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Abstract

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Design/methodology/approach

The proposed model is tested through a multiple case study of seven European cities. This choice of sample makes the study highly representative. Data collection is based on an exhaustive search and analysis of available data on smart city initiatives, destination management organisations (DMOs) and tourism plans. Social network analysis (SNA) using Gephi software is employed to build stakeholder networks.

Findings

Analysis of the stakeholder networks that shape tourism governance and smart initiatives in several cities reveals a disconnection between the two types of networks. The results show limited progress towards the expected synergies of true smart tourism city governance.

Practical implications

Theoretically, the study contributes to the debate on new forms of governance for the complex evolution of urban tourism. In practice, the relationship between tourism governance and Smart city initiatives needs to be redefined to achieve synergies that increase the inclusiveness and efficiency of urban tourism policies.

Originality/value

This study examines the under-researched topic of the interrelation between tourism governance and smart city initiatives. By comparing the networks of actors resulting from these two processes, it assesses the extent to which this interrelation helps the emergence of new governance models (smart tourism city governance).

Keywords: Social network analysis, Tourism governance, Smart city, Smart tourism, Stakeholders

Article classification: Research paper

Special Issue: Social Network Analysis in Hospitality and Tourism

Smart tourism city governance: exploring the impact on stakeholder networks

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1. Introduction

The impact of digitalisation on tourism justifies new approaches to planning and management, with initiatives in smart cities and destinations offering notable examples. The smart approach has been identified in novel theoretical conceptualisations as a new governance framework in which the adoption of technologies is instrumental (Gretzel and Jamal, 2020; Ivars-Baidal *et al.*, 2019). These theoretical contributions emphasise the relational role of the smart approach in creating knowledge and promoting destination competitiveness and innovation (Boes *et al.*, 2016; Buhalis and Amaranggana, 2013) within a collaborative framework (Marasco *et al.*, 2018). This relational role is enhanced by the intensive use of technology and data and the sharing of information. The integration of all actors involved is also critical to co-create value chains (Buhalis *et al.*, 2023). However, the impact of the smart approach on the urban and tourism governance framework has not been studied in depth. In particular, research has overlooked its influence on relationships between stakeholders in urban destinations. Moreover, the intersection between smart city development and tourism remains an under-researched topic (Gretzel and Koo, 2021).

The present study addresses this research gap. Specifically, it explores this relationship from the perspective of governance and stakeholder networks. This perspective is critical to understand the development of smart cities and their implications for urban and tourism management. A theoretical model is proposed to describe the transition towards smart tourism city governance from the perspective of stakeholder participation. The proposed model is tested using an exploratory multiple case study that examines the extent to which such a transition is taking place in several destinations (Amsterdam, Barcelona, Edinburgh, Lisbon, Ljubljana, Turin and Venice). Building on elements of social network analysis (SNA) described by Casanueva *et al.* (2016), the types of stakeholders, their interrelationships and their level of involvement in governance are examined for the selected cities. This analysis responds to the main research question of this study: What is the extent of the interrelation between tourism governance stakeholder networks and smart city development?

The rest of the paper is organised as follows. The second section reviews past studies of tourism governance and smart city initiatives to propose a new theoretical framework for smart tourism city governance. The role of stakeholder relationships in this new framework is then examined. The third section describes the method and data collection process. The fourth section presents the main results and outlines the types of stakeholder networks and their

interrelationships. Finally, the fifth section presents the main conclusions and implications. Limitations are also discussed, along with future lines of research.

2. Literature review

This section analyses the relationship between tourism governance and the development of the smart approach in tourist cities from the point of view of stakeholder networks. First, the evolution from tourism governance to smart tourism city governance is discussed. Next, a stakeholder-based approach is adopted to propose a model for the transition towards smart tourism city governance. This proposal is derived from a review of the research in three interrelated areas: the complex evolution of urban tourism and the challenges it raises for urban and tourism management (Ba *et al.*, 2022; Hartman *et al.*, 2020; Koens *et al.*, 2021); the governance implications of the new smart tourism ecosystem (Buhalis *et al.*, 2023; Gajdošík, 2022; Gretzel *et al.*, 2015a, 2015b); and the underdeveloped relationship between tourism and smart city development. The study of these areas reveals both the potential risk of traditional governance models becoming obsolete and the need to evolve towards new, more holistic, integrative and technology-supported models.

2.1. From tourism governance to smart tourism city governance

The application of governance to tourism marks an evolution in the concept and forms of government and public management (Del Gesso *et al.*, 2022). This topic has received increasing theoretical and applied attention in tourism research over the last three decades. Hall (2011) defined four tourism governance frameworks based on the relationships between public and private actors, namely hierarchies, markets, networks and communities. At the city level, DMOs coordinate essential tourism-related activities and foster a collective vision of the destination. Thus, from a network governance perspective, the DMO plays a key role. In fact, networking capacity is an essential factor in the authority and relevance of DMOs in destination governance (Gretzel, 2021; Volgger and Pechlaner, 2015). As a final evolutionary stage in the theoretical framework of DMOs, Gretzel (2022) proposed a preliminary conceptualisation of a *smart DMO*. This conceptualisation involves going beyond narrow tourism agendas to conceive management as true tourism governance that does not prioritise the interests of certain tourism industry stakeholders.

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3 Accordingly, the digitalisation of tourism can further change tourism governance processes.
4 Digitalisation, accelerated by the virtualisation and process automation effects of COVID-19,
5 constitutes a disruptive factor in tourism. It involves the introduction of new players such as
6 digital platforms, requiring new approaches to the planning and management of tourism cities.
7 The smart approach offers a new governance framework with technology adoption at its core.
8 This vision is in turn influenced by the development of smart city projects. Theoretically, some
9 elements of a new form of governance stem from adaptation to the impact of digitalisation.
10 Other elements stem from its interrelation with smart city initiatives. These factors converge in
11 tourism cities. However, Ivars-Baidal *et al.* (2019) emphasised the role of governance more
12 than that of technology. They depicted governance as a fundamental strategic and relational
13 element of destinations that involves cooperation between stakeholders to encourage
14 innovation. Similarly, Gretzel and Jamal (2020) interpreted good governance as a prerequisite
15 for an ethical smart destination. The ethical perspective is particularly important because the
16 social dimension of smart destinations has been neglected. In sum, tourism governance and
17 smart city development appear to have common, complementary elements. Therefore,
18 synergetic convergence is advisable, as several authors have already argued (Gretzel and Koo,
19 2021; Koens *et al.*, 2021; La Rocca, 2014; Lee *et al.*, 2020; Pasquinelli and Trunfio, 2020). As
20 part of this desirable convergence, the interconnectedness of stakeholders is crucial.
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37 2.2. Stakeholder interaction in smart tourism city governance

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39 Destination governance requires dynamic interaction between stakeholders through cooperative
40 processes. Via both formal and informal institutional arrangements, these processes enable
41 collective outcomes more efficiently than hierarchical government action alone (Bramwell,
42 2011). Tourism is no longer seen as a separate industry, sector or policy domain. Instead, it is
43 part of inclusive strategic spatial planning (Hartman *et al.*, 2020). However, from a planning
44 perspective, social participation is often symbolic (Moscardo, 2019). Therefore, local residents
45 must be included in tourism governance, and further research on the design of new forms of
46 participation is required (Bichler, 2021).
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54 This trend has been enhanced by the effects of overtourism in cities suffering from high
55 tourism pressure before the COVID-19 pandemic. Russo and Scarnato (2018) analysed the
56 changing discourse on tourism after a certain “social tolerance threshold” has been reached.
57 They examined its effects, in an attempt to build a more participatory policymaking framework
58 in Barcelona. Overtourism has led cities such as Amsterdam and Barcelona to rethink the
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3 relationship between the promotional function of the DMO and the city's tourism management,
4 which is the responsibility of the city council.
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7 In this context, new theoretical proposals are emerging in relation to smart cities to
8 emphasise the collaborative role of local governments in improving city hospitality (Del Gesso
9 *et al.*, 2022; Koens *et al.*, 2021). At least at the theoretical level, the smart approach combines
10 satisfying tourists' needs with improving residents' quality of life. In doing so, it offers new
11 avenues for research and management. These avenues have been explored from the point of
12 view of theory (Santos-Júnior *et al.*, 2020) and empirical inquiry (Herrero *et al.*, 2019).
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18 The interaction between stakeholders is a defining characteristic of smart destination
19 governance. The range of stakeholders grows with the complexity of the smart tourism
20 ecosystem. This ecosystem includes traditional and new actors (e.g. technology companies,
21 digital platforms and research centres), along with residents themselves (Errichiello and
22 Micera, 2021; Gretzel *et al.*, 2015b). This complexity of the smart tourism ecosystem is
23 especially relevant in cities with high tourism pressure.
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29 Previous studies have shown both positive and negative effects of stakeholder networks
30 emerging in smart cities. For example, Meijer and Rodríguez (2016) linked smart city
31 governance to forms of human collaboration through ICTs aimed at better outcomes and more
32 open governance processes. They specifically highlighted new communication channels and
33 tools for interacting with citizens. These developments could reframe the engagement of
34 residents in tourism planning from a smart city perspective through initiatives such as the use
35 of open data, crowdsourcing and platform co-creation (Lalicic and Önder, 2018). This proposal
36 offers a positive view that supports a citizen-centric smart city approach. Conversely, some
37 authors have criticised these networks for their poor democratic performance (Nesti and
38 Graziano, 2020). Therefore, a deeper understanding of changes in the way stakeholders interact
39 in the context of smart cities is necessary. The focus of the present study addresses this issue.
40 However, such analysis would be incomplete without considering the influence of smart city
41 projects on tourism governance and vice versa. Such policies are not always well coordinated,
42 and they have not yet been investigated from the point of view of networks of actors and their
43 interrelationships.
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55 Based on the previous discussion, a new model of transition towards smart tourism city
56 governance is proposed. It is summarised in Figure 1. The model is based on two realities that
57 are at risk of becoming obsolete. The first is a form of tourism governance in which planning
58 has only token social participation and DMOs focus purely on marketing. According to this
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perspective, the involvement of stakeholders is restricted to the tourism industry. The second reality is a technocentric approach to smart cities. In this context, the tourism pressure on urban destinations has increased worldwide while several drivers of change intensify, highlighting the need to rethink urban tourism governance.

One example of the drivers of change is the blurring of boundaries between tourism and everyday life. Another is the impact of digitalisation on urban processes as short-term rentals grow. A third is the greater interconnection of stakeholders thanks to digital tools. Another driver refers to tourism-related social exclusion processes. Finally, the impact of COVID-19 on the digital transition of cities has also been a driver of change, with tourism pressure increasing both before and after the pandemic. These drivers of change would lead to a redesign of tourism governance and smart city development based on several common factors. Examples of these factors include a more citizen-centric view of tourism and smart city development, a need to broaden social participation, the use of technology and information in decision support systems, and the encouragement of open innovation.

The proposed model involves shifting tourism governance towards broader and more transversal stakeholder participation. This shift would influence DMOs and tourism planning processes, better integrating tourism governance with smart city development. A closer connection between tourism governance and smart cities would lead to synergies in participation, innovation processes and data availability. As reported by technology and innovation companies, it would also bring benefits in increased efficiency in the dimensions of smart cities that are in some way linked to tourism. Examples include public transit, traffic management, energy, waste, water management, public safety, public health and e-governance.

[Insert Figure 1 around here]

3. Method

An exploratory research approach was adopted to study interconnectedness between smart city development initiatives and tourism governance in urban destinations from a stakeholder perspective. A multiple case study was performed. Exhaustive analysis was conducted to study the smart development and tourism governance plans and projects of the selected cities. Table 1 in the supplementary material shows the data sources that were employed. This analysis detected the main stakeholders and their networks. These networks illustrate the level of integration and adherence of these cities to the proposed theoretical model. This approach was

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3 considered an essential first step towards validating the proposed model. The method is
4 illustrated in Figure 2.
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7 [Insert Figure 2 around here]
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10 11 *3.1. Case selection*

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13 Seven European cities from six countries were chosen: Amsterdam, Barcelona, Edinburgh,
14 Lisbon, Ljubljana, Turin and Venice. The approach in the present study responds to recent calls
15 for research on smart destination governance in different destinations with different governance
16 structures and degrees of smartness development (Errichiello and Micera, 2021). The chosen
17 cities had different demographic and tourism characteristics. The cities varied in terms of
18 degree of tourism pressure, measured through collection and analysis of local statistics, and
19 level of smart city development, calculated based on the literature review and analysis of the
20 smart approach in each city, as illustrated in Figure 1A in the supplementary material.
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24 Despite difficulties in harmonising statistical indicators, the selected cities can be grouped
25 as follows. The two large urban destinations are Amsterdam and Barcelona, which are
26 international benchmarks in smart city policies (Mora *et al.*, 2019). Three cities have high
27 tourist pressure but limited development of smart initiatives (Venice, Lisbon and Edinburgh).
28 Venice is a special case due to the huge pressure from day visitors. Ljubljana is the smallest
29 national capital in Europe in demographic terms, with relatively low tourist pressure and scarce
30 effective smart city development. Finally, Turin has an advanced smart city project, at least
31 compared with other Italian cities, but low tourist pressure.
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35 This sample of cities reveals common trends and variations between destinations in terms of
36 the convergence of tourism governance with smart city development and in terms of stakeholder
37 participation, as proposed in the theoretical model. It also leads to an analysis framework that
38 can be extrapolated to other cities, especially in Europe. It can thus provide a better
39 understanding of the reality, the potential and the shortcomings of the smart approach applied
40 to urban destination governance.
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43 44 *3.2. Data collection and analysis*

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46 Data collection involved three steps. It was based on exhaustive desk research using the official
47 institutional websites of the seven selected European cities. The first step was to perform an
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3 extensive search and in-depth analysis of information on three core areas for the chosen cities.
4 The first area comprised the structure and activities of smart management bodies. The second
5 area was the DMO model and its functions. The third area consisted of the main tourism
6 planning processes. The results are summarised in Table 2 (smart city initiatives), Table 3
7 (DMOs) and Table 4 (tourism plans) in the supplementary material. This process was labour
8 intensive and demanding because of the number of languages in which the information was
9 written and the number and internal complexity of institutional entities and programmes.
10 Academic experts with an in-depth knowledge of tourism governance and smart initiatives in
11 each city were contacted. They were asked to validate a working document of key information
12 sources. They were also asked to assess the local relevance of the organisations, plans and
13 initiatives used to build stakeholder maps.
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23 Second, based on the previous analysis, stakeholders were identified. They were classified
24 according to three individual attributes that are widely used in tourism governance research:
25 type, sector and scale. There are many classifications in the literature. However, a common
26 approach is to differentiate between the public sector, the private sector, civil society and
27 academia (Restrepo *et al.*, 2021). Starting from this common categorisation, stakeholders were
28 classified into seven categories: public administration, tourism industry and related sectors,
29 mobility and transport, technology companies, other companies, research and academia, and
30 civil society. Surprisingly, given the research objective, this study is the first in which
31 technology companies have been included in this type of analysis.
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39 Finally, social network analysis (SNA) was employed. This form of analysis has been widely
40 applied in tourism (Casanueva *et al.*, 2016; Mariani and Baggio, 2020; Scott *et al.*, 2008; Van
41 der Zee and Vanneste, 2015) to examine stakeholder networks and their interrelations. In SNA,
42 networks are graphically represented by a set of vertices or nodes and a set of pairs of distinct
43 nodes, called edges or links. The resulting structure reflects individuals' decisions and
44 behaviour. The focus is therefore on the patterns of relationships, the interconnectedness of
45 stakeholders (Timur and Getz, 2008), and the role and degree of primacy of intervening
46 stakeholders (Restrepo *et al.*, 2021). In the present study, nodes represented city stakeholders,
47 coordinated by governance bodies. The links were related to the number of relationships or ties
48 between governance bodies and stakeholders. This approach resembles that of other similar
49 studies (Presenza and Cipollina, 2010; Restrepo *et al.*, 2021; Sheehan and Ritchie, 2005; Timur
50 and Getz, 2008).
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Gephi software was used to build the stakeholder networks. This software also measured their size, composition (as per the established classification) and degree of interrelation between nodes. The governance stakeholder graphs and planning agent graphs were built separately. In the governance graphs, the analysis was based on networks with formal ties (Wasserman and Faust, 1994). These networks were affiliation networks, similar to those used in other studies based on social network analysis. The connections indicated membership in tourism governance and smart city entities. By contrast, in the planning graphs, connections between nodes indicated participation in formal planning processes (e.g. commissions, focus groups, interviews and open consultation), as summarised in Table 4 in the supplementary material. In creating these networks, no distinction was made in terms of type of participation. Priority was given to the identification of stakeholders. The networks in this study were lead organisation-governed networks according to the classification of Beaumont and Dredge (2010). Therefore, the only metrics presented are the average degree of interrelation and the degree of stakeholder centrality. The average degree of interrelation (average number of edges per node) showed a predominance of bidirectional relationships between nodes, with values close to 2. The eigenvector used to identify the degree of stakeholder centrality had higher values and consequently a higher centrality for entities responsible for management or planning initiatives (i.e. DMOs and smart management bodies).

4. Results and discussion

4.1. *The diversity of smart city approaches and management structures*

The selected cases show the diversity of approaches and varying degree of maturity in smart city development, as reflected in Table 2 in the supplementary material. Amsterdam and Barcelona are often associated with best practices in a range of dimensions of smartness. Both have a well-defined sustained smart strategy, although Barcelona reoriented its smart policy towards technological sovereignty and social innovation in 2015. The initial phases of development were linked to investment in strong technological infrastructures (e.g. environment, connectivity and sensorisation). They currently focus on fostering innovation from a social and sustainable perspective. The smart city strategy of Edinburgh is still in an early stage and has limited scope for collaboration. The project entails progressive integration of public services in a platform that combines business solutions with a customer engagement layer. The ability of this approach to stimulate innovation and social engagement remains to be seen. Lisbon does not have a specific smart city plan. However, various initiatives are being

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3 developed in this regard by different municipal areas. The website *Lisboa Inteligente* brings
4 together the city's smart initiatives, which cover six areas: environment, citizenship, economy,
5 governance, mobility and lifestyle. In the case of Ljubljana, strictly speaking, there is no explicit
6 smart city project. However, its modest size and commitment to sustainability, among other
7 factors, mean that Ljubljana has something of a smart city model oriented towards urban
8 sustainability through urban planning and regulatory measures. In Turin, smart initiatives are
9 channelled through Torino City Lab (TCL) and Torino Social Impact (TSI). Finally, Venice
10 has no specific smart city plan or strategy, but it does have several ongoing projects with a
11 smart approach, the Smart Control Room (SCR) being one of the most notable.

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This range of approaches reflects different degrees of smartness depending on “local contexts that shape how they are conceived and produced” (Kitchin, 2022, p. 157). It also reveals that smart strategy is at the fringe of mainstream institutional policymaking in the selected cities, echoing the findings of Cowley and Capprotti (2018) for UK cities. This institutional weakness derives from smart concept attrition in local governments in cities such as Barcelona and Turin (Nesti, 2020). Smart cities are connected to urban innovation processes but do not have the integral transformative character of urban management originally associated with the smart concept. In addition, the use of partnerships to develop smart initiatives is seen as a façade given the persistent unequal representation of locals and their concerns (Shelton and Lodato, 2019). This inequality shows policymakers’ disregard for equality and diversity in smart city development (Nesti and Graziano, 2020).

4.2. *Poor integration of smart city management networks and tourism governance*

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The previous section explains that the predominant structure for managing smart cities is public, although the standard formula for developing smart projects is in the form of partnerships. Smart initiatives form networks mainly consisting of government departments, technology companies, companies from other sectors, and universities and research centres. Conversely, tourism governance networks are mostly made up of sector participation, tourism companies, local government and a small but variable selection of transport companies and research centres. As explained later, the presence of tourism companies in smart initiatives is minimal, as is the presence of technology companies in tourism governance.

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As shown in Table 3 in the supplementary material, DMOs and tourism organisations are most typically public-private organisations, although they operate in different ways in each city.

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3 Tourism management organisations form two types of networks: those derived from their
4 governing bodies and those made up of agents that participate in their actions. In both cases,
5 the data show a clear disconnection with stakeholder networks for smart city initiatives.
6 Evidence of this disconnection is the widespread predominance of two edges as the average
7 degree of the network. The structure of stakeholder networks for the selected cities is based on
8 public leadership and uneven private participation. There is a clear sector bias in favour of
9 tourism-related organisations. Additionally, the involvement of technology companies and civil
10 society representatives is generally scarce. In the specific case of technological/innovation
11 agents, Amsterdam&partners offers a notable example. Regarding social involvement, the
12 Tourism Council of Barcelona, which was created specifically to expand local agents'
13 involvement in tourism governance, is the most prominent example. To a lesser extent,
14 Amsterdam&partners and the RTE of Lisbon offer other notable examples.

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16 The analysis shows that DMOs with more complex structures and activities generate larger
17 and denser networks. The make-up of the supervisory board of Amsterdam&partners is 50%
18 tourism industry agents, 16.7% other businesses, 11.1% research and academia, 11.1% civil
19 society representatives, 5.5% public administration and 5.5% technology businesses. Figure 3
20 shows the patterns of the relationship between Amsterdam&partners and the smart city
21 management body (AEB). Two stakeholders from research and academia participate actively.
22 Interestingly, some tourism companies belong to the AEB but are not members of the DMO.

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39 The two governing bodies of Barcelona Turisme are made up of public and private agents.
40 Associated members (more than 1,000 partners) are organised by tourism product or market
41 segment. The connection between tourism governance stakeholders and the smart agent
42 network is weak. The smart strategy is based on a public body (Municipal Institute of
43 Information Technology), which provides technological support, and various innovation-
44 oriented organisations and initiatives under a quadruple helix approach (BIT Habitat). No
45 purely tourism companies are involved. Turismo de Lisboa has considerable participation from
46 private agents (800, with a clear predominance of the hotel sector). The Regional Board
47 includes municipalities and other administrations, as shown in Figure A2 in the supplementary
48 material. With the exception of the National Tourism Board, which is present in one project,
49 no tourism agent is involved in the 36 Smart Lisbon projects. In Edinburgh and Venice, the
50 limited development of smart city initiatives hinders the integration of stakeholders. The
51 participation of tourism stakeholders in Torino City Lab is marginal.

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3 Finally, Ljubljana lacks a smart city strategy, even though it has received numerous awards
4 as a smart city and destination (Johnson *et al.*, 2021). Ljubljana Tourism is public but
5 collaborates with private actors both on its board and in its promotion and product development,
6 as shown in Figure A3 in the supplementary material. Formally, tourism stakeholders are not
7 integrated with the Technology Park, although this technology park has started to work with
8 Tourism Ljubljana on a virtual and augmented reality project.
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14 In sum, according to the tourism governance models formulated by Hall (2011), network
15 governance is the predominant model in the selected cities. This model is linked to public-
16 private partnerships, with DMOs playing a central role. The results show that this model can
17 become somewhat undemocratic and can lead to under-representation of the agents affected by
18 tourism in the city. For instance, Serra *et al.* (2017) studied the Barcelona DMO, showing that
19 the lack of a broader framework of representation and a holistic vision of tourism limits the
20 creation of shared value for the city. To overcome this problem, the city of Barcelona has
21 created the Tourism & City Council, with a broad representation of stakeholders, although it is
22 merely for consultation purposes.
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31 The networks derived from tourism governance and smart city management appear to
32 function as separate bubbles (Mizrachi and Gretzel, 2020). This way of functioning is in stark
33 contrast to the supposed virtuous circle between tourism and smart cities (Lagier and
34 Montargot, 2019) and is far from the ideal “interactive ecosystem” that is supposedly the key
35 to the success of smart hospitality and tourism development (Law *et al.*, 2022). This separation
36 of tourism governance and smart cities affects key aspects of the smart approach, such as the
37 analysis of big data as a source of knowledge and competitive advantage (Mariani *et al.*, 2021).
38 Only in the case of Amsterdam do these bubbles overlap at the governance level. In the other
39 cities, gradual interaction takes place only in specific initiatives.
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48 *4.3. Tourism planning and smart city initiatives: parallel processes leading to disconnected* 49 *networks*

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52 The analysis of the relationship between the agents involved in tourism planning and smart
53 initiatives has two fundamental limitations. The first is the lack of an overall smart strategy in
54 some cities, even though a specific strategic plan is important for smart city governance
55 (Camboim *et al.*, 2019). This factor limits the application of the smart approach to the
56 implementation of a diverse range of specific projects. The second limitation is the
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3 “invisibility” of tourism in smart strategies. There is also a crucial difference between a
4 participatory approach to tourism planning, which relates to the tourism sector, and a technical
5 approach, which sets out the strategy and smart actions.
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9 The interpretation of the type of planning that smart cities use is complex and controversial
10 from the point of view of stakeholder participation. Komninos *et al.* (2019) defined smart city
11 planning as an uncoordinated and unpredictable collection of initiatives, actions and
12 opportunities. According to their definition, it is “planning without a plan”. This idea is
13 confirmed in the selected cities in the sense that plans do not exist in some cities or have not
14 been updated since initially drafted. Like the development of specific initiatives, the creation
15 of smart plans has not been encouraged by participatory processes. The theoretical association
16 of smart planning with participatory governance is not a reality in the selected cities. This result
17 agrees with those of Angelidou (2017), who analysed 15 smart city strategies, finding that they
18 were characterised by low or no participation. The development of smart initiatives is framed
19 within a logic of experimental governance that encourages a multi-sector collaborative
20 approach (Cowley and Caprotti, 2018). This approach relies on initiatives such as living labs,
21 hackathons and smart testbed opportunities, which seem to favour bottom-up smart city
22 initiatives (Cardullo, 2021). Consequently, the smart approach tends to lead to the consolidation
23 of a triple helix model with selective stakeholder participation.
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35 From the point of view of tourism planning, Table 4 in the supplementary material
36 summarises the type of participation in the instruments developed by the selected cities. It also
37 shows the percentage of social and technological or digital agent participation in each plan. The
38 characteristics and duration of the participation processes vary across the case studies, although
39 they usually involve working groups, thematic sessions and interviews. The use of digital
40 platforms to encourage participation in Barcelona (*Decidim.Barcelona* platform) and
41 Edinburgh (City Council Consultation and Engagement Hub) is noteworthy. Participation is
42 clearly based on tourism agents, with a low percentage of social actors in all cases except
43 Amsterdam and Barcelona (around 20%). The technology or digital sector is barely represented.
44 There is greater social participation in the creation of tourism plans than in the structure and
45 activities of DMOs. Based on the growth forecasts of the strategic plans, pro-growth tourism
46 strategies are associated with lower resident participation in governance (Bichler, 2021) in
47 Ljubljana, Turin, Lisbon and, to a lesser extent, Edinburgh. In Amsterdam and Barcelona, the
48 impact of tourism pressure on residents’ quality of life is a catalyst for increased participation.
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Venice maintains sector participation despite the implementation of regulatory measures aimed at limiting visitor arrivals (increased taxes, cruise tourism control and a smart control room).

As mentioned earlier, smart strategy plans are not widespread and involve few actors. In the cities that have (or have had) specific smart city plans (i.e. Barcelona, Edinburgh and Turin), these documents are technical. Smart plans include complex, highly specific issues that seem to be left out of the public debate (e.g. data integration platforms and sensorisation). Hence, participation in tourism planning processes was compared with the main smart initiatives in each city. The analysis shows no connection between the actors involved in both processes in most cases. Moreover, in the cases where there is a connection, the links are weak. However, there are differences between the selected cities. For example, Amsterdam, Barcelona and Turin have an average degree of connection of between 5 and 6 as opposed to the typical bidirectional relationship with an average degree of connection of around 2.

Despite this apparent disconnection, Barcelona has some noteworthy characteristics. Civil society representatives are especially involved in district-level planning initiatives in Barcelona, as in other cities in the sample. However, Barcelona also has a Tourism Mobility Strategy involving transport and mobility companies and organisations, which are also present in the tourism strategic plan. The network of agents emerging from tourism planning processes and smart initiatives has more contact points than the network of agents related to management bodies. Figure 4 illustrates the myriad of relationships derived from the interconnection between the planning and smart initiatives in Barcelona.

[Insert Figure 4 around here]

The broad social participation in Amsterdam in the *City in Balance* initiative (and later in the *Redesigning the Visitor Economy* initiative with a more sector-oriented approach) helps integrate actors already involved in the initiatives implemented by the Amsterdam Economic Board. In Edinburgh, there is a clear dissociation between the technical and institutional character of the smart strategy and sector participation in the tourism planning process, as shown in Figure A4 in the supplementary material. However, in tourism planning, Edinburgh is unique in having a close connection of tourism agents with the cultural sector, linked to the “festivalisation” of the city. Finally, in the case of Torino City Lab, the symbolic participation of a local tourism company, Teatro Regio, is the only participation of note.

5. Conclusions and implications

5.1. Conclusions

This study is the first attempt in the tourism literature to assess the interrelationships between tourism governance and smart city initiatives from the point of view of stakeholder networks. As Clark (2020, p. 178) noted, “if one cannot identify who are the actors in the smart cities project (...), then one cannot identify where policy interventions can make a difference”. The paper proposes a new transition model towards smart tourism city governance. This model emphasises the synergies between tourism governance and the development of smart cities. The model proposes the existence of a broader, interconnected framework for stakeholder collaboration as a fundamental pillar.

However, stakeholder mapping in the seven case study cities shows little integration between tourism governance and smart initiatives, although there is variation depending on the local context. These results contradict the theory on smart cities and smart destinations, which suggests that there should be an interaction between the two. In particular, the findings show that the disconnection of tourism governance and smart initiatives is generalised, with the exceptions being Amsterdam and Barcelona. These two cities have a tradition of participatory urban planning, a mature smart strategy and considerable tourism pressure. In both cities, universities and research centres have gradually been integrated into tourism governance networks and smart initiatives. This convergence reflects the importance of knowledge in current urban policies. Additionally, tourism governance follows a sector approach within a public-private partnership framework. This approach is business-oriented in the case of DMOs and open to citizen participation in planning processes, especially if these plans are on a neighbourhood scale. The results highlight the idea that management bodies and smart initiatives in the selected cities are based on public leadership and mainly include technology companies, firms from different sectors, and universities and research centres.

The analysed stakeholder networks reveal a transition from a perspective of corporate smart cities to an approach focused on social innovation. This approach is the core of the strategy of smart city projects in cities such as Amsterdam, Barcelona, Lisbon and Turin. The evolution of smart city policies in cities such as Barcelona and Turin has also involved a social shift towards greater citizen participation. The cities in this case study have reinforced and renewed urban innovation systems to varying degrees under the smart approach. They have created more participatory environments and have moved towards more collaborative governance. These dynamics illustrate the attempts to transition from a triple to a quadruple helix approach by including civil society (Mora *et al.*, 2019). However, in Amsterdam, which adopted a

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3 participatory approach from the start of its smart strategy, the integration of civil society is still
4 limited (Mello Rose, 2022). Thus, smart cities do not necessarily offer a win-win strategy for
5 tourism (Williams *et al.*, 2020). It is therefore necessary to explore ways of bringing smart cities
6 and tourism governance closer together.
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10 Based on these findings, it is not possible to conclude that there is a synergetic convergence
11 between tourism and smart policies that would give rise to a distinct type of governance known
12 as smart tourism city governance. It is not even possible to conclude that smart tourism city
13 governance is under formation or development. This situation shows that the real challenge of
14 smart tourism city governance lies not in the application of technology but in the design and
15 development of collaborative structures. Such structures are essential for urban and tourism
16 innovation. The challenge is also to create mechanisms of broad social participation to evolve
17 towards more inclusive smart cities and smart destinations.
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27 *5.2. Theoretical contributions*

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29 These results are relevant to the scientific debate on the need to evolve towards new forms of
30 governance of tourism cities and to measure the extent to which the global smart city discourse
31 is actually generating transformative governance processes (Joss *et al.*, 2019). The smart
32 approach challenges destinations' traditional organisational structures and requires the
33 rethinking of public management, particularly the role of DMOs (Romero-Dexeus *et al.*, 2022).
34 The interests of visitors and the local community (Sorokina *et al.*, 2022) should be balanced
35 with the adaptation of the functions of DMOs and stakeholder engagement in this digital and
36 data-driven marketing scenario (Huang *et al.*, 2022). The proposed theoretical transition model
37 is only partially evident in the cases studied in this paper.
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45 From a governance perspective, the smart approach should favour the intensive use of
46 technology and data, which would improve the processes of stakeholder collaboration,
47 knowledge transfer and innovation. However, the analysis of formal networks in the smart
48 approach reveals the difficulties of integrating the innovation and technology system with the
49 tourism system and raises questions about the association of smart cities with participatory
50 governance. Furthermore, the analysis of governance processes and actors reveals new trends
51 in urban and tourism planning. These trends should be analysed given that holistic integrated
52 planning is being challenged by the rise of a project approach that entails an experimental type
53 of governance. Different forms of experimental projects (from hackathons to CityLabs) are
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3 becoming the way to face urban challenges and have diverse implications in terms of scalability,
4 cost-benefit analysis of public resources and stakeholder representation and benefits. The
5 development of pilot projects entails risks such as those noted by Mancebo (2020). These risks
6 require further research to analyse, for example, the deficit of upscaled projects, the conception
7 of citizens as consumers, the privatisation of urban services, the increase of social control and
8 the polarisation of initiatives in certain privileged neighbourhoods but neglect in others.
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14 The investigation of these processes cannot be isolated from the questioning of the smart
15 city concept itself in both urban policy and research. In the selected cities, the evolution of the
16 smart city is generally accompanied by a shift towards social innovation, which entails less
17 emphasis on technology and a retreat from the “smart” concept. This evolution reinforces the
18 trend of going beyond smart cities (Kitchin, 2022), which has also been transferred to smart
19 tourism cities (Coca-Stefaniak, 2021). This discussion is part of a debate where stakeholder
20 participation in urban governance is a fundamental analysis perspective.
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Figure 5 summarises the positive and negative dynamics in the shift towards smart tourism
city governance. Although the findings of this study vary from city to city, they reveal positive
dynamics for a new, synergetic form of governance. By using technological opportunities and
more inclusive policies, this new form of governance can improve the integration of tourism in
smart cities and overcome the compartmentalised approach to tourism management. However,
the findings also reveal negative dynamics that raise questions over certain assumptions
inherent to smart cities and smart destinations.

[Insert Figure 5 around here]

5.3. *Practical implications*

The empirical examination of the proposed theoretical model of the transition towards smart
tourism governance reveals barriers that hinder this transition and the exploitation of synergies
between tourism governance and smart cities. The role of smart cities and tourism management
in urban policies needs to be redefined and clarified. The convergence of these two processes
does not occur spontaneously, not even in cities with the most developed smart strategies and
advanced tourism policies. Instead, it requires prior institutional design and a broadening of
stakeholder involvement. Inclusive urban tourism implies greater involvement of civil society
in the decision-making process, which is not yet apparent in stakeholder networks. Moreover,
it entails the risk of social washing (Erdmenger and Kagermeier, 2021).

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3 The role, along with the legitimacy, of DMOs is under scrutiny because they have not
4 evolved from marketing to management, despite a theoretical and political mantra repeated over
5 the last 20 years. Their relationship with urban governance must be redefined to a more holistic,
6 participatory vision. This objective converges with the development of citizen-centric smart
7 cities. The formal distance between the tourism and technology spheres means a loss of
8 opportunities and a limitation for the improvement of tourism innovation. Furthermore, the
9 definition of actors in urban and tourism governance structures is a key element for the design
10 and implementation of strategies to recover and/or transform the tourism sector at the local
11 level after the COVID-19 crisis. The participation scenario is an interesting indicator of the
12 dialogue between coalitions of pro-growth actors and other urban actors found in many cities.
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23 *5.4. Limitations and future research*

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25 This study has several limitations. First, this research focused only on formal participation
26 networks. In such networks, a lead organisation takes a central coordinating role, facilitating
27 and enabling collaboration. Future research should also analyse non-formal mechanisms of
28 participation and identify actors that are less well organised and represented or even excluded
29 from urban and (smart) tourism governance processes (Nesti and Graziano, 2020).
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35 Second, the type of affiliation networks examined in this study had some limitations for
36 statistical analysis, especially once the low degree of interrelation between tourism governance
37 and smart city development became evident as a core finding. Future research should measure
38 perceptions of the degree of interaction and salience of actors using specific methods based on
39 primary information from stakeholders.
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45 Finally, despite the exploratory nature of this research, the symbiosis between tourism
46 governance and smart initiatives is still important to progress towards a more sustainable and
47 inclusive form of urban tourism in the current socio-economic context. The combined effect of
48 overtourism and the COVID-19 crisis highlights the need to recover and rethink urban tourism.
49 This objective is reflected, for example, in the most recent planning documents of Amsterdam
50 and Ljubljana. Smart tourism city governance can contribute to achieving this goal, but the
51 analysis of stakeholder networks reveals that there is still much to be done in this regard.
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Figure 1. Transition model towards smart tourism city governance: the stakeholder participation perspective

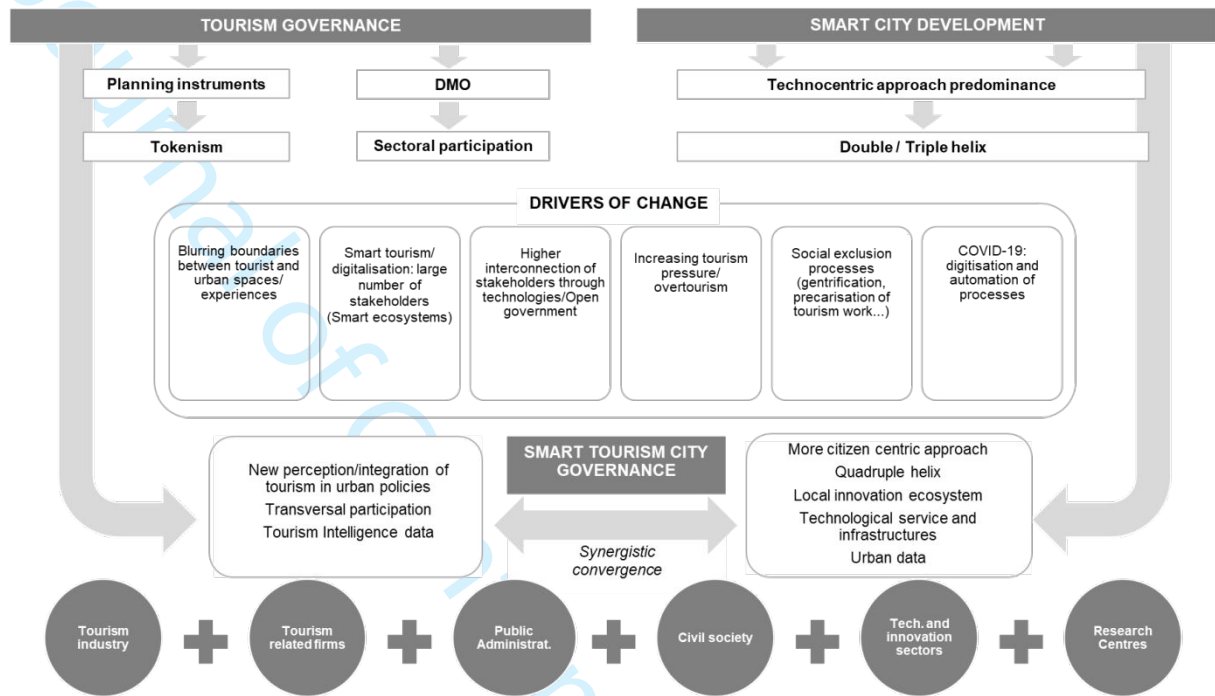


Figure 2. Methodological approach

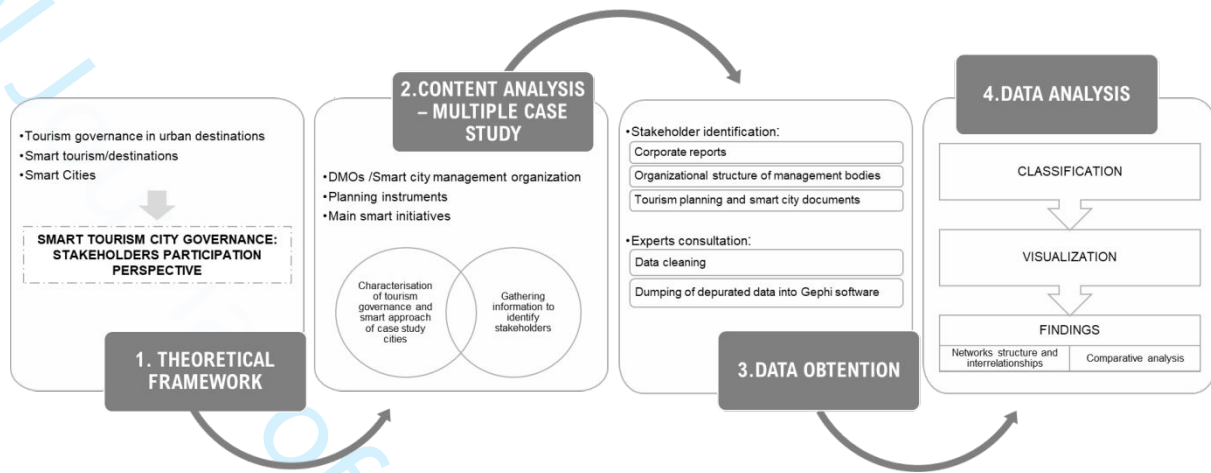
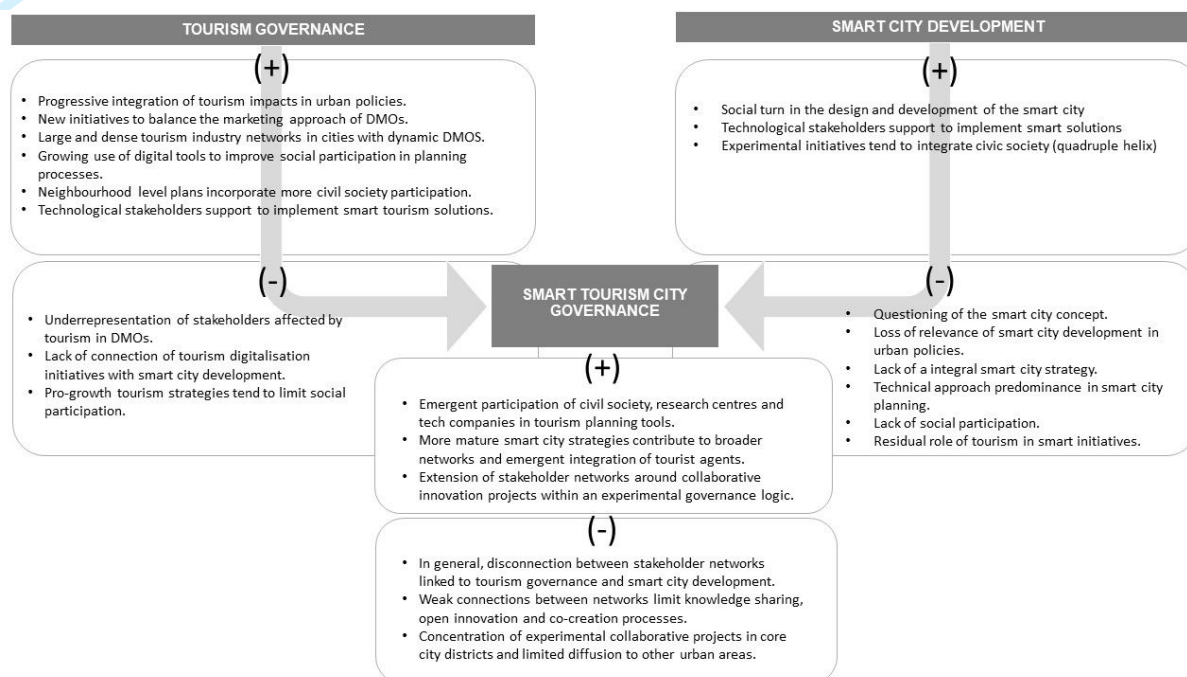


Figure 5. Positive and negative dynamics towards smart tourism city governance

Supplementary Table 1. Data collection sources

City	Documents and online resources reviewed
Amsterdam	<i>Governance</i>
	Amsterdam&partners
	https://www.iamsterdam.com/en/our-network/amsterdam-and-partners/about-us/who-we-are
	https://issuu.com/iamsterdam/docs/jaarverslag_a_p_2019_v8_def
	https://www.iamsterdam.com/media/pdf/corporate/rvt-leden-en-beloningsbeleid-2021.pdf
	Amsterdam Economic Board
	https://amsterdameconomicboard.com/en
	https://amsterdameconomicboard.com/en/our-people
	https://amsterdameconomicboard.com/en/who-are-we#board
	https://amsterdameconomicboard.com/partners
	<i>Planning</i>
	Redesigning the visitor economy
	https://www.iamsterdam.com/media/pdf/corporate/brochure-redesigning-the-visitor-economy-of-amsterdam.pdf
	City in Balance
	https://assets.amsterdam.nl/publish/pages/868689/programme_city_in_balance_2018-2022_1.pdf
Barcelona	<i>Smart bodies or initiatives</i>
	Smart City Project
	https://amsterdamsmartcity.com/about
	https://amsterdamsmartcity.com/partners
	TechConnect program
	https://techconnect.city/
	https://techconnect.city/partners/
	<i>Governance</i>
	Barcelona Turisme
	https://professional.barcelonaturisme.com/es/corporate/informacion-corporativa/quienes-somos
	https://professional.barcelonaturisme.com/es/corporate/segmentos/nuestros-miembros
	Tourism & City Council
	https://ajuntament.barcelona.cat/turisme/ca/consell-de-turisme/qui-som
	<i>Planning</i>
	Barcelona Tourist Mobility Strategy
https://ajuntament.barcelona.cat/turisme/sites/default/files/memoria_emt_20171204_0.pdf	
Strategic Tourism Plan 2020	
https://ajuntament.barcelona.cat/turisme/ca/strategic-plan/activitat	
<i>Smart bodies or initiatives</i>	
Digital Transition (City Council Department)	
https://ajuntament.barcelona.cat/agenda2030itransiciodigital/	
IMI- Municipal Institute of Informatics (Digital Transition service)	
https://ajuntament.barcelona.cat/imi/ca/l-institut/qui-som	
Barcelona Digital City (Digital Transition service)	
https://ajuntament.barcelona.cat/digital/ca/qui-som	
BIT Habitat-i.lab (Barcelona Digital City program)	
https://bithabitat.barcelona/comunitat	
Barcelona Urban Innovation Platform (BIT Habitat community)	
https://ajuntament.barcelona.cat/digital/ca/innovacio-digital/bit-habitat-i-lab/plataforma-dinnovacio-urbana	
https://bithabitat.barcelona/comunitat/plataforma-dinnovacio-urbana	
Mobile World Capital	
https://mobileworldcapital.com/ca/	
https://mobileworldcapital.com/ca/patronat/	
CIDAI (Centre of Innovation for Data tech and Artificial Intelligence)	
https://cidai.eu/socis-promotors/	
Edinburgh	<i>Governance</i>
	ETAG (Edinburgh Tourism Action Group)
	https://www.etag.org.uk/about-us/etag-full-group/
	Tourism Strategy Implementation Group (SIG)
	https://www.etag.org.uk/2020-sig/
Festivals Edinburgh	

City	Documents and online resources reviewed
	https://www.edinburghfestivalcity.com/about/board-and-staff
	<i>Planning</i>
	Edinburgh 2030 Tourism Strategy https://www.etag.org.uk/wp-content/uploads/2014/01/Edinburgh-Tourism-Strategy-2030.pdf
	ECCT (Edinburgh City Centre Transformation) https://democracy.edinburgh.gov.uk/documents/s6001/Item%207.1%20-%20ECCT%20Final%20Strategy%20with%20all%20appendices.pdf
	The Thundering Hooves 2.0 https://www.edinburghfestivalcity.com/assets/000/000/823/TH_2_0_-_full_report_original.pdf?1432048731
	<i>Smart bodies or initiatives</i>
	Digital and Smart City Strategy https://democracy.edinburgh.gov.uk/documents/s26745/7.10%20-%20Digital%20and%20Smart%20City%20Strategy.pdf
Lisbon	<i>Governance</i>
	Turismo de Lisboa (DMO) https://www.visitlisboa.com/pt-pt/
	Regional Tourism Entity (ERT-RL) http://www.ertlisboa.pt
	<i>Planning</i>
	Plano Estratégico de Turismo para a Região de Lisboa (Strategic Tourism Plan) https://www.lisboa.pt/fileadmin/actualidade/noticias/user_upload/Relatorio_Final_Plano_Estrategico-2020-2024_compressed.pdf
Ljubljana	<i>Governance</i>
	Ljubljana Tourism (DMMO) https://www.visitljubljana.com/sl/turizem-ljubljana/kontakti/ https://www.visitljubljana.com/sl/turizem-ljubljana/informacije-javnega-znacaja/
	Regional Development Agency (RDA-LUR) https://rralur.si/agencija/informacije-javnega-znacaja/ https://rralur.si/regija/organi-regije/
	<i>Planning</i>
	Tourism Strategy Ljubljana (2021-2027) https://www.visitljubljana.com/sl/turizem-ljubljana/vizija-in-strategija/strategija-razvoja-2021-2027/
	Tourism Regional Strategy (2017-2022) https://ztl.sites.innovatif.com/assets/Dokumenti-PDF/Strategije/Strategija-razvoja-in-trzenja-turizma-v-regiji-Osrednja-Slovenija-2017-2022-kopija.pdf
	<i>Smart bodies or initiatives</i>
	Technology Park https://www.tp-lj.si/en/members/members-list
Turin	<i>Governance</i>
	Turismo Torino e Provincia https://www.turismotorino.org/it/turismo-torino-e-provincia/societa-trasparente/organizzazione/organi-di-indirizzo-politico https://www.turismotorino.org/it/il-tuo-viaggio/travel-trade/registro-operatori https://convention.turismotorino.org/es https://www.turismotorino.org/sites/default/files/imce/editor/amministrazione_trasparente/Soci_partecipazione_al_06_luglio_2021.pdf
	<i>Planning</i>
	Destination Piemonte Plan https://statigenerali.piemonte-turismo.it/modello-organizzativo/ https://statigenerali.piemonte-turismo.it/calendario/
	Study in Torino http://www.studyintorino.it/it/informazioni/
	<i>Smart bodies or initiatives</i>
	Torino City Lab https://www.torinocitylab.it/en/thanks-to/partners#main-partners

City	Documents and online resources reviewed
	CTE-Next https://www.torinocitylab.it/en/update-to/cte-next
Venice	<i>Governance</i> OGD Venezia https://www.comune.venezia.it/it/content/ogd-organizzazione-gestione-destinazione-turistica-venezia
	<i>Planning</i> Destination Management Plan https://www.comune.venezia.it/sites/comune.venezia.it/files/page/files/DMP_Venezia_2017.pdf Territorial Governance Project https://www.comune.venezia.it/sites/comune.venezia.it/files/documenti/documenti/territorial%20governance%202017.pdf

Supplementary Table 2. Smart city initiatives by case study

City	Smart management body	Scale	Structure	Main smart initiatives
Amsterdam	Amsterdam Economic Board	Metropolitan	Public-private partnership	<p><i>Amsterdam Smart City</i>: Open innovation platform based in a public-private partnership (governments, knowledge institutions, social organizations and innovative companies in the Amsterdam Metropolitan Area)</p> <p><i>TechConnect</i>: Tech courses and the tech labour market for underrepresented groups</p>
Barcelona	The Digital Transition Area in the City Council integrates the Municipal Institute of Informatics (IMI) and Barcelona Digital City	Local	Public	<p><i>Barcelona Digital Plan 2017-2020</i>. Transition to Technological Sovereignty</p> <p><i>Bit Habitat i.lab /Barcelona Urban Innovation Platform</i>, aimed at the acceleration of sustainable and social urban innovation (public Foundation with a business and a scientific Council)</p> <p><i>Smart City Expo and World Congress</i></p> <p><i>Mobile World Capital</i></p> <p><i>Centre of Innovation for Data Tech and Artificial Intelligence (CIDAI)</i></p>
Edinburgh	City Council (a Smart City Board will be established)	Local	Public	<i>Digital and Smart City Strategy (2020-2023)</i>
Lisbon	Urban Management and Intelligence Center (City Council)	Local	Public	<p>The website <i>Lisboa Inteligente</i> brings together the smart initiatives being developed in the city</p> <p><i>Smart Open Lisboa</i> (startup Program)</p> <p><i>Startup Lisboa Incubator</i> (private non-profit association)</p>
Ljubljana	No specific body			<i>Ljubljana Technology Park</i> , as a regional innovation hub for knowledge and technology transfer, develops actions that can be assimilated to smart city initiatives
Turin	Torino City Lab	Local	Public-private partnership	<i>Torino Social Impact</i> . Open platform integrated by different types of agents: public sector; research innovation and technological transfer; incubators and accelerators; finance and philanthropy; skills and facilities for social innovation; third sector and cultural entities; and private-profit and non-profit sector for social innovation
Venice	VENIS (Venezia Informatica e Sistemi S.p.A.)	Local	Public	<i>Smart Control Room</i> . A monitoring system aimed at improving decision making, mobility systems and city safety through the use of new technologies

Supplementary Table 3. Case study cities' DMOs or tourism body description and degree of social and technological/digital involvement in their agent networks

City	DMO or tourism body	Scale	Structure	Social involvement*	Tech/Digital involvement*
Amsterdam	Amsterdam&partners	Local	Public-private partnership	11.11%	5.56%
Barcelona	Barcelona Turisme Tourism Council	Local	Consortium public-private	2.38%	0%
		Local	Public entity	35.71%	0%
Edinburgh	SIG ETAG Forever Edinburgh	Local	Public entity	8.3%	0%
		Local	Local Action Group	0%	0%
		Local	Public entity	0%	0%
Lisbon	Turismo Lisboa Regional Tourism Entity	Local & Regional	Public-private partnership	4.7%	0%
		Regional	Public-private partnership	11.76%	0%
Ljubljana	Ljubljana Tourism	Local & Regional	Public entity	0%	0%
Turin	Turismo Torino e Provincia	Local & Regional	Public-private partnership	0%	0,8%
Venice	OGD Venezia	Local	Public-private partnership	0%	0%

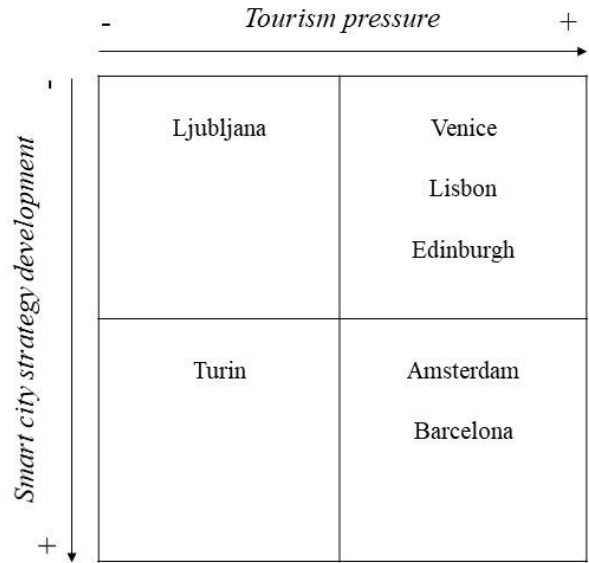
* Data represent the percentage of stakeholders' social/digital involvement with respect to the total number of agents that participate in each tourism body.

Supplementary Table 4. Agent's participation in tourism planning processes

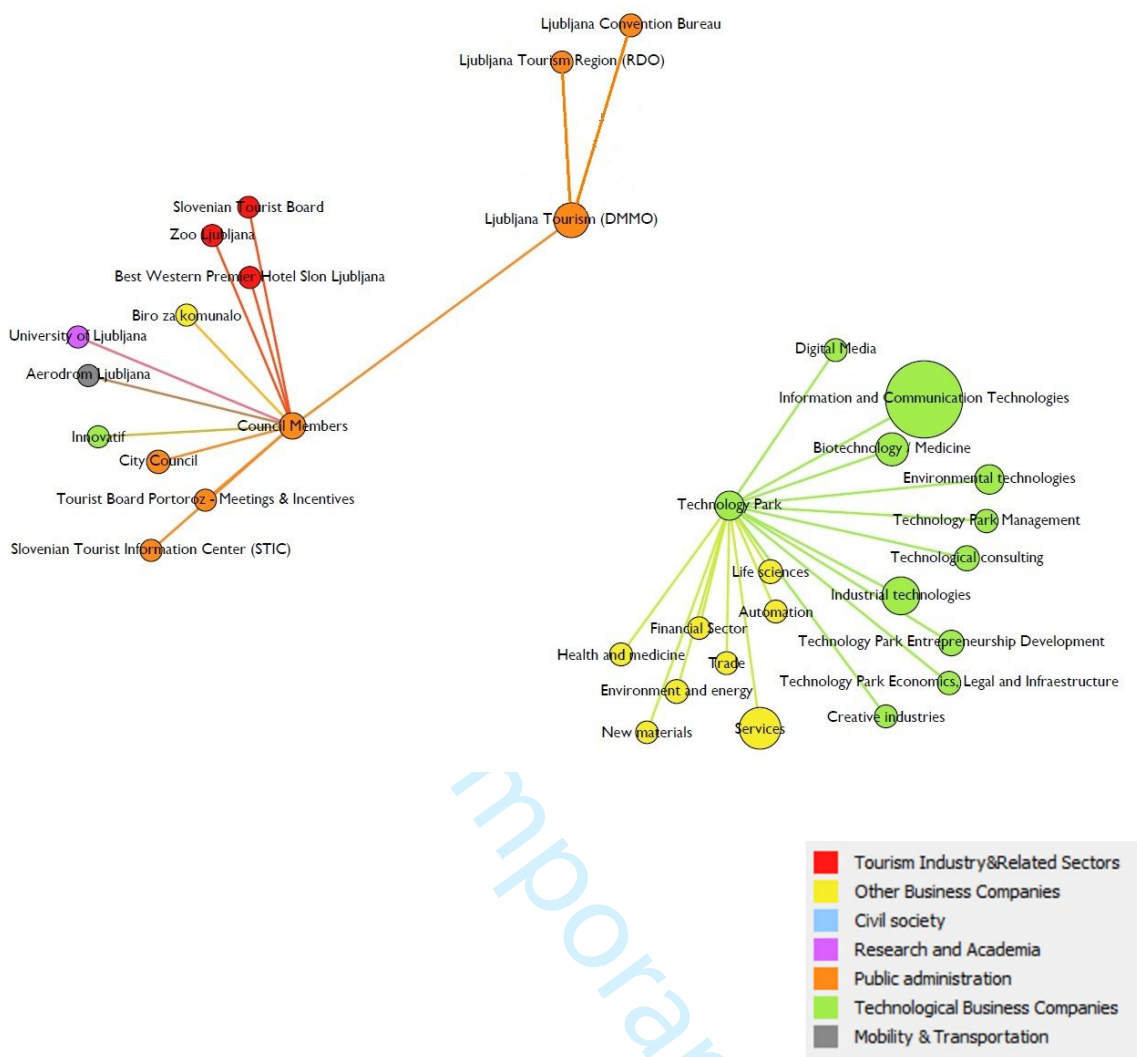
City	Planning instrument	Type of agent's participation	Social involvement*	Tech/Digital involvement*
Amsterdam	Redesigning the visitor economy of Amsterdam. Vision 2025	- Co-creation sessions during 2 months with broad diverse agents	20.9%	0%
Barcelona	Strategic Tourism Plan (2016-2020)	- Broad diverse agents participate in 13 sectoral commissions to discuss specific tourism topics - Consultation process in the Digital participatory Platform "Decidim"	18.46%	2,5%
Edinburgh	2030 Tourism Strategy	- Relevant stakeholders were selected for interviews and focus groups. Other agents (civil society and others) participated by questionnaires. - A consultation of the Strategy Draft was opened in the Consultation and Engagement Hub of the City Council	4%	4%
Lisbon	Strategic Tourism Plan for Lisbon Region (2020-2024)	- Interviews were conducted with 26 participants from various leading tourism organizations - Meetings were held with 31 representatives of 13 city Councils - Focus groups, interviews and different thematic workshops were held with private actors and associations	0%	0%
Ljubljana	Tourism Strategy (2021-2017)	- Public administration (different departments) and tourism industry agents were involved by workshops and interviews	0%	0%
Turin	Destination Piemonte (2017-2022)	- Tourism industry, public administration, social agents, mobility sector and academia contributed through 8 tourism workshops.	10%	1%
Venice	Destination Management Plan (2016-2018)	- Participation of DMO members in workshops and interviews	0%	0%

* Data represent the percentage of stakeholders' social/digital involvement with respect to the total number of agents that participate in each plan.

Supplementary Figure A1. Tourism pressure - smart city development quadrant chart for case study cities



Supplementary Figure A3. Tourism Ljubljana and Technology Park stakeholders' networks



Supplementary Figure A4. Stakeholder networks in Edinburgh resulting from tourism planning and smart city initiatives

