Clustering residents' perceptions of tourism sustainability in rural areas in Spain

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Abstract

Revitalizing rural areas has become a strategic priority for many countries, with tourism increasingly recognized as a key driver of sustainable development. This study explores residents' perceptions of tourism sustainability in rural communities, acknowledging their role as central stakeholders in shaping tourism outcomes. Drawing on the framework proposed by Rasoolimanesh et al. (2025), the research examines five dimensions of sustainability (economic, socio-cultural, environmental, political, and technological) and identifies distinct resident clusters based on their evaluations of these dimensions. The study also considers residents' sociodemographic profiles (according to education level, income, gender and age) which help explain variations in sustainability perceptions and cluster membership. The findings reveal significant differences in perception across clusters, with the political dimension consistently rated most critically and the technological dimension viewed most positively. These results suggest that while residents recognize tourism's potential to improve livelihoods and community well-being, concerns about governance and institutional trust remain prevalent.

Keywords

Rural tourism, sustainability, resident, tourism governance, cluster analysis

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Introduction

Revitalizing rural areas is a critical issue for many developed and developing countries nowadays. Under these circumstances, tourism can play a crucial role in these areas by

facilitating new businesses and activities, increasing the job opportunities for local people, and protecting natural and socio-cultural environments (Demirović et al., 2020). According to Jia et al. (2023), these positive impacts (benefits) of tourism contribute to the successful development of host communities and, consequently, to the achievement of Sustainable Development Goals. However, if tourism growth is not adequately managed, it can have negative socio-economic and environmental impacts (costs) in host communities (Rasoolimanesh et al., 2025).

Adopting a perspective focused on the local people (or residents) in host communities, which are conceived as one of the most relevant stakeholders in tourism (Yayla et al., 2023; Pramanik & Rahman, 2024), it can be established that tourism success is strongly influenced by the residents´ perceptions of the tourism impacts in their communities (Sharpley, 2014). In particular, if the benefits or positive impacts of tourism are perceived by residents to be higher than the costs or negative impacts, then they will perceive the tourism as a sustainable activity and, consequently, they will be more willing to project a positive image of their communities among potential visitors, to interact harmoniously with tourists and to support for tourism development in their local communities (San Martín et al., 2018).

With this in mind, the objective of this paper is to examine the tourism sustainability, as perceived by residents, in rural areas. Based on the theoretical framework proposed by Rasoolimanesh et al. (2025), our empirical study considers five dimensions of tourism sustainability: economic, socio-cultural, environmental, political and technology sustainability. Subsequently, it aims to identify different groups or clusters of residents depending on their perceptions of these dimensions of tourism sustainability.

Literature review

Tourism sustainability dimensions

Previous studies have identified three main types of tourism impacts, both positive and negative, to be perceived by the local people in host communities: economic, socio-cultural, and environmental impacts (Dyer et al., 2007; Vargas-Sánchez et al., 2015; Kim et al., 2021). In this sense, residents perceive economic benefits/costs (for example, creation of local businesses versus rise of the prices of goods and services), socio-cultural impacts (for example, improvement of cultural facilities versus damage of the cultural heritage), and environmental effects (for example, preservation of natural resources versus increase of pollution levels) derived from the tourism development in their local communities.

Recently, Rasoolimanesh et al. (2025) develop a specific scale to measure the residents´ perceptions of tourism sustainability in urban destinations. Aligned with the Sustainable Development Goals, the scale includes not only the economic, socio-cultural and environmental dimensions of tourism sustainability, but also other two interconnected dimensions: political and technology sustainability. Political sustainability is related to the ability of governments to promote, for example, community participation, stakeholder collaboration or good regulations (Choi & Sirakaya, 2006). For its part, technology sustainability is linked to the use of tourist platforms, technological applications and advanced management systems in host communities (Ivars-Baidal et al., 2023).

Residents´ perceptions of tourism sustainability

Tourism has emerged as a strategic sector for enhancing and diversifying the economic base of rural communities, offering a wide range of activities such as nature exploration,

farming experiences, adventure sports, wellness, educational programs, artistic endeavors and cultural heritage (Lopes et al., 2019). Residents play a key role in the success of tourism destinations, and their involvement is crucial for fostering sustainability (Cadima et al., 2023). Several scholars have emphasized the importance of considering residents as key stakeholders in tourism planning and development (Draçi & Demi, 2023), recognizing the local community as one of the most influential factors in shaping tourism outcomes. Therefore, understanding residents' perceptions of tourism impacts is important, but it is even more critical to explore how negative consequences can be mitigated (Sinclair-Maragh et al., 2015). Therefore, segmenting residents based on their perceptions and analyzing each group separately can provide valuable insights for policymakers and tourism developers. This approach helps clarify how different perception factors interact and influence each other (Gursoy et al., 2009). Moreover, past research has shown that residents' sociodemographic profiles, including education level, income, gender and degree of empowerment or tourism-related knowledge, significantly shape their perceptions of tourism impacts (Andriotis & Vaughan, 2003; Caro-Carretero & Monroy-Rodríguez, 2025; Gursoy et al., 2019). These variables can influence both the intensity and direction of residents' support for tourism development. In light of this, the present study seeks to answer the following research question:

Are there significant differences in residents' perceptions of tourism sustainability in rural areas in Spain based on the sustainability dimensions they prioritize and their sociodemographic profiles?

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Methodology

This research adopts an empirical approach, using cluster analysis to categorize residents in rural areas based on their perceptions about the sustainability of tourism in their communities. The study was based on a survey to people over 18 years old, living in rural areas (municipalities with less than 30,000 inhabitants) in Spain. This country was selected for the research because of its relevance as a tourist destination (UNWTO, 2025) and its leadership in the development of rural tourism (Campon-Cerro et al., 2017). An online survey was designed with a structured questionnaire that included questions about the sustainability of tourism, the socio-demographic characteristics of the respondents and their support for tourism in host communities.

Residents' perceptions about the sustainability of tourism in rural areas were measured taking as reference the scales developed by Rasoolimanesh et al. (2025). These authors include five dimensions of sustainability: economic, social, environmental, political and technology sustainability. The measurement of the support for tourism was based on the scales proposed by Nunkoo and So (2015) and Schlesinger et al. (2023). All items were rated on a 7-point Likert scale, ranging from "strongly disagree" to "strongly agree". Data collection was conducted with the support of a specialized company, which invited participants with the target profile (over aged 18 and older and living in municipalities with less than 30,000 inhabitants) from an online panel. A non-probability sampling method was used, establishing quotas to ensure the representativeness of the sample in terms of age, gender and province of residence of the Spanish population. A total of 2,001 valid responses were obtained. The demographic characteristics of the sample are summarized in Table 1.

INSERT HERE TABLE 1. Socio-demographic characteristics of the sample

Results

A two-stage clustering process was applied, combining hierarchical and non-hierarchical methods. Hierarchical clustering was first used to determine the optimal number of clusters, following the stopping rule suggested by Hair et al. (2010). The identified clusters were then refined using non-hierarchical clustering techniques to ensure accurate group assignment. To explore significant differences among clusters, statistical analyses such as ANOVA and cross-tabulations were conducted. Once the psychometric properties of the scale were tested using Confirmatory Factor Analysis with EQS software, the scale for tourism sustainability (5 dimensions, 22 items) was used to conduct the K-means cluster analysis, which identified three distinct groups based on residents' perceptions of tourism impacts (Table 2). ANOVA results revealed statistically significant differences among the three clusters for all items, indicating heterogeneous perceptions of tourism sustainability among residents.

INSERT HERE TABLE 2. Results of cluster analysis

Cluster 1 (n = 857, 42.8%) shows a moderate assessment of all the dimensions of sustainability while Cluster 2 (n = 551, 27.5% %) has a very critical perception, reporting strong concerns about the impact of tourism in rural areas and Cluster 3 (n = 593, 29.6%) has a most optimistic view. The results of Chi-square tests (Table 3) reveal a statistically significant association between cluster membership and gender, age, education and occupation (p-value < 0.05 in all cases). Finally, ANOVA test confirm the consistency of the cluster analysis, as the support for tourism is significantly lower in the case of Cluster 2 ("Negative") and significantly higher for Cluster 3 ("Positive").

INSERT HERE TABLE 4. Cluster characterization: socio-demographic profile

Discussion and conclusions

Having knowledge of the specific clusters of residents and the demographic profile of each cluster is extremely useful for future tourism planning. In this research, clustering analysis reveals three distinct resident profiles based on their perceptions of tourism sustainability in rural areas in Spain, each characterized by socio-demographic traits and differentiated evaluations of the economic, sociocultural, environmental, political and technology dimensions of sustainability.

As far as the cluster 1 "Moderate" (42.8%) is concerned, residents in this group express a balanced view of tourism sustainability. Economically, they recognize tourism as a driver of local development, particularly in terms of job creation and investment attraction. However, they are less convinced about its fiscal contributions, suggesting some skepticism regarding the broader economic redistribution of tourism revenues. In the socio-cultural dimension, these residents appreciate tourism's role in promoting cultural exchange and mutual understanding, yet they remain doubtful about its effectiveness in preserving local traditions and cultural heritage. This reflects a complex perspective since they appreciate intercultural engagement but remain cautious about the potential erosion of their cultural identity, a tension that has been identified in previous research (Tang & Xu, 2023). Environmentally, this cluster shows moderate optimism. They perceive tourism as somewhat harmonious with the natural surroundings, but express reservations about its ability to foster environmental awareness among locals or to serve as a strong incentive for conservation. This demographic group, primarily middle-aged adults (35–54 years), with balanced gender representation and high employment levels, tends to adopt a pragmatic outlook. Their views are shaped by direct

involvement in the local economy and personal experience with both the advantages and drawbacks of tourism, supporting previous studies (e.g., Caro-Carretero & Monroy-Rodríguez, 2025).

Regarding Cluster 2 “Negative” (27.5%), this group holds a critical view of tourism’s sustainability across all dimensions. Economically, they are highly skeptical, perceiving minimal benefits in terms of development, investment or fiscal gains. Their sociocultural outlook is equally pessimistic, with strong concerns about the erosion of local traditions and limited belief in tourism’s capacity to foster meaningful cultural exchange. Environmental perceptions are also notably negative. Residents in this cluster doubt tourism’s compatibility with nature and question its role in promoting conservation or environmental ethics. Their responses suggest a deep-seated concern about tourism’s disruptive impact on rural ecosystems and community values. Socio-demographically, this cluster includes a higher proportion of men, older adults (55+) and individuals with higher education levels. Their critical stance may stem from long-term observation of tourism’s evolution and its perceived failure to deliver sustainable outcomes. Their educational background may also contribute to a more analytical and cautious assessment of tourism’s promises versus its realities (Andriotis & Vaughan, 2003).

Cluster 3 “Positive” (29.6%) exhibits the most optimistic view of tourism’s sustainability. They strongly endorse its economic benefits, highlighting its role in boosting development, attracting investment and improving employment opportunities. From a sociocultural point of view, they believe tourism enhances cultural appreciation and facilitates meaningful exchange, although they are less confident about its role in safeguarding traditional practices. In the environmental domain, this group perceives tourism as a positive force for conservation and environmental awareness. They view tourism as compatible with nature and capable of promoting sustainable behaviors among the local population. This cluster is predominantly composed of women, younger and middle-aged individuals, many of whom are not currently employed and possess lower levels of formal education. Their optimism may reflect aspirational expectations and a belief in tourism’s potential to improve livelihoods and community well-being, even if they are not yet fully integrated into the sector. As Jackson (2025) notes, tourism often inspires hope among marginalized groups by presenting tourism as a pathway to economic empowerment and improved quality of life.

Across all three clusters, the political dimension emerges as the most critically evaluated. Regardless of whether residents hold moderate, negative or positive views, there is a shared perception that local governance structures lack the capacity to effectively manage tourism impacts. This includes skepticism about the government’s ability to offer meaningful employment, control negative consequences and foster genuine community participation in tourism planning. Such concern suggests a systemic gap in institutional trust and highlights the need for more transparent governance mechanisms in rural tourism development. This aligns with Bramwell and Lane (2011), who argument that effective tourism governance requires inclusive and structures, especially when aiming to achieve sustainability goals. In contrast, the technological dimension receives consistently higher ratings across all clusters. Residents acknowledge the beneficial role of digital tools, such as mobile applications, social media and e-governance platforms, in enhancing tourism accessibility, improving communication and contributing to local quality of life. Even among those with critical views of tourism, technology is seen as a relatively positive force. This indicates that technological innovation is perceived as a valuable asset in rural tourism, capable of bridging gaps in service delivery and

community engagement. As shown by Liu et al. (2024), information and communication technologies significantly enhance the resilience of rural tourism by mitigating operational challenges and improving stakeholder coordination

Managerial implications

Tourism planners must develop strategies that promote sustainable tourism by reinforcing its most positively perceived aspects, particularly technological innovation and economic development, through investment in digital infrastructure, smart tools and inclusive employment initiatives targeting women and younger residents (Clusters 1 and 3). At the same time, they should address the most critical concerns, especially those related to governance, cultural preservation and environmental impact, by fostering transparent decision-making, participatory planning and conservation efforts (Cluster 2). It is conserved that tailored approaches are essential. In this sense, neutral residents (Cluster 1) respond well to messages of economic stability and gradual progress, while more critical residents (Cluster 2), often older and highly educated, require direct engagement through inclusive dialogue and cultural safeguards. Positive residents (Cluster 3), typically composed of women and non-employed individuals, should be empowered through training and entrepreneurship opportunities. Finally, continuous feedback mechanisms must be established to monitor evolving perceptions and ensure tourism development remains responsive to community values and expectations.

Acknowledgements

This work is part of the Research Project "PID2022-140160NB-I00 Responsabilidad Social de los Destinos Turísticos: Adopción de un Enfoque Ecosistémico Basado en el Paradigma Actual de Destinos Inteligentes", funded by MICIU/AEI /10.13039/501100011033 and FEDER, European Union (EU), and the Research Project "TED2021-131314B-I00 Sostenibilidad Corporativa y Turismo Inteligente en Comunidades Rurales: Influencia en el Desarrollo Económico y Social del Territorio", funded por MICIU/AEI /10.13039/501100011033 y por la Unión Europea NextGenerationEU/ PRTR. .

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Annexes

Table 1. Socio-Demographic Characteristics of the Sample

Variable	**%**	**Variable**	**%**
Gender		Education	
Male	48.7	No studies / Primary education	3.2
Female	51.3	Secondary education	54.6
Not binary	0.0	Higher education	42.2
Age		Occupation	
18 to 34 years	23.2	Employed	56.6
35 to 54 years	39.6	Retired / Unemployed / Pensioner	32.3
55 to 74 years	30.1	Student	6.3
75 or more years	7.1	Housework	4.8

Table 2. CFA and psychometric properties of the scales

Dimensions of sustainability	Cronbach's alpha	Goodness of fit indices
Economic	0.952	BBNFI = 0.96

Social	0.907	BBNNFI = 0.96
Environmental	0.936	CFI = 0.97
Political	0.905	IFI = 0.97
Technology	0.878	RMSEA = 0.05

Table 3. Results of cluster analysis

	Final cluster centers			ANOVA	
	Cluster 1 (N = 857)	Cluster 2 (N = 551)	Cluster 3 (N = 593)	F	Sig.
Tourism brings economic development to my municipality	4.64	2.46	6.12	1198.11	0.00
Tourism attracts more investment to my municipality	4.56	2.40	6.02	1148.76	0.00
Tourism generates significant tax revenue for my municipality	4.33	2.33	5.91	1004.69	0.00
Tourism improves employment opportunities in my municipality	4.55	2.39	6.02	1111.36	0.00
The local and traditional culture are preserved in my municipality thanks to tourism	3.48	1.69	5.27	1110.51	0.00
Tourism values and protects the diversity of heritage in my municipality	4.22	2.28	5.80	1235.45	0.00
Tourism in my municipality promotes better understanding between cultures	4.16	2.31	5.83	1252.94	0.00
Tourism development in my municipality promotes cultural exchange	4.25	2.38	5.89	1143.33	0.00
Tourism in my municipality is more respectful towards the environment than other economic activities.	3.93	2.30	5.42	855.75	0.00
Tourism development in my municipality provides an incentive for the conservation of natural resources	4.05	2.05	5.69	1381.16	0.00
Tourism in my municipality raises environmental awareness among residents	3.64	1.92	5.44	1289.62	0.00
Tourism development in my municipality promotes positive environmental ethics	3.87	2.13	5.56	1270.63	0.00
Tourism in my municipality is developed in harmony with the natural environment	4.21	2.48	5.75	954.61	0.00
Government of my municipality provides training opportunities to local people	3.12	1.67	4.72	789.95	0.00

Government of my municipality provides employment opportunities to local people	3.27	1.83	4.93	792.38	0.00
Government of my municipality is able to control adverse impacts of tourism	3.25	1.99	4.77	589.05	0.00
Government of my municipality encourages local residents to participate in the tourism industry	3.51	2.05	5.04	672.78	0.00
Social media plays an important role in communicating the tourism in my municipality	4.35	3.00	5.71	517.43	0.00
Media influence my support for tourism events in my municipality	3.84	2.30	5.39	707.34	0.00
Government of my municipality provides the e-governance mode to deliver different services to the residents	4.07	3.25	5.33	278.76	0.00
Technology applications promotes sustainable tourism in my municipality	3.76	2.36	5.45	851.59	0.00
Technology applications promotes an enhanced quality of life for residents in my municipality	3.99	2.99	5.44	449.97	0.00

Table 4. Cluster characterization: socio-demographic profile

	Cluster 1 (N = 857)	Cluster 2 (N = 551)	Cluster 3 (N = 593)	Total sample
Gender (Chi-square = 3.29; p-value = 0.19 n.s.)				
Man	50.5%	51.2%	43.8%	48.7%
Woman	49.5%	48.8%	56.2%	51.3%
Age (Chi-square = 23.81; p-value = 0,00**)				
18 to 34 years	25.4%	18.0%	25.0%	23.2%
35 to 54 years	42.2%	37.4%	37.8%	39.6%
55 to 74 years	27.4%	34.8%	29.7%	30.1%
75 or more years	4.9%	9.8%	7.6%	7.1%
Education (Chi-square = 8.00; p-value = 0.09*)				
No studies / Primary educ	2.1%	2.5%	5.6%	3.2%
Secondary education	53.0%	50.3%	61.0%	54.6%
Higher education	44.9%	47.2%	33.4%	42.1%

Occupation (Chi-square = 22.53; p-value = 0.00**)				
Employed	62.5%	56.8%	47.9%	56.6%
Retired / Unempl / Pensioner	27.2%	34.1%	37.9%	32.3%
Student	6.3%	4.5%	7.9%	6.3%
Housework	4.0%	4.5%	6.2%	4.8%

** Significant at 95% confidence level; * Significant at 90% confidence level

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