socioeconomic resilience and conditions" pillar now accounts for nearly 6% of the total, including poverty levels, social protection, and equality.

The third sustainability dimension, "T&T demand pressure and impact" also weighs about 6%. It measures tourism's economic contribution, length of stay, seasonality, online interest in cultural and natural attractions, geographic dispersion of tourists, and city center quality. This pillar aims to address the growing issue of overtourism affecting many destinations. The inclusion of overtourism proxies, such as concentration of interest in cultural or natural attractions measured by internet searches, addresses a growing concern in many tourist destinations (Milano et al., 2019; Gerritsma, 2019; Santana-Jiménez & Hernández, 2011; Namberger et al., 2021).

It's important to note that while these changes represent progress, they don't guarantee comprehensive sustainability measurement. Critics argue that both the TTCI and TTDI could be considered more as measures of a destination's investment climate rather than true tourism

competitiveness. This bias is evidenced by variables that reward destinations with strong business facilities, resulting in ranking leaders such as Switzerland or Japan. As Croes and Kubickova (2013) pointed out, the index may resemble a systematic collection of data rather than a model for testing relationships between variables.

Therefore, in the TTCI, but even more so in the TTDI, the multidimensionality of competitiveness is still in conflict with the holistic approach that sustainability requires. While the index represents progress by integrating sustainability as a fifth dimension (WEF, 2022), certain structural contradictions persist, challenging its ability to fully reconcile these goals.

Competitiveness vs. Sustainability: Structural Contradictions in the TTDI

The TTDI introduces significant methodological advancements but faces persistent contradictions between its multidimensional competitiveness metrics and the holistic sustainability principles it aims to uphold. While the index represents progress in integrating sustainability as a fifth dimension (WEF, 2022), its structural design often prioritizes traditional growth indicators over sustainable development goals.

One of the most striking contradictions emerges in the infrastructure dimension. Despite reducing its weight from 25% to 17,6%, the TTDI retains variables that incentivize unsustainable practices. For example, the "density of short-term rental listings" metric rewards destinations with higher concentrations of platforms like Airbnb, indirectly promoting overtourism and housing market distortions (Gerritsma, 2019; Santana-Jiménez & Hernández, 2011). Similarly, under the "T&T Policy and Enabling Conditions" pillar, affordability of airport taxes is prioritized, potentially undermining carbon-pricing initiatives aimed at reducing tourism-related emissions (Khalid et al., 2020). These examples illustrate how the index's competitiveness metrics conflict with sustainability objectives, creating paradoxical incentives for destinations.

The TTDI's partial progress in sustainability integration is further evident in its treatment of natural and cultural resources. These pillars, critical for sustainable tourism development, saw a 6,62% reduction in weighting. This adjustment disproportionately impacts destinations reliant on heritage assets, such as Spain, which experienced a decline in rankings despite its cultural endowments (SEGITTUR, 2022). Meanwhile, the introduction of the "non-leisure resources" pillar reflects a shift toward business tourism metrics (e.g., MICE, health tourism), which may prioritize economic growth over community well-being.

Innovation emerges as a more effectively integrated element in the TTDI. The index leverages digital proxies, such as TripAdvisor page views to measure attraction popularity and online search volumes to gauge demand, reflecting real-time tourism patterns (Sigala, 2018). This tech-forward approach contrasts with the limited adoption of sustainability metrics like carrying

capacity or resident sentiment. These factors are critical for managing overtourism in destinations such as the Canary Islands, where unregulated short-term rentals now exceed traditional accommodations (Ben Eli et al, 2023).

The challenge lies in reconciling the index's multidimensional competitiveness framework with the holistic approach required for sustainability. Spain's case exemplifies this tension: ranked second globally in the 2024 TTDI but 42nd in sustainability dimension (WEF, 2024). This discrepancy stems from two fundamental issues. First, sustainability is treated as an add-on dimension (17.64%) rather than a cross-cutting principle. Second, the index retains a growth bias, with 72% of indicators prioritizing quantitative metrics (e.g., hotel density, air connectivity) over qualitative development.

For the TTDI to effectively align with its stated objective of fostering "sustainable and resilient development" (WEF, 2022), several systemic adjustments are required. First, contradictory variables within the index should be replaced by metrics that explicitly assess community impacts and resident well-being. Second, sustainability considerations need to be integrated across all dimensions and pillars of the index, rather than being confined to a single dimension or treated as supplementary criteria. Finally, incorporating overtourism methodologies—adaptable to local contexts and specific destination characteristics—able to provide a more nuanced understanding of destination limits. Such reforms would transform the TTDI from a primarily growth-oriented competitiveness index into a comprehensive framework for evaluating and promoting sustainable tourism development.

Concluding remarks

The World Economic Forum's transition from the Travel & Tourism Competitiveness Index (TTCI) to the Travel & Tourism Development Index (TTDI) represents a significant shift in measuring tourism competitiveness, reflecting the growing importance of sustainability in the sector. This study offers a critical analysis of the extent to which sustainability is effectively integrated across the dimensions of the indexes, highlighting its role as a transversal cross-cutting element in tourism development.

The TTDI's incorporation of sustainability as a fifth dimension, accounting for 17,64% of the total index weight, marks a step forward in aligning with the UN 2030 Agenda for Sustainable Development. Tourism competitiveness no longer involves just satisfaction, or the resources made available to the tourists, but also the welfare of all the people who develop their activity in tourism or coexist with it. By incorporating factors such as socioeconomic conditions, seasonality, and tourism concentration, the index recognizes that true competitiveness extends beyond tourist experiences to encompass the broader welfare of all stakeholders impacted by tourism.

However, the integration of sustainability in the TTDI remains partial and fragmented. Although sustainability has gained prominence, it functions more as an isolated component rather than a truly transversal principle embedded across all variables and dimensions. This segmented approach results in inconsistencies between certain indicators and falls short of establishing sustainability as a foundational, cross-cutting criterion throughout the index.

The shift from "competitiveness" to "development" in the index's name suggests a rethinking of the tourism model. However, a closer analysis reveals that the TTDI represents an initial step towards a more comprehensive understanding of tourism's role in sustainable development. The complexity of measuring tourism competitiveness within a sustainability framework remains a significant challenge.

As the tourism sector evolves, there is an increasing emphasis on steady-state tourism, which prioritizes qualitative growth over quantitative expansion (Hall, 2010). This paradigm shift challenges traditional competitiveness metrics and underscores the need for frameworks that better capture tourism's contribution to sustainable development. The notion that "more does not mean better, and growth does not mean development" calls for a redefinition of competitiveness metrics to include dimensions such as environmental sustainability, social equity, and resilience. A more inclusive methodological framework for sustainability is needed nowadays to enable a more comprehensive and differentiated understanding of destination performance.

Moving forward, the key question becomes: How transversal should sustainability be in measuring tourism competitiveness and development? Future iterations of the TTDI and similar indexes must strive for a more holistic integration of sustainability principles across all dimensions. This approach would involve not only measuring environmental impacts but also assessing social equity, cultural preservation, and long-term economic resilience. For example, the incorporation of a 'Resident Well-being' pillar, measures factors such as housing affordability, local employment in tourism, and resident sentiment towards tourism. This would help balance the index's current focus on visitor and business metrics with the needs of host communities.

The present study acknowledges certain areas for further research: while an alternative indicator that incorporates the methodological innovation needed to better capture tourism's contribution to development has not yet been introduced, this opens the way for future research to explore such approaches. Likewise, a methodological refinement could be envisaged that integrates sustainability in a more holistic manner, while continuing to build on the focus offered by the TTDI.

In conclusion, while the TTDI marks progress in incorporating sustainability into tourism competitiveness measurement, there still remains significant room for improvement. The tourism sector's future competitiveness and development indices should aim for a truly multidimensional approach that balances economic growth with environmental stewardship and social well-being, reflecting the complex and interconnected nature of sustainable tourism development.

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