

Article

Variety, Smart Specialization and Tourism Competitiveness

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Abstract: This work analyzes how regional tourism dynamics (demand, supply and specialization) and innovation performance may influence tourism competitiveness. The novelty and originality of the analysis is the inclusion of aspects related to the sectorial priority options defined within smart specialization strategies in European regions as potential explanatory factors. By using a panel data model and focusing on regions where tourism is one of the priority sectors for Regional Innovation Strategies (RIS3, 2014–2020), the results reveal positive impacts of tourism demand, supply and specialization on the value added produced by tourism activities. Moreover, immaterial aspects related to the qualification of the regional labor force and innovation dynamics (investment in research in development) also exert a positive impact on tourism competitiveness. The novel results obtained regarding the impacts of smart specialization strategies show a high potential of the tourism sector to benefit from geographical, cultural and institutional forms of proximity. The results also suggest that knowledge externalities arising from interactions with both related or unrelated sectors—by exploiting interactions and connectivity with sectors with both low and high cognitive distances—may emerge.

Keywords: relatedness; proximity; network; innovation; specialization; panel data

1. Introduction

Framing this approach within the studies on tourism competitiveness [1,2] and adopting a methodology inspired by a recent study on European regions [3], the purpose of this work is to analyze the relations between regional tourism dynamics and regional systems of innovation [4,5] taking into account strategic options defined within smart specialization regional policies. The originality and novelty of the analysis is the consideration of different sectorial priority options defined within such regional innovation strategies as potential explanatory factors for tourism competitiveness, offering the first empirical approach to this question.

Tourism is assumed as an activity deeply embedded into the characteristics of the territories. The supply of tourism products and services in a destination is highly constrained by the existing resources, climate, natural landscape or the material and immaterial cultural heritage. Moreover, specific characteristics of the tourism sector, like co-spatiality, co-temporality and co-terminality—and the related localized interactions emerging from these aspects—emphasize territorial embeddedness, while making the tourism destination a repository of information about behaviors, needs, preferences and motivations of visitors. Processes of co-creation of services, experiences, policies or destinations may emerge from these interactions [6]. The increasing utilization of information and communication technologies (ICT) in the provision and consumption of tourism services [7] reinforces these localized interactions. In this sense, tourism is not only a place-based activity, but it tends to also be

a knowledge-based activity, rooted into the characteristics of the places and potentially contributing to the emergence and development of local and regional innovation networks [8,9].

The supply of tourism services in a destination may be also seen as a decentralized value chain, where a relatively large number of small and medium sized companies (SME) operate. These companies often have limited structures or formal mechanisms to assimilate and integrate information for the reorganization of productive systems, the creation of new products and services and adaptation to new circumstances [10,11]. However, they establish interconnections with consumers and suppliers, developing different types of links [12]. In this sense, tourism companies can create different forms of connectivity with a broad range of other firms and institutions, potentially assuming a central role within regional innovation networks [13].

Concerns with the embeddedness of regional economies into the specific characteristics of the territories, the importance of local knowledge and capabilities, or the externalities and mutual benefits potentially arising from the linkages, interactions and networks existing in a place are also at the core of the smart specialization strategies, currently under implementation in European regions (Regional Innovation Strategies, 2014–2020) [14,15]. The implementation of such innovation strategies—and the availability of information allowing for an international analysis—offers an opportunity for assessing their impacts on regional tourism dynamics, taking into account aspects related to connectivity, networks and efficiency underlying the smart specialization approach. This analysis constitutes one of the first empirical assessments of the results of the implementation of smart specialization strategies in European regions focusing on aspects related to tourism. One of the very few other works on related topics is a study very recently published analyzing the role of tourism within regional specialization and its impacts on economic growth and resilience [16].

A detailed explanation and discussion of these concepts is presented in Section 2, while the data and variables used are described in Section 3. The econometric analytical model developed following a panel data approach [17] is presented in Section 4. The concluding Section discusses the results obtained, taking into account aspects related to the variety and diversity of regional economic structures, relatedness of the tourism sector with different activities and their impacts on tourism competitiveness. Where existing, results from previous studies on similar topics are discussed, although the implications of smart specialization strategies on tourism performance have not been the object of previous analyses.

2. Literature Review and Conceptual Framework

2.1. Information, Networks and Smart Specialization

Tourism supply may be seen as a decentralized value-chain, where most of the tourism products and services are provided by SME. As a result of the interactions established with each user—enhanced by contemporary digital technologies—tourism providers potentially accumulate large amounts of information about preferences, motivations, needs or behaviors of tourists. The information obtained by those SMEs tends to be tacit (implying processes of codification and adaptation in order to contribute for the generation of innovative solutions) and localized (rooted in the characteristics of the destination and the existing services). The destination becomes a repository of unique and inimitable knowledge, not necessarily implying the development of new products and services, or the implementation of new forms of organization, because SMEs tend to be less engaged in innovation networks, not taking full advantage of their potential to increase productivity [18].

The effectiveness of the interactions between stakeholders appears to be crucial to boost the regional innovation potential [9] by transforming this unique and localized knowledge into reorganizations of the tourism supply, contributing to the differentiation of destinations. This potential depends on education levels or investments in research and development (as proposed in the model developed in this work). Previous studies have focused on these issues, when looking at labor productivity in hospitality [19] or to the positive impacts of labor qualification on the performance of high ranking hotels [20] or hotels following an explicit differentiation strategy [21]. With particular interest for the

tourism sector, the distinctions between organizational vs spatial proximity and circumstantial vs consequential spillovers recently proposed [22] allow for the identification of diverse types of relatedness and their impacts on different aspects of innovation in tourism: for the case of spatial proximity, the formation of clusters and regional innovation models may be seen as linked to circumstantial spillovers, while consequential spillovers can be observed when looking at effects on tourism flows, attractions or market shares.

The importance of place and regional capabilities driving specialization patterns [23] are central elements for smart specialization [24], which inspires the Regional Innovation Strategies (RIS 3, for 2014–2020) being implemented in European regions. By focusing on a limited number of priority sectors, such strategies aim at boosting bottom-up entrepreneurial innovation processes, by promoting spinoff effects arising from interactions within networks of interconnected regional stakeholders [25,26]. Apart from geographical proximity, it is expected that knowledge proximity (related to products, services, organizations, production processes, technologies or markets) or cultural and institutional proximity [27–29] contribute to the development of regional innovation networks, leading to improvements in productivity. Specialization (or diversification) patterns may occur among sectors with high proximity (“related variety”, contributing to a quick and easy diffusion of innovations and/or economic impacts) but also with higher distance (“unrelated variety”, based on the development of economic sectors with low interdependencies, implying difficulties for the diffusion of innovation and economic impacts, but reducing the vulnerability of the regional economy to sectorial negative shocks) [30–32].

The diversity of services comprising the destination value chain opens a high potential for the tourism sector to assume a central role within smart specialization strategies [33,34]. Tourism can develop strong intra-industry interconnections, by exploring the knowledge proximity between accommodation services, food provision, entertainment, tour guides and the most traditional hospitality services [35]. However, a strong connectivity between unrelated sectors [36] may also emerge, with the specific needs of the tourism markets potentially contributing for the creation of interactions with transport and mobility services, health services, water or waste management or energy production and consumption. Moreover, innovation in tourism may also benefit from knowledge externalities and spillovers arising from the development of a creative regional economy, where other activities (like manufacturing or high-tech sectors) contribute to diversify regional economic structures [37,38].

As it will be seen, the empirical analysis developed in this work allows for the identification of a very diverse set of economic activities coexisting with tourism as priority sectors in smart specialization strategies, while positively contributing for tourism competitiveness. This suggests that tourism may benefit from different types of externalities and forms of proximity, which justifies the coexistence of diverse strategic options in different regions, according to their own territorial characteristics. A more detailed analysis of the transmission mechanisms of these spillovers and their concrete impact on tourism competitiveness is a matter for further research, requiring other types of information and methodology. One very interesting and detailed study [39] makes an effort to systematize these aspects, by identifying spatial and sectorial correlations when looking at the distribution of labor qualifications and the production of patents, as proxies for technological developments and innovation processes. However, the fact that tourism is not classified as a sector for statistical purposes (comprising different activities and sectors) imposes specific difficulties for this type of analysis for the tourism industry.

2.2. Innovation and Competitiveness

Tourism may be seen as a knowledge-based activity [40] relying on the generation, analysis and reutilization of information, in a permanent process of co-creation of services, experiences and destinations, potentially involving a wide range of stakeholders [6]. These characteristics of tourism activities are dependent on economic, technological and political aspects: the “inner layer” shaping tourism competitiveness [1], which may be distinguished from the “outer layer” (the most stable, related

to natural and geographical characteristics) and the “intermediate layer” (related to socio-cultural features). Being vulnerable to processes of change and transformation, these forces contribute to define the efficiency, effectiveness and ability of the tourism sector to generate economic growth and development, constituting sources of competitive advantage.

The tourism system can be observed as an innovation network, not necessarily limited by the boundaries of the destination and potentially including other stakeholders in the region, taking advantage of geographical proximity and potential interactions [18,41,42]. The concept of a “regional innovation network” [4,5,43] may contribute to the systematization and analysis of the aspects shaping innovation in tourism, within a geographical scope that is larger than the destination itself [8,44].

Assuming the problems and limitations to measure the aspects shaping innovation systems and their relations with tourism activities [45], the analytical model presented in this work considers the regional efforts in innovation (measured according to the investment in Research and Development (R&D) activities) and the qualifications of the labor force (measured by the share of the active population with tertiary education) as the variables broadly defining the innovative environment in each region. Similar territorial levels were considered for the analysis of tourism competitiveness in Italy [46], China [21] or Japan [47].

Following different approaches, formulations, models and/or indicators, competitiveness in tourism has been extensively analyzed over the last few decades [48]. Furthermore, different international institutions proposed comprehensive sets of indicators and guidelines for the assessment of tourism competitiveness [49,50]. However, most of these approaches do not establish a link between explanatory aspects of tourism competitiveness and an output indicator for its measurement [2]. Thus, those studies follow an explanatory rather than a definitional approach to competitiveness. These two perspectives use indicators from the definitional approach (such as the ability to attract visitors) and from the explanation approach (including production and contextual factors) [51]. Supported by this point of view, the model presented in the following section offers a macro-level analysis of the relation between innovation and tourism competitiveness [4,52] including aspects characterizing the regional tourism dynamics (tourism demand, supply and level of specialization) causally linked to a measure of competitiveness (gross value added by the tourism sector, as an indicator of the economic impacts on the region).

Considering the importance of proximity and territorial characteristics for the agglomeration of innovative tourism activities, the concept of “tourism districts” can also be used for the analysis of tourism competitiveness [52]. Other studies [46,53] also follow a regional approach to frame the analysis of tourism competitiveness, taking into account aspects related to innovation dynamics. Focusing on a much larger number of regions (but also considering aspects related to smart specialization), a recent study [3] adopts a methodology and variables comparable with the present work (in particular, the adoption of the gross value added by tourism as a proxy for tourism competitiveness), while a different methodology is used to frame this problem in the context of sustainable regional development [54].

In fact, gross value added by tourism activities emerged relatively early in the literature on these topics when establishing a clear link between competitiveness and sustainability in tourism [1]: in fact, a long term approach to tourism competitiveness implies the creation of economic benefits for the host communities and also the protection of sensitive resources contributing to the attractiveness of the destination and shaping its uniqueness. Thus, this competitiveness should not be achieved by significant increases in tourism demand (with related pressures and damages on the territories), but through the ability to generate a higher value added for the local and regional economies. Assuming this definition of competitiveness and a long-term perspective, value added appears as an adequate measure of tourism competitiveness, even though it does not cover all the dimensions of this aspect [3,41,52].

3. Model, Data and Variables

Focusing on the “inner layer” of the determinants of tourism competitiveness [1], the framework for the econometric model presented in this work includes the impacts of traditional production factors (physical and human capital), contextual variables related to innovation dynamics (such as the intensity of research and development or labor qualifications), tourism dynamics (related to supply and demand) and characteristics of the patterns of specialization within regional economic structures (level of specialization in tourism and strategic priority sectors within Regional Innovation Strategies). The output variable is the regional tourism performance (expressed by the gross value added created by tourism in each region), as a measure of competitiveness [3]. By analyzing a relatively long period (2006–2017), this variable reveals the continuous socio-economic impacts of tourism, with the related benefits for the local population. Figure 1 represents this research plan.

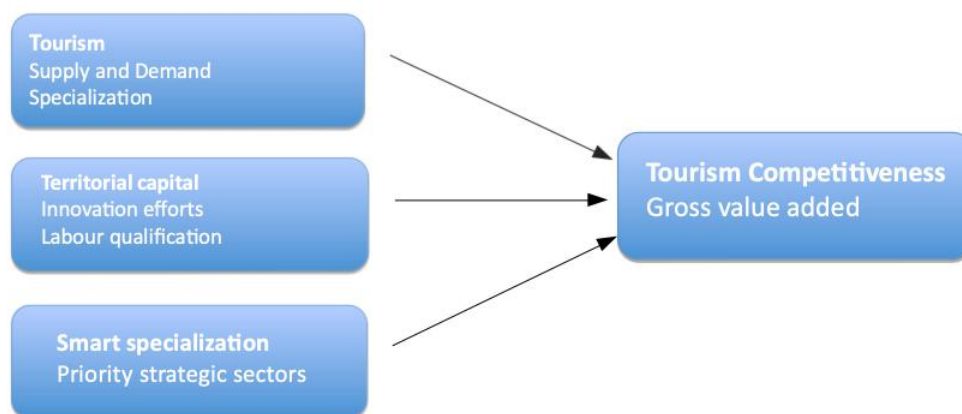


Figure 1. Architecture of the model.

The territorial level of analysis is the NUTS-2 regions, following the classification adopted by Eurostat for European regions. This scale is adequate for the purposes of the current work, as these regions exhibit some territorial coherence (despite the existence of several tourism destinations within each of them), while the existence of comparable data allows for an international analysis. These regions are defined at the European level following the same demographic, socio-economic, geographical and political criteria, implying a certain level of similarity between regions. Moreover, this is the territorial scale commonly assumed within European policy institutional frameworks for the definition of regional development and/or the innovation of strategic plans, along with tourism planning and management processes. This territorial level is also relevant for the observation of innovation dynamics, human resource endowment, inter-sectorial relations, structural transformations and the evolution of regional economic systems, which are difficult to access at the destination level. Thus, policy and managerial implications of the results obtained can be discussed at an appropriate territorial and institutional level.

This study covers a relatively long period of 11 years (2007–2017), including 55 NUTS-2 regions in the European Union. For all the variables except the sectorial priorities for regional innovation strategies, secondary data collected at Eurostat were used. For the strategic priorities, the data were collected at the S3Platform (Joint Research Centre of the European Commission). All the NUTS-2 regions with available statistical information and defining tourism and/or hospitality services as a priority specialization sector were included in the study. Most of them were located in the south of Europe, but regions from Denmark, Germany or Romania were also analysed, contributing to a relatively large and diverse sample. Hovedstaden, Midtjylland and Nordjylland (Denmark); Brandenburg and Niedersachsen (Germany); Burgenland and Tirol (Austria); Centru and Sud-Est (Romania); Anatoliki Makedonia, Kentriki Makedonia, Dytiki Makedonia, Ipeiros, Thessalia, Ionia Nisia, Dytiki Ellada, Sterea Ellada, Peloponnisos, Attiki, Voreio Aigaio, Notio Aigaio and Kriti (Greece); Valle d’Aosta,

Friuli-Venezia Giulia, Emilia-Romagna, Toscana, Lazio, Molise, Campania, Puglia, Calabria, Sicilia, Sardegna (Italy); Galicia, Cantabria, Navarra, La Rioja, Aragón, Castilla-la-Mancha, Extremadura, Cataluña, Valencia, Illes Balears, Andalucía, Murcia and Canarias (Spain); Norte, Algarve, Centro, Lisboa, Alentejo, Açores, Madeira (Portugal); Cyprus; and Malta. These regions are represented in the map presented in Figure 2 (due to problems of space, relatively remote islands from Portugal and Spain—Açores, Madeira and Canary Islands—are not depicted).

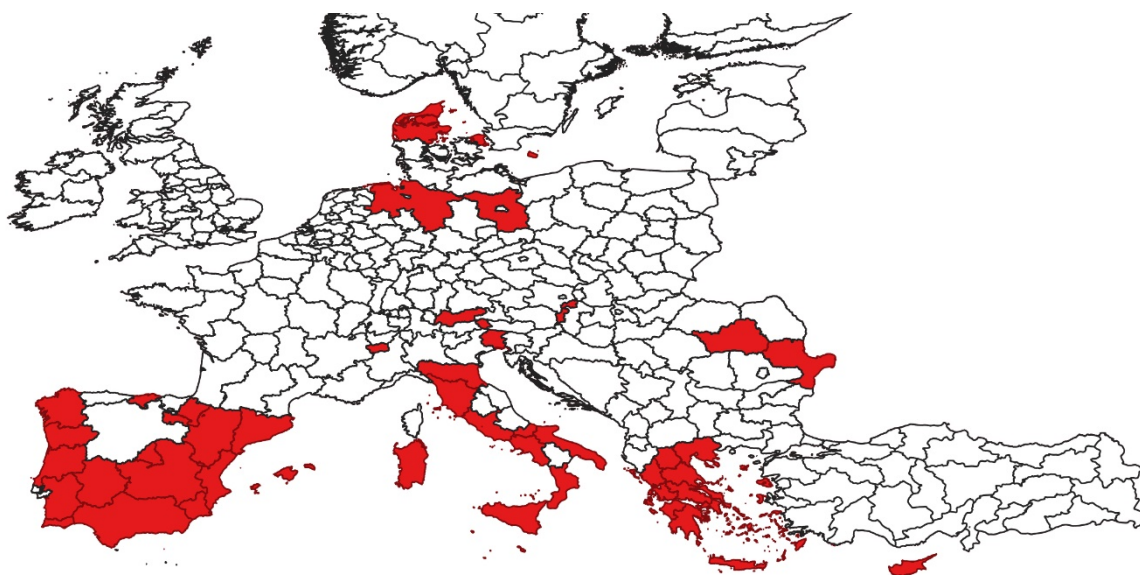


Figure 2. Regions considered in the study.

This work assumes a broad definition of tourism services, as defined by Eurostat, where most of the statistical information has been collected (including wholesale and retail trade; transport; accommodation and food service activities; and ICT services). This definition assumes the relevance of ICT for contemporary tourism dynamics. Being noteworthy that the importance of these services may rely on aspects not strictly related to the tourism sector, it was possible to achieve relevant and interesting results considering the objectives of this work and its policy and managerial implications. The positive correlation identified between the growth value added by this broadly defined tourism sector and tourism demand (measured according to the overnight stays) or tourism supply (measured by the number of beds available in accommodation establishments) reveals the adequacy of this approach.

The dependent variable considered in the panel model to be estimated (“GVAT”) is a proxy for tourism competitiveness, measured according to the regional gross value added by tourism activities per capita (at constant prices and considering purchasing power standards). The gross value added measures the difference between the revenues obtained by tourism activities and the cost of the related inputs, and the utilization of this type of variable as an indicator of tourism competitiveness has been used in previous studies, as noted before. In particular, the analysis presented in a recent work focusing on European regions [3] supports and is expanded by this analysis, through the consideration of a longer period and the inclusion of information about smart specialization strategic options. In fact, the observation of this indicator over a relatively long period allows one to assess several dimensions of tourism competitiveness, including the socio-economic impacts on the regions and the process of growth, while being, at least implicitly, linked to the satisfaction obtained by visitors. Considering constant prices along the period under analysis avoids eventual problems relating to different inflationary problems among regions, while the consideration of the size of the regions (by calculating scores per habitant) allows for a more precise evaluation of the efficiency of regional tourism systems.

For computational purposes, natural logarithms were applied to the variables characterizing regional tourism supply (number of beds available in accommodation establishments, per capita—“BEDS”) and demand (number of overnights registered in accommodation establishments, per capita—“NPC”), as explanatory variables for tourism competitiveness. Explanatory factors relating to immaterial aspects aiming at assessing knowledge production and innovation dynamics in the region were measured taking into account the percentage of the work force with tertiary education (“EDUC”) and the percentage of the regional GDP invested in research and development (“RD”), while the level of specialization in tourism was measured according to the percentage of the sector within regional employment (“EMPT”). Finally, the potential impacts on tourism competitiveness of regional sectorial priority choices within smart specialization strategies were assessed by using dummy variables (Si), with a score of 1 when the sector was a regional priority, and 0 otherwise (this information was collected in the website of the S3P platform, the European Commission office supporting the preparation and implementation of these strategies by regional authorities).

Using the “car” package in R [55], Variance Inflation Factor (VIF) tests for all the variables in the model were performed, leading to scores clearly below the threshold of five [56], thus suggesting the inexistence of problems of multicollinearity. Furthermore, two tests for the normality of the distributions have been performed (Shapiro–Wilk and Pearson), whose *p*-values clearly show this characteristic for all the variables in the model, thus suggesting the inexistence of problems of heteroskedasticity. The list of variables, their code, unit, average score and standard deviation, are presented in Table 1, along with the results for the VIF tests and the *p*-values for the normality tests.

Table 1. Variables, codes and scores for the (Variance Inflation Factor) VIF and normality tests.

Variable	Code	Unit	VIF	S-W	Pearson
Gross value added by tourism per capita (PPS)	GVAT	Ln	[Depend]	6.238×10^{-15}	$5.662e^{-11}$
Beds in accommodation establishments	BEDS	Ln	3.003	$<2.2e^{-16}$	$<2.2e^{-16}$
Share of tourism in employment	EMPT	%	2.948	$2.978e^{-13}$	$<2.2e^{-16}$
Nights in accommodation establishments	NPC	Ln	3.975	$1.488e^{-12}$	$<2.2e^{-16}$
Investment in research and development	RD	%	1.847	$<2.2e^{-16}$	$<2.2e^{-16}$
Workforce with tertiary education	EDUC	%	1.825	$1.516e^{-13}$	$<2.2e^{-16}$
Agriculture and food (42 regions)	S01	Dummy	2.265		
Energy (27 regions)	S02	Dummy	1.817		
Health (35 regions)	S03	Dummy	2.833		
Environmental technologies (19 regions)	S04	Dummy	1.549		
Mobility and transports (13 regions)	S05	Dummy	1.648		
Logistics (5 regions)	S06	Dummy	1.602		
Culture and creativity (32 regions)	S07	Dummy	2.197		
ICT (9 regions)	S08	Dummy	1.378		
Manufacture (19 regions)	S09	Dummy	1.604		
Technologies of the sea (15 regions)	S10	Dummy	1.636		
Biotechnologies (7 regions)	S11	Dummy	1.379		
Housing and construction (6 regions)	S12	Dummy	1.651		
Advanced materials / technologies (12 regions)	S13	Dummy	1.652		

The stationarity of the data was also tested, with the “plm” package in R [57]. Four tests were computed (for trends and individual intercepts), by using the Im-Pesaran-Shin Unit-Root Test [58], with the number of lags limited to 2 or 4, according to the Akaike Information Criteria. The *p*-values obtained were below $2.2e^{-16}$, revealing the stationarity of the data [17]. Furthermore, a Pesaran CD test for cross-sectional dependence [59] was calculated and the *p*-value obtained (0.012) suggests the inexistence of this characteristic. Once panel data models allow for the simultaneous analysis of

temporal and geographical units, they are suitable tools for the purposes of this work and the models were computed by using the “plm” package in R.

As the choice of priority sectors for each smart specialization regional strategy was modeled by using dummy variables, the constant term obtained for each region (depending on the scores for those dummies) was different. Thus, a pooling effects model is suitable for the purposes of this work. However, a different specification was computed, based on a fixed effects model (which accounts for specific time effects possibly affecting all the regions in each period under analysis), which was supported by the result of a Hausmann test (p -value $<2.2 \times 10^{-16}$) [60]. In both cases, the models were estimated based on the Ordinary Least Squares method. The similar results obtained revealed the consistency of both models.

4. Innovation, Smart Specialization and Tourism Competitiveness: A Panel Model

This model is therefore defined as:

$$\begin{aligned} \text{GVATit} = & \beta_0 + \beta_1 \text{BEDSit} + \beta_2 \text{NPCit} + \beta_3 \text{EMPTit} + \beta_4 \text{RDit} + \beta_5 \text{EDUCit} + \\ & \beta_6 \text{SO1it} + \beta_7 \text{SO2it} + \beta_8 \text{SO3it} + \beta_9 \text{SO4it} + \beta_{10} \text{SO5it} + \beta_{11} \text{SO6it} + \beta_{12} \text{SO7it} + \\ & \beta_{13} \text{SO8it} + \beta_{14} \text{SO9it} + \beta_{15} \text{S10it} + \beta_{16} \text{S11it} + \beta_{17} \text{S12it} + \beta_{18} \text{S13it} + \text{uit} \end{aligned} \quad (1)$$

where i is an index for the regions, t is an index for the time period, and u is the error term.

The results presented in Table 2 clearly show the robustness of the estimations, once the parameters estimated in both models are extremely similar: the variables whose impact is statically significant are always the same, while keeping the same sign for the estimated parameters. The measure for the goodness of fit (R-Square) is very high (above 0.8 in both cases). Table 3 shows the (time) fixed effects, revealing from 2009 the negative impact that the international crisis affecting the global economy had on tourism dynamics. This tendency would be reverted in 2012, when the fixed effect increased regarding the previous year, but the tendency has not been clearly stable since then.

Table 2. Estimation of the models.

Variable	Pooling Model				Fixed Effects Model			
	Estim.	Std. Er.	Pr(> t)	Sign.	Estim.	Std. Er.	Pr(> t)	Sign.
BEDS	4567.99	387.44	$<2.2e^{-16}$	***	4938.86	374.94	$<2.2e^{-16}$	***
NPC	553.55	62.47	$<2.2e^{-16}$	***	494.24	60.33	$1.541e^{-15}$	***
EMPT	63.6	9.7	$1.156e^{-10}$	***	68.13	9.29	$7.192e^{-13}$	***
RD	971.03	55.79	$<2.2e^{-16}$	***	986.63	53.38	$<2.2e^{-16}$	***
EDUC	14.69	5.33	0.00604	**	19.9	5.21	0.00015	***
S01	−1085.86	109.96	$<2.2e^{-16}$	***	−987.96	133.51	$4.609e^{-13}$	***
S02	621.58	124.57	$7.885e^{-07}$	***	654.27	122.9	$1.440e^{-07}$	***
S03	300.2	124.3	0.01602	*	353.98	130.3	0.00679	**
S04	−440.43	130.98	0.00082	***	−414.94	129.84	0.00147	**
S05	464.29	161.27	0.00413	**	447.41	154.28	0.00387	**
S08	712.02	170.5	$3.397e^{-05}$	***	767.02	164.23	$3.711e^{-06}$	***
S09	275.42	129.26	0.0335	*	353.78	134.97	0.009	**
S10	293.17	140.2	0.03694	*	347.78	137.6	0.01174	*
S11	684.63	197.9	0.00058	***	730.17	190.91	0.00014	***
S13	−308.93	162.49	0.00577	.	−277.54	155.22	0.07428	.
Intercept	−3560.05	425.01	$3.744e^{-16}$	***				
R-Squared	0.80026				0.81819			

Signif. codes: 0 *** 0.001 ** 0.01 * 0.05.

Table 3. Fixed (time) effects.

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
−2782.2	−2790.7	−3311.7	−3481.1	−3621.1	−3568.6	−3661.6	−3622.0	−3537.0	−3560.1	−3502.2

All the variables taken into account to characterize regional tourism dynamics and innovation dynamics exert a positive impact on tourism competitiveness. Aspects related to supply (number of beds available), demand (number of nights spent in accommodation establishments) and tourism specialization (share of the regional labor force working in the tourism sector) have a positive impact on tourism competitiveness in these regions. Moreover, the aspects related to innovation dynamics taken into account were also found to be positively correlated with regional tourism competitiveness. Both education (qualification of the regional labor force) and efforts on innovation (regional investment in research and development) have a positive correlation with the creation of value added by the tourism sector in the regions under analysis.

The innovative analysis of the relation between smart specialization priority sectors performed in this work offers some relevant insights which are difficult (or impossible) to compare with previous studies. A first main observation is that a very large number of priority sectors may exert a positive impact on tourism competitiveness. In fact, only three sectors (logistics, chosen in 5 regions; culture and creativity, defined as a priority in 32 regions; and housing and construction, prioritized by 6 regions) had no statistical relation with the gross value added generated by the tourism sector. These results suggest—at least for the activities related to the cultural and creative sectors—that new approaches to their integration into regional tourism supply may be needed. A similar observation can be made when looking at agriculture and food production (with clear links with tourism supply and defined as priority by 42 regions) and at environmental technologies (chosen by 19 regions), which have a negative correlation with the competitiveness of the tourism sector.

Positive impacts on tourism competitiveness were mostly observed from priority sectors with some proximity and potentially high interconnections with tourism activity (including ICT or mobility and transports). However, positive correlation was also found with sectors with some cognitive distance, but potentially establishing different forms of connectivity (health services, energy production, or mobility and transports). Finally, sectors relatively unrelated to tourism dynamics (like manufacture, biotechnologies or advanced materials) also appear as positively correlated with tourism competitiveness, suggesting the importance of the spatial concentration of knowledge for the creation of positive spinoffs and externalities, while revealing the importance of the geographical, cultural and institutional context, even when knowledge proximity is limited.

5. Conclusions

This work offers a “macro-level” analysis of innovation in tourism [4,5], focusing on interactions between economic, political and technological aspects—the “inner-layer” determinants of tourism competitiveness [1]. The econometric model presented combines elements from an explanatory approach [2] with a definitional approach [51]. The territorial unit of analysis allows for the assessment of the role of regional innovation systems and specialization patterns on tourism competitiveness, taking into account both material and immaterial aspects. This work constitutes a first attempt to evaluate the impacts of sectorial choices within smart specialization strategies in European regions on the performance of the tourism sector.

The results of the model presented confirm the expected positive impact of the size of tourism demand and supply on the value added generated by the tourism sector. Similar results had been obtained in different studies, and in particular, in a recent analysis focusing on a broader set of European regions (237) with the same territorial level but including territories where tourism plays an important socio-economic role and also others where this does not happen [51]. Similarly, the immaterial aspects defining the role of knowledge and innovation capabilities in the regional economic systems are both positively correlated with tourism competitiveness, confirming the importance of technological incorporation for the development of innovative products and services. Similar results had been obtained in previous studies [20,21], focusing on different aspects and adopting different methodologies.

However, the results of the model presented in the current analysis reveal an important difference when compared with others recently obtained for European regions [3,54]. Those studies showed that

a high specialization of the regional labor force in tourism was negatively correlated with the creation of value added by the tourism sector. This suggests that regions where tourism dynamics are based on labor intensive services for large scale markets (predominantly located in South Europe, as also noted) generate proportionally lower levels of value added. In the case of the current study, the analysis is exclusively focused on regions where tourism is a priority for regional specialization (with a very large dominance of South European regions) and the results reveal a positive correlation between relatively high levels of employment and value added by tourism activities. These different results suggest that regions where tourism plays an important role within specialization patterns tend to reveal a similar performance (by linking employment and value added in similar proportions), while regions where tourism is less important within regional economic structures tend to achieve better results (higher levels for the value added, not implying a labor intensive supply). Implicitly, this reveals higher levels of productivity and lower negative impacts on the territories, as identified before [19].

The most innovative and relevant results of the current work relate to the analysis of the impact of different sectorial priority choices for smart specialization in European regions. In a general sense, the broad set of priority sectors with positive correlation with the performance and competitiveness of the tourism sector suggests that tourism can have a central role within regional innovation strategies [13,34]. This can be achieved by exploring interactions and processes of interconnectivity with activities with both high proximity (related variety) and low proximity (unrelated variety) [29,30,38]. The results show that tourism may benefit from the knowledge externalities created by a wide number of other activities, taking advantage of the geographical, cultural and institutional proximities, even when not sharing the same technological, organizational or commercial knowledge [27].

In particular, this analysis identifies positive correlations between regional tourism competitiveness and the choice of priority sectors with some proximity to tourism activities, which can emerge from interactions related to commercial opportunities arising from the existence of a dynamic tourism market. According to different analyses [28,31,35], this may happen with the sectors related to energy production, health services, mobility and transport, logistics, culture and creativity or ICT, which can be seen as relatively related to tourism.

On the other hand, relatively unrelated activities, like manufacturing, technologies of the sea and biotechnologies also reveal a positive correlation with tourism performance, suggesting that positive knowledge externalities may emerge despite the cognitive distances, taking advantage of geographical, cultural and institutional proximity, facilitating the diffusion of ideas and innovations [36,37].

Finally, it should be mentioned that the negative correlation observed for the relationship between agriculture and food production and tourism competitiveness suggests that additional efforts are required in order to reinforce the interconnectivity potentially existing between these activities. In general terms, these results also reveal the benefits of a balanced and diversified regional economic structure, where close links between tourism and other activities may contribute to an effective integration of knowledge into innovation processes, as proposed by the smart specialization approach [14,24].

Assuming the difficulties to obtain comparable indicators to assess the impacts of innovation dynamics on the tourism sector [9,41], further developments of the current analyses may focus on localized case studies aiming at identifying place-specific opportunities and constraints. It is also noteworthy that strategic priorities within smart specialization strategies were analyzed in this work based on the intentions expressed by regional authorities in their planning processes. An economic analysis of the impacts of these choices may also shed new light on this issue when information about the results of the overall regional innovation strategies (2014–2020) is available.

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