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The Local Turn in Tourism Statistics Within the Statistical Framework for Measuring the Sustainability of Tourism 2024

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Abstract: Contemporary challenges in destination management, particularly those related to sustainability, tourism behavior, and mobility, require granular, local-scale data to inform public and private sector decisions. However, the traditional international tourism statistics standards, such as IRTS 2008 and TSA:RMF 2008, have focused on national and, to a lesser extent, regional scales, overlooking local destinations as a relevant level for the measurement and analysis of tourism. As a result, no common conceptual framework has been available for producing statistical information for local destinations, despite tourism impacts being primarily felt at this level. The endorsement by the United Nations in 2024 of the new Statistical Framework for Measuring the Sustainability of Tourism (SF-MST 2024) has addressed this gap, marking a crucial shift toward recognizing local tourism destinations within sustainability measurement. In this conceptual paper, the recent local turn within this new international statistical standard is explored. Furthermore, by comparing SF-MST 2024 with previous documents, an extended conceptual framework for tourism statistics is developed, including the spatial dimension. Finally, in this paper, the implications for the implementation of the framework in local tourism destinations are discussed.

Keywords: tourism data; local tourism destinations; statistical framework; sustainability; overtourism; spatial scale

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1. Introduction

Recent events and trends in international tourism, including crises, overtourism, sustainability concerns, tourist behavior, and tourist mobility, have highlighted the need for timely tourism data with a high degree of geographical granularity. This level of granularity proved crucial for tracking the pandemic's impact on tourism at the local level [1], while post-pandemic recovery has reintroduced the urgency of addressing overtourism in destinations worldwide [2]. Furthermore, tourism sustainability concerns require a data-driven approach to managing destinations [3]. At the same time, new digital data sources are enhancing evidence-based decision-making in tourism at the local scale, particularly in the context of monitoring tourism mobility and understanding tourist behavior [4].

The call for more granular tourism statistics, from both spatial and temporal perspectives, has been raised by researchers like Batista e Silva et al. [5], who plotted the spatiotemporal distribution of tourists across Europe. However, research efforts relying on secondary data at the very granular local scale have not been methodologically supported by the traditional international tourism statistical standards endorsed by the United

Nations, which largely focus on the national or regional level. Since tourism activity, particularly tourism demand, is remarkably concentrated geographically [6], tourism-related issues can show substantial variations not only within a country or region but even within a municipality [7].

Assessing sustainability in local destinations has mostly been achieved using case studies [8] but the findings are not always empirically comparable. In the temporal domain, traditional tourism statistics have typically been constrained to yearly, quarterly, or monthly intervals, while the spatial perspective has primarily been addressed through administrative boundaries, usually at the country and regional scales. However, enhanced spatiotemporal tourism data beyond these limits can provide a clearer and more comprehensive perspective on tourism, helping improve destination management [5].

The core set of methodological documents of the international framework of tourism statistics endorsed by the United Nations Statistical Commission consists of two consolidated manuals and a third recently added one. The oldest document is the *International Recommendations for Tourism Statistics 2008* (IRTS 2008 hereinafter), which was adapted in 2008 and published two years later by United Nations and World Tourism Organization [9], and contains the main definitions and accounting principles for tourism statistics offices. It is a revision of the version adopted by the Statistical Commission of the United Nations in 1993 and published in 1994. The second methodological framework on tourism statistics is the *Tourism Satellite Account: Recommended Methodological Framework 2008* (TSA:RMF 2008 hereinafter), jointly approved by United Nations, the World Tourism Organization, Eurostat, and the OECD in 2010 [10]. This manual also has a previous version endorsed by the United Nations Statistics Commission in 2000 and published in 2001. This framework has been recently expanded by the inclusion of a third document, the Statistical Framework for Measuring the Sustainability of Tourism, hereinafter SF-MST 2024 approved by the UNWTO and endorsed by the United Nations Statistical Division [11], which develops approaches included in previous statistical standards, and also introduces the spatial perspective.

The spatial perspective implies analyzing the complex socioeconomic and environmental relationships between tourism and its geographical context. This perspective emphasizes the importance of destinations as places where tourism plays a significant role, and where visitors interact with the industry, attractions, environment, and local residents, creating a complex web of connections [12]. However, the paradigm shift in tourism statistics related to the SF-MST 2024 spatial perspective is only implicit.

The main objective in this paper is to provide evidence of the evolving role of local tourism destinations within international tourism statistics standards, to propose an extended conceptual framework that incorporates the spatial dimension into tourism measurement—particularly in the context of sustainability—and to discuss the implications of this local shift in tourism statistics. By analyzing and extending the SF-MST 2024 framework, in this study, critical gaps are addressed in the existing methodologies, including IRTS 2008 and TSA:RMF 2008, illustrating how local-scale data can enhance tourism decision-making. The integration of the spatial dimension into international statistical standards is particularly relevant for addressing challenges such as overtourism, sustainability, or social concerns at the local destination scale. It is worth noting that this paper does not provide an assessment of the SF-MST 2024—unlike the research by Dwyer [13], which focuses on its lack of a well-being perspective.

Tourism measurement methodologies have evolved over the past few decades through two complementary approaches. One approach involves the development of tourism statistical frameworks, as outlined in IRTS 2008 and TSA:RMF 2008. These statistical documents align with other prominent international frameworks, including the National Accounts [14],

the Balance of Payments [15], and the System of Environmental-Economic Accounting [16]. The second approach to tourism statistics development has been characterized by the creation and implementation of sets of indicators by international public organizations, private organizations, and academic initiatives [17–27]. These sets of indicators have been designed for application at various geographical scales, such as national, regional, or local levels. However, they face challenges related to conceptual robustness, consistency, and precise methodology. Applying these indicators across different spatial scales within a country often produces misleading results due to the uneven spatial distribution of tourism. Despite some sets of indicators claiming to be integrated [23], they do not constitute statistical frameworks because they do not share the required principles and methodologies [14]. The relevance and lack of progress in defining tourism destinations at the local scale has been recognized by Miller and Torres [25], and highlights the contribution of SF-MST 2024 and the extended framework in this paper, which provide a common basis for integrating the indicators and delineating destinations.

In this paper, the basis for an extended conceptual framework for measuring tourism that incorporates the spatial dimension is presented. This new framework builds on the SF-MST 2024, in which the United Nations included local tourism destinations into a statistical framework for the first time. The consideration of different scales of analysis is a way of achieving the integration, consistency, and comprehensiveness [14] of tourism data generated at the local destination scale, while ensuring coherence with data obtained at regional and national levels.

The United Nations World Tourism Organization (UNWTO) has been working on the initiative *Measuring the Sustainability of Tourism* since 2016 [28], aiming to integrate sustainability into the core methodological documents for tourism statistics. The final document, SF-MST 2024, which was adopted by the 25th General Assembly of the UNWTO in October 2023, was endorsed by the 55th session of the United Nations Statistical Commission in February 2024 [11]. The spatial dimension and the local destination scale have been regarded as essential aspects for measuring sustainability throughout the new reference document. However, a bridge between the newly recognized spatial dimension of tourism and the demand and supply perspectives outlined in the previous methodological documents has yet to be established. In this paper, an improvement in the set of statistical methodological documents is proposed, providing a natural way of extending the conceptual framework for tourism by including the spatial dimension as a new perspective beyond the traditional supply and demand approaches to tourism statistics. Within this new framework, tourism could be measured and analyzed from three different perspectives and their combinations, namely the tourism industry (supply perspective), the visitors (demand perspective), and the local destination, which includes the local community (spatial perspective).

2. Rationale of the Study

This study is framed as a conceptual paper, drawing on the principles outlined by Gilson and Goldberg [29] in the sense that the focus is on integration and proposing new relationships between constructs. It provides a proposal for extending and bridging existing perspectives within tourism statistics, with significant implications for destination sustainability management. By delineating a novel pathway beyond the current boundaries of the literature, in this paper, the endeavor is to highlight the underexplored potential of local scale statistics in unraveling the complexities and challenges intrinsic to tourism management.

To achieve the objective of this paper, a two-pronged methodology was adopted. First, a comprehensive literature review was conducted on the academic fields addressing

tourism at the local scale. Our analysis revealed the following three core thematic areas within the literature related to tourism at the local level: destination management, destination sustainability (including environmental, social, and economic impacts), and tourist behavior and mobility at destinations. Following this, the traditional tourism statistical frameworks (IRTS 2008 and TSA:RMF 2008) were analyzed, specifically assessing both their contributions—such as the twofold approach to tourism (demand and supply)—as well as their limitations, particularly in capturing the spatial dimension. Building upon these insights, in this paper, a quantitative and qualitative content analysis is developed to support the local turn in tourism statistics, as reflected in the SF-MST 2024, and the integration of this spatial dimension into a conceptual framework that extends tourism statistics approaches.

The tourism sector faces increasing complexity in the context of understanding and managing sustainability, governance, and the interplay between global and local dynamics. These challenges are not isolated but deeply interconnected, requiring a holistic approach that can integrate multiple dimensions. A systems thinking approach provides this integration, offering a framework to analyze tourism as a dynamic and interconnected system where institutional norms, sustainability concerns, and local–global interactions all converge. Systems thinking has long been applied to tourism to capture its complexity and is fundamental to the conceptual framework developed in this paper [30]. One prominent example is Leiper's [31] tourism system, which has significantly influenced the conceptual framework and graphical tools presented in this paper.

Institutional theory fits within this systems approach by shedding light on how tourism statistics are shaped by norms and standards, influencing the governance and performance of the sector at various scales [32]. Similarly, sustainability theory complements systems thinking by emphasizing the need for precise, multi-dimensional tools that can quantify tourism's environmental, social, and economic impacts [33]. These impacts are often most acute at the local level, where tourism interacts directly with communities, businesses, and the environment. Here, glocalization theory enriches the systemic perspective, highlighting how local particularities intersect with global trends to shape tourism outcomes [34,35].

The research questions underpinning this paper are as follows: (1) How has the spatial dimension evolved within international tourism statistical frameworks? (2) How can the spatial dimension be integrated within existing conceptual frameworks for tourism statistics? To address these questions, the manuscript is structured as follows. Section 3 provides a literature review that highlights the critical role of local-scale analysis in contemporary tourism studies and substantiates the need for such an approach in addressing prevailing sustainability challenges. Section 4 critically assesses the role of the local scale of analysis and the significance of tourism destinations within traditional international statistics methodologies. Section 5 provides evidence supporting the local turn in tourism statistics and proposes an extension of the existing statistical and conceptual framework. Section 6 discusses the implications of the proposed framework extension particularly regarding the challenges associated with its implementation in local destinations. Finally, the conclusion summarizes the key findings and contributions of the study.

3. The Local Scale of Analysis for Tourism Sustainability Management

The international framework for tourism statistics, outlined until recently in IRTS 2008 and TSA:RMF 2008, has provided a valuable conceptual basis for developing tourism statistics. However, its limitations arise from not fully accounting for the interconnectedness within local tourism destinations, a spatial context which encompasses the perspectives of visitors, the industry, the environment, and communities, as highlighted long ago by the United Nations Environmental Program and the WTO [18]. Furthermore, there has been a

recent emphasis on the local scale of analysis prompting a shift in thinking and practice towards a local turn in tourism studies as highlighted by Higgins-Desbiolles and Bigby [36]. In this section, the three core thematic areas in the literature related to tourism at the local scale are reviewed, as follows: destination management, sustainability, and visitor behavior and mobility.

3.1. Tourism Destination Management

Management of tourism destinations has been a key topic of tourism research, emphasizing the need for detailed data. Reinhold et al. [37] highlighted the relevance and future challenges faced by destination management, while Candela and Figini [38] underscored the pivotal role of tourism destinations in tourism economics and management. These last authors conceptualized tourism products as a bundle of goods and services, and destinations as a mix of firms and both public and private support structures. In this context, destination management organizations emerged as a field of research and innovation, acting as primary consumers of local tourism data. Given the limitations of data availability, there is a longstanding tradition of restricting sub-national tourism approaches to the regional scale. For instance, Alfaro Navarro et al. [39] focused on the sustainability of tourism in European NUTS 2 regions. By contrast, Bornhorst, Ritchie, and Sheehan [40] conducted qualitative research on the success of destinations without clearly defining their boundaries. Beritelli, Bieger, and Laesser [41] advocated flexible strategic business areas over traditional boundaries. Fyall and Garrod [42] discussed climate change challenges to destination resilience without identifying tourism destinations. Ultimately, Oklevik et al. [43] argued that traditional UNWTO indicators do not adequately address overtourism, calling for a broader set of indicators at the destination scale, although their study focused on a large area of Norway. In summary, the literature on destination management acknowledges the gap in the statistical data at the local destination level, the ambiguity of the destination concept, and the consequent limited success in enhancing the comparability of international local tourism data.

The current management of popular local tourism destinations is challenged by the phenomenon of overtourism [44]. Overtourism, a relatively recent term for an age-old issue [45], mainly relates to the conflict between local residents and tourists, the patterns of tourism development, the blurred concept of carrying capacity [46], and the long-standing debate on the tourist area life cycle [47]. The literature on overtourism has emphasized the need for a local-level approach and the importance of more accurate data. This issue is not strictly national, regional, or even municipal, as it affects specific districts or spots within major cities, popular attractions, and cultural or coastal destinations [48]. Overtourism and the pandemic-induced zero tourism can be viewed as opposing extremes, both of which require detailed spatial and temporal information for effective management.

The need for infrastructure planning and development to meet the needs of both tourists and residents at the local scale has been systematically overlooked in tourism statistics despite being crucial for destination management from a supply perspective (IRTS, 2008). Consistently with this argument, Figini [49] emphasized the crucial relevance of stakeholders' coordination within tourism destination supply chains, rendering destination management a strategic activity. In the environmental dimension, waste, water, and energy management emerge as critical aspects at the destination scale. In the social dimension, the visitors' perspective and the local community perspective also emerge as crucial factors. Finally, from an economic point of view, tourism flows, expenditure, employment, and investments are also topics on which the concept of sustainability is being focused (SFMST 2024). Understanding the tourism demand perspective is equally crucial in tourism destination management, as it encompasses the preferences, behaviors, and characteristics

of tourists that need careful consideration in the context of data-driven management. A closer look at statistics from this perspective reveals a high degree of concentration at the local scale. The uneven distribution of tourism flows can be observed in municipalities of European countries [50]. A closer examination of tourism flows reveals an even higher concentration of tourists in specific districts within each municipality, as shown by Batista e Silva et al. [5] using geolocated data for Europe. The measurement of demand trends at a local tourism destination scale is essential for market segmentation, tourist satisfaction, environmental awareness, and price sensitivity and it remains an unresolved challenge in the management of local destinations.

Tourism growth has been propelled, in part, by the increasing ability of cities to attract visitors. Globally, cities have become prime destinations [51,52]. However, the lack of statistics at the city level complicates the effective analysis, management, and planning of tourism [53]. Despite initial efforts to develop city tourism statistics [54], the UNWTO [11] has only recently published a document offering recommendations on this critical topic.

3.2. Measuring the Sustainability of Tourism

Measuring the sustainability of tourism has inspired many academic contributions in recent decades but its contribution to policymaking remains unclear, and little attention has been given to identifying the places where relevant information is needed [25]. The oversight of the spatial dimension in sustainability research extends beyond tourism. As Wilbanks [55] noted, sustainability inquiries are significantly influenced by the scale at which they are posed. Furthermore, while some contributions [56] have underscored the importance of scale, the neglected issue of scale remains a gap in research on the measurement of sustainability, as noted by McCool [57].

Local case studies on the sustainability of tourism made up 35% of published papers between 1987 and 2012 [8] and continue to represent a significant portion (27%) of the studies published in the five-year period that followed [58]. The absence of a standardized statistical framework that explicitly addresses the scale of analysis has constrained their comparability and integration into a broader sustainable tourism theory.

The need for a more effective measurement of tourism sustainability has been emphasized by Budeanu et al. [59], while several public and private institutions, including the European Commission [20], have promoted valuable initiatives on systems of indicators. However, these initiatives do not share a common conceptual framework that considers the spatial perspective and the destination scale of analysis. In the case of international systems of indicators for tourism, Niavis [60] mentioned not only the obstacles of lack of data, stakeholder cooperation, and defining thresholds, but also the difficulty of defining a common spatial basis for the analysis. In the academic literature the relevance of indicators has been reviewed by Torres-Delgado and Saarinen [61], Agyeiwaah et al. [22], Kristjánsdóttir et al. [23], Niavis [60], Balas and Abson [24], and Miller and Torres-Delgado [25]. Indicators have been proposed for diverse purposes, including general use [62], and from a governance perspective [63], in relation to the smart destination approach [64], or addressed at the firm level [22]. However, a standardized, systematic, and comparable statistical and conceptual framework for measuring tourism sustainability has been long awaited, particularly at the destination scale of analysis. This absence of a common basis for measurement spurred the launch of the initiative, *Measuring the Sustainability of Tourism*, aimed at providing a statistical framework for countries and destinations [28]. The final document of this initiative, the SF-MST 2024, considers the relevance of the local scale of analysis and goes further, for the first time, by providing a methodology to delimit local tourism destinations in a UNWTO methodological document.

The question of *where* has long been critical in measuring the sustainability of tourism [25]. Ko [56] noted that tourism destinations are often located across political, administrative, or environmental boundaries, which complicates measurement. In fact, there are multiple scales at which tourism sustainability can be analyzed, including global, supranational, national, regional, municipal, and local (SF-MST 2024). Graymore et al. [65] advocated for a regional scale measurement to overcome national scale limitations. However, Mowforth and Munt [66] (p. 71) argued for a balanced perspective, as "too global an analysis ignores local lessons and too local an analysis ignores global questions". From an impact-based perspective, two main scales of analysis emerge, namely, global and local. On the one hand, tourism impact can be understood in terms of global sustainability. This, in turn, can be analyzed in two ways, either as the impact of tourism on global sustainability, for example, the carbon footprint generated by global tourism [67], or the impact of global sustainability on tourism, for example, the impact of climate change on tourism [68]. On the other hand, what is unique to tourism and necessitates a local approach to sustainability is the propensity of local tourism destinations to jeopardize their own development through congestion or pollution [44,48]. The global and the local dimensions are inherently linked, and focusing on only one side weakens the analysis. At the global scale, the main goal is conservation, but at the local scale, the goal tends to be economic development, particularly in the global South [69]. The global and local approaches for analyzing tourism sustainability are depicted in Figure 1.

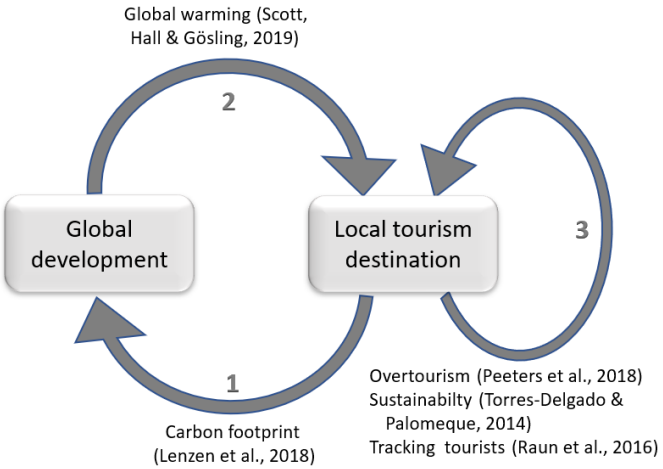

Figure 1. Three approaches to destination sustainability analysis. Source: prepared by the authors [48,62,67,68,70].

The interdependence between local and global scales of analysis in the context of the management of common-pool resources were emphasized by Ostrom et al. [71]. The approach of tourism sustainability management based in common pool resources in tourism [72] highlights the necessity of coordinating tourism policies and data collection across multiple spatial levels, which is essential for addressing the externalities and governance challenges that arise in tourism management.

Local-scale monitoring and assessment are also instrumental in quantifying the local economic impacts of tourism and climate change policies as illustrated by Loehr and Becken [73], who provided a comprehensive view of how these policies affect the community and tourism flows. They have also helped to identify the aspects that require targeted support in the destination [74]. In addition, the importance of local destination approaches in the context of a just climate transition in tourism destinations cannot be overstated. Numerous local destinations are particularly vulnerable to the impacts of climate change mitigation policies, such as shifts in air transport and rising energy costs, which can disrupt

established tourism patterns and economic stability. Therefore, justice in the distribution of costs and benefits at the global level must be compatible with a just distribution at the local scale because decarbonization poses social issues at the destination level [75]. Furthermore, the social impacts of tourism are predominantly, but not exclusively, felt at the local scale [76].

3.3. Tourist Behavior and Mobility

Understanding visitor behavior, including mobility, has long been a subject of interest for researchers. However, as McKercher and Lau [77] have pointed out, research in this area has, until recently, been limited by the challenges associated with collecting and analyzing visitor movement data. However, in the last decade, the interest in this topic has been fostered due to the availability of more granular spatiotemporal data [70,78,79].

Traditional data sources, such as surveys, provide incomplete and limited insights into the places visited by tourists and their activities [80]. This limitation has spurred the exploration of novel data sources [81,82], based on the use of digital footprints as a means of tracking tourists' movements at local tourism destinations [78]. However, there are still challenges due to the lack of standardized international guidelines to identify the appropriate spatial areas for conducting such analyses. The efforts undertaken by the UN Statistical Commission [83] and the European Union [84] to create geographical grids for statistical purposes serve as a promising starting point for comparisons across different regions. One such application of these methodologies can be found in the work of Batista e Silva et al. [5] in which they used big data sources to analyze tourism intensity, density, and seasonality across spatial grid cells in Europe. Functional zoning as the initiative of OECD [85] has emerged as another complementary approach to enhancing the usefulness of this type of tourism-related information.

The topics addressed by big data in tourist behavior are extensive [79]. Relevant examples include the following: Taecharungroj and Mathayomchan [86] on online reviews in Phuket; Buning and Lulla [87] on bikeshare usage; Chen et al. [88] on global mobility of Chinese visitors; and Mashkov and Shoval [89] on tourism density and intensity at local destinations. Literature reviews have shown big data applications in tourism dating back to 2002 [90–93], Most big data case studies have been characterized by the diversity of methodologies for data treatment [79]. Therefore, integrating big data case studies on behavior and mobility within a common conceptual and statistical framework remains a challenge. The delineation of local tourism destinations can help avoid what has been called the modifiable areal unit problem (MAUP) [94], which warns of the instability of statistical results derived from alternative spatial aggregation of geolocated data (e.g., alternative boundaries in zoning). This is crucial for big data applications in tourism, in which geolocated information is spatially aggregated, making the results sensitive to zoning strategies.

4. The Local Scale Within Traditional Tourism International Statistical Frameworks

The System of National Accounts, which underpins all United Nations socio-economic statistical frameworks, establishes that a framework provides a simplified representation of a phenomenon through several concepts and their interrelations. The framework must be simple, to aid comprehension, but it must cover all important considerations. A statistical framework must satisfy the conditions of comprehensiveness, consistency, and integration [14]. Comprehensiveness means that all the activities and agents are covered, consistency means that the same accounting rules are used throughout, and integration implies that the elements of the framework are interrelated. Statistical frameworks are guided by accounting principles, which are linked to conceptual frameworks that establish

clear and operative definitions and identify the relationship between the core concepts. However, the conceptual framework does not clarify the nature, direction, and intensity of the relationship between the variables or constructs as is the case in a theoretical framework. Tourism, as an interdisciplinary field, builds research from several disciplines [95] and the definitions and uses of theoretical frameworks vary among authors [96]. This variety of disciplinary frameworks must be made compatible with a single international statistical and conceptual framework for official tourism statistics. Frameworks are key in tourism. McKercher and Moyle [97] show that the existence of different conceptual frameworks in research can result in *framework bias*, which explain tourism myths [98]. The lack of standardized data methodologies has also resulted in attempts to develop new sets of tourism sustainability indicators. In their reviews on the topic, Kristjánsdóttir et al. [23] and Balas and Abson [24] found that developing new sets of indicators accounted for approximately 30 research papers. Ballas and Abson [24] observed that 43% of papers on tourism indicators focused on developing new sets of indicators, while only 32% applied existing sets to specific cases.

Traditional international frameworks for tourism statistics (IRTS 2008 and TSA:RMF 2008) were designed primarily for the national scale of analysis, which makes it challenging to adapt them to the regional and, particularly, the local scale. Chapter 8, section C, of IRTS 2008 includes a few paragraphs on measuring tourism at subnational levels, while Annex 7 of TSA:RMF 2008 also suggests extending this methodology to regional and local levels. However, these extensions are not straightforward. Despite notable examples of applying IRTS 2008 and TSA:RMF 2008 at the regional level [99], the local scale introduces several issues.

The absence of a robust statistical and conceptual framework at the local scale of analysis in international tourism statistics has been linked with the predominant focus on national and international perspectives in tourism data collection over the past few decades because developing statistical standards has primarily been the responsibility of national statistics offices.

By contrast, the subnational approach, which has been overlooked in tourism statistics as well as other fields, such as the National Accounts [14], has only recently gained attention [83]. It is worth noting that the first official estimates on worldwide domestic tourism trips were published recently, rather recently, in 2020 [100], highlighting the traditional data gap in subnational tourism data.

As a statistical framework, the IRTS 2008 goes beyond a mere set of indicators. It encompasses concepts, definitions, classifications, and indicators that are conceptually precise, measurable, and aligned with other international statistical definitions and classifications. Interestingly, IRTS 2008 has been incorporated into national statistics, including the European Union [101], as a recognition of its methodological value. One of the most significant contributions of IRTS 2008 lies in its dual perspective on tourism from both the supply side and the demand side. This insightful conceptual structure enables the integration of tourism into the aggregate demand and supply perspective of a national economy, thus paving the way for the development of tourism satellite accounts (TSA:RMF 2008). Therefore, until recently, official tourism statistics have had a market-based approach, focusing on consumers (the visitors) and producers (the industry). These economically driven demand and supply perspectives differ from the broader, more comprehensive conceptual framework proposed by Leiper [31], which integrates both the tourism industry and visitors with critical geographical elements, such as generating regions, transit routes, and destination regions. Therefore, Leiper's system is consistent with the extended framework presented in this paper, which will be further elaborated upon in the following section.

The market-focused statistical framework for tourism, which was adopted by IRTS 2008 and TSA 2008, has yielded valuable insights for decision-making. It encompasses all consumers and classifies them into two distinct groups of those engaged in tourism (visitors) and those not associated with tourism (non-visitors). Additionally, this framework distinguishes the tourism industry from other industries. However, it does not consider the spatial perspective and the core concept of tourism destinations [38].

The concerns about establishing clear boundaries for local destinations are not new and have been highlighted by previous reports and systems of indicators. UNEP and WTO [18] and the European Tourism Information System (ETIS) [20] underscore the importance of defining the boundaries of destinations. However, these sets of indicators have primarily been applied to regional and municipal destinations, despite the limitations of using administrative zones for tourism analysis [102]. In general, these sets of indicators are sought after by DMOs in the process of transforming themselves into data-driven DMOs [103], but the data generated still face issues of comparability, credibility, and utility due to the absence of commonly accepted definitions, the different spatial scales at which they are applied, and the absence of a clear connection between the data obtained and the statistics produced at higher scales under IRTS 2008.

5. The Local Turn in Tourism Statistics: Towards an Extended Conceptual Framework

The recently approved SF-MST 2024 makes a significant contribution to introducing the spatial perspective in tourism statistics. Beyond the national and regional scales, the document proposes addressing the local scale either through municipal administrative boundaries, by delineating local tourism destinations within municipalities, or by combining areas across municipalities. Although these different spatial scales for tourism statistics have been recognized in this document for the first time, there is still a need for clarification of the role of local destinations within the conceptual framework of tourism.

Our proposal for an extended conceptual framework builds on IRTS 2008, TSA:RMF 2008, and, most notably, SF-MST 2024. IRTS 2008 established the foundations for tourism statistics by standardizing the concepts and classifications of tourism data collection. By contrast, TSA:RMF 2008 builds on this standard, focusing on measuring tourism's economic contribution to national accounts. Finally, SF-MST 2024 further broadens the scope by integrating environmental and social dimensions alongside economic considerations, and crucially, incorporating the spatial dimension. This multi-dimensional approach enhances the ability of tourism managers to make informed decisions by linking tourism with sustainability across various spatial levels, thus providing a vital tool for broader, more informed decision-making in tourism.

The methodology of this section is structured in two complementary parts. The first focuses on identifying the emergence of the local turn in tourism statistics, while the second outlines the process for constructing an extended conceptual framework that integrates local tourism destinations as a critical third pillar alongside the traditional demand and supply perspectives followed in IRTS 2008 and TSA:RMF 2008.

To systematically analyze the role of the spatial dimension in tourism statistics standards, a structured content analysis of the three frameworks—IRTS 2008, TSA:RMF 2008, and SF-MST 2024—was conducted. The search criteria focused on identifying key terms and conceptual themes related to the spatial dimensions and local-level measurement. Relevant sections were systematically coded using the MAXQDA v.24.5 software (VERBI Software, Berlin, Germany), which enabled the quantification of references to spatially relevant terms. The qualitative analysis complemented this by examining the contextual integration of these terms within each framework to assess their evolution in international

tourism statistics standards. First, key terms used in the documents were identified, and those related to spatial analysis were selected. Subsequently, the relationships between these terms were examined to identify word combinations that most accurately reflected the relevance of the local scale in tourism.

The results showed that the main spatial-related concepts or combinations identified, including derivatives, were the following: "area", "local", "destination", "region", "spatial", "scale", and the combination "local tourism destinations(s)". The frequency of appearance of these words or word groups was consistently over ten times higher in SF-MST 2024 compared to the other previous documents, as shown in Table 1. In fact, the concept "local tourism destination(s)" appears 71 times in SF-MST 2024, whereas it was not mentioned in the previous documents. Notably, TSA:RMF 2008 makes extremely limited use of spatial terminology, as it primarily focuses on a national perspective. From a qualitative content analysis standpoint, it is worth noting that the subnational perspective (whether regional or local) is mentioned only briefly, as a possible extension of the framework, towards the end of both the IRTS 2008 and TSA:RMF 2008 documents. In contrast, the SF-MST 2024 explicitly identifies the local scale as a key feature of the framework. Furthermore, the local scale is integrated throughout the entire document, particularly within the economic, environmental, and social sections, reflecting a more comprehensive approach to capturing tourism sustainability across multiple spatial levels.

Table 1. Frequency of use of the main spatial-related concepts in the methodological documents.

Spatial-Related Concepts	IRTS 2008	TSA 2008	SF-MST 2024
Area (and derivatives)	32	15	253
Local (and derivatives)	25	15	214
Destination (and derivatives)	48	5	204
Region (and derivatives)	55	39	144
Spatial (and derivatives)	0	0	103
Scale (and derivatives)	9	1	90
Local tourism destination(s)	0	0	71
Total number of words	61,586	44,644	82,564

The second part of the methodology focuses on the tools to construct an extended conceptual framework to incorporate the spatial destinations as a third analytical perspective of tourism statistical frameworks. Building this conceptual framework involved thematic mapping, by extracting and categorizing the key themes from IRTS 2008, TSA:RMF 2008, and SF-MST 2024. In addition, conceptual alignment among the three documents was necessary to find conceptual similarities and differences. And finally, the conceptual framework synthesis implied designing a holistic model that positions local tourism destinations as one of the central components of tourism statistics, integrating the spatial perspective along with the existing demand and supply approaches.

Before presenting the figures that outline the results of applying this methodology, it is important to note that the three methodological documents differentiate, from a demand perspective, between two primary groups associated with tourism, those of visitors and non-visitors (IRTS 2008). They also differentiate, from a supply perspective, two distinct economic activities, those of the activities of the tourism industry and those of other industries. However, the recognition of local tourism destinations in SF-MST 2024 enables the incorporation of the spatial perspective within the statistical framework, which must maintain conceptual consistency with supply and demand approaches. This involves recognizing certain places as local tourism destinations, in contrast to the rest of the

country or region where tourism might not be as significant. The defining characteristic of local tourism destinations is concentration either from the tourism demand or supply perspectives. Therefore, the traditional two-dimensional conceptual perspective on tourism statistics (IRTS 2008) could be expanded to a third dimension, namely, the spatial one, which would include local tourism destinations and the rest of the territory, as shown in Figure 2. This systems approach aligns with the criteria broadly applied by the United Nations Statistical Division [14], ensuring that all economic activities (tourism industry and others), all individuals (visitors and non-visitors), and the entire territory (local tourism destinations and the rest of the territory) are considered. Figure 2 visually represents the proposed third perspective, extending the traditional approach to include the spatial perspective. Beyond the economic and spatial focus, this extended framework incorporates the social perspective by including local communities living in or around tourism destinations, categorized within the group of non-visitors in tourism statistics. This allows for the consideration of impacts on labor conditions and quality of life, which are more evident and measurable at the local destination scale.

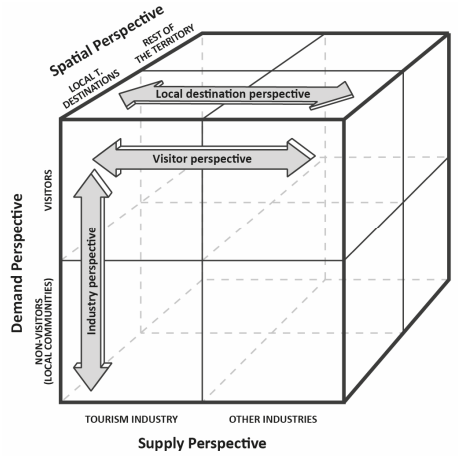

Figure 2. Outline of the three dimensions of the extended conceptual framework. Source: prepared by the authors.

The traditional statistical framework rests upon two fundamental concepts. Firstly, the visitors, representing the demand perspective, and secondly, the tourism industry (or products), reflecting the supply perspective (IRTS 2008). To define the concept of visitors, the auxiliary concept of the *usual environment* was introduced. In addition, to identify tourism industries across international classifications of economic activities, it was necessary to specify the two criteria that tourism products must meet (IRTS 2008). Expanding this conceptual framework to incorporate the spatial perspective requires establishing additional criteria related to the identification of local tourism destinations. The goal here is to effectively capture tourism concentration as the key feature of local destinations, either as tourism density or tourism intensity [5]. Since concentration can derive from two perspectives—the concentration of visitors from the demand perspective and the concentration of tourism establishments from the supply perspective—specific criteria need to be considered to delimit destinations at the local level.

This proposed extended conceptual framework for tourism statistics meets the aforementioned criteria for a framework [14], offering a seamless approach to incorporating local tourism destinations into the tourism statistical system. The recent methodological document (SF-MST 2024) considers a local tourism destination as an area satisfying either demand or supply concentration criteria. From the demand side, this requires that a significant percentage of consumers in these areas are visitors, and that the destination attracts a significant share of visitors from the wider region or country. From the supply

side, tourism industries in these areas would have to represent a significant share of the economy, and a significant share of the tourism industries in the wider region or country would need to be located there. Figure 3 outlines the extended framework proposed in this paper, which builds on the traditional conceptual relations between visitors and the tourism industry (left side) already included in IRTS 2008 and TSA:RMF 2008, and the local tourism destinations (right side) included in SF-MST 2024.

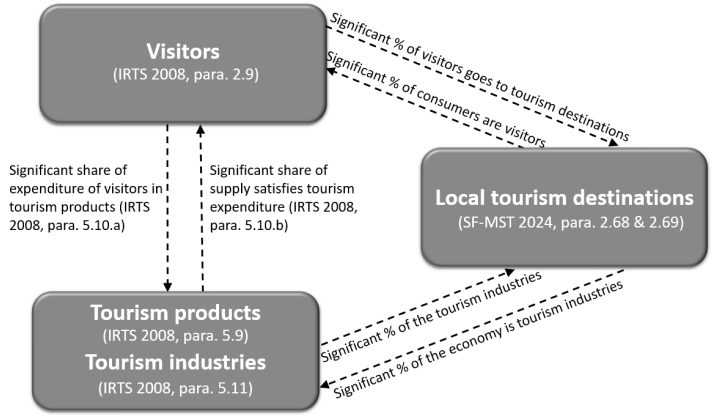

Figure 3. Outline of the extended conceptual framework for measuring the sustainability of tourism. Source: prepared by the authors [9,11].

To understand the extended framework outlined in Figures 2 and 3, waste production in tourism offers a clear example. Waste generation can be examined from the following multiple perspectives: the waste generated by tourists; by the tourism industry; and by local tourism destinations; or through a combination of these three perspectives. A combined analysis, as seen in [104], focuses on waste generated solely by local visitors and only within tourism industries, in a tourism destination. However, the framework allows for flexibility, enabling the simultaneous adoption of all three perspectives—tourists, industry, and destination—or any combination thereof, depending on specific research needs. For example, one might analyze the waste generated by visitors in both tourism industries and other sectors across an entire region. The flexibility of the framework underscores its relevance in enhancing the comparability of tourism's contribution to sustainability, a key challenge in tourism statistics that has historically been hindered by the lack of a unified approach. Furthermore, Figures 2 and 3 reflect the intertwined nature of tourism and its main components from a systems perspective. This complexity is rooted in the interactions between the social (people), economic (firms), and environmental (place) dimensions. This approach not only facilitates the measurement of tourism impacts but also aligns them with a more integrated analysis. Both externalities, as discussed by Briassoulis [72], and multipliers of tourism expenditure [105] are integral parts of this framework.

6. Discussion and Implications

Building on the findings in this study, in this section, the broader discussion and implications of integrating a spatial dimension into tourism statistics are explored, offering insights into the practical and theoretical aspects, giving particular relevance to the implementation process of the framework and the limitations of this paper.

A key outcome of this extended framework is its potential to transform destination management by enabling detailed tracking of tourism flows and behaviors at local levels, thereby facilitating data-driven decision-making [3]. As our proposed framework bridges the gap between traditional macro-level tourism statistics and the micro-level realities of local destinations, it offers insights that are critical for managing both sustainability and economic impacts more effectively. Additionally, it can better address the challenges of

overtourism [44] and climate change adaptation [73]. It is worth noting that the development of new indicators or even policy instruments for sustainable tourism does not guarantee a real paradigm shift towards sustainability, as acknowledged by Hall [106]. Moreover, as recognized by Miller and Torres [25], indicators have the capacity to measure impacts, but they have failed to promote better governance and to change sustainability policies. However, from a sustainability perspective, the integration of local destinations into the framework provides a powerful tool for assessing tourism's environmental and social impacts [107]. As the framework allows for the more accurate identification of areas with high tourism concentration, it supports the creation of targeted strategies for mitigating negative effects such as congestion, resource depletion, and pollution. Additionally, the capacity to link big data sources with traditional statistics introduces a new level of precision in sustainability measurements, offering opportunities for more adaptive and resilient tourism policies that can evolve with real-time data [79]. Tourism management can benefit from this approach by improving the measurement of overtourism [44], enhancing sustainability analysis at the local scale [25], and enabling a more precise understanding of tourism behavior and mobility. A clear focus on the spatial dimension of tourist activity and mobility, along with well-delineated local destination boundaries, helps mitigate the modifiable areal unit problem (MAUP) [94].

Sustainable tourism indicators serve as a critical link between theoretical frameworks and real-world policy applications, acting as measurable proxies for assessing tourism's economic, environmental, and social sustainability. Rooted in sustainability theory, indicators such as visitor density, intensity, and carbon emissions quantify tourism's impacts [89]. From an institutional theory perspective [32], indicators like employment quality and income distribution illustrate how governance structures and policy frameworks influence economic benefits and labor conditions within the tourism sector. Systems thinking further underscores the interconnected nature of tourism [12,18], where indicators capture the dynamic relationships between demand and supply at the local scale. The extended conceptual framework provides a structured foundation for applying these indicators at a more spatially precise scale, allowing for localized sustainability assessments. Furthermore, sustainable tourism indicators are not standalone metrics but components of a broader statistical framework [27], reinforcing the emerging role of local destinations as key analytical units in measuring and managing tourism sustainability.

From a practical standpoint, in this study, policymakers are offered a structured approach to integrating spatially disaggregated data into tourism management, enabling evidence-based decision-making at the local level. Local communities can also better understand the consequences of the impacts they suffer and propose policies to enhance local wellbeing. Tourists might also benefit from this local turn, as the increasing demand for sustainable destinations can be better supported by credible data. And destinations can use sustainability data to design strategies aimed at finding a balance between the benefits for visitors, firms, and local communities. However, implementing the framework presents challenges in terms of data governance, data-driven decision-making, political commitment, destination governance, data availability, financial resources, and necessary skills.

The implementation process will require further pilot studies, such as those already published by UNWTO [108,109]. The numerous initiatives developing sustainability indicator sets have addressed the need for context-specific indicators. Moreover, a balance must be established because no single set of indicators is suitable for all destinations [25]. The conceptual framework outlined in this paper and the SF-MST 2024 are an opportunity for grounding individual initiatives and providing them with a common language and methodologies. This implies improving data governance through close collaboration between data producers, decision makers, and the organizations that transform the data into

relevant information and knowledge [110,111]. In this context, observatories, for example, those grouped under the International Network of Sustainable Tourism Observatories (INSTO) [3], should play an important role in the practical and collaborative implementation of the framework.

Digitalization technologies are improving access to data from official registers, which can assist destinations in obtaining information for decision making [7]. These sources require high-level skills to transform raw data into relevant information. Initiatives such as the European dataspaces, one of which is dedicated to tourism, represent an opportunity for local destinations because private firms and public administrations collect, analyze, and share big data on these platforms [112]. In addition, open data initiatives and the increasing availability of publicly accessible big data are providing new opportunities for local-level tourism analysis [80]. Furthermore, the implementation of the new statistical framework should be integrated with smart destination initiatives as data are a crucial element in their success [64].

The implementation of the framework may require the delineation of local tourism destinations. The main criteria for this delineation have been included in SF-MST 2024 following previous experiences [113]. However, providing statistical information for the delineated destinations can be supported with three main strategies, which require statistical techniques that may exceed local destinations capacities [114], demanding better data governance [110,111]. These strategies are the geolocation and digitalization of existing public registers [7]; designing ad hoc surveys; using extended samples of existing national or regional surveys; implementing small area estimation methods [114]; and leveraging big data sources to obtain information for local areas [5]. Big data have been successfully used worldwide for several objectives related to tourism sustainability [91,93] but there is still a need to harness its applications, which can be achieved by using the statistical framework as a reference for case studies. The delineation of local tourism destinations promotes the integration of tourism data with other spatial data, such as land and resource use, demographics, and economic indicators. This integration can provide a more comprehensive understanding of the context in which tourism takes place, enabling data-driven decision making [3] by stakeholders. Thereby, the delineation of destinations following SF-MST criteria will allow tourism information to avoid the aforementioned modifiable areal unit problem [94].

The operationalization of local tourism destinations can be addressed at various levels to obtain a nested system of local tourism destinations and should be adapted to the typology of the destination—for example, coastal, urban, mountain and nature, or rural [48]. Criteria concerning the characteristics of the supply and/or demand side may be incorporated to make the destination delimitation more relevant for decision-making and to identify local destinations that are as distinct from each other as possible. These criteria may include the size of the establishments, types of accommodation, the origin of tourists, the products offered, or the age of tourism infrastructure. This process can leverage the existing literature on functional zoning in social sciences, which has delimited functional zones on topics such as crime, poverty, diseases, and the identification of neighborhoods [115]. Despite the criteria used to identify these areas being diverse, most of the research concludes that incorporating subjectivity is necessary to avoid meaningless computer-driven area identification [116].

A particularly noteworthy implication of the spatial perspective for tourism measurement is its alignment with advances in social and economic statistics within the United Nations. The Global Statistical Spatial Framework developed by experts from the UN Statistical Commission [83] emphasizes that linking data about people and businesses to a geographic location and integrating it with geospatial information results in a more

comprehensive understanding of the social, economic, and environmental issues. This provides far greater insights than viewing statistical or geospatial information in isolation. Furthermore, spatial grids can support the delimitation of local tourism destinations. They are increasingly used in national statistics worldwide [83,84]. In fact, combining several square grids that meet specific criteria can delineate a local tourism destination.

The inclusion of the local-scale perspective in the new standard (SF-MST 2024) has not been a straightforward process, as official statistics offices often exhibit an inherent tendency towards using the national scale as the main reference. New implementation processes will also require new concepts because the main definitions of tourism included in IRTS 2008 and TSA:RMF 2008 have been traditionally oriented towards a national scale. In this sense, the approval of the SF-MST 2024 necessitates a revision of previous methodological documents, which largely overlooked the spatial perspective and local destinations. Regarding its implementation, the SF-MST 2024 incorporates flexibility, a key criterion highlighted by the System of National Accounts [14]. This flexibility means that full implementation is not required in all countries, regions, or destinations. Instead, its full application is recommended in situations in which the level of tourism development or the data needed for decision-making at the local scale justifies the cost of a spatially detailed perspective. This may be the case in regions facing overtourism or sustainability concerns. The flexibility of the newly released framework allows for the use of either municipalities or local tourism destinations (functional tourism zones) as the areas for local-scale measurement. Municipalities, as administrative entities, have more readily available information, but local tourism destinations, as functional areas that are the center of tourism impacts, offer a more precise scale for addressing and measuring tourism challenges. As stated by the OECD [85] (p. 14): "functional areas offer a different perspective on statistics that can produce a more accurate picture of actual circumstances than administrative areas", and this can be particularly relevant in the case of tourism. However, the scale for the department in charge of measurement, the scale for the data, and the scale for the decision-making process might vary across different countries and regions, highlighting the variety of governance challenges and institutional contexts.

Regarding the theoretical implications of this study, the integration of multiple perspectives in this paper has offered a deeper understanding of tourism dynamics at local scales and broadened the conceptual foundation for tourism research. Systems thinking has provided the foundation for understanding the interconnectedness and feedback loops between tourism demand, supply, and spatial elements at the local level. This is critical in addressing the dynamic complexity of tourism flows and impacts. By incorporating institutional theory, in this paper, the importance of governance structures and policies in enabling or constraining the effective implementation of tourism statistics and sustainability measures has been underscored, and how an institutional arrangement—an international statistical standard—may influence management decisions has been illustrated. Sustainability theory has deepened our understanding of the new framework's goals, promoting a more balanced and long-term approach to tourism management. Lastly, glocalization theory has shown the interplay between global tourism frameworks and local realities, making it possible to establish a relationship between global challenges and local measurement at local destinations. This multifaceted theoretical approach not only highlights the robustness of the proposed conceptual framework but also enhances its applicability in addressing contemporary tourism challenges, such as overtourism, sustainability concerns, and localized impacts. As such, this paper contributes to the evolving discourse on the future of tourism measurement and governance, offering both practical and conceptual advancements.

Moreover, while the proposed extended conceptual framework offers significant advancements in measuring tourism at the local scale, several limitations must be acknowledged. First, the availability and granularity of the data required for successful implementation may vary, particularly in regions with limited digital infrastructure or statistical capacity. Additionally, the resource-intensive nature of the framework could present challenges for smaller destinations or those with constrained budgets. Methodologically, the delineation of local tourism destinations involves the use of subjective criteria, which could result in inconsistent application across regions. Finally, a successful framework relies on coordination among diverse stakeholders, and any lack of alignment could pose barriers to data sharing and its successful application. These factors may affect the robustness and comparability of tourism data across different destinations and addressing them will be crucial for the framework's full operationalization.

Another limitation of the framework concerns the dynamic nature of tourist behavior and mobility during trips, which can affect data accuracy and interpretation at the local scale. Tourists often visit multiple locations within a single trip, making it difficult to capture their full movement patterns and impacts accurately, especially when using traditional data collection methods. This mobility complicates destination management as well as the assessment of tourism impacts and sustainability at specific sites. Moreover, big data sources, such as mobile tracking and geolocation data, can improve understanding of tourist mobility, but access to such data is often uneven and may raise privacy concerns. In addition, the availability and integration of big data for mobility analysis are not yet standardized across destinations, which can lead to inconsistencies in how mobility is factored into sustainability assessments. These issues underline the need for more sophisticated methods to track and analyze mobility across local destinations, as overlooking such movements could skew the understanding of tourism flows and lead to ineffective management and sustainability strategies.

7. Conclusions

The inclusion of the local tourism destination scale within the SF-MST 2024 opens the door for an extended conceptual framework for measuring tourism by including the spatial perspective in official tourism statistics. This represents a critical shift in the measurement of tourism, marking the first time the spatial dimension has been formally integrated into international statistical frameworks. In this paper, this framework has been extended by proposing an innovative conceptual model that incorporates the local destination scale, aligning with the demand, supply, and spatial perspectives. This contribution lays the foundation for significant advancements in tourism statistics, offering a more comprehensive understanding of tourism dynamics at the local level. By extending the scope, it establishes the groundwork for significant advancements in tourism research and management. The development of the statistical and conceptual framework offers a methodological foundation for a more detailed understanding of tourism patterns, facilitates data integration, enables systematic monitoring, and could even empower local communities.

The extended conceptual framework developed in this paper has substantial implications for understanding tourist behavior and mobility within and between destinations. The increasing availability of big data, particularly through mobile tracking and geolocated data, enhances our ability to analyze tourist movements and preferences with unprecedented accuracy. This insight is crucial for developing more responsive destination management strategies that can adapt to changing demand, visitor satisfaction challenges, and sustainability goals. However, the availability and use of such data remain uneven, underscoring the need for greater standardization and data governance to enable widespread application across destinations.

Despite the importance and relevance of the SF-MST 2024, the bridging with previous documents remains incomplete and will require updates to ensure alignment. In addition, the implementation process will pose new, not yet fully addressed, questions about the relevance of the scale of analysis. The integration of the framework with the Sustainable Development Goals [27] or the effective development of traditionally neglected social and environmental indicators are also tasks to be accomplished during the implementation of the new framework. Overall, the incorporation of the spatial perspective ensures a deeper and more nuanced understanding of tourism's impact on local communities, the economy, and the environment.

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