

Knowledge Networks of Destination Regions: A Systemic Cross-Sectoral and Regional Perspective

Weidenfeld¹, A., Hall², M., & Baggio³, R.

¹ University of Warsaw (PL), a.weidenfeld@uw.edu.pl

² Massey School of Business, Massey University Albany, Auckland (NZ), C.M.Hall@massey.ac.nz

³ Bocconi University, Milan (IT), rodolfo.baggio@unibocconi.it

Journal of Travel Research, 2025, doi: 10.1177/00472875251388338

Abstract:

Innovation in tourism is increasingly driven by knowledge networks that span sectors and regions, yet their systemic dynamics remain underexplored. This conceptual paper applies a neo-Schumpeterian evolutionary economic geography lens to reframe how tourism knowledge networks are understood at macro-destination and extra-regional levels. Adopting a network-system perspective, it proposes a typology of tourism knowledge networks based on systemic qualities such as boundedness, coherence, and unified function. The paper advocates for a cross-sectoral, multi-destination knowledge network continuum as a more effective foundation for examining innovation processes in tourism. The study contributes a new framework for analyzing regional innovation systems in tourism and sets a research agenda emphasizing the importance of integrated, multi-scalar knowledge exchange in destination development.

Key words: knowledge transfer, tourism networks, economic geography, destination development, tourism innovation

1. Introduction

Knowledge of economic performance and innovation, which drives the competitiveness of tourism firms and destination regions (Booyens & Rogerson, 2017), is often shared informally and unintentionally as spillovers. However, to maximize its effect, knowledge transfer should follow a clear process that includes capturing, developing, sharing, and using organizational knowledge (Cooper, 2015, 2018).

Knowledge sharing, defined as the conversion of knowledge into information and data, requires effective mechanisms for its diffusion (McLeod et al., 2024). These mechanisms, such as formal networks within tourism systems, establish interconnections. Knowledge networks serve as “pipelines” for individuals and groups of actors (Bathelt et al., 2004) to exchange geographically dispersed information and knowledge (Owen-Smith & Powell, 2004). These networks may arise from informal ties between individuals or from formal relationships, such as contracts or strategic alliances (Owen-Smith & Powell, 2004). They can occur at the micro level (actor), for example, organizations and the individuals within them; the meso level (group), for example, supply chains, networks, and tourism sub-sectors; and the macro level

(across destination regions). Researchers have examined these networks extensively at the intra-destination level, where individual organizations, including businesses, marketing agencies, and governmental bodies, form knowledge exchange networks within destination regional boundaries (Del Chiappa & Baggio, 2015; Raisa et al., 2020; McLeod, 2020), but less at the macro scale.

Actors can be individuals, organizations, or other entities representing private, public, non-government, or association groups. When we examine destinations as networks of organizations, actors become stakeholders if they play an active role in the system (Valeri & Baggio, 2022). A social network is a set of connections among actors, used to describe their social behavior. In tourism, networks are antecedents and a necessary condition for innovation and diffusion (Brandão et al., 2018), representing the outcomes and processes of knowledge investment and transfer.

An innovation system is a set of relationships between actors involved in innovation, which involve varying degrees of interdependence (Asheim & Gertler, 2006). It consists of dynamic and complex interactions in networks characterized by institutional features at different territorial scales of analysis, reflecting differences in institutional settings, social situations, and innovation needs (Hall & Williams, 2020).

Knowledge exchange processes that facilitate innovation and network processes between destination regions differ in geographic and sectoral scales, including regional and sectoral innovation systems, system efficiency, and effectiveness. This creates a challenge because there is a lack of epistemological clarity regarding two underlying aspects of tourism innovation that we elaborate in this article: the geographic levels that constitute the intra- and extra-regional levels at which knowledge is exchanged; and the research perspective from which the efficiency and effectiveness of knowledge exchange mechanisms are examined.

Studies on collaboration in knowledge exchange between tourism destination regions differ in geographic scale and sectoral focus, creating an epistemological challenge regarding what defines a tourism destination region as the unit of analysis and how well it represents a region's tourism industry (Hall & Williams, 2020). The geographic perspective refers to formal links between individual organizations and the administrative areas for which they are responsible, including their boundaries. The sectoral perspective refers to the relative homogeneity or heterogeneity of the types of organizations within the destination region's boundaries. Therefore, the task is twofold. First, we must determine how representative the destination region unit of analysis is by observing interactions among members of knowledge networks of relevant organizations and enterprises, such as destination management organizations and business associations. Second, we must define the regional or administrative boundaries based on where interactions occur and which sectors are included.

Despite the need to improve the effectiveness of knowledge networks in generating meaningful knowledge interactions, studies on knowledge exchange mechanisms in general, and in tourism in particular, provide limited understanding of the criteria that determine when networks are systemic (effective) (Weidenfeld et al., 2021). Therefore, it is necessary to address the definitional ambiguity surrounding network perspectives and systems approaches in tourism. Consequently, we propose a new typology for conceptualizing networks based on their systemic value and nature, as well as the extent to which they represent regions, including their geographic level and sectoral focus. We use an inter-organizational perspective to address

knowledge exchange at the macro-destination level and suggest methodologies. Appropriate definition of spatial scale, for example, the macro-destination level, should guide studies on knowledge networks of destination regions, which, despite their growing number and importance, remain largely overlooked in tourism innovation studies.

A neo-Schumpeterian evolutionary economic geography approach is used as the framework for this paper because it offers insights into the complex tangible and intangible relationships among technological, economic, and social development in a spatial context (Hanusch & Pyka, 2005; Evangelista, 2022). The ontology of complexity in evolutionary approaches provides a basis to identify emergent properties from network relationships, such as knowledge networks (Robert et al., 2017). For example, this may include the development of co-evolution in spatially proximate sectors, such as tourism, facilitated by specific spatially tied institutions (Schamp, 2010). Chu and Hassink (2023) also highlight the approach's potential to advance a spatial ontology that reconciles the dialectic between the "space of places" and the "space of flows" (Martin & Sunley, 2023), an observation to which we respond in the context of tourism.

The evolutionary approach emphasizes novelty, creativity, and continuous innovation as the main drivers of long-term economic growth and evolution (Brouder et al., 2016). Innovation improves enterprises' product offerings, processes, and business practices through continuous knowledge creation and application. This gives destinations greater competitiveness in a globally competitive economic environment (Booyens & Rogerson, 2017). Therefore, the evolutionary approach assumes that improvement, efficiency, and effectiveness are needed within and across tourism organizations.

A Schumpeterian evolutionary perspective provides a suitable framework to address knowledge exchange processes in a destination context for several reasons. First, it acknowledges the importance of the knowledge economy and the need to generate effective inter-organizational collaborative mechanisms to maintain competitiveness. Second, it frames both intra- and extra-regional levels and addresses the multiscale complexity in facilitating inter-organizational relations. Third, addressing the qualities and institutional environment that engender effective collaborative mechanisms in a multiscalar "cooptative" inter-organizational environment aligns closely with a Schumpeterian evolutionary economic geography approach (Chu & Hassink, 2023). Therefore, focusing on barriers and enablers to dynamic knowledge creation and dissemination among regional enterprises is important (Brouder et al., 2016). Drawing from the evolutionary economic geography approach, we emphasize the significance of knowledge exchange and innovation among organizations that advance tourism-related regional development.

After this introduction, the next two sections discuss the tourism knowledge network perspective and the innovation system approach, which include the institutional dimension and systemic qualities. We then explain the sectoral and regional tourism innovation perspectives before suggesting, with examples, a cross-sectoral and cross-regional perspective focused on knowledge exchange between destination regions at the macro-destination level, operationalized by multi-destination knowledge networks. The paper concludes by presenting its contributions and suggesting future research. The next section discusses the knowledge network and innovation system concepts and their relevance, followed by a review of the innovation system concept and its sectoral and regional tourism dimensions. We suggest an

alternative combined cross-sectoral and cross-regional perspective, as well as a new conceptual framework.

2. Tourism knowledge exchange at the extra-regional level

The Extra-regional Level

The *extra-regional level*, recognized as important for creating new knowledge combinations that enhance innovation and competitiveness (Booyens & Rogerson, 2017; Brandão et al., 2019; Hall & Williams, 2020), remains largely under researched. The extra-regional level refers to all knowledge exchange with actors, both tourism and non-tourism, outside the destination region. It includes three suggested sub-levels (Figure 1), which offer a detailed framework for analysis and help establish conceptual clarity. The first two levels are the interregional levels, which are important for any tourism organization to achieve greater inventiveness through non-regional links with tourism and non-tourism actors outside the regional context (Kofler et al., 2018). This is important because regional over-embeddedness, when networks are too closed, can lead to lock-in and prevent actors from searching for new ideas from external national or international sources. External knowledge plays an important role in learning and innovation because networks limited to local and regional actors can cause underdevelopment in regional innovation systems (Brandão et al., 2018). In tourism, research on innovation in interregional networks has focused mainly on cross-border regional contexts and includes the joint development of new marketing methods, technologies, ways of working, products, and services (Booyens & Rogerson, 2017; Makkonen et al., 2018).

The first extra-regional level refers to extra-regional links between individual actors and organizations or individuals that are tourism unrelated or do not consider themselves part of the tourism industry in their region. This may include professional services such as engineering, information technologies, and food industries (Baird & Hall, 2016). The second level is the *interregional level*, which focuses on the analysis of inter-organizational micro-networks and actors collaborating with one or more others in different destination regions (Brandão et al., 2019; Makkonen et al., 2018; Herasimovich et al., 2024). This level includes qualitative studies that examine the nature and importance of external knowledge exchanged, the types of organizations as knowledge receivers and providers, and the diffusion of innovation and knowledge (e.g., Booyens & Rogerson, 2017; Makkonen et al., 2018), and quantitative studies mainly using Social Network Analysis (e.g., Brandão et al., 2019; Herasimovich et al., 2024). Network metrics, such as density, clustering coefficients, or community identification, are used to assess the extent of collaboration in the network and, therefore, their knowledge exchange propensity (e.g., Valeri & Baggio, 2022).

The third category examines collaboration at the macro-destination region, specifically at the destination and cross-regional sub-levels. The destination region sub-level is the unit of analysis where we examine collaboration between most or all actors in one territorial unit and those in other destinations, as Sun et al. (2025) did in their work examining a network of Chinese city regions. They identify elements in each member city, such as research institutions, tourism resources, and spatial proximity, that support the creation and evolution of inter-city links. They also examine changes in tourism innovation, including products, services, technology, and management, measured by patent values for each city as indicators of tourism innovation growth. However, they do not examine interregional knowledge linkages between

tourism actors in each destination region as indicators of actual knowledge exchange, or those representing the entire region, such as regional authorities and destination management organizations. Furthermore, the use of patents as a measure of tourism innovation has been criticized because of the service nature of tourism and the inappropriateness of focusing on artifacts, such as patents, rather than the inherent qualities of the tourism system (Hall & Williams, 2020). Therefore, we suggest a cross-regional level and an inter-organizational perspective focused on multi-destination knowledge networks, which constitute the second sub-level of the macro-destination regions, as an alternative approach.

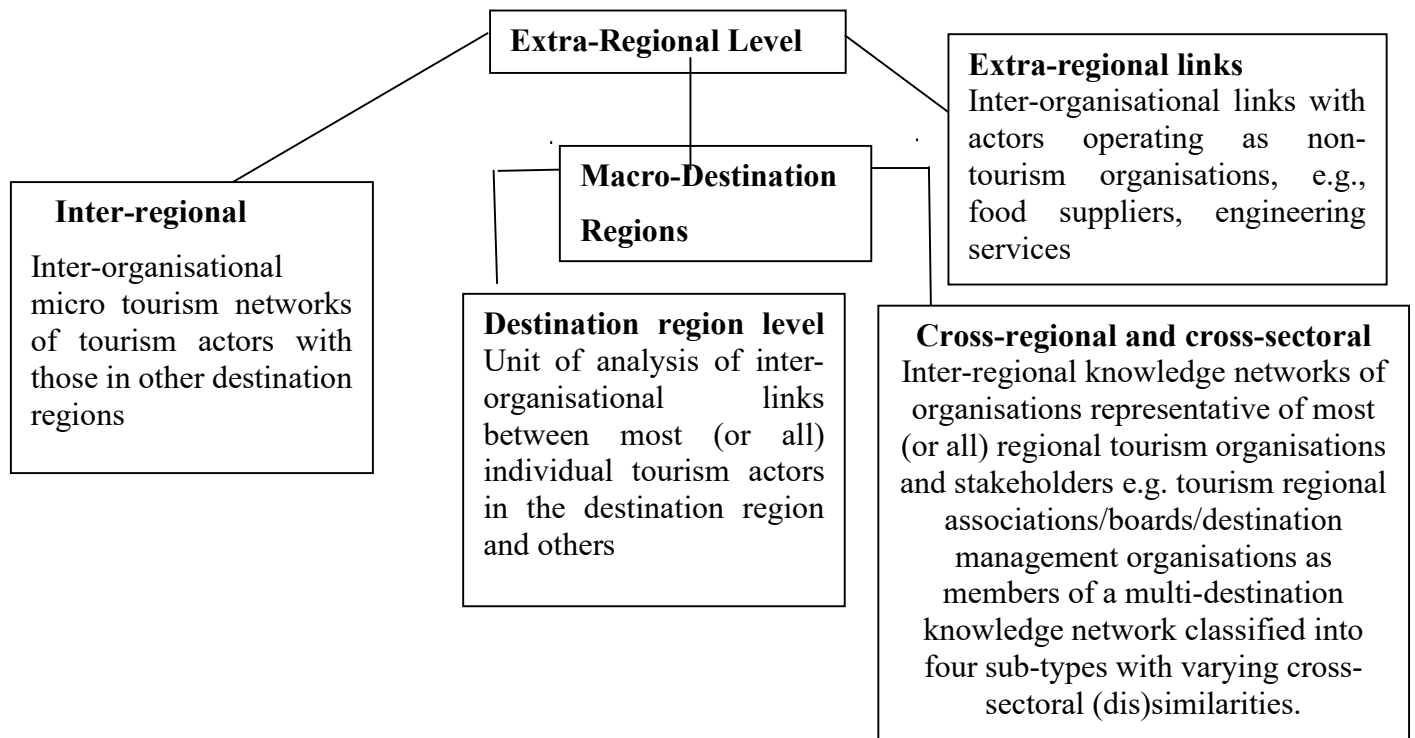


Figure 1. Tourism knowledge exchange at the extra-regional level

The types of knowledge exchanged and innovation at extra-regional level remain understudied and, in addition to those identified as relevant at the interregional level, include public service delivery, sustainability, finance, and economic development aspects (Weidenfeld et al., 2021).

Given the difficulties in studying each individual regional actor, we focus on organizations that represent tourism actors in destination regions, such as destination management organizations, tourism boards, and regional business associations. These organizations inherently engage directly or indirectly in knowledge links with all or most of their members, and often with non-members. Therefore, they can act as regional knowledge agents in interactions with other destination regions. Accordingly, this paper addresses the knowledge gap in the understanding of how inter-regional networks, composed of organizations representing tourism stakeholders, facilitate the exchange of ideas and promote innovation across destinations. After debating on what and how extra-regional knowledge exchange is perceived in tourism, we divide extra-regional knowledge exchange into three

levels: extra-regional linkages, interregional, and macro-destination. Understudied at the macro-destination level, we introduce the concept of multi-destination knowledge networks, which describes the largely unexplored mechanisms that enable knowledge exchange among multiple destination regions, and identify and examine the key attributes of these networks. Second, we suggest that such networks can be considered systemic when they include both formal and informal institutions, along with three systemic qualities that shape their overall effectiveness (Weidenfeld et al., 2021). Third, we identify four types of multi-destination knowledge networks, distinguished by factors such as membership exclusivity, structural design, sectoral composition, member diversity, geographic reach, and spatial proximity. Finally, we provide a conceptual framework based on a systemic knowledge network continuum. Addressing these factors can help tourism knowledge networks function more effectively as knowledge exchange facilitators and increase their membership values.

2.1. The tourism knowledge network perspective

Knowledge created by learning is an important precursor for tourism firms' innovation and competitiveness (Bachinger & Kofler, 2022), particularly regarding products, processes, marketing strategies, and organizational strategies related to their competitiveness and functioning. It is understood, used, managed, or examined within its contextual and holistic settings, as well as through the social interactions that facilitate its flow in complex networks (Brandão et al., 2018, 2019). Knowledge exchange drives innovation by creating multi-actor networks that combine external knowledge from diverse sectors and regions with internal knowledge creation (Sun et al., 2025).

The tourism network approach includes three main research streams: Actor Network Theory, the network as a type of stakeholder, and the network as a perspective or approach for analysis, to examine whether phenomena are perceived as networks (Nguyen et al., 2019). This paper focuses on the latter perspective, which examines how relations and structures influence actor behavior (Stuck et al., 2016), and is highly relevant for understanding collaborative dynamics in tourism innovation and knowledge exchange (Marasco et al., 2018; Raisi et al., 2020; Valeri & Baggio, 2022).

Knowledge networks provide platforms and create conditions for establishing relationships that support the development of innovation processes and products (Brandão et al., 2018, 2019). Tourism knowledge networks include a wide range of actors and sectors, such as businesses, universities, and organizations, which are essential to their functioning and can also provide a regional development mechanism (Bachinger & Kofler, 2022; Valeri & Baggio, 2022). They enable complementarities and economies of scale by allowing shared costs, skills, services, and resources, such as market research. This synergy increases competitive advantage, trust, social cohesion, and access to diverse knowledge sources (Booyens & Rogerson, 2017; Favre-Bonte et al., 2019; Kofler et al., 2018). In this paper, we define multi-destination knowledge networks as platforms consisting of at least three organizations, managed by a team or organization that does not usually manage micro-networks.

Tourism knowledge networks operate at local, regional, national, and global levels; however, more attention has been given to the destination regional context, described as broad regional networks, where knowledge and information flow among diverse stakeholders (Baggio & Cooper, 2010). The geographical and sectoral diversity of networks is important in

tourism because its multi-sectoral nature involves complementary bundled activities that generate a tourism experience. Tourism is produced as a set of functionally linked service offerings by hotels, restaurants, transport providers, retailers, visitor attractions, and others at the destination level, with actor heterogeneity potentially contributing to innovation performance (Brandão et al., 2018, 2019). Below, we examine how these can be studied from both sectoral and regional perspectives in shaping tourism knowledge networks as systemic entities.

3. The systemic characteristics of regional tourism knowledge networks

The structure of relationships in a socio-economic system shapes creativity, innovation, and the network's ability to absorb and use external knowledge (Baggio, 2014; Binder, 2020). The systemic perspective provides a clear framework for studying tourism innovation and knowledge management, highlighting the non-linear, interactive, and evolving nature of learning among diverse actors (Dahesh et al., 2020). Innovation emerges from geographically and sectorally distributed capabilities shaped by economic, political, and historical factors (Hall & Williams, 2020; Gutiérrez et al., 2021). However, tourism research often overlooks the institutional and systemic dimensions that embed innovation socially and institutionally (Brandão et al., 2019; Earl & Hall, 2023).

3.1 Institutional dimension

Formal and informal institutions are equally important for the development and function of innovation systems (ISs) (North, 1990) because both shape learning processes and can enhance or constrain innovation. Formal institutions include laws, regulations, and organizations that shape interactions (Gutiérrez et al., 2021). For example, affiliate membership in the United Nations World Tourism Organization and its innovation network requires adherence to the *Global Code of Ethics for Tourism* and acceptance of the *Statutes of the Organization* and the obligations of membership (UNWTO 2023).

In tourism, formal institutions, such as destination management organizations, act as intermediaries between regional actors and help create conditions for successful network development (Brandão et al., 2018). Informal institutions include routines and norms, such as avoiding imitation to reduce competition, particularly among neighboring businesses (Earl & Hall, 2023; Weidenfeld et al., 2010). Formal institutions, including knowledge networks and bridging organizations, establish top-down “rules” through regulatory regimes, while informal institutions complement them by shaping conventions and norms (Coriat & Weinstein, 2002; Borrás, 2004). Informal institutions can become formal institutions over time (Edquist, 2004). Therefore, knowledge networks, such as organizational or strategic alliances, can function as formal institutions and shape both formal and informal institutional characteristics.

Every network can derive new knowledge from both informal and formal ties. For example, formal and informal interactions between speakers as experts and attendees at workshops can generate knowledge (Sanz-Ibáñez et al., 2019). From an evolutionary perspective, formal and informal institutions that underlie systems can stimulate each other's emergence, but a system requires both to be present (Weidenfeld et al., 2021). In tourism, innovation depends on knowledge flowing through both formal ties, such as well-defined structures or contractual relations, and informal inter-organizational network ties, such as

personal contacts within and between destinations (Baird & Hall, 2016; Zach & Hill, 2017). Nonetheless, institutions alone cannot define networks or their systemic behavior, which depends on the systemic qualities of regional knowledge networks (Weidenfeld et al., 2021).

3.2 Systemic Qualities

Coherence, unified function, and boundedness determine how systemic regional networks are (Weidenfeld et al., 2021). Below, we examine their nature and relevance to tourism innovation systems.

3.2.1 Coherence

The quality of coherence refers to the extent to which a system's elements are consistent in values and shared beliefs behind attitudes, as well as social interaction that characterizes how innovation processes occur (Borrás, 2004). It implies feedback loops, complementary competencies between agents, and common developmental trajectories (Roper et al., 2006). Three aspects shape coherence: *related variety*, *network density*, and *strength*.

Related variety refers to cognitive differences among regional economic activities that are sufficient to enable the creation of new combinations of different and complementary knowledge, thus advancing regional diversification (Boschma & Frenken, 2011). It enables the development of economic activities characterized by cognitive proximity or related technologies with balanced similarities. In destination regions, related variety between tourism sub-sectors and between these and non-tourism sectors is important for stimulating knowledge exchange linkages and driving service or product diversification, primarily based on market relatedness (Weidenfeld, 2018). Because sub-sectoral organizations from different industries at various relatedness levels, such as transport, accommodation, and agriculture, exchange knowledge driven by market relatedness and share data on the same end customers (i.e., tourists), considerable coherence is assumed. In other words, coherence is positively related to related variety if networks are not loosely connected or do not have isolated elements that are unlikely to jointly generate meaningful innovative output (Rakas & Hain, 2019).

Networks' density and *strength* of ties, that is, dense versus sparse and strong versus weak ties, vary in how they benefit innovation performance. Cohesive or dense networks with strong ties often occur at high connectivity, leading to higher trust and reciprocity (Brandão et al, 2018). These conditions facilitate knowledge dissemination, idea development, and the operation of supporting governance mechanisms. However, they may also be counterproductive for creativity because they insulate groups from new ideas and information from outside the network. Balancing cohesion is needed to avoid over-embeddedness in a network. In tourism, people from different backgrounds, perspectives, and industries generate innovative products and services by creating new knowledge combinations. Very cohesive networks or sub-networks may be counterproductive to innovation if they are not open enough to engage with other external actors. Therefore, balanced cohesion, that is, a combination of strong and weak ties within the same network, increases coherence and the likelihood of meaningful innovation (Baggio, 2014; Brandão et al., 2018).

3.2.2 Unified Function

In innovation systems, specific themes, priorities, or innovative activities often face common challenges or threats, which require innovative solutions (Edquist, 2004, 2006). A function includes the aims to which all system elements contribute (Rakas & Hain, 2019) and

characterizes actors working within the same sub-sectors or when sub-sectors are thematically related. For example, in attractions, the World Association of Zoos and Aquariums (2023) acts as a global knowledge network with a unified function based on well-defined shared priorities among its members. However, as already noted, knowledge interactions in destination regions occur between businesses and organizations from different sectors and industries. Such knowledge networks can be highly diverse and differ substantially in their knowledge base. This dissimilarity can weaken knowledge interlinkages, which justifies the need for centralized networks that coordinate innovation processes and promote shared principles and objectives (Brandão et al., 2018). Nevertheless, like coherence, a unified function might reduce access to new knowledge because centralized networks often depend on a few organizations, and their loss or absence of functionality might affect network performance (Raisi et al., 2020), particularly without participation from extra-regional sources. Such participation is determined by the network's boundedness.

3.2.3 Boundedness

Innovation systems can have sectoral, technological, cognitive, or regional boundaries, where innovations are generated and supported by specific institutions (Hall & Williams, 2020). This characteristic is more common, but not exclusive, in the regional innovation systems context, where regions are defined by homogenous criteria, pre-existing cultural embeddedness, and internal cohesion (Doloreux & Parto, 2005). This allows for a reasonable delineation between the system's territorial unit and the rest of the world. However, this boundary depends largely on the purpose of the analysis (Edquist, 2006). As a general guideline, sufficient coherence within certain boundaries can delineate a regional innovation system's boundary (Asheim et al., 2011).

Administrative boundaries and functionality, in terms of the frequency or intensity of economic interaction and labor mobility as a knowledge carrier, are often used (Andersson & Karlsson, 2006), along with other types of collaborations within regional boundaries (Edquist, 2006). However, tourism flows and transport connectivity patterns also shape knowledge interactions. In destination regions, local cultural and natural resources contribute to specific product knowledge networks, such as health tourism and gastronomy (European Commission, 2015), which are characterized by linkages between a wide range of actors (Booyens & Rogerson, 2017).

The three qualities above do not suggest a dichotomy between the presence or absence of a system or network mechanism. Instead, they indicate a continuum, with "no system" at one end and a "full system" at the other, and most knowledge exchange mechanisms fall between these extremes, displaying some characteristics of systemic networks (Weidenfeld et al., 2021). The strength of a system depends on the structure and relationships shaped by the nature and context of how destination networks are managed. These systemic qualities are relevant to industrial or sectoral networks and are typical of global, national, and geographic systems at the destination regional level. We examine both below before relating the systemic perspective to each.

4. The sectoral and regional perspective in tourism innovation systems

4.1 Tourism Sectoral Innovation Systems

The sectoral system framework (Malerba, 2006) has been used to examine innovation determinants and performance across many sectors. Its main components include actors, sectoral environments, such as knowledge, technologies, demand and markets, institutions and policies, and unexpected shock events, as well as interactions and networks (Gutierrez et al., 2021; Li et al., 2021). A sector is a “set of activities that are unified by some linked product groups for a given or emerging demand and which share some common knowledge” (Malerba, 2006, p.385). In each sector, firms share some characteristics but are also heterogeneous (Malerba 2004).

Tourism sectors are defined as the “grouping of enterprises into specific tourism services, such as accommodation and tours” (Raisi et al., 2020, p.4). When “heterogeneous firms facing similar technologies, searching around similar knowledge bases, undertaking similar production activities, embedded in the same institutional setting, share some common behavioural traits and develop a similar range of learning patterns, behaviour, and organisation form” (Malerba, 2006, p.387), they form a sectoral innovation system. Because tourism is a multi-sectoral and multi-stakeholder industry with various sectors and sub-sectors that share the same end users (visitors and tourists), tourism network mechanisms can be defined as sectoral innovation systems if they facilitate knowledge exchange based on shared objectives and priorities (Hall & Williams, 2020).

Tourism innovation systems are “the parts and aspects of the economic structure and institutional set-up affecting learning and innovation in tourism firms” (Sundbo et al., 2007, p.93). Because sectoral innovation systems’ boundaries are defined by actors’ interactions aimed at achieving innovation (Li et al., 2021), tourism sectoral innovation systems can exist from local to global geographic scales. This approach, at any scale, must consider the network of stakeholder relationships (networks), businesses’ strategic decision making (competitiveness), participation of organizational actors (Brandão et al., 2019), and the systems’ sustainable innovation and research development. Major international tourism networks, such as the International Air Transport Association (2023), represent a tourism sectoral innovation system at the global scale. As the trade association for the world’s airlines, it has shared priorities related to specific challenges and policy formulation, addressed by knowledge dissemination and learning activities. While formal institutional factors are easy to identify in such networks, the nature and extent of informal institutions, such as certain norms that shape innovation processes, cannot be found without in-depth investigation.

The main dimensions of the sectoral innovation system are the knowledge and technological domain, actors and networks, and institutions. In these cases, sectoral specificities or sectoral evolution play a pivotal role in explaining actors’ behaviors and performance. Tourism includes sectors that also belong to other industries. Therefore, tourism as a sectoral innovation system may differ in its components’ knowledge base, learning processes, interactions, and formal and informal institutions (Gutiérrez et al., 2021). Following Gutiérrez et al. 2021, sectoral innovation systems vary across industries and sectors and should be studied regarding the three ways tourism sub-sectors may differ from other industries:

i) *Knowledge base and learning processes*: The symbolic knowledge base, as in other service industries, is especially important in tourism, while other knowledge bases, such as synthetic and analytic, are more relevant in other industries (Mannich & Larsen, 2013). This includes

the aesthetic qualities of regional products, designs, images, and the appeal of cultural artifacts and narratives, all of which contribute to product value (Asheim et al., 2007).

ii) *Actor linkages and interactions*: The variety of actors and the nature of their interactions, both market and non-market, through networks is important, particularly in tourism as a multi-sectoral industry, as already discussed. These interactions should be examined regarding sub-sectoral particularities that shape knowledge interactions.

iii) *Formal and Informal Institutions*: Different industries have their own formal and informal institutions that influence innovation trajectories and knowledge networks. Formal institutions may develop over time from the core roles of industry representative associations or they may be government bodies with regulatory powers. Informal institutions can arise from the intrinsic properties of place, which can influence how actors interact and the extent and manner of knowledge sharing (Hall & Williams, 2020).

There have been no substantial empirical studies on tourism sectoral innovation systems. This is surprising given their presence at global, national, and destination regional levels, which are the most common geographical research and operational units in tourism. Studies should also examine sectoral specificities and differences between tourism sectors regarding homophily, where similar actors are more likely to interact with each other than with dissimilar ones, and the location of actors, suppliers, and specialized services. Nevertheless, the importance of the destination regional level raises the question of whether these can be regarded as tourism regional innovation systems.

4.2 Tourism and regional innovation systems

A “tourism region” is “a specific geographical area where tourism enterprises are clustered” (Raisi et al., 2020, p.4). The regional innovation system concept emphasizes the relationship between innovative and economic competitive advantages and geographical proximity among actors (Cooke, 2004; Cooke et al., 1998). It consists of three core elements: “learning” as a dialogic and recursive process that produces knowledge and innovation; “milieu” as a territorial context defined by specific values and norms; and “embeddedness” as a relational perspective in socio-structural and territorial terms (Kofler et al., 2018, p.69). A regional innovation system includes businesses in the knowledge application and exploitation subsystem (businesses and customers) or the knowledge generation and diffusion subsystem (supporting organizations, public administration, and academic institutes). Actors from the application subsystem focus on driving commercial innovation activities in a regional innovation system and are therefore of pivotal importance (Stuck et al., 2016).

Different regions have distinct regional innovation systems; therefore, no single framework applies to all tourism destinations, except for general patterns and practices that improve innovation processes, performance, and overall destination competitiveness (Brandão 2014). Studies on tourism and regional innovation systems (e.g., Hjalager, 2010; Luongo et al., 2023) show no substantial evidence that the tourism industry dominates public organizations and research infrastructure or directly or indirectly facilitates major regional innovation processes (Hall & Williams, 2020). Booyens and Rogerson (2017) also find this in their attempt to identify a regional tourism innovation system in the Western Cape region, South Africa, based on four levels of networking and collaboration: within government, between private and public organizations, among industry practitioners, and with other industries. In other words,

empirically rigorous studies using the concept of tourism regional innovation systems do not show substantial evidence of tourism-related knowledge application or generation subsystems that define a destination region as such. Instead, the relationship between tourism and regional innovation systems is best described as influential and enabling.

Nevertheless, tourism has direct and indirect effects on regional knowledge economies. Its direct effects include special service and experience-related features that enable and encourage interactions between customers and residents beyond tourism (Hall & Williams, 2020). This unique role in the internationalization of knowledge constitutes both a direct and indirect contribution to regional innovation systems (Liu & Nijkamp, 2018). In addition, tourism serves as a platform for diversifying non-tourism sectors at the regional level; new tourism markets create new demands for products and services that are consumed differently, thus diversifying the entire economy (Weidenfeld, 2018). For example, inter-sectoral relations enabled by tourism have resulted in regional diversification in destinations in Spain, Italy, Portugal, and France (Biagi et al. 2021). Indirect effects may include creating a multicultural environment, characterized by the development of both soft (skills, knowledge, trust) and hard (transport, communication, finance) infrastructures (Liu & Nijkamp, 2018), and sustaining quality-of-life and sense of place by enhancing place appeal and improving its image (Hall & Williams, 2020).

Tourism as a regional staple may create broad indirect socio-economic effects on the entire system and its actors, especially in rural and peripheral regions where tourism may generate enabling conditions for innovation activities outside tourism (Weidenfeld & Hall, 2014). However, tourism's regional contributions remain underestimated (Kofler et al., 2018) because it is mainly a small business, low-technology service industry, and regional innovativeness is often measured by technological or scientific indicators, such as patents. The sectoral and regional innovation system perspectives appear to have limited relevance in explaining tourism innovation. Therefore, given the importance and constraints of intra-regional cohesiveness and multi-sectoral knowledge interactions in tourism, we suggest an alternative cross-sectoral and cross-regional perspective.

5. Toward a cross-sectoral and cross-regional perspective

Inter-sectoral linkages among tourism sub-sectors and between these and non-tourism sectors are important for regional economies (Hall & Williams, 2020). However, in the knowledge economy, inter-sectoral networks alone may not create strong knowledge interactions in destination regions, which are necessary for tacit knowledge exchange and cohesive networks. In destination regions, these networks often show lock-ins that are counterproductive for creativity and innovation because of industrial and regional over-embeddedness. When networks are too closed, they may dominate and prevent members from searching for new ideas from external actors, which may cause regional innovation systems to remain underdeveloped (Booyens & Rogerson, 2017; Brandão et al., 2018; Kofler et al., 2018). Instead, a combination of strong and weak knowledge ties between tourism sectors within and outside the same network, such as with non-tourism sectors and extra-regional sectors, may be needed (Brandão et al., 2018).

Adopting this perspective also acts as a catalyst for diversification. In the interregional context, diversification across regions occurs when related varieties between sectors in

different regions develop, depending on sector (dis)similarities between regions. This process requires and generates interregional knowledge exchange, which may result in cross-regional joint innovation (Weidenfeld, 2018). However, tourism practitioners, policy makers, and scholars have not widely adopted this perspective. The premise that tourism organizations are unable to invest resources in knowledge management is well recognized (Hall & Williams, 2020; Brandão et al., 2018) and is even more pronounced when bridging sectors with considerable inter-sectoral differences because of cognitive knowledge bases (Safonov et al., 2023).

Second, establishing interregional tourism cooperation is more challenging and requires more resources than cooperation at the intra-regional level because of limited time and resources, as well as differing priorities, political motives, and marketing directions (Zemła, 2014). Nevertheless, destination competitiveness is important and requires co-opetitive relationships, meaning non-competitive relations through cooperation, and collaboration mechanisms such as networks, especially when creating a tourism offer that is difficult for competitors to imitate (Luongo et al., 2023). Therefore, co-opetition in tourism destinations explains why tourism entrepreneurs are often reluctant to collaborate closely with neighboring tourism enterprises in innovation-related activities (Bellini et al., 2017; Biagi et al., 2021; Brandão et al., 2018, 2019; Weidenfeld, 2018). Instead, many individual actors seek alternative knowledge resources from distant actors, but the collective, organized actions taken by knowledge exchange mechanisms of regional groups seeking knowledge from other destination regions remain overlooked.

5.1 Knowledge exchange between destination regions

Cooperation among individual tourism actors remains insufficient in a globally competitive environment. Until recently, collaboration between destination regions, which may better address these challenges, has been largely ignored (Zemła, 2014). One key form of such collaboration is knowledge exchange, learning, and joint innovation, which enhance destination competitiveness (Cooper, 2015, 2018; Raisi et al., 2020). Related varieties between sectors, enabled by labor exchange, compatibility, and complementarity, diversify innovation capability (Kofler et al., 2018; Weidenfeld, 2018). For example, medical tourism plays an important role when patients transfer tacit knowledge of different health systems, facilities, and medical professionals, showing the contribution of a specific tourism sub-sector to medicine (Ormond, 2016).

Driving processes that constitute knowledge exchange is challenging. While individual actors, such as organizations or entrepreneurs, may take their own initiative based on specific interests. For example, business-to-business, inter-destination knowledge exchange requires more institutionalized intervention facilitated by groups of regional actors (regions-to-regions). The next section suggests a theoretical framework and highlights some mechanisms of understudied interregional knowledge exchange mechanisms.

5.2 Multi-destination knowledge networks and their typology

Studies of knowledge networks of regions, where groups such as local authorities represent their entire region, are relatively recent. These networks are defined as knowledge networks of regions that facilitate and coordinate knowledge exchange activities, such as

hosting industry events, policy learning, and training (Weidenfeld et al., 2021). Destinations are mostly acknowledged as complex dynamic systems that source, share, and use knowledge as a prerequisite for innovation (e.g., Baggio, 2014; Baggio & Cooper, 2010; Raisi et al., 2020). However, this approach has so far been largely ignored at the cross-regional level (Éber et al., 2018).

In tourism, the equivalent of a knowledge network of regions is a *multi-destination knowledge network*, referred to here as “*multi-destination networks*.” These networks consist of destination regions whose main objectives, priorities, or activities include learning, knowledge exchange, or innovation. Sun et al. (2025) identify several key drivers as determinants of multi-destination network formation, including geographical proximity, disparities in economic and scientific variations, and elements of tourism development foundation, such as the local tourism economy, tourism education, and tourism resource endowment.

Geographic proximity positively affects the tourism innovation network by enabling knowledge, technology, and resource exchange, and by promoting innovation connections. The geographic proximity dimension is important for forming multi-destination networks because it is positively related to actors’ willingness to collaborate, given the advantages of spatial agglomeration and collective learning in best practices, technologies, products, and services (Sun et al., 2025; Safonov et al., 2023). Sun et al. (2025) also suggest that inter-regional economic convergence is important for driving tourism innovation network connections, because smaller disparities in economic development between regions create a stronger impetus for tourism innovation network evolution.

The proposed typology of existing multi-destination networks identifies geographic proximity, cross-sectoralness, and tourism endowments and resources, which relate to the type of common or different tourism experience products and shared or different markets among members. The two remaining drivers, interregional economic and scientific disparities, are more general to the regional economy, less specific to tourism, and vary greatly between urban and rural areas and between countries.

The typology of multi-destination networks is based on geographical outreach—transnational or within national boundaries—and relative proximity among destination regions, as well as cross-sectoral (dis)similarities that shape knowledge exchange (Table 1). Membership exclusivity often determines this typology, which may be open to regions from the same country or different countries (Weidenfeld et al., 2021), and may include similar or different sectors depending on network composition. Cross-sectoralness among regions refers to the similarity in sectoral composition among members, which defines the network’s thematic nature as stated in its aims. The nature of cross-sectoralness is twofold: first, networks may consider it as part of their membership strategy; second, it may promote knowledge exchange to introduce new sectors or encourage interactions among dissimilar sectors to create new knowledge combinations that effect innovation. Cross-sectoral dissimilarity may coincide with similarity in the focus of cross-sectoral knowledge exchange, such as in neighboring regions (types 1, 2), which are more likely to share similar tourism resources, markets, and sectors, and face the same challenges, making them likely to seek and share similar knowledge. Their similar cross-sectoralness is likely to stimulate incremental innovation, and when not very similar, radical innovation may emerge. Proximity can also create temporary but frequent face-

to-face interactions in such networks and generate related varieties and creativity, which enhances joint innovation (Weidenfeld, 2018).

Neighboring regions (types 1, 2) are more likely to share similar tourism resources, markets, and sectors, and face the same challenges; therefore, they seek and share similar knowledge. Similar cross-sectoralness may stimulate incremental innovation, or, when not very similar, may lead to more radical innovation. Although spatial proximity can be advantageous, institutional differences between regions in different countries might hinder knowledge exchange in type 1 networks and encourage it in type 2 networks because of institutional similarity. Furthermore, in type 2, cognitive and cultural similarities between entrepreneurs from the same country (ways of thinking) may create lock-in that hinders innovation (Weidenfeld, 2018). For example, Beskidzka 5 in Poland is a network of five communities selling similar tourism offerings. These communities previously competed for the same markets but developed an innovative approach to coopetition and designed a new combined product (Chudy & Valeri, 2017; Zemła, 2014). Type 3 and 4 networks are likely to have weaker unified function because distant regions are less likely to share the same tourism product and market attributes, such as seasonality. Instead, they tend to share knowledge on more generic aspects, such as sustainable development and technology, rather than on region-specific challenges, such as marketing. For example, the Spanish Smart Tourist Destinations Network (2023) (Type 4) was initiated by the Secretary of State for Tourism to facilitate knowledge exchange of experiences, which contributes to the smart development of destination regions. The extent to which each type of multi-destination network tends to develop systemic qualities is examined next.

Table 1. Typology of multi-destination knowledge networks

Multi-destination knowledge networks	Transnational	National
Neighboring destinations: Cross-sectoral similarity in tourism resources, markets, challenges, knowledge bases, and geographical proximity engendering temporary, frequent face-to-face interactions, that engender related varieties and creativity which enhances joined innovation	1. Cross-border Neighboring destination regions from different countries in border regions from two countries or more and may include several regions that constitute a macro region	2. Neighboring destination regions within national boundaries Proximate destination regions exchanging market knowledge with each other within the same county
Shared knowledge foci	markets, marketing and tourism resources	
Cultural, cognitive and institutional proximities	Medium	High
Examples	“AlpNet” (AlpNet, 2023), a network of neighboring Alpine regions	e.g., ‘Beskidzka 5’, five municipal authorities in Poland (Chudy & Valeri, 2017; Zemła, 2014)
Distant destinations Low geographical proximity, cross-sectoral (dis)similarity in tourism resources, markets, challenges, knowledge	3. Transnational Distant or non-contiguous destinations from different countries, that have similar characteristics, e.g., best practice	4. Distant destination regions within national boundaries Destination regions from across the same countries, which share similar

bases, and low geographical proximity resulting in low frequency of face-to-face interactions	solutions and challenges such as climate crisis	interests and therefore exchange knowledge
Shared knowledge foci	Problem solving solutions, technology, marketing	
Cultural, cognitive and institutional proximities	Low	High
Examples	Network of European Regions for Competitive and Sustainable Tourism (2023)	The Smart Tourist Destinations Network (2023) in Spain

5.3 Systemic qualities of multi-destination knowledge networks

As noted above, in addition to formal and informal institutional dimensions, the levels of unified function, coherence, and boundedness determine how systemic multi-destination networks are. Table 2 identifies and explains the systemic qualities of the four network types in relation to exemplars. The indicative examples show how the evolutionary approach used here applies to real places. This addresses the criticism that evolutionary economic geography tends “to work with superficial place characteristics and ignore agency, and the interpretations and practices of the actors and how they influence, and are influenced by, real places” (Chu & Hassink, 2023, p.392).

We initially identified the exemplars through exploratory interviews with various actors, such as heads of associations, in the European context. We then gathered relevant documentary material and conducted thematic analysis, including evidence from policy and strategy documents, complemented by reports and academic literature (Pechlaner et al., 2002; Żemła, 2014; Chudy & Krutikov, 2017; Farinha et al., 2019; AlpNet, 2023; US Travel Association, 2023).

The analysis included thematic coding based on predefined key words and concepts, such as knowledge, learning, innovation training, product type, and distance. Each knowledge network was first identified as a multi-destination network with formal institutions, for example, membership conditions, and with the logical assumption that informal institutions also exist. Second, we defined a network as a multi-destination knowledge network if it included knowledge exchange in one or more of its stated objectives or priorities, or in its innovation or learning-related strategies or activities (Weidenfeld et al., 2021).

Finally, we identified, explained, and estimated systemic qualities based on the extent of evidence supporting their potential high, medium, or low levels, including evidence from interviews with members and associates. Although the exemplars presented here are limited, and further empirical investigation of primary data and in-depth case studies are required in future studies, they serve to show that we are examining real places and networks (Chu & Hassink, 2023).

We assessed unified function as high or low based on how much network members shared objectives or priorities related to knowledge exchange or innovation. Insufficient systemic levels may demotivate inter-organizational knowledge exchange across regions that do not share the same vision and development objectives. Coherence is necessary as a motivator and as a condition that allows combinations of complementary inter-organizational

knowledge bases from different destination regions to create effective knowledge exchange, resulting in innovation. We assessed systemic levels based on members' skills, competence, and shared knowledge interests. We determined boundedness as high or low based on how well members' boundaries and membership inclusion criteria were defined. For example, we categorized multi-destination networks with eligibility criteria that allow destinations with well-defined administrative boundaries to become members as having high boundedness.

Table 2. Systemic qualities of different types of multi-destination knowledge network

<i>Type</i>	<i>Cross-sectoral similarity</i>	<i>Multi-destination networks</i>	<i>Coherence</i>	<i>Unified Function</i>	<i>Boundedness</i>	<i>Systemic qualities</i>
1. Cross-Border	Similar	AlpNet A network of tourism organizations from 9 Alpine neighboring tourism regions in Italy, Austria, Germany and Switzerland aimed at promoting European Alpine tourism (Pechlaner et al., 2002, AlpNet, 2023)	<i>Low</i> Homogeneity of members' composition: Members are regions only with no evidence of any specialized organizations as formal or informal partners. The members have neither features and mechanisms that create coplanarities and/or feedback loops	<i>High</i> Clear and well-defined foci and objectives: 1. Creating a learning network and cross-border collaboration in Alpine marketing by using an information and communication platform (Pechlaner et al., 2002). 2. It is aimed at addressing global challenges, strengthening, and boosting sustainable Alpine tourism.	<i>High</i> Only regions with well-defined administrative boundaries and a strong tourism industry in the Alps are members.	<i>Medium/High</i> Evidence of unified function and boundedness but weak coherence
2. Neighboring within national boundaries	Similar	'Beskidzka 5' , five municipal authorities in Poland. Four of them located in Silesia and their cooperation agreements signed between the authorities of five municipalities (Brenna et al.) (Žemla, 2014; Chudy & Krutikov, 2017).	<i>Low</i> Homogeneity of members' composition (regions only) is counterproductive to complementarities No specialized organizations or mechanisms that are	<i>High</i> Well-defined objectives and foci: promoting all the regions including all the five authorities as attractive for tourists through collaboration in knowledge exchange related to marketing.	<i>High</i> Only regions with well-defined administrative boundaries and a strong tourism industry Silesia county that are specified in the	<i>Medium/High</i> Includes member regions from the same country that form a one macro destination region (boundedness) and little evidence of complementarities between them (coherence). There are

		The organizations represent contiguous regions from different countries.	likely to create coherence.		agreement are members.	indefinable shared vision objectives (unified function).
3. Distant Transnational	Similar focus but dissimilarity among members	The Network of European Regions for Sustainable and Competitive Tourism (2023) – A network of organizations representing non-contiguous destination regions from different countries 1. 40 European regional tourism authorities and more than 30 associated members. 2. It develops interregional projects to improve tourism governance in Europe, collects, categorises and shares good practice on competitive and sustainable tourism among its member regions.	<i>High</i> 1. A coherent framework for coordinating research and regional development related to sustainable and competitive tourism. 2. A strong competency in tourism, engagement with different types of destination regions in European projects. 3. Diversity of types of actors and specialized mechanisms and activities to develop coherence: - activities include enhancing sustainable tourism by academic organisations, enterprises and associations of sustainable and responsible tourism businesses (Farinha et al., 2019)	<i>High</i> Clear objectives aimed at addressing priorities by sharing best practice solutions for members. These are aimed at achieving a smarter, more sustainable approach to tourism development.	<i>High</i> Members are regional councils, destination management organizations and tourism boards representing regions with clear administrative boundaries in Europe.	<i>High</i> 1. Evidence of coherence, shared objectives related to knowledge exchange (unified function) and learning among its member regions from across Europe (boundedness). 2. Triple Helix (research, government and industry) is identified, that tends to increase coherence.

4. Distant within national boundaries	Dissimilarity	The Destinations Council (associated with U.S. Travel Association) has 400 convention and visitor bureau members. This is a network of destination marketing organizations representing non-contiguous destination regions from the same country. organizations (US Travel Association, 2023)	<i>Medium</i> 1. Diversity of actors: Members are similar but geographically diverse with different markets, that increases potential for learning taking place among members in seminars and best practice events.	<i>Low</i> Neither additional shared priorities nor objectives focusing on identified themes are stated: The network is aimed at educating, engaging and providing resources for members is the primary purpose but	<i>Hight</i> 1. Accepting all types of new members from across the US only 2. Members represent regional authorities or cities with clearly defined administrative boundaries.	<i>Medium</i> 1. Weak unified function that concentrates on acting as a channel for general knowledge exchange related to marketing without thematic foci. 2. Evidence of potential coherence among member regions taking place in knowledge interactions between regions of different marketing offerings. 3. Membership is open to any US region regardless interregional proximity or shared markets/sub-sectors implying on low exclusivity (boundedness)
---------------------------------------	---------------	---	---	---	--	---

The exemplars of multi-destination networks show different systemic qualities. The highest systemic qualities and the most diverse actors are found in type 3, exemplified by the Network of European Regions for Sustainable and Competitive Tourism, which is near the “system” edge of the continuum. This network facilitates shared knowledge through activities such as participation in projects focused on shared priorities related to sustainable development. The heterogeneity of its members, which are destination regions from across Europe, increases the chances of complementarities in knowledge, skills, and competence. This diversity engenders feedback loops and cognitive proximity that is not too high, which stimulates knowledge sharing.

The American Destinations Council (type 4) has medium systemic quality and functions mainly as a marketing knowledge dissemination platform by organizing joint training and events. For example, it promotes best practices knowledge exchange and peer learning at annual events. Its membership is restricted to organizations representing U.S. regions, including 400 destination marketing organization and Convention and Visitor Bureau members (US Travel Association 2023), which differ in their offerings and are therefore potentially complementary in knowledge bases, skills, and competences.

In other networks, the three qualities appear at different levels. *Boundedness* is high because all networks include members that are regional councils or local authorities with defined administrative boundaries. Membership exclusivity ranges from high, for example, Beskidzka 5 consists of regions from several neighboring communities, to low, for example, the Destination Council is open to any U.S. region. The Smart Tourist Destinations Network (Table 1) shows stronger boundedness, both geographic and functional, because it is limited to Spanish local authorities committed to adopting specific technologies and innovation processes (The Smart Tourist Destination Network, 2023).

Boundedness also affects the meaningfulness of innovation. Members of multi-destination networks extended by distance over national and transnational space (types 3–4) tend to establish more meaningful knowledge interactions and be more innovative than those in networks of neighboring destination regions, which develop weaker interactions that result in incremental changes. This occurs because of greater inter-sectoral similarities between the member regions and the tendency to share marketing knowledge.

Unified function is high except for the Destinations Council, which focuses on general marketing rather than specific priorities, and Beskidzka 5, which was established for joint marketing of a multi-destination area in Poland. The Network of European Regions for Sustainable and Competitive Tourism, whose objectives address sustainable development and competitiveness, and “AlpNet,” which focuses on sustainability and global challenges, both have high unified function. We assessed coherence based on member heterogeneity and evidence of members sharing knowledge activities, complementarities, and feedback. The homogeneity of members in AlpNet and Beskidzka 5 corresponds with limited evidence of knowledge exchange, competence or skills complementarities, and feedback loops that indicate coherence. The Network of European Regions for Sustainable and Competitive Tourism includes regions from across Europe that offer various types of tourism and target different markets, which creates more heterogeneity and thus incentivizes more meaningful internationalized knowledge exchange than that between cross-border and neighboring

networks within the same national boundary. However, coherence requires further investigation than what is provided in the exemplars; therefore, level comparisons are indicative only.

The exemplars show that types 1–3 of the examined networks are considerably systemic. Transnational networks of distant regions with different tourism offerings or markets, which share thematic priorities, objectives, and activities, as well as networks of neighboring regions exchanging knowledge on their shared markets, are more systemic than neighboring networks with more generic shared priorities, e.g., type 4. Accordingly, the Destination Council is positioned closest to the “no system” edge, while the Network of European Regions for Sustainable and Competitive Tourism is described, with caution, as the most “systemic” and located closest to the “system” edge of the continuum (Figure 2). Geographic outreach and inter-sectoral similarity are often interrelated because neighboring member regions are more likely to have high inter-sectoral similarities, determined by tourism offerings, and vice versa, which affect systemic qualities. Therefore, a multi-destination knowledge network and its typology is useful when adopting a cross-regional and cross-sectoral perspective.

Multi-destination knowledge networks are networks of destination regions whose main objectives, priorities, or activities include learning, knowledge exchange, or innovation. This concept includes four types: transnational and national, with each network divided into neighboring and distant types. Each type has a specific spatio-sectoral composition, which shapes inter-destination knowledge exchange and the extent of systemic nature that determine innovation outcomes. However, each type requires additional studies over time to further validate these concepts and typology, which underlie the regional-sectoral perspective.

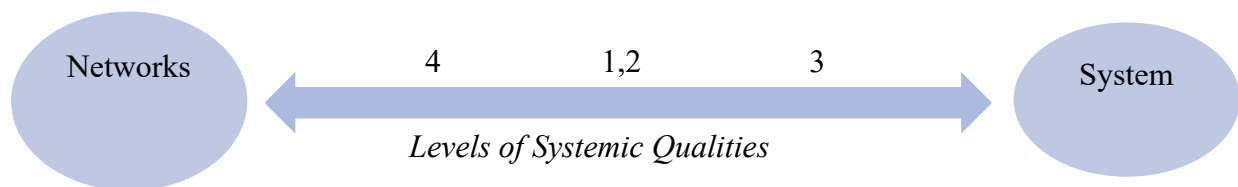


Figure 2 Multi-destination knowledge networks on the systemic knowledge network continuum

1. AlpNet
2. “Beskidzka 5”
3. The Network of European Regions for Sustainable and Competitive Tourism
4. The Destinations Council

6. Conclusion

This paper responds to scholarly debates and practical issues in tourism innovation, networks, and knowledge exchange. First, it addresses the debate on what extra-regional knowledge exchange is and how it is perceived in tourism. We enhance conceptual clarity by dividing extra-regional knowledge exchange into three levels: extra-regional linkages, interregional, and macro-destination. We focus on the often overlooked macro-destination level by suggesting a cross-regional and sectoral inter-organizational perspective to examine

knowledge exchange collaboration between destination regions as the units of analysis. Using a neo-Schumpeterian evolutionary economic geography approach, we conceptualize innovation as a relational process from a sectoral and regional perspective at intra- and inter-regional and sectoral levels, that is, across regions, sectors, and industries. Second, we examine the importance of improving the systematic operation of networks as knowledge exchange mechanisms, with networks that have strong systemic qualities being more effective in generating meaningful knowledge exchange for innovation outcomes.

By adopting this approach, we advance a spatial ontology that reconciles the dialectics in tourism between regions (space of places) and their interactions (spaces of flow), where various sectors that constitute tourism co-evolve. More specifically, we suggest a conceptual framework based on a systemic knowledge network continuum to better understand multi-destination knowledge networks.

Network perspectives that emphasize the role of relations and structures are highly relevant for future studies because knowledge management is inextricably linked to its context. Tourism, as a mostly localized and fragmented industry, is often characterized by weak research capability. However, tourism can also be framed as a network industry that connects different regional actors and sectors, which can facilitate joint knowledge generation and innovation capabilities.

In the system approach and regional economy context, the importance of the conceptual fuzziness surrounding tourism's systemic nature and qualities remains largely ignored. However, the system approach has so far insufficiently considered the institutional dimension and systemic qualities, including unified function, coherence, and boundedness, as well as sectoral similarities that underlie an evolutionary approach for studying mechanisms that engender knowledge exchange in destination regions. Each of these understudied qualities is relevant to tourism networks and their systemic nature, because sectoral or regional knowledge networks are affected by the nature of their geographic scope (transnational or national) and by their management. Based on the preceding discussion, we propose the following:

Proposition 1: Multi-destination knowledge networks characterized by high coherence, unified function, and boundedness will exhibit greater effectiveness in facilitating inter-regional knowledge exchange and driving tourism innovation;

Proposition 2: The integration of both formal and informal institutions within these networks strengthens their systemic qualities, thereby enhancing innovation outcomes.

The fragmented nature of the tourism industry and co-opetitive relationships may inhibit meaningful intra-regional learning and create a need for cross-regional and cross-sectoral perspectives. Greater attention should be given to the contribution of tourism to regional knowledge networks and regional innovation systems. For example, tourism can drive the development of infrastructure and soft skills for innovation beyond tourism, which also contribute to quality-of-life and place attributes that create an environment for attracting human capital (Hall & Williams, 2020).

Regional and sectoral perspectives are equally important and closely linked at the destination regional level, where most tourism consumption occurs. However, intra-regional knowledge exchange between tourism sectors is insufficient for two reasons. First, co-opetition

relationships do not encourage tourism actors to share knowledge with counterparts because they want to avoid imitation and direct competition. Second, cross-sectoral learning does not create lock-in and can stimulate combinations of unrelated knowledge bases that are useful for innovation. Therefore, the cross-regional, cross-sectoral perspective, which emphasizes geographical outreach and sectoral similarity among members, should be favored for determining membership criteria and facilitating more meaningful and innovative processes. Accordingly, we detail a third proposition, which also provides a foundation for future empirical research on the mechanisms and outcomes of inter-regional knowledge networks in tourism:

Proposition 3: Networks with higher cross-sectoral diversity among member regions are more likely to produce radical innovations, while those with greater sectoral similarity tend to foster incremental innovation.

Nevertheless, this does not mean that intra-sectoral and regional learning should be downplayed. Overall, we recommend a combination of both strong and weak, intra- and extra-regional knowledge ties between tourism sectors within and outside tourism. Interregional knowledge exchange studies have examined knowledge exchange between individual actors, such as organizations, businesses, and entrepreneurs, focusing on joint development of new marketing methods, technologies, ways of working, products, and services (Weidenfeld, 2013; Booyens & Rogerson, 2017). At the macro-destination level, knowledge exchange at the destination unit sub-level has been explored in terms of products, services, technology, and management (Sun et al, 2025). However, relationships between groups of regional actors representing their regions at the cross-regional level have been largely ignored. Therefore, a multi-destination knowledge network was proposed as a mechanism to facilitate knowledge exchange at the cross-regional level between multiple destination regions (Figure 1).

We suggest a typology of a multi-destination network based on differences in geographical outreach (transnational or within the same national boundaries), relative location (members that are distant or proximate to other members), cross-sectoral (dis)similarity, and relational proximity among members (cultural, cognitive, institutional). This typology, which includes four types, provides a framework for examining these attribute differences, which affect their systemic qualities.

A multi-destination knowledge network may be described as systemic, meaning it operates as an effective mechanism if it includes both formal and informal institutions and shows considerable systemic qualities. For each of the four types of multi-destination knowledge networks, we provide an exemplar and its systemic levels. These exemplars show that knowledge exchange and innovation processes focus on marketing, sustainability, and technology, depending on the network type. However, systemic qualities do not determine whether a system exists in a dichotomous way but indicate the extent to which knowledge mechanisms such as networks have systematic properties or function as systems. Thus, the degree to which they are described as systemic depends on their systemic qualities, which define where each multi-destination network falls on the network–system continuum. We assume that most networks have formal and informal institutions and some systemic qualities, placing them between the two extremes of the continuum. Therefore, most multi-destination networks in the exemplars are defined as *systemic multi-destination knowledge networks*. We

also suggest that systemic transnational distant networks generate more meaningful knowledge interactions for innovation than neighboring networks. The continuum thus provides another means for classifying and examining multi-destination networks for research and policy-making purposes.

In theory, a network-of-networks fully represents such systemic networks, connecting individual destination networks through the knowledge exchanges among their members. However, when the analysis does not examine all types of ties and their interactions but instead focuses on a higher level, the multilevel configuration can be projected into a flat dyadic form. This approach makes it easier to study the main connectivity characteristics (Koskinen et al., 2023).

Although the above provides a platform for further research, significant questions remain. First, the extent to which individual actors in each destination region are involved in and affected by multi-destination networks' knowledge dissemination and interactions requires examination. This effect can be explored regarding the assumption that high levels of dissemination may increase the competitiveness of actors and, therefore, the entire economic performance of the member destination regions. Second, the geographical and sectoral distribution of actors benefiting from and engaging in knowledge dissemination and exchange in each destination member region requires more empirical examination. Third, the extent of inter-sectoral interactions needs to be identified. Fourth, the nature, extent, and interplay between the three systemic qualitative criteria should be explored and compared between different types of networks more rigorously. Fifth, the role of interregional economic and scientific disparities requires further research and incorporation into the approach. This is especially significant regarding the problem of measuring the effect of tourism research beyond the anecdotal. Further empirical investigation over time of each exemplar is required to fully examine the interplay between each quality and determine their relative strengths and weaknesses, contingency, and causal relationships in general and in relation to levels of knowledge exchange, competitiveness, number of innovations introduced or launched, and product lifecycle extensions. Future studies should, therefore, provide a more complete picture and undertake longitudinal analysis to examine their complexity.

The cross-regional and sectoral perspective, multi-destination network typology, and the systemic network continuum provide a conceptual framework and research agenda for new directions in tourism innovation research. Examining the extent to which multi-destination knowledge networks are also cross-sectoral, or the extent to which cross-regional knowledge exchange is also inter-sectoral, should be the first question to address. This presents methodological challenges. First, it requires qualitative and quantitative empirical validation through surveys and interviews with various actors, innovation biographies, and social network analysis that map knowledge interactions by location and sector or market. These methods can help define these interactions in relation to the systemic nature and qualities of multi-destination networks. Second, studying the particularities of knowledge interactions in such networks will require comparison with non-tourism knowledge networks. Potential particularities may include examining knowledge exchange between regions that are seasonal destinations or generating regions for each other, such as Alpine and Mediterranean regions.

The quantitative analysis of network connections that should be elaborated to address the above in future studies includes two approaches that provide a sound basis for assessing the

characteristics of knowledge transfers in a tourism system. One approach is pure static estimation of these features using well-known metrics that identify both global and individual characteristics, such as the presence of intermediate structures or the relative importance of different actors (Coscia, 2021). In this case, the analysis may examine collaborative patterns between various actors (Baggio & Ruggieri, 2024) inside and outside single destinations, following the idea that a partnership is based on meaningful knowledge exchange.

A modularity analysis (Souravlas, 2021) may reveal stakeholder communities with strong collaboration and compare cluster memberships with those based on other attributes, such as type of business or geographic location. This is especially useful for analyzing the actual extent of cooperation in multi-destination knowledge networks, beyond the perceptions of actors usually found with traditional methods based on interviews or questionnaires (Baggio, 2011; Raisi et al., 2020). The second approach introduces a dynamic dimension. This can be expressed as a temporal evaluation, when data allow, showing if and how these patterns develop over time, or by examining internal processes. In this case, numerical simulation of knowledge transfer is treated as an innovation diffusion model (Baggio, 2015; Zhang et al., 2016), which enables examining the mechanisms through which the process unfolds and finding possible changes to configurations that improve or optimize these processes regarding the extent or speed of information or knowledge diffusion.

However, simulating diffusion processes on networks is challenging because of several key limitations. Besides computational complexity, models rely on simplifying assumptions, such as static networks, nodes with homogeneous characteristics, or fixed transmission rates, which may not accurately reflect real-world dynamics. Additionally, the quality and availability of data used to inform these models can significantly affect simulation accuracy. Real-world networks often have complex topologies and dynamic structures that are difficult to capture in a simulation, and the stochastic nature of these processes, where outcomes can vary between simulation runs, may complicate analysis and interpretation. Nonetheless, the extensive literature helps ensure confidence in the results if approached rigorously. Finally, as part of improving understanding of knowledge exchange and management in tourism innovation, an important and ongoing question is how to best leverage flows of knowledge exchange in research institutions and academic arenas, such as this journal, into destination regions and sectoral knowledge networks for collective advantage.

References

- Andersson, M., Karlsson, C. (2006). Regional innovation systems in small and medium-sized regions. In Johansson, B., Karlsson, C., & Stough, R. (Eds.), *The Emerging Digital Economy. Advances in Spatial Science* (pp. 55-81). Springer. https://doi.org/10.1007/3-540-34488-8_4
- Bachinger, M., & Kofler, I. (2022). *Encyclopaedia of tourism management and marketing* (pp. 653–656). Edward Elgar. <https://doi.org/10.4337/9781800377486.regional.knowledge.networks>
- Baggio, R. (2014). Creativity and the structure of tourism destination networks. *International Journal of Tourism Sciences*, 14(1), 137–154. <https://doi.org/10.1080/15980634.2014.11434688>
- Baggio, R., & Cooper, C. (2010). Knowledge transfer in a tourism destination: the effects of a network structure. *The Service Industries Journal*, 30(10), 1757–1771. <https://doi.org/10.1080/02642060903580649>
- Baggio, R. (2011). Collaboration and cooperation in a tourism destination: a network science approach. *Current Issues in Tourism*, 14(2), 183-189. <https://doi.org/10.1080/13683500.2010.531118>

- Baggio, R. (2015). Knowledge management and diffusion: the network paradigm. In M.T. McLeod & R. Vaughan (Eds.), *Knowledge networks and tourism* (pp. 108-125). Routledge.
<https://doi.org/10.4324/9780203768754>
- Baggio, R., & Ruggieri, G. (2024). Collaboration and cooperation: a network analytic approach. *International Journal of Islands Research*, 5(1), art. 2. <https://doi.org/10.1080/13683500.2010.531118>
- Baird, T. & Hall, C.M. (2016). Competence based innovation in New Zealand wine tourism: Partial strategies for partial industrialisation. In H. Pechlaner & E. Innerhofer (Eds.), *Competence-based innovation in hospitality and tourism* (pp. 197-224), Routledge.
<https://doi.org/10.4324/9781315573144>
- Biagi, B., Brandano, M.G., & Ortega-Argiles, R. (2021). Smart specialisation and tourism: Understanding the priority choices in EU regions. *Socio-Economic Planning Sciences*, 74,
<https://doi.org/10.1016/j.seps.2020.100883>
- Booyens, I., & Rogerson, C.M. (2017). Networking and learning for tourism innovation: evidence from the Western Cape. *Tourism Geographies*, 19(3), 340–361. <https://doi.org/10.1080/14616688.2016.1183142>
- Binder, P. (2020). Impacts of network relationships on absorptive capacity in the context of innovation. *The Service Industries Journal*, 40, 974-1002. <https://doi.org/10.1080/02642069.2018.1533955>
- Borrás, S. (2004). System of innovation theory and the European Union. *Science and Public Policy*, 31(6), 425–433. <https://doi.org/10.3152/147154304781779787>
- Boschma, R., & Frenken, K. (2011). Technological relatedness, related variety and economic geography. In P. Cooke, B. Asheim, R. Boschma, R. Martin, D. Schwartz, & F. Tödtling (Eds.), *Handbook of regional innovation and growth* (pp. 187–197). Edward Elgar. <https://doi.org/10.4337/9780857931504.00028>
- Brackenbury, M. (2006). Has innovation become a routine practice that enables companies to stay ahead of the competition in the travel industry? In *Innovation and tourism policy* (pp. 71–83). OECD Publishing.
<https://doi.org/10.1787/9789264025028-6-en>
- Brandão, F. (2014). *Innovation in Tourism: the role of regional innovation systems*. Doctoral dissertation, Universidade de Aveiro. <https://doi.org/10.13140/RG.2.1.3719.4409>
- Brandão, F., Breda, Z., & Costa, C. (2019). Innovation and internationalization as development strategies for coastal tourism destinations: The role of organizational networks. *Journal of Hospitality and Tourism Management*, 41, 219–230. <https://doi.org/10.1016/j.jhtm.2019.10.004>
- Brandão, F., Costa, C., & Buhalis, D. (2018). Tourism innovation networks: a regional approach. *European Journal of Tourism Research*, 18, 33–56. <https://doi.org/10.54055/ejtr.v18i.312>
- Chu, H., & Hassink, R. (2023). Advancing spatial ontology in evolutionary economic geography. *Cambridge Journal of Regions, Economy and Society*, 16(3), 391-404. <https://doi.org/10.1093/cjres/rsad020>
- Chudy, W., & Valeri, K. (2017). Conditions and Possibilities of Undertaking Physical Activity in the “Beskidzka 5” Tourism Cluster / Fizinio aktyvumo „Beskidzka 5“ turizmo klasteryje sąlygos ir galimybės. *Geografija Ir Edukacija: Mokslo Almanachas / Geography and Education: Science Almanac*, 5, 77–83.
<http://doi.org/10.15823/ge.2018.3>
- Cooke, P. (2004). Introduction: Regional innovation systems - An evolutionary approach. In Cooke, P.N., Heidenreich, M., & Braczyk, H.J. (Eds.). *Regional innovation systems: the role of governance in a globalized world* (pp. 2–26). Psychology Press. http://dx.doi.org/10.4324/9780203390702_chapter_1
- Cooke, P., Uranga, M.G., & Etxebarria, G. (1998). Regional systems of innovation: an evolutionary perspective. *Environment and Planning A*, 30, 1563–1584. <https://doi.org/10.1068/a301563>
- Cooper, C. (2015). Managing tourism knowledge. *Tourism Recreation Research*, 40(1), 107–119.
<http://doi.org/10.1080/02508281.2015.1006418>
- Cooper, C. (2018). Managing tourism knowledge: a review. *Tourism Review*, 73(4), 507–520.
<https://doi.org/10.1108/TR-06-2017-0104>
- Coriat, B., & Weinstein, O. (2002). Organizations, firms and institutions in the generation of innovation. *Research Policy*, 31(2), 273–290. [https://doi.org/10.1016/S0048-7333\(01\)00141-X](https://doi.org/10.1016/S0048-7333(01)00141-X)
- Coscia, M. (2021). *The atlas for the aspiring network scientist*. IT University of Copenhagen.
<https://doi.org/10.48550/arXiv.2101.00863>
- Dahesh, M.B., Tabarsa, G., Zandieh, M., & Hamidzadeh, M. (2020). Reviewing the intellectual structure and evolution of the innovation systems approach: A social network analysis. *Technology in Society*, 63, 101399. <https://doi.org/10.1016/j.techsoc.2020.101399>

- Del Chiappa, G., & Baggio, R. (2015). Knowledge transfer in smart tourism destinations: Analyzing the effects of a network structure. *Journal of Destination Marketing & Management*, 4(3), 145–150.
<https://doi.org/10.1016/j.jdmm.2015.02.001>
- Éber, F.Z., Baggio, R., & Fuchs, M. (2018). Hyperlink network analysis of a multi destination region: the case of Halland, South Sweden. *Information Technology & Tourism*, 20(1), 181–188.
<https://link.springer.com/article/10.1007/s40558-018-0108-9>
- Edquist, C. (2004). Reflections on the systems of innovation approach. *Science and Public Policy*, 31(6), 485–489. <https://doi.org/10.3152/147154304781779741>
- Edquist, C. (2006). Systems of innovation: Perspectives and challenges. In J. Fagerberg & D. C. Mowery (Eds.), *The Oxford handbook of innovation* (pp. 181–208). Oxford University Press.
<https://doi.org/10.1093/oxfordhb/9780199286805.003.0007>
- European Commission (2015). *Perspectives for research and innovation strategies for smart specialisation (RIS3) in the wider context of the Europe 2020 Growth Strategy*. Directorate General for Research and Innovation. <http://dx.doi.org/10.2777/872170>
- Evangelista, R. (2022). Neo-Schumpeterian economics. In F. Stilwell, D. Primrose, & T. Thornton (Eds.), *Handbook of alternative theories of political economy* (pp. 156–172). Edward Elgar. Farinha, F., Oliveira, M.J., Silva, E.M.J., Lança, R., Pinheiro, M.D., & Miguel, C. (2019). Selection process of sustainable indicators for the Algarve region-OBSERVE project. *Sustainability*, 11(2).
<https://doi.org/10.3390/su11020444>
- Favre-Bonte, V., Gardet, E., & Thevenard-Puthod, C. (2019). The influence of territory on innovation network design in mountain tourism resorts. *European Planning Studies*, 27(5), 1035–1057.
<http://doi.org/10.1080/09654313.2019.1588856>
- Gutierrez, C., Roa, V., & Smith, J. (2021). The Chilean sectoral innovation systems: An Approach from the national innovation survey. *Journal of Technology Management & Innovation*, 16(1), 3–13.
<https://doi.org/10.4067/S0718-27242021000100003>
- Hall, C.M., & Williams, A.M. (2020). *Tourism and innovation*. Routledge.
<https://doi.org/10.4324/9781315162836>
- Hanusch, H., & Pyka, A. (2005). Principles of neo-Schumpeterian economics. *Volkswirtschaftliche Diskussionsreihe No. 278*. Universität Augsburg, Institut für Volkswirtschaftslehre.
- Herasimovich, V., Alzua-Sorzabal, A., & Guereño-Omil, B. (2024). Online networking behaviour of tourism stakeholders in a multi-destination region: A hyperlink network analysis. *Journal of Destination Marketing & Management*, 31, 100844. <https://doi.org/10.1016/j.jdmm.2023.100844>
- Hjalager, A. (2002). Repairing innovation defectiveness in tourism. *Tourism Management*, 23(5), 465–474.
[https://doi.org/10.1016/S0261-5177\(02\)00013-4](https://doi.org/10.1016/S0261-5177(02)00013-4)
- Kofler, I., Marcher, A., Volgger, M., & Pechlaner, H. (2018). The special characteristics of tourism innovation networks: The case of the Regional Innovation System in South Tyrol. *Journal of Hospitality and Tourism Management*, 37, 68–75. <https://doi.org/10.1016/j.jhtm.2018.09.004>
- Koskinen, J., Jones, P., Medeuov, D., Antonyuk, A., Puzyreva, K., & Basov, N. (2023). Analysing networks of networks. *Social Networks*, 74, 102–117. <https://doi.org/10.1016/j.socnet.2023.02.002>
- Li, D., Liang, Z., Tell, F., & Xue, L. (2021). Sectoral systems of innovation in the era of the fourth industrial revolution: an introduction to the special section. *Industrial and Corporate Change*, 30(1), 123–135.
<https://doi.org/10.1093/icc/dtaa064>
- Liu, J., & Nijkamp, P. (2018). Inbound tourism as a driving force for regional innovation: A spatial impact study on China. *Journal of Travel Research*, 58(4), 594–607. <https://doi.org/10.1177/0047287518771223>
- Luongo, S., Sepe, F., & del Gaudio, G. (2023). Regional innovation systems in tourism: The role of collaboration and competition. *Journal of Open Innovation: Technology, Market, and Complexity*, 9(4), 100148. <https://doi.org/10.1016/j.joitmc.2023.100148>
- Malerba, F. (Ed.) (2004). *Sectoral systems of innovation. concepts, issues and analyses of six major sectors in Europe* (pp. 9–41). Cambridge University Press. <https://doi.org/10.1017/CBO9780511493270.002>
- Malerba, F. (2005). Sectoral systems: How and why innovation differs across sectors. In Mowery D.C. & Nelson R.R. (Eds.), *The Oxford handbook of innovation* (pp. 380–406). Oxford University Press.
<http://doi.org/10.1093/oxfordhb/9780199286805.003.0014>

- Marasco, A., De Martino, M., Magnotti, F., & Morvillo, A. (2018). Collaborative innovation in tourism and hospitality: a systematic review of the literature. *International Journal of Contemporary Hospitality Management*, 30(6), 2364–2395. <http://doi.org/10.1108/IJCHM-01-2018-0043>
- Martin, R. L. and Sunley, P. J. (2024). Why an evolutionary economic geography? The spatial economy as a complex evolving system. In K. Dopfer, R. Nelson, J. Potts, & A. Pyka (Eds.), *Routledge handbook of evolutionary economics*. Routledge.
- McLeod, M. (2020). Understanding knowledge flows within a tourism destination network. *Journal of Hospitality and Tourism Insights*, 3(5), 549-566. <http://doi.org/10.1108/JHTI-02-2020-0017>
- McLeod, M., Vaughan, D.R., Edwards, J., & Moital, M. (2024). Knowledge sharing and innovation in open networks of tourism businesses. *International Journal of Contemporary Hospitality Management*, 36(2), 438-456. <http://doi.org/10.1108/IJCHM-03-2022-0326>
- Moonen, T., Cosgrave, E., Nunley, J., & Zanetti, O. (2020). *Network Effects- The innovation multipliers of international collaboration for cities and subnational governments*. NESTA. <http://doi.org/10.1080/17510694.2022.2057062>
- Nguyen, T.Q.T., Young, T., Johnson, P., & Wearing, S. (2019). Conceptualising networks in sustainable tourism development. *Tourism Management Perspectives*, 32, 100575. <http://doi.org/10.1016/j.tmp.2019.100575>
- Ormond, M. (2016). Knowledge transfer in the ‘medical tourism’ industry: The role of transnational migrant patients and health workers. In F. Thomas (Ed.), *Handbook of migration and health* (pp. 498-514). Edward Elgar. <http://doi.org/10.4337/9781784714789.00040>
- Raisi, H., Baggio, R., Barratt-Pugh, L., & Willson, G. (2020). A network perspective of knowledge transfer in tourism. *Annals of Tourism Research*, 80, 102817. <https://doi.org/10.1016/j.annals.2019.102817>
- Rakas, M., & Hain, D. S. (2019). The state of innovation system research: What happens beneath the surface? *Research Policy*, 48(9), 103787. <https://doi.org/10.1016/j.respol.2019.04.011>
- Robert, V., Yoguel, G., & Lerena, O. (2017). The ontology of complexity and the neo-Schumpeterian evolutionary theory of economic change. *Journal of Evolutionary Economics*, 27(4), 761-793. <https://doi.org/10.1007/s00191-017-0512-x>
- Roper, S., Scott, J., Cooke, P., Clifton, N., & Hewitt-Dundas, N. (2006). *The Scottish innovation system: a actors, roles and actions*. Scottish Executive, Department of Enterprise, Transport and Lifelong Learning.
- Safonov, A., Hall, C.M., & Prayag, G. (2023). Non-collaborative behaviour of accommodation businesses in the associational tourism economy. *Journal of Hospitality and Tourism Management*, 54, 98-107. <http://doi.org/10.1016/j.jhtm.2022.12.007>
- Sanz-Ibáñez, C., Lozano, S., & Anton Clavé, S. (2019). Brokers in a destination’s knowledge networks. *Journal of Destination Marketing & Management*, 11, 120–129 129. <http://doi.org/10.1016/j.jdmm.2019.01.001>
- Schamp, E. W. (2010). On the notion of co-evolution in economic geography. In R. Boschma & R. Martin (Eds.), *The handbook of evolutionary economic geography* (pp. 432-449). Edward Elgar.
- Souravlas, S., Sifaleras, A., Tsintogianni, M., & Katsavounis, S. (2021). A classification of community detection methods in social networks: a survey. *International Journal of General Systems*, 50, 63-91. <http://doi.org/10.1080/03081079.2020.1863394>
- Stuck, J., Broekel, T., & Revilla Diez, J. (2016). Network structures in regional innovation systems. *European Planning Studies*, 24(3), 423–442. <http://doi.org/10.1080/09654313.2015.1074984>
- Sun, P., Lin, Z., & Chen, C. (2025). Unlocking potential: Macro insights into the evolution of a multi-destination tourism innovation network. *Journal of Travel Research*, 64(1), 139-157. <https://doi.org/10.1177/00472875231209981>
- Sundbo, J., Orfila-Sintes, F., & Sørensen, F. (2007). The innovative behaviour of tourism firms—Comparative studies of Denmark and Spain. *Research Policy*, 36, 88–106. <http://doi.org/10.1016/j.respol.2006.08.004>
- United Nations World Tourism Organisation (2023), Global code of Ethics for Tourism , Retrieved on 08/07/2025, <https://www.unwto.org/global-code-of-ethics-for-tourism>,
- Valeri, M., & Baggio, R. (2022). Increasing the efficiency of knowledge transfer in an Italian tourism system: a network approach. *Current Issues in Tourism*, 25(13), 2127–2142. <https://doi.org/10.1080/13683500.2021.1937960>
- Weidenfeld, A. (2013). Tourism and cross border regional innovation systems. *Annals of Tourism Research*, 42(0), 191–213. <https://doi.org/10.1016/j.annals.2013.01.003>

- Weidenfeld, A. (2018). Tourism diversification and its implications for smart specialisation. *Sustainability*, 10(2), 319 <https://doi.org/10.3390/su10020319>
- Weidenfeld, A., & Hall, C.M. (2014). Tourism in the development of regional and sectoral innovation systems. In A.A. Lew, C.M. Hall, & A.M. Williams (Eds.), *The Wiley Blackwell Companion to Tourism* (pp. 578–588). Wiley Blackwell. <https://onlinelibrary.wiley.com/doi/10.1002/9781118474648.ch46>
- Weidenfeld, A., Makkonen, T., & Clifton, N. (2021). From interregional knowledge networks to systems. *Technological Forecasting and Social Change*, 171, 120904. <https://doi.org/10.1016/j.techfore.2021.120904>
- Zach, F.J., & Hill, T.L. (2017). Network, knowledge and relationship impacts on innovation in tourism destinations. *Tourism Management*, 62, 196–207. <https://doi.org/10.1016/j.tourman.2017.04.001>
- Zemła, M. (2014). Inter-destination cooperation: Forms, facilitators and inhibitors – The case of Poland. *Journal of Destination Marketing & Management*, 3(4), 241–252. <https://doi.org/10.1016/j.jdmm.2014.07.001>
- Zhang, Z.K., Liu, C., Zhan, X.X., Lu, X., Zhang, C.X., & Zhang, Y.C. (2016). Dynamics of information diffusion and its applications on complex networks. *Physics Reports*, 651, 1–34. <https://doi.org/10.1016/j.physrep.2016.07.002>