ESTUDIOS Y MONOGRAFÍAS

TRANSITIONING TOWARDS THE FUTURE OF TOURISM DESTINATIONS: RESILIENT, SMART, AND GREEN DEVELOPMENT

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Chapter 5

Building sustainability in smart destinations: Applicability of a management model for the case of Spain

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Abstract: Tourism Intelligence and sustainability are present in most of the current academic debates on the policy and governance of tourism. In the case of Spain, these debates have drawn a new scenario in which tourism sustainability and intelligence need to meet with the new territorial and tourism sector needs.

Within this framework, the Spanish model of smart destination is led by the methodology of the State Company for the Management of Innovation and Tourism Technologies (SEGITTUR), transforming the territories to favor the transition to a new, more innovative, and sustainable tourism model.

The main goal of this work consists of obtaining empirical evidence on smart sustainability measurement within the smart transformation of a destination. To do this, the SEGITTUR methodology has been applied in 22 Spanish destinations that are in process of becoming SD. The outputs of this work bring empirical evidence to build sustainability within a management model for destinations within their smart transformation. These outputs also enable the Spanish destinations to identify the main weaknesses and strengths they must cope with to assure a sustainable transformation regarding both their territorial characteristics as well as their population size.

Keywords: Smart tourism; Sustainability; Smart governance; Destination management; Smart destinatio.

I. INTRODUCTION

The transformation of the tourism sector throughout its history and its vulnerability to events of any kind have shown the territorial and structural consequences, while at the same time making clear its capacity and need for resilience (Ivars-Bidal & Vera-Rebollo, 2021). The current scenario has shaped a world, not only increasingly changing, but progressively more exposed to all kinds of disturbances (Bankoff, 2019) that affect in a direct way the tourist activity and the citizenship in general. It is not possible to consider, even at a theoretical level, the reconfiguration of tourism if it is not extended to society as a whole, which prioritise the logic of immediate and particular benefit over stability, social welfare, equity, opportunities for all and environmental and socio-economic sustainability.

On the one hand, the importance of tourism intelligence and the Smart Destination (SD) models is gaining more and more importance in the tourism sector and in the academic community itself (Ivars-Baidal et al, 2016, 2019a, 2021; Femenia-Serra & Ivars-Baidal, 2018, de las Heras-Pedrosa et al, 2019; Sigalat et al, 2020). An SD model is based on the changes in the management of urban territories that have been forged from the new paradigms that have become evident in the need to define more efficient management mechanisms that help to manage 21st-century cities based on the so-called digital revolution, and thus transforming the tourism sector (Celdrán et al., 2018).

In Spain, this concept appears for the first time within the National and Integral Tourism Plan (PNIT) 2012-2015, promoted by the Secretary of State for Tourism (under the Ministry of Industry, Trade and Tourism) and managed by the Sociedad Estatal para la Gestión de la Innovación y las Tecnologías Turísticas (State Company for the Management of Innovation and Tourism Technologies), which goes by the acronym SEGITTUR.

Changes in the management of tourism policies are mainly framed by the need to carry out a change that helps Spain to improve its competitive positioning and create a scenario of balance between the territory and the management of destinations under the new needs of the sector. These needs are motivated by the transformation that is taking place in the tourism sector defined by factors such as technological evolution, new business models, changes in demand (Ivars-Baidal & Vera, 2019) and the strategic role of the sustainability management model itself, which make significant changes in tourism management even more necessary. Thus, and following the definition provided by SEGITTUR (2015), SD are "innovative, consolidated on a cutting-edge technological infrastructure, which guarantees the sustainable development of the tourist territory, accessible to all, which facilitate the interaction and integration of the visitor with the environment and increase the quality of their experience at the destination and improve the quality of life of the resident" (p.35).

On the other hand, sustainability (Font et al., 2021; Foronda-Robles et al., 2020) is a crucial pillar to assure an optimal process of intelligent tourism development into a destination as it represents a dimension to take care of in several SD models (Ivars-Baidal et al., 2021). According to the definition of the UNWTO (2020), sustainable tourism implies a vision that is neither immediatist nor economicist, which ensures management of resources that, in addition to guaranteeing the long-term profitability of tourism operators, makes the tourism sector a structuring element of the territory.

The sustainability dimension is also considered by the Spanish standardisation agency (AENOR) as an essential issue regarding the UNE (acronym of Una Norma Española) Policy 178501:2018 that specifies the requirements that a smart tourist destinations management system must accomplish based on the five pillars on which smart tourism destinations are founded: governance, innovation, technology, accessibility, and sustainability.

In this framework, this chapter focuses on two issues that are discussed in the current academic debates about tourism policy and governance: tourism intelligence (Buhalis, 2019; Del Vecchio et al., 2018; Luque, et al. 2015; Nam et al., 2021; Shafiee et al., 2019) and tourism sustainability (Grilli et al., 2021; Hall, 2019; Higgins-Desbiolles, 2018, 2020; Roxas et al., 2020) of the tourism system. Thus, the main goal consists of obtaining empirical evidence on smart sustainability measurement within the smart transformation of a destination. To do this, the SEGITTUR (2015) methodology has been applied in 22 Spanish destinations that are in process of becoming SD so they could identify the main weaknesses and

strengths they must cope with to assure a sustainable transformation when becoming SD.

II. THE SMART DESTINATION MODEL OF SPAIN

The Spanish Tourism Administration launched the Smart Tourist Destination (SD) program in 2012. This initiative, which emerged from the National and Comprehensive Tourism Plan, is one of the strategic projects of the Secretary of State for Tourism of the Government of Spain. Throughout this process, SEGITTUR (2015) is the manager and promoter of the methodology and its application. Thus, improving the governance of tourist destinations; promoting the economic, social and environmental sustainability of tourism; favouring the digital transformation of companies and tourist destinations as well as promoting innovation and accessible tourism for all.

To maximise all these benefits through synergies between destinations and knowledge transfer, the SD Network was created in February 2019. The SD Network aims to promote a new reference framework to consolidate the competitiveness of the Spanish tourism model. This network enables destinations to cooperate in a common space through strategic alliances between them, and also with the private sector, with access to a portfolio of services and solutions from the private and public sector that facilitate their conversion and involvement in the process, such as education and training, access to databases of grants, subsidies and financing, technological solutions and international visibility, among others.

An SD model is based on knowledge (Boes et al., 2015) and is articulated through a tool based on the evaluation of management requirements or indicators (Sigalat-Signes et al., 2020; Soares et al., 2021; Williams et al., 2020), which are developed in an inter-administrative context fed and developed with a "multi-actor" approach and based on the territory on a local scale. These requirements are structured in areas of work (or axes) that make up what has been called the Smart or Intelligent Tourism Destination Model.

2.1. AN OVERVIEW OF THE SEGITTUR MODEL OF SMART DESTINATION

The SEGITTUR SD methodology includes a total of five axes: *1) Governance; 2) Innovation; 3) Technology; 4) Accessibility; and 5) Sustainability.*

Regarding the *governance* axis, it is a concept that has become increasingly relevant in the political discourse on tourism, where collective

decisions are becoming more and more important due to the impact that tourism activity has on the territory. This shows the increasingly active role of the different social actors who are seeking new ways of managing the conflicts that arise from the development of tourism activity. These conflicts gain more attention because they are produced by the rejection, not of the activity, but rather of its development model. This issue has been addressed by the scientific literature for decades (Glass, 1964; Smith, 1979; Hiernaux, Cordero and Duynen, 2002; Gotham, 2005; Buckley, 2012; Janoschka, 2016; Vergara-Constela, 2016; Gascón and Cañada, 2016; Gravari-Barbas & Guinand, 2017; Mermet, 2017; Bournazou, 2017; Navarrete, 2017; Milano, 2017; Benach & Albet, 2018; Cocola-Gant, 2018; Parralejo & Díaz, 2019; Mansilla, 2019; Quijano, 2019; Sanmartín, 2019; Arold, 2021; Medina & Fernández de Alarcón, 2021) and has been more visible with the growth in demand and the new business models that have ensued accompanied by substantial changes in the configuration of territories. Likewise, Velasco (2014) defines tourism governance as "the search for new forms of collective decision-making on issues that involve the management of conflicts of interest and that seek to promote processes of social innovation, the strengthening of the weakest actors in the system and the change of tourism dynamics that generate negative impacts" (p.19). Thus, the governance axis within the SD meets the requirements of the basic principles of good governance: accountability, transparency and participation.

The axis of *Innovation* (Boes et al., 2015; Gretzel et al., 2015; Sigalat-Signes et al., 2020; Xiang & Fesenmaier, 2017) is responsible for managing the destination based on the development of an innovation ecosystem that can stimulate the creation of a new tourism generation that bases its growth on the generation of creative development of great value for the tourism system to achieve greater competitiveness. In this way, growth aims to be based on an economy that wants to rely on knowledge and innovation (Celdrán et al., 2018), which is not seen as a choice but rather as a need within the SD model, thus enabling the destination's tourism society to have a latent growth model on which it must be governed.

Accessibility, another of the axes, acquires its relevance in exposing the most inclusive part of the tourism industry (Foronda-Robles et al., 2020), providing value in the guarantee of being able to develop the tourist action despite of the limitations that the user may have. Thus, accessibility is still one of the pending challenges in a large number of destinations worldwide regarding tourism policy (Devile & Kastenholz, 2018; Benjamin et al., 2021; Rucci et al., 2021). On the other hand, an increasing number of works relate accessibility with the inclusiveness of tourism regarding how marginalised

people might be ethically and beneficially included in the production and consumption of tourism (Lam et al., 2020; Liasidou et al., 2019; Machado, 2020; Nyanjom et al., 2018; Scheyvens, & Biddulph, 2018).

The fourth axis of the SEGITTUR methodology is *technology* (Yi et al., 2019). Following Celdrán et al. (2018) this strategic axis bases on the digitalisation and integration of ICTs in the destination, since they offer a technology platform that allows improving the tourist experience and greater efficiency in the management of information. Thus, ICTs have acquired a major role in the business models of the tourism sector, being present in the entire value chain from the inspiration phase (before the trip) of the trip to the memory phase, determining the ability of tourism companies and destinations to compete (Romero-Dexeus, 2018). Technology changes the destination (Gretzel et al., 2015), which, in its technological vision, becomes a producer of data to create the great Tourism Intelligence System (SEGITTUR) that allows for a hyper-connected scenario that generates growth and knowledge (Del Chiappa & Baggio, 2015; Jovicic, 2019). On the one hand, this technological growth is acquiring its development based on the demand of the sector itself and its adaptation to the supply of the technological market. Thus, technology behaves as a facilitator of the tourism process of the destination while at the same time providing an integrating and facilitating vision in the actual processes of management and enjoyment of the destination where the service provider, the tourist and the citizen himself benefit. Likewise, its technology base can be designed as a generator of knowledge about the values of interest that respond to the concerns of the requirements of the SD model and of the destination itself.

The fifth axis is *sustainability*. One of the most important facts about tourism in today's society has to do with tourism production in what we could call the "tourism effect". Numerous authors (Vera et al., 2011; Marín, 2017) and institutions (Biosfer, World Tourism Organization or the Global Sustainable Tourism Council GSTC) have debated on sustainable tourism. This matter is part of the discourse of tourism policy since the last few decades regarding its environmental, economic and social vision. Based on this fact, sustainability, the last of the axes, is indicated as an essential part and consequence of the rest of the axes, as can be seen in Figure 1, mainly due to its transforming and sustained nature over time. Despite its value as a strategic element, *sustainable tourism* continues to be a challenge for tourism policymakers, planners and the scientific community (Ivars-Baidal & Vera, 2019). In this context, the SD model addresses its requirements to give real vision and value to the concept of sustainable tourism management. For its part, the UNE 178502:2018 Standard, in

the sustainability axis, indicates that "Sustainability contemplates the rational and efficient management of resources (environmental vector), the quality of life of tourists and residents (socio-cultural) and business competitiveness linked to the economic vector." (p.6) offering a holistic vision to the SD model itself.

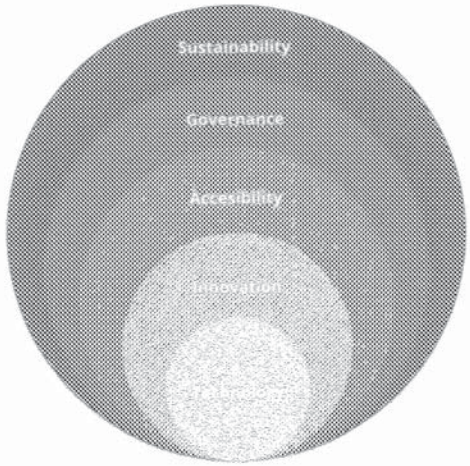

Figure 1. Sustainability within the SEGITTUR's SD Model.

Source: own elaboration.

2.2. THE SMART DESTINATION PROCESS BASED ON SEGITTUR METHODOLOGY: SUSTAINABILITY AS A KEY FACTOR IN CURRENT AND FUTURE TOURISM GOVERNANCE

The SD program of SEGITTUR (2015) is articulated as a continuous improvement process designed so that destinations can successfully face the challenges and permanent transformations posed by the global economic, social and technological environment. An initiative to promote the transformation of territories to favour the transition to a new, more innovative and sustainable tourism model. This process culminates in the distinction as an Intelligent Tourist Destination after applying the management and planning methodology developed by SEGITTUR, which provides a homogeneous SD framework to make destinations more technical and innovative in their management.

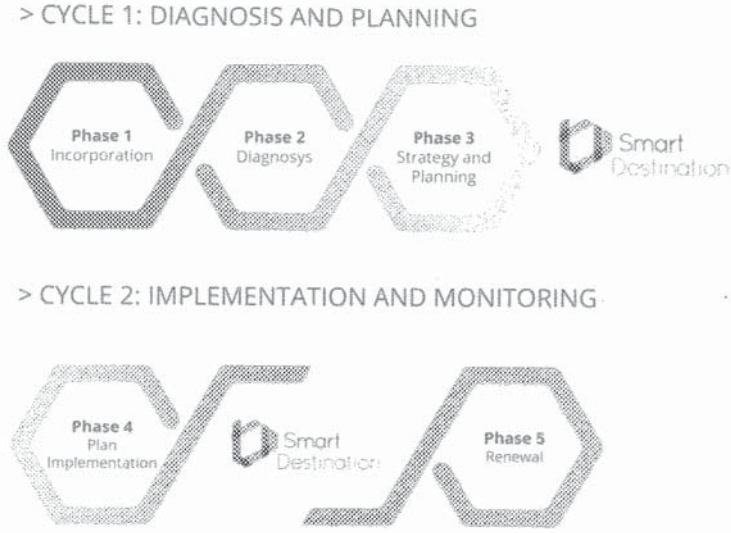

Figure 2. The stages of the SEGITTUR's SD Model.

Source: Own elaboration based on SEGITTUR (2020, 2021).

Since then, the work carried out in these years has made it possible to highlight the fundamental role that public management leadership plays in the sustainable development of tourism activity. An oversight for which the Smart Tourist Destinations program provides a valuable instrument to identify and prioritise the main challenges first and then guide and direct decision-making and the allocation of resources.

Currently, one of the main challenges of SD is Smart tourism sustainability (González-Reverté, 2019; Perles-Ribes & Baidal, 2018). This must be considered as a transversal tool for the continuity of tourism activity in the future, with all quality and well-being standards for both tourists and residents. Sustainability within the SD model must be able to contribute to ensuring viable long-term economic activities that provide all agents with well-distributed socio-economic benefits (stable employment opportunities, income earning and social services for residents, poverty reduction ...). Also, respect socio-cultural authenticity and adequately value cultural assets as a resource and tourist attraction. Make optimal use of environmental resources, maintain essential ecological processes and help conserve the destination's natural resources and biological

diversity. And to achieve a high degree of social and economic well-being for the local population without the pressure of tourist flows harming the use of public services.

III. A PROPOSAL FOR SUSTAINABLE AND SMART TOURISM DEVELOPMENT BASED ON THE SEGITTUR METHODOLOGY

The main goal of this work consists of obtaining empirical evidence on smart sustainability measures within the smart transformation of a destination. Hence, this work offers an exploratory approach by applying the Exploratory Data Analysis (EDA) methodology (Hammouchi et al., 2019) to discover patterns, spot anomalies, test hypotheses, and check assumptions about smart sustainability within the transformation process of an SD.

This type of exploratory analysis offers insight for Destination Management Organisations (DMO) into current and future measures of smart sustainability in SD and comparisons within different periods in an SD and between other SD.

The EDA methodology application was based on the SD methodology (2015), as a tool to diagnose and make sustainability operative within the process of a destination becoming an SD. According to this tool, four scopes of action are contained: 1) Sustainable Tourism Policy; 2) Conservation and Protection of Cultural Heritage; 3) Environment Protection and 4) Socio-economic Development and Circular Economy.

This experimental methodology proposes a series of requirements related to each scope of action to verify how sustainable an SD is during intelligent tourism growth about the other axes of the model: Governance, Innovation, Technology and Accessibility.

The SEGITTUR methodology was tested and applied to a total of 22 destinations of several typologies (sun and sea, urban and natural) and their population size from 2018-2020.

The sample of this work contains 22 destinations that have already reached a certain level of maturity regarding SD issues, so they are suitable for applying to the SEGITTUR methodology. However, their level of tourism development does not have to be equivalent. The used data in this work was collected and provided by SEGITTUR through a strong interaction with destinations using questionnaires and meetings with those responsible for the different areas of the destination.

The outputs of this work identified the main challenges that destinations need to face to assure a sustainable model of tourism development adapted to the transformation process in Spanish SD.

3.1. DESCRIPTION OF THE SEGITTUR METHODOLOGY: A SUSTAINABLE APPROACH

The value of implementing the SEGITTUR methodology lies in harnessing existing and potential capacities to foster the growth of a more economically, socially, culturally, and environmentally sustainable sector.

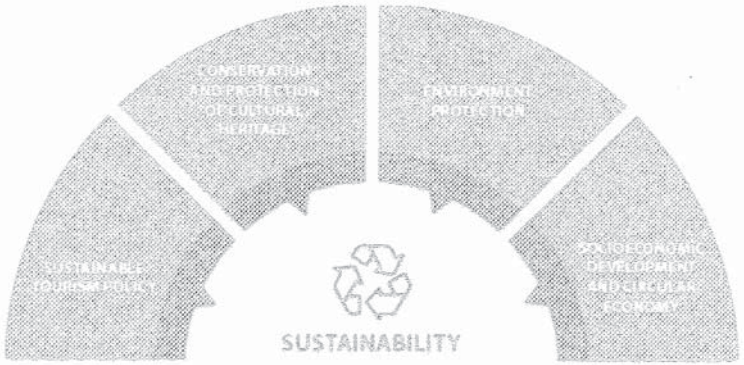

Figure 3. The sustainable scopes of actions of the SEGITTUR's SD Model.

Source: Own elaboration based on SEGITTUR (2020, 2021).

This tool contains 80 requirements concerning four scopes of action that assure sustainability within the Spanish process of smart tourism development: *1) Sustainable Tourism Policy; 2) Conservation and protection of cultural heritage; 3) Environmental protection and 4) Socio-economic development and circular economy.*

Table 1. Number of requirements per scope of action.

Scope of action	Functions	Number of requirements
1. Sustainable Tourism Policy	Planning	14
	Monitoring	4
	Marketing	2
	Seasonality	1
	Legal framework	2
	Private sector	4

Scope of action	Functions	Number of requirements
	Participation	5
	Sensitisation	1
	Total	**33**
2. Conservation and protection of cultural heritage	Conservation	3
	Local economy	2
	Total	**5**
3. Environment protection	Natural areas	3
	Landscape impacts	1
	Mobility	1
	Natural resources	2
	Legal framework	1
	Water quality	5
	Air quality	1
	Noise	1
	Climate change	2
	Energetic efficiency	1
	Waste	2
	Recycling	2
	Private sector	1
	Total	**23**
4. Socio-economic development and circular economy	Tourism quality	1
	Local economy	2
	Training and employment	9
	Exploitation	1
	Participation	1
	Satisfaction	2
	Security and health	2
	Solidarity	1
	Total	**19**
	Total	**80**

Source: Own elaboration based on SEGITTUR (2020, 2021).

3.1.1. Sustainable Tourism Policy

This section analyses the necessary elements for implementing a sustainable and responsible tourism policy, from the definition of the strategy to the regulatory, control, use and communication elements that enable its implementation and development. In this case, 33 requirements are contained.

This scope evaluates sustainability from several approaches concerning the existence of planning and monitoring tools of tourism management used by the Destination Management Organizations (DMO), marketing actions, legal framework, private sector cooperation, and participation and sensitisation of both visitors and local population in tourism activity.

3.1.2. Conservation and improvement of cultural heritage

This scope of action aims to ensure that intelligent tourism development preserves a destination's cultural heritage, including both tangible and intangible assets (Kontogianni & Alepis, 2020; Lee, 2017).

With a total of 5 requirements, this scope includes issues such as the regulation of trade and/or exhibition of historical and archaeological remains; siting, design, construction, materials and/or demolition of immobile cultural heritage; the protection of handicrafts and intangible assets of the destination as well as organising activities to these very cultural resources.

3.1.3. Environmental Conservation

The requirements of this scope cover everything related to the tourism space of the destination, and its environmental protection, ranging from the territory, water, air or energy, waste treatment, recycling, sustainable mobility and the means of transport that serve residents and tourists, as well as the use of renewable energies, energy efficiency or climate change, among other things (Femenia-Serra et al., 2019).

A total of 23 requirements are included in this section to ensure a competitive, smart and sustainable approach to building a competitive advantage for SD by exploiting natural resources and managing and reallocating the natural resources in an optimal way (Shafiee et al., 2019).

3.1.4. Socio-economic development and circular economy

Socio-economic sustainability means that the benefits of tourism in the territory impact the well-being of residents, job creation, the population of the territory, the protection of its heritage and its sustainable development and social cohesion (Hall, 2019).

This scope includes a total of 19 requirements or items that measure several issues related to quality in the tourist offer with the measures adopted to achieve it, programmes, training or manuals, redistribution of the costs and benefits of tourist activity, the measurement of resident and tourist satisfaction, knowledge of the tourism phenomenon in the territory, health care for tourists, as well as security and civil protection for tourists and residents.

3.2. THE APPLICATION OF THE SEGITTUR METHODOLOGY: SUSTAINABILITY IN TERMS OF POPULATION SIZE AND TERRITORIAL TYPOLOGIES WITHIN THE SD TRANSFORMATION

The methodology was applied to 22 Spanish destinations regarding their territorial typology or characteristics as well as their population size.

Regarding the territorial characteristics, four typologies have been included in the sample: 1) coastline; 2) Insular; 3) Urban; and 4) Rural.

In relation to the number of inhabitants, five range have been included: 1) 0-20,000; 2) 20,001-80,000; 3) 80,001-120,000; 4) 120,001-200,000; and 5) 200,001-300,000.

A self-diagnosis tool was prepared for the 22 destinations of the sample with the 80 requirements contained in the methodology. SEGITTUR collected the data between January 2018 and December 2020.

The data was processed to bring practical implications to DMO concerning the sustainability within the process of Smart tourism development among Spanish destinations.

IV. APPLICABILITY OF THE SEGITTUR METHODOLOGY ON SPANISH DESTINATIONS: PRACTICAL IMPLICATIONS

Applying the SEGITTUR methodology from a sustainable approach has enabled both measuring the level of each destination concerning the sustainability of their smart development and identifying the main weaknesses and strengths within each scope of action regarding population size and territorial characteristics.

4.1. POPULATION SIZE OF SPANISH SMART DESTINATIONS AND SUSTAINABILITY: A POSITIVE OR A NEGATIVE CORRELATION?

Regarding the population size of the 22 destinations contained in the sample (*Table* 2), the average level of sustainability exceeds 60%. The following table shows the generally high level of compliance with the sustainability issues for all destinations in the sample.

Table 2. Average sustainability concern within the SD process.

Population size (number of inhabitants)	Sustainable Tourism Policy	Conservation and protection of cultural heritage	Environmental protection	Socio-economic development and circular economy	Total sustainability
200,001-300,000 inhab.	94%	97%	94%	88%	93%
120,001-200,000 inhab.	71%	96%	77%	76%	75%
80,001-120,000 inhab.	49%	82%	69%	61%	60%
20,001-80,000 inhab.	56%	80%	64%	66%	62%
0-20,000 inhab.	46%	70%	56%	59%	48%

A positive correlation between size and concern for sustainability could exist. While destinations with more than 200,000 inhabitants reach a degree of compliance in the sustainability axis of over 90% and those with between 120,001 inhabitants and 200,000 inhabitants are at 75%, those with less than 20,000 inhabitants have a level of compliance which does not reach 50%.

According to Conservation and protection of cultural heritage, a higher level of compliance is observed in the case of the Conservation and protection of cultural heritage, regardless of the size of the analysed destinations.

On the other hand, the performance on sustainable and responsible tourism policy has the lowest score in almost all destinations concerning the size of the destinations. These data highlight the difficulties destinations with less than 20,000 inhabitants face in implementing sustainable tourism policy planning processes, monitoring sustainability indicators to improve their management, applying specific legislation and the involvement of the private sector in the process.

Concerning both the environmental protection and the socio-economic development and circular economy scopes, a negative correlation trend can be found, as the sustainability level is lower as the number of inhabitants also decreases.

4.2. SUSTAINABILITY AND TYPOLOGY OF TOURISM SYSTEMS WITHIN THE PROCESS OF SD TRANSFORMATION

Regarding the sustainability scores obtained by the different destination typologies (Table 3):

Table 3. Average sustainability concern within the SD process.

	Sustainable Tourism Policy	Conservation and protection of cultural heritage	Environmental protection	Socio-economic development and circular economy	Total sustainability
Coastline	59%	76.5%	66%	67%	65%
Urban	57%	90%	71%	67%	65%
Rural	60%	85%	70%	67%	57%
Insular	51%	76%	59%	63%	58%

In the case of the four territorial typologies, a higher level of compliance is observed in the case of Conservation and Protection of Cultural Heritage and a lower level of performance is observed in the case of sustainable tourism policy, especially in the case of insular destinations.

Regarding coastline destinations, this is one of the most balanced typologies, with the highest degree of sustainability in the area of Conservation and protection of cultural heritage (76.5%), followed by fostering socio-economic development (67%), environmental protection (66%) and sustainable tourism policy (59%) as the most challenging issue in the sustainable SD process.

Regarding the insular destinations, sustainable tourism policy (51%) and environmental protection (59%) are the main scopes of action that should be strengthened to assure a sustainable SD process. This could also be due to the insular fragility (Robinson et al., 2019). Regarding socio-economic development, it is quite remarkable that the score is the lowest one (63%), despite islands being more dependent on tourism compared to other geographic territories.

Regarding urban destinations, Conservation and protection of cultural heritage are among the highest scores (90%), and sustainable tourism policy in SD issues is quite necessary for cities (57%). Environmental protection (71%) and socio-economic development (67%) in these territorial typologies have reached an acceptable level of sustainability.

For the case of rural destinations, conservation and protection of cultural heritage (85%) and environmental protection (70%) are the most sustainable scopes of action within the transformation in SD. Sustainable tourism policy of rural destinations (60%) seems to be the most effective in terms of sustainability concerning the other territorial typologies. As it is the case of the other typologies, the socio-economic development in these destinations has reached an acceptable level of sustainability that could enhance (67%).

In short, the analysed data highlight the important work in sustainability that most Spanish destinations have been carrying out for years, above and beyond other areas of work, while at the same time, opportunities for improvement are detected in issues related to sustainability and responsible governance.

Regarding sustainable tourism policy, destinations need to face some issues within their smart transformation in general terms (Shafiee et al., 2019). For example, they are measuring and reporting progress on sustainability commitments of both the public and private sectors. Boluk et al. (2019) state that these commitments should focus on six main cores:

1) critical tourism scholarship; 2) gender in the sustainable development agenda; 3) engaging with Indigenous perspectives and other paradigms; 4) degrowth and the circular economy; 5) governance and planning, and 6) ethical consumption. In line with other authors (Mexa & Coccossis, 2017), monitoring capacity and management of the carrying capacity to avoid the destination's touristification seems to be other of the main challenges within the SD transformation process (Sati, 2020). Rodella et al. (2017) carried out a comparison of the carrying capacity for seven beaches in the Emilia-Romagna region (Italy) to ensure that the sun and beach model in the region offers a competitive and responsible model in terms of physical-environmental degradation and user satisfaction and seasonality facing (Aramendia-Muneta, 2020). According to Ivars-Baidal et al. (2019b), overtourism and massification are the main issues faced through an SD model. Pérez & Lois (2018) also give empirical evidence for the Santiago de Compostela (Spain) case, where descongesting tourist flows become one of the main problems for this destination.

Another of the main challenges identified in this work is the design of an adjusted smart and sustainable strategy that fulfils all the needs of the destination and the territory. Gretzel & Koo (2021) state the need to develop SD and Smart Cities as convergence spaces combining both touristic and residential experiences based on a common roadmap.

On the other hand, some of the main identified strengths concerning sustainable tourism policy were the inclusion of tourism sustainability awareness mechanisms, the access of the local population to the destination's tourism infrastructure and services, as well as the promotion of sustainability certifications in the destination's establishments.

Regarding the Conservation of both natural and cultural resources, some common challenges have been detected for Spanish destinations. For example, restrictions on the construction of tourist infrastructures that respect local architectural codes (Nocca, 2017) as well as the natural environment and the protected areas (Heslinga et al., 2019). Simón-Porcar et al. (2020) give empirical evidence for the case of Monsagro (Salamanca, Spain), stating Cruziana and other ichnofossils as architectural elements in many buildings of the village that represent a main ethnopaleontological phenomenon aligned with the rural development of this destination.

On the other hand, it is crucial to foster energy efficiency plans (Saint et al., 2019) and climate change measures to adapt to it (Scott et al., 2019). Sun et al. (2020) prove the need to formulate a strategy that optimises market segments and tourism volume about the effects of carbon mitigation. Yoon et al. (2022) focus on the case study of Benidorm (Spain) to prove unsustainability in the trade-offs between energy and water in salty

groundwater extraction and disposal for several hotels and the waterpark as well as little familiarity among tourism professionals regarding water and energy savings. Another of the revealed challenges is air quality mapping. Monteiro et al. (2021) suggest air quality as a new attractiveness criterion for tourism destinations in post-pandemic tourism strategies.

On the other hand, some of the main strengths concerning natural and cultural resources were identified: inventory and action plans for the Conservation of historical and artistic heritage, mechanisms to ensure tourist accessibility to quality public transport and private water-saving programs, as well as tools for the management of waste and landfills.

Regarding socio-economic development and circular economy, some of the key challenges were identified regarding SD in Spain. One of these challenges is the awareness of visitors and residents about the importance of promoting good sustainable practices (Alazaizeh et al., 2019). This is in line with the statement of Carballo et al. (2019) that emphasises the collaboration of residents and visitors as an imperative to assure a sustainable tourism model in a case like Lanzarote (Spain).

The tourism labour precarity seems to be also a key challenge regarding an SD, according to the findings of the work, as the need for fair conditions for tourism professionals. Úbeda et al. (2020) state that the tourism sector could become one of the main drivers of Spanish labor deterioration as they mainly use temporary contract workers and have employed workers with lower professional requirements, especially for youth segments. This is in line with Cañada (2018), that carries out an analysis of the tourism sector focusing on hotel maids' as a collective that has deteriorated in terms of working conditions, including reduction of salary and loss of professional categories, work overloading, uncertain work contracts, aggravation of health problems or even decrease the capacity of representation among workers' collective interests.

Regarding the quality of life as another main issue in the SD transformation process, Sigala et al. give empirical evidence for the case study of Gandía (Valencia), showing that smart tourism growth could represent a driver for enhancing the quality of life of visitors and residents. However, it is essential to find means to quantify the return on investments made, both economically and socially.

On the other hand, some of the main strengths concerning socio-economic development and circular economy were identified. This includes quality management certifications and distinctive tourism safety, a collaboration of DMO with tourism-related education centres, and disaster management strategies.

Finally, the findings of this work should be considered by DMO as a means for implementing and adapting other existing indicators systems such as the European Tourism Indicators System (ETIS) to gain advancement towards evidence informed planning for tourism (McLoughlin et al., 2020) as well as increasing competitiveness (Font et al., 2021).

V. CONCLUSION

The main goal of this work consisted of obtaining empirical evidence on smart sustainability measures within the smart transformation of a destination. Hence, this work has emphasised the role of tourism governance according to the new smart paradigm and SD based on the SEGITTUR methodology (2015) that evaluates the SD process according to five axes: 1) Governance; 2) Innovation; 3) Technology; 4) Accessibility; and 5) Sustainability.

Sustainability, as one of the transversals and pending challenges of SD, has been measured based on the SEGITTUR (2015) methodology in 22 Spanish destinations regarding the scopes of action related to this matter: 1) Sustainable Tourism Policy; 2) Conservation and Protection of Cultural Heritage; 3) Environment Protection and 4) Socio-economic Development and Circular Economy.

The main results of this work bring empirical evidence and some main guidelines that contribute to assuring sustainability in Spanish destinations within the process of transformation in SD regarding the analysed scopes of action related to sustainability.

This work proves the need to measure tourism according to the population size of destinations and territorial typologies to foster tourism competitiveness and knowledge.

This work also offers a contrasted and validated tool that enables destinations to gain tourism competitiveness based on sustainability as a key axis within the SD model. In addition, the local knowledge contributes to building a tourism intelligence network at the supra-municipal level.

On the other hand, some limitations should be remarked concerning this work. First, the sample contains 22 destinations, so the findings of this work could be completed as soon as more cases are available not only from Spain but also from other latitudes. Thus, these findings must be considered in general terms, not individual cases. Second, the analysis of SD sustainability focuses on its relationship with only two aspects of destinations: population size and territorial characteristics. There is a need to incorporate other potential explanatory factors of an SD's sustainability level related to

elements such as the environmental awareness of the resident population, the DMO commitment to sustainability or the typology of travellers they received, among others. Thirdly, it is too soon to anticipate if the spread of the COVID-19 pandemic would have any long-term positive effects on the sustainability evolution at SD, a contextual element that has not been included in the analysis made but which we could anticipate would be very relevant in future analysis. Finally, the applied methodology is still in progress by SEGITTUR, so the adjustment of this tool in the short and medium term will enable particularising in individual case studies.

The future roadmap of the SD model depends on a context of great uncertainty marked by the crisis caused by the COVID-19 pandemic and its unpredictable evolution through the different variants. This will require a review and update of the SD methodology in a short time. However, in the case of the sustainability axis developed by SEGITTUR, we did not want to end this analysis without suggesting some elements that we consider should be taken in consideration in the future SD model and that could, at the same time, feed the scientific reflection of the coming years around sustainability, issues such as the following: recognition of the growing importance of sustainability certifications as a differentiating element of the tourism offer at destinations (i.e. Booking.com recently launched its "Travel Sustainable Badge" (Nov. 2021); the development of sustainable urban mobility strategies (including pedestrianisation, support for public transport, bicycles, electric cars or the growing importance of "Mobility as a Service" platforms); the consideration among the tourist resources of the destination ecosystems and natural habitats; the growing need to carry out environmental impact studies of tourist activity and carrying capacity for a smarter management of the SD; the existence of compensation mechanisms and its effect on the SD (such as the tourist tax); strategies for the Conservation of the historical-artistic heritage; circular economy, water cycle management plans; waste, noise and odour management procedures; strategies and measures for adaptation and mitigation to climate change (i.e. like movements towards Zero carbon destinations or Zero carbon travel industries); greater energy efficiency; prioritise local products and services (i.e. promotion of Km0 initiatives or Slow Food Travel); quality jobs in tourism; or the monitoring of the incidence of COVID-19 on the destination and its primary care system.

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