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Determining dimensions of tourist accommodation for the segmentation of the impact of regional tourism in Spain

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Abstract: The significant growth of the tourism sector in the last decade has led to the appearance of new types of accommodation. The objective herein is to determine the dimensions that characterise the Spanish tourist accommodation sector, and to analyse its impact on a regional scale. The methodology used applies Multivariate Analysis techniques. Five determining dimensions of the tourist accommodation sector are identified, with special emphasis on aspects related to the labour market, to the supply and demand of the sector and to efficiency. A positive, albeit uneven, impact on regional economies is evident, with location and the preferred type of tourism as determining factors for success. "Sun and sand" holiday tourism, predominant in the Mediterranean regions and the Spanish archipelagos, favours traditional accommodation such as hotels and tourist flats, while other types of tourism opt for alternative forms of accommodation, such as campsites and hostels.

Keywords: Tourist accommodation; Multivariate analysis; Determinant dimensions; Tourism impact.

Dimensiones determinantes de los alojamientos turísticos para segmentar el impacto turístico regional en España

Resumen: El importante crecimiento del sector turístico en la última década, ha provocado la aparición de nuevos tipos de alojamientos. Por ello, se plantea el objetivo de determinar las dimensiones que caracterizan al sector del alojamiento turístico español, analizando su impacto a escala regional. La metodología utilizada aplica técnicas de Análisis Multivariante. Se identifican cinco dimensiones determinantes del alojamiento turístico, destacando especialmente en aspectos relacionados con el mercado laboral, con la oferta y demanda del sector y con la eficacia turística. Se evidencia un impacto positivo, aunque desigual, en las economías regionales, siendo la localización y la modalidad turística preferida condicionantes del éxito. El turismo vacacional de "sol y playa", predominante en las regiones mediterráneas y los archipiélagos españoles, prefiere alojamientos tradicionales como los hoteles o los apartamentos turísticos, mientras que otras modalidades turísticas se decantan por formas alternativas de alojamiento, como el camping o el albergue.

Palabras clave: Alojamientos turísticos; Análisis multivariante; Dimensiones determinantes; Impacto turístico.

1. Introduction

Tourist accommodation can be defined as establishments that offer their facilities and services to individuals and groups (Akyeampong, 2007). Another definition indicates that tourist accommodation is any facility that provides a place of reference for people who are temporarily away from their usual place of work or residence (Mensah and Dei-Mensah, 2013). The facilities available in tourist accommodation can be diverse and can be classified as either serviced, or non-serviced and self-catering (Bhatia, 2006; Akyeampong, 2007; Middleton et al., 2009). Serviced tourist accommodation has facilities that provide

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beds for their guests (bed-making, general cleaning, meals, etc.) (Bhatia, 2006; Akyeampong, 2007): hotels are included in this category. In non-serviced and self-catering accommodation, guests are responsible for preparing their own meals, although the host may provide some form of recreational services. Examples include holiday flats, campsites, and hostels. The rise of alternative forms of tourism (e.g., volunteering, backpacking) has increased the search for alternative accommodation that meets the needs of tourists (Otoo and Amuquandoh, 2014; Dayour, 2013).

The World Tourism Organization reports that, in 2018, the tourism sector had more than 1,300 million tourists, generated 15% of global employment, and received a revenue of more than 1,300 billion dollars (UNWTO, 2018). This places the tourism industry as one of the most prominent industries worldwide, ranking fourth after the oil, chemical, and automotive industries (Dos Santos et al., 2017). According to Pijs et al. (2017) a definition of hospitality is that which hosts offer to their guests, encompassing both the guest's experience with the physical place (accommodation and facilities) and with the employees. Hence, for the tourism industry and in particular for the accommodation distributor, providing the tourist with a satisfactory stay is a key factor (Kandampully et al., 2018). Another important aspect for the tourism industry is the image projected by the accommodation, since it is a crucial element for the industry's success and plays a fundamental role in the tourist's choice (Moreno-Gil et al., 2012; Chen and Hsu, 2000), and an especially decisive role in the case of hotels (Dubé and Renaghan, 2000). In turn, the image expresses the quality of the tourism market and helps to reduce the risk of tourist choice (Mangan and Collins, 2002). Tourist accommodation is an indispensable element in the development and promotion of tourism in tourist destinations. The range, variety, and quality of accommodation available at a given destination can reflect the level of tourism development of the destination and can also act as a determinant of tourist choice. Therefore, the characteristics and peculiarities of the accommodation largely determine the success of the industry and the success of tourist destinations (Sharpley, 2000). Despite the importance of the accommodation sector in the tourism industry, research has hitherto mainly focused on the study of the hotel sector (see, for example, Sellers-Rubio and Casado-Díaz, 2018; Cordero and Tzeremes, 2017; Arbeló et al., 2017; Ben Aissa and Goaied, 2016; De Jorge and Suárez, 2014), and has largely neglected the remaining modalities of tourist accommodation. In particular, in the case of Spain (the country on which the research focuses), a large number of tourists use private accommodation, such as second homes, and family or friends' houses (Nicolau and Más, 2006). More specifically, the supply of tourist accommodation in Spain shows that the hotel is the most offered type of accommodation, accounting for almost 67% of the total supply, followed by tourist apartments with just over 29% of the supply, while the other types of accommodation (campsites and hostels) are far behind the most offer types of accommodation (INE, 2022). With respect to tourism demand by type of accommodation, the most popular type of accommodation among travelers visiting Spain is the hotel, with almost 79% of the demand, with the number of travelers using other types of accommodation being much lower than the majority (INE, 2022). As for the duration of the tourist stay, tourist apartments and campsites are the ones with the highest number of days of stay. Specifically, in the last 5 years, the average length of stay in tourist apartments is 5.7 days, in campsites 4.8 days, in hotels 3 days and in hostels 2.5 days (INE, 2022).

In Spain, tourist destinations can be classified into one or two types according to the accommodation on offer: holiday destinations and residential destinations (Perles-Ribes et al., 2016). In residential destinations, second homes are used both for tourist flat rentals and for personal use (Mazón, 2006). Moreover, changes in consumer behaviour in the tourism sector, together with the emergence of new types of accommodation, such as shared accommodation (Airbnb), may influence the consumption of tourist accommodation (Fang et al., 2016; Ert et al., 2016; Tussyadiah and Pesonen, 2015).

The health crisis caused by COVID-19 has strongly affected the tourism sector, leading to significant declines in tourism demand, and negatively impacting economic and social levels (Chinazzi et al., 2020; Higgins-Desbiolles, 2020; Nepal, 2020; Nguyen and Coca-Stefaniak, 2020). As a result, international tourism demand has fallen by 74%, leading to heavy losses in export earnings of US$1.3 trillion, declines in global GDP of US$2 trillion, and losses of 120 million direct jobs (UNWTO, 2021). The impact has been particularly significant in those countries where the tourism sector was most active, such as Spain (Sánchez-Cañizares et al., 2021), a world leader in tourism, where the sector contributes 11.8% of GDP and 52% of services exports (OECD, 2020). However, the effect of the COVID-19 pandemic on the accommodation sector has not been uniform. For tourists, safety is paramount, but travellers have become more reluctant to stay in hotels (Richards and Morrill, 2021; Gursoy and Chi, 2020), and hence alternative accommodation has benefited compared to the more traditional types of accommodation (Gössling et al., 2020; Cohen, 2020; ćengel et al., 2020; Ma et al., 2020).

As we have indicated above, most studies on tourist hospitality focus on the analysis of the hotel sector (Patterson et al., 2017; Caber and Albayrak, 2014; Hartman and Qu, 2007), with few studies analyzing the tourist accommodation sector in its different modalities. Therefore, the main motivation of the study is to contribute to the existing literature by developing this line of research, thereby extending existing research, by simultaneously considering the four types of tourist accommodation with the highest demand in Spain (hotel, tourist apartments, campsites and hostels). Therefore, the objective of the study is to identify and examine the relationship between the determinants of the different types of tourist accommodations from a territorial perspective, which will make it possible to discriminate the impact of the location of tourist destinations according to different types of accommodation. The proposed characterization will favor the tourism sector both in decision-making and in the adoption of tourism strategies, thus helping to propose possible changes in the country's lodging models.

This document is structured as follows. Section 2 develops the theoretical framework of the study and sets out the research hypotheses. Section 3 presents the analysis methodology and data sources. The results are explained in Section 4. Finally, Section 5 presents the discussion and conclusions of the study.

2. Theoretical framework

The tourism sector is largely linked to disposable income, and therefore periods of economic crisis exert a strong impact on the tourism sector since tourism demand is strongly affected (Campos-Soria et al., 2015). However, many households have used their savings to continue travelling despite undergoing periods of recession (European Commission, 2010). To reduce tourism expenditure, tourists primarily shorten the length of stay and reduce spending on accommodation (OECD, 2014; European Commission, 2010): measures that negatively impact the tourism industry, especially hotel accommodation (Pappas, 2015; Martin and Isozaki, 2013). Tourists opt for cheap hotels (Bronner and de Hoog, 2014) and for budget accommodation alternatives, such as holiday flats or other more affordable options (Bronner and de Hoog, 2012). This leads to lower tourism revenues, as the accommodation sector accounts for a large share of total tourism expenditure (Masiero et al., 2015; Wang and Ritchie, 2012; Capó et al., 2007).

An important factor in the tourist's choice of accommodation is the physical place where the tourist experience takes place, which depends largely on the characteristics of the accommodation (e.g., price, services offered, category of accommodation) and on the destination's own attributes (e.g., cultural offer, safety of the destination, hygiene and cleanliness) (Li et al., 2015; Saló et al., 2014; Rigall-i-Torrent and Fluviá, 2011). The predominant type of accommodation in a given tourist destination may vary according to the traditional function of the destination, the predominant economic, social, and cultural activities, the size of the city, and the transport systems (Chou et al., 2008; Akyeampong, 2007; Yang, 2004). These determinants mean that tourism accommodation markets primarily identify three types: business, holiday (or recreational), and local markets (Cooper et al., 2008). It is therefore hotels that are associated with holiday destinations, which have the most positive influence on job creation and, moreover, show a smaller reduction in employment in periods of crisis (Perles-Ribes et al., 2016; Exceltur, 2015). Hotels in holiday destinations have fewer negative effects on the environment than other types of accommodation (Mazón, 2006), which is why in Spain the most recommendable tourism accommodation model to develop is the hotel (Perles-Ribes et al., 2016). Tourist destinations whose accommodation is based on tourist flats usually have seasonal tourism and tend to suffer from a lack of basic services, such as cleanliness and sanitation (Exceltur, 2015; Capó et al., 2007; Mazón, 2006; Casado-Díaz, 1999), which determines the choice of accommodation and also the loyalty of tourists to certain tourist destinations. Another of the most valued attributes in the choice of accommodation is the leisure offer of the tourist destination (Exceltur, 2015). Thus, destinations that base their accommodation on hotels offer more than just "sun and beach" holidays, since they provide a variety of complementary activities based on environmental, cultural and leisure activities (Perles-Ribes et al., 2016; Yang, 2012; Fernández-Morales and Mayorga-Toledano, 2008).

As noted above, the choice of accommodation is subject to a number of conditioning factors related, for example, to the cleanliness, location, and safety of the tourist destination (Jang and Wu, 2006; Gustin and Weaver, 1993). In general, however, quality and staff are the most valued attributes in accommodation selection (Caber and Albayrak, 2014; Ladhari, 2012; Juwaheer, 2004; Callan and Bowman, 2000), with value for money (Ramanathan, 2012; Wuest et al., 2001; Callan and Bowman, 2000; Wei et al., 1999) and available health services (Patterson et al., 2017) also playing a role. The type of accommodation and other variables that are part of the tourism experience are directly related to the activity to be

undertaken (Patterson et al., 2011) and to the duration of the trip (Dellaert et al., 1998). Therefore, the length of stay in hotels is usually shorter than in non-hotel accommodation, such as tourist flats (Tussyadiah and Pesonen, 2015; Alegre and Pou, 2006). In line with the above, most research points to tourist flats and private homes (second homes) as the accommodation with the longest tourist stays (Nouza et al., 2018; Salmasi et al., 2012; Martínez-García and Raya, 2008; Nicolau and Más, 2006). Given the relevance of the length of stay for the accommodation tourism sector, it is important to promote longer stays as these lead to lower costs and maximise profits, while maintaining high occupancy rates (Peypoch et al., 2012; Fleischer et al., 2011; Barros and Machado, 2010).

Another major issue involves the relationship between the age of the tourist and the type of accommodation preferred, in that older tourists give greater importance to accommodation (Li et al., 2013), whereby they prefer commercial accommodation, such as hotels, for the services they offer compared to those offered by other types of accommodation (Losada et al., 2017; Yang, 2012; Batra, 2009; Capó et al., 2007; Peterson and Lambert, 2003), hence, despite the higher costs that are usually associated with hotels in comparison with those of alternative accommodation (Masiero et al., 2015; Laesser and Crouch, 2006), older people remain less interested in cheap accommodation (Campos-Soria et al., 2015).

This study examines the various types of tourist accommodation as a whole and determines the dimensions that characterise each type by means of a regional approach to tourist destinations. The following study hypotheses are therefore proposed:

Hypothesis 1: The dimensions that characterise tourist accommodation in Spain generate a heterogeneous territorial impact on tourist destinations.

As a consequence of the previous hypothesis, 2 further hypotheses can be established:

Hypothesis 2: The type of tourist accommodation which generates the greatest impact is determined by the location of the tourist destination.

Hypothesis 3: The type of tourist accommodation with the greatest territorial acceptance determines the type of tourist accommodation with the greatest impact on the tourist destination.

3. Methodology and data sources

The data used in the study originates from official statistics published by the Spanish National Statistics Institute (INE), specifically, from the Hotel Occupancy Survey, the Tourist Apartment Occupancy Survey, the Campsite Occupancy Survey, and the Hostel Occupancy Survey for the year 2021.

Spain has a geographical diversity that is shown in different administrative segmentations, among which are the regions (also called Autonomous Communities). This division is not only territorial, but also political and administrative. Therefore, the regions play a crucial role in tourism administration (Ivars-Baidal, 2004), and as such, the study considers 17 Spanish regions as units of analysis, excluding the autonomous cities of Ceuta and Melilla due to their lack of official data.

For the selection of variables, the characterisation of the different types of tourist accommodation (hotels, tourist flats, campsites, and hostels) have been taken into account, through information on their visitors, the establishments offered, the accommodation required, the necessary tourist resources, and the employment generated by the sector. According to this characterisation, 32 variables are considered for the analysis of the 17 Spanish regions. The variables are grouped into the following thematic blocks (the abbreviated notation of the variable and the unit of measurement of the variable are indicated in brackets, respectively):

1. *Tourism Resources.* The variables considered are: establishments available in the hotel modality (H4) (number), vacancies offered in hotels (H5) (number), establishments available in the camping modality (C4) (number), vacancies offered in campsites (C5) (number), establishments available as tourist flats (AP5) (number), bed places available in tourist flats (AP4) (number), establishments available as hostels (A4) (number), bed places available in hostels (A5) (number).

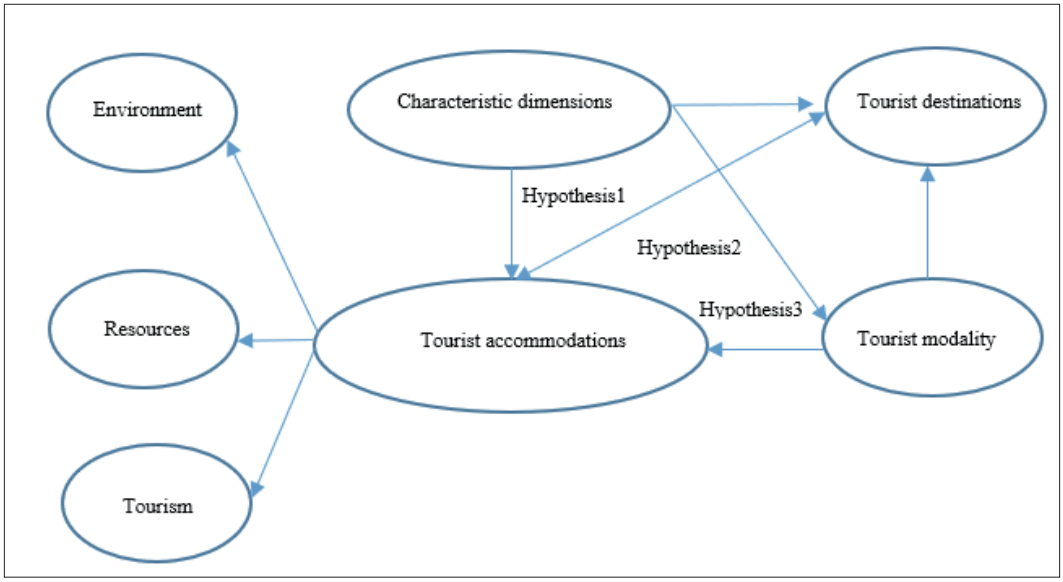
2. *Economy*. The variables employed are: employees in hotels (H8) (number), employees in campsites (C8) (number), employees in tourist flats (AP8) (number), employees in hostels (A8) (number).

3. *Tourism*. The variables studied are: travellers staying in hotels (H1) (number), overnight stays in hotels (H2) (number), days of stay in hotels (H3) (number), degree of occupancy in hotels (H6) (%), degree of occupancy per weekend place in hotels (H7) (%),travellers staying in campsites (C1) (number), overnight stays in campsites (C2) (number), days spent in campsites (C3) (number), occupancy rate in campsites (C6) (%), occupancy rate per weekend pitch in campsites (C7) (%), travellers staying in holiday flats (AP1) (number), overnight stays in holiday flats (AP2) (number), days spent in holiday flats (AP3) (number), occupancy rate in holiday flats (AP6) (%), weekend occupancy rate per bed place in holiday flats (AP7) (%), travellers staying in hostels (A1) (number), overnight stays in hostels (A2) (number), days spent in hostels (A3) (number), occupancy rate in hostels (A6) (%), occupancy rate per weekend bed place in hostels (A7) (%).

In the representation of the variables used for the study, the variety of their units of measurement can be appreciated, which makes it necessary to consider standardised variables.

The hypotheses indicated in Section 2, together with the variables studied, allow the following theoretical model to be proposed (see Figure 1):

Figure 1: Theoretical model.



Source: Authors' own.

For the analysis of the data, statistical techniques of Multivariate Analysis are applied: Factor Analysis and Cluster Analysis. These methodologies make it possible to establish relationships, explore latent structures, analyse large databases, and facilitate the interpretation of large volumes of information. Multivariate Analysis has frequently been applied in research to determine dimensions, by characterising zones or subjects, and for segmentation purposes. Some of this research has been applied to the tourism sector, such as in the study by Sánchez-Sánchez and Sánchez-Sánchez (2022a), where it is employed to analyse the effect of the COVID-19 pandemic on camping tourism, whereby two types of tourist destinations are characterised: coastal and natural. Sánchez-Sánchez and Sánchez-Sánchez (2022b) also apply these methodologies to establish the relationships between protected natural areas, nature tourism, and its impact on rural development in Andalusia. In Sánchez-Sánchez and Sánchez--Sánchez (2021), these methodologies are employed to identify the factors that characterise Spanish rural tourism, and these relationships are utilised to analyse the capacity of the tourism sector as an economic option for local development. Florensa et al. (2020) use these methodologies to identify and evaluate the satisfaction and expectations of tourists in Aigüestortes National Park. Iordanova and Stylidis (2019) use them to study whether the image of a tourist destination alters according to

tourists' experience with said destination. Jani (2018) uses them to determine different tourist profiles in Tanzania in relation to tourism sustainability. Fernández-Morales and Mayorga-Toledano (2018) apply them to define groups of tourist destinations based on the impact of cruise tourism in different territorial areas. In the study by Sánchez and Sánchez (2018), they are employed to determine factors that describe the provincial effect of rural tourism on Spanish employment. In the work by Claveria and Poluzzi (2017), different multivariate dimension reduction techniques are utilised to group the world's main tourist destinations according to the growth of the main tourism indicators. Díaz-Pérez and Bethencourt-Cejas (2016) apply traditional multivariate analysis methods to tourists visiting a specific destination (La Palma) and thereby compare the quality of the information obtained on the segmentation of the tourism market. Li et al. (2015) use various multivariate techniques to define cultural groups according to tourists' motivation for travelling. In Carvalho and Sarkar (2014), these techniques enable innovative patterns to be determined in different Portuguese tourism companies. Pina and Delfa (2005) use them to classify the types of tourist accommodation into groups and thereby to define the profile of the tourist who is most likely to opt for each type of accommodation.

4.1. Factorial Analysis

Factorial Analysis aims to establish dimensions (also called Factors) with which to explain the potential associations between a set of variables. To this end, composites of the original variables are made, which enables the desired dimensions to be obtained. This makes it possible to achieve a smaller number of latent variables (or dimensions), which show the original information of the individuals examined in a more simplified way.

The linear model is that used by Factorial Analysis to relate variables to dimensions, so that it formulates the original variables as a linear combination of unobserved dimensions or factors. The mathematical model utilised is as follows:

$$Y_{ij} = \sum_{k=1}^{m} \beta_{ik} D_{kj} + E_{ij} \quad (1)$$

In our study, Y_{ij} represents the value of the variable Y_i studied in region j; D_{kj} represents the value of dimension k in region j; E_{ij} measures the part of the variable Y_i in region j that is not explained by the extracted dimensions; β_{ik} denotes the standardised regression coefficient of the variable Y_i on the dimension D_k. These coefficients therefore show the importance of the dimension, and high values of the coefficient indicate a strong relationship between the dimension and the corresponding variable.

In order to determine the dimensions, the Principal Components method (Morrison, 1987) is applied, and an exploratory approach is used in which the criterion is the selection of those dimensions that reach an eigenvalue higher than one (Kaiser, 1960).

4.2. Cluster Analysis

The dimensions obtained to characterise regional tourist accommodation in Spain are taken as a reference to apply Cluster Analysis. This technique is employed to identify groups of regions that present similar characteristics in their descriptive dimensions. Thus, individuals (in our case regions) that are part of a cluster or group all have homogeneous characteristics, while individuals that integrate different clusters are heterogeneous (Hair et al., 2000). The grouping of individuals in the clusters is carried out according to how similar they are, and this similarity is measured mathematically through the distance between individuals. In mathematics, there are various ways of measuring distances, one of which is the squared Euclidean distance, as applied in this study, although the choice of the measure of distance employed does not really affect the result obtained (Hair et al., 2000).

Regarding the procedure to establish the clusters, there are two possible methods: hierarchical and non-hierarchical. Their fundamental difference is that hierarchical methods consider all possible clusters, while non-hierarchical methods fix in advance the number of clusters to be obtained. In our study, the hierarchical method is applied in order to establish the optimal number of clusters, and subsequently the non-hierarchical k-means method is used.

4. Results

The results are structured as follows: Firstly, the dimensions that characterise the different types of tourist accommodation in Spain are determined. Secondly, groups of regions are established according to their determining dimensions.

5.1. Characterisation of tourist accommodation

The application of Factorial Analysis requires the selection of eigenvalues; therefore, the most frequent criterion is used, in which those that are greater than unity are chosen (Kaiser, 1960). In accordance with this requirement, Factorial Analysis determines five dimensions that explain 87.975% of the total variability (Table 1). This percentage of explained variability is high, which indicates that the factorial model obtained is very good, given that, in studies referring to Social Sciences, 60% is assumed as the lowest limit of acceptance of the model (Hair et al., 2000).

Table 1: Determinant dimensions of tourist accommodation and explained variance.

Dimensions	Eigenvalue	% of variance	% cumulative variance
Dimension 1. Hotels and Tourist Apartments: Labour Dynamism and Supply-Demand Balance	12.195	38.109	38.109
Dimension 2. Campsites: Labour dynamism and supply-demand balance	7.151	22.347	60.456
Dimension 3. Hostels: Labour dynamism and supply-demand balance	4.095	12.797	73.254
Dimension 4. Tourist Apartments and Hostels: Tourism Effectiveness	3.235	10.111	83.365
Dimension 5. Campsites: Tourism Effectiveness	1.475	4.611	87.975

Source: Authors' own.

Table 2 shows the coefficients of the rotated factor matrix for the five dimensions obtained. These coefficients, which we will call factor scores, measure the importance of each variable in the dimension: the stronger the relationship, the higher the factor score achieved. It follows that the first dimension shows a strong relationship with nine of the thirty-two variables studied (see Table 2) with respect to the accommodation modalities of hotels and tourist flats. These variables are: the number of overnight stays in hotels (H2), the number of days of stay in hotels (H3), the degree of occupancy in hotels (H6), the number of staff employed in hotels (H8), the number of travellers in tourist flats (AP1), the number of overnight stays in tourist flats (AP2), the number of bed places in tourist flats (AP4), the number of establishments in tourist flats (AP5), and the number of employees in tourist flats (AP8). Dimension 1 explains 38.109% of the total variability (Table 1). These relationships indicate that there is a positive correlation between the indicated variables and Dimension 1, that is, high (or low) values of the first dimension are related to regions with high (or low) values in the aforementioned variables. According to the variables that characterise the first dimension, tourist accommodation in the form of hotels and tourist flats exert the greatest impact, standing out especially in aspects related to the labour market, and tourist supply and demand. Therefore, Dimension 1 is labelled *Hotels and Tourist Apartments: Labour dynamism and supply-demand balance.*

The regions in which Dimension 1 exerts the greatest impact are those that show the highest factor scores in this dimension. The Canary Islands with a score of 2.650 points, the Valencian Community with 1.712 points, and Andalusia with 1.349 points (see Table 3) represent the regions with the greatest territorial effect on the accommodation modalities of hotels and tourist flats, especially in aspects related to tourism supply and demand and the associated labour market.

The second dimension explains 22.347% of the total variance (Table 1), since it is strongly and positively related to five of the variables studied for the campsite accommodation mode: number of travellers (C1), number of overnight stays (C2), number of establishments (C4), number of bed places (C5), and staff employed (C8). These relationships show that high (or low) factor scores for Dimension 2 are associated with regions that have high (or low) values of travellers, overnight stays, establishments, bed places, and staff employed in camping-type accommodation. Thus, Dimension 2 is labelled as *Campsites: Labour dynamism and supply-demand balance*. The region of Catalonia is the most prominent in Dimension 2, given that it is the region with the highest score (3.502 points) in this dimension (Table 3).

Table 2: Factor scores.

Variables	Dimension 1	Dimension 2	Dimension 3	Dimension 4	Dimension 5
H1	0.499	0.689	0.291	0.335	-0.043
H2	**0.743**	0.444	0.063	0.430	-0.193
H3	**0.781**	-0.113	-0.211	0.388	-0.312
H4	0.170	0.671	0.632	0.113	-0.172
H5	0.672	0.547	0.154	0.406	-0.190
H6	**0.766**	-0.013	-0.108	0.396	0.274
H7	0.690	0.096	-0.085	0.236	0.501
H8	**0.779**	0.368	0.052	0.412	-0.253
C1	0.091	**0.970**	0.135	-0.025	0.054
C2	0.182	**0.945**	0.100	-0.112	0.145
C3	0.637	0.003	-0.205	-0.281	0.348
C4	0.238	**0.870**	0.340	-0.208	0.096
C5	0.161	**0.960**	0.133	-0.087	0.108
C6	-0.173	0.151	-0.246	0.125	**0.879**
C7	-0.175	0.187	-0.257	0.097	**0.887**
C8	0.204	**0.946**	0.132	-0.106	0.143
AP1	**0.927**	0.259	0.067	0.104	-0.069
AP2	**0.949**	0.222	-0.033	0.084	-0.080
AP3	0.365	0.472	-0.234	0.235	0.071
AP4	**0.910**	0.307	0.033	-0.114	0.070
AP5	**0.951**	0.214	-0.002	0.002	-0.028
AP6	0.186	-0.109	0.014	**0.939**	0.079
AP7	-0.084	-0.202	0.013	**0.882**	0.063
AP8	**0.918**	0.042	-0.044	0.133	-0.254
A1	-0.102	0.061	**0.911**	0.090	-0.096
A2	0.043	0.316	**0.918**	0.099	-0.005
A3	0.299	0.007	-0.011	-0.074	0.078
A4	-0.076	-0.066	**0.894**	-0.211	-0.226
A5	-0.048	0.242	**0.894**	-0.178	-0.153
A6	0.302	0.027	-0.102	**0.828**	0.030
A7	0.332	-0.017	-0.093	**0.869**	0.146
A8	-0.035	0.319	**0.895**	0.002	-0.083

Source: Authors' own.

Dimension 3 explains 12.797% of the total variance (Table 1). The regions with the highest impact on this dimension present a positive correlation with five of the variables analysed in the hostel accommodation modality: number of travellers (A1), number of overnight stays (A2), number of establishments (A4), number of bed places (A5), and staff employed (A8). This relationship leads to labelling Dimension 3 as *Hostels: Labour dynamism and supply-demand balance* (Table 2). The most important regions with respect to the score obtained in the third dimension are Galicia and Andalusia with 2.839 and 1.238 points, respectively (Table 3).

Table 3: Regional scores per dimension.

Regions	Dimension 1	Dimension 2	Dimension 3	Dimension 4	Dimension 5
Andalusia	1.349	0.835	1.238	0.059	-0.098
Aragon	-0.234	-0.278	0.430	-0.520	0.088
Asturias	-0.526	-0.249	-0.342	-0.241	-0.472
Balearic Islands	0.511	-0.281	-0.904	2.033	-0.557
Canary Islands	2.650	-0.891	-0.736	0.572	-1.310
Cantabria	-0.299	-0.299	-0.864	-0.395	0.736
Castilla y León	-0.520	-0.263	0.758	-0.531	-0.813
Castilla La Mancha	-0.859	0.035	-0.695	-0.563	-1.294
Catalonia	-0.365	3.502	-0.224	0.450	-0.422
Valencian Community	1.712	0.679	0.225	-1.693	1.763
Extremadura	-0.813	-0.108	-1.176	-0.918	-1.277
Galicia	-0.501	-0.591	2.839	-0.065	-1.038
Madrid	-0.470	-0.105	0.253	2.265	1.263
Murcia	0.174	-0.582	-0.684	-1.029	0.421
Navarra	-0.647	-0.463	-0.040	0.475	0.839
Basque Country	-0.309	-0.610	0.641	0.294	0.973
La Rioja	-0.853	-0.330	-0.719	-0.192	1.198

Source: Authors' own.

The fourth dimension explains 10.111% of the total variance (Table 1), since it is positively associated with four of the variables studied and refers to two types of accommodation: tourist flats and hostels (Table 2). Specifically, these variables are the degree of occupancy (AP6, A6) and the degree of weekend occupancy (AP7, A7) in the afore mentioned types of accommodation. Thus, high (or low) values of Dimension 4 are related to regions with high (or low) tourist occupancy and high (or low) tourist occupancy at weekends. These associations allow Dimension 4 to be labelled as *Tourist Apartments and Hostels: Tourism Effectiveness*. The top regions in this dimension are Madrid with 2.265 points and the Balearic Islands with 2.033 points (Table 3).

The fifth dimension explains 4.611% of the total variance (Table 1). Dimension 5 is positively related to two of the camping-type accommodation variables: degree of occupancy (C6) and degree of weekend occupancy (C7) (Table 2). This dimension is labelled *Campsites: Tourism Effectiveness*. The most important regions in this dimension are the Valencian Community (1.763 points), Madrid (1.263 points), and La Rioja (1,198 points) (see Table 3).

The results obtained reveal the segmentation of the Spanish tourism sector according to the different types of accommodation and show the diversity and heterogeneity of its impact on tourist destinations. The dimensions that determine the types of accommodation in Spain present a clear regional segmentation according to the type of tourist accommodation that exerts the greatest effect on each territory, 1and highlight 2thereby highlighting the dimensions that measure employment impact, tourist efficiency, and the balance between supply and demand. It can be said that tourist flats, campsites, and hostels are the most "complete" accommodation, given that not only do they produce a major impact on the labour market, but their supply and demand is also equitable, and

they manage to achieve tourism efficiency. Hotels constitute the accommodation in the greatest demand in Spain (INE, 2022). However, contrary to what might be expected, this is not a modality that achieves tourism efficiency. The time period analysed probably has a lot to do with these results, given that in 2021 the COVID-19 pandemic strongly affected the tourism sector, with hotels being the type of accommodation hardest hit and suffering sharp falls in tourism demand; in Spain in 2021, the demand for hotels fell by 68.9% compared to 2019 (INE, 2022). This may be due to the fact that during the COVID-19 health crisis, security became the top priority for tourists, who were more reluctant to stay in hotels, and hence tourism in alternative accommodation was less affected, since social interaction was lower than in hotels.

5.2. Territorial map of tourist accommodation

In order to determine the regional groups, the characterisation provided by the dimensions obtained above are taken into account. Thus, regions with similar attributes with respect to the five dimensions defined above are identified. To this end, firstly, the non-hierarchical k-means method is applied, in which the scores obtained in the regions in each of the dimensions described above are used. The k-means method needs to previously establish the number of groups or clusters to be determined, and therefore, in order to choose the most convenient number, several tests have been carried out, where the various changes occurring in the residual variance have been analysed for different numbers of clusters. Subsequent to the various tests, six clusters have been selected as the optimal number. Table 4 and Figure 2 show the configuration and regional map of the determined clusters, respectively.

Table 4: Regional configuration according to cluster membership.

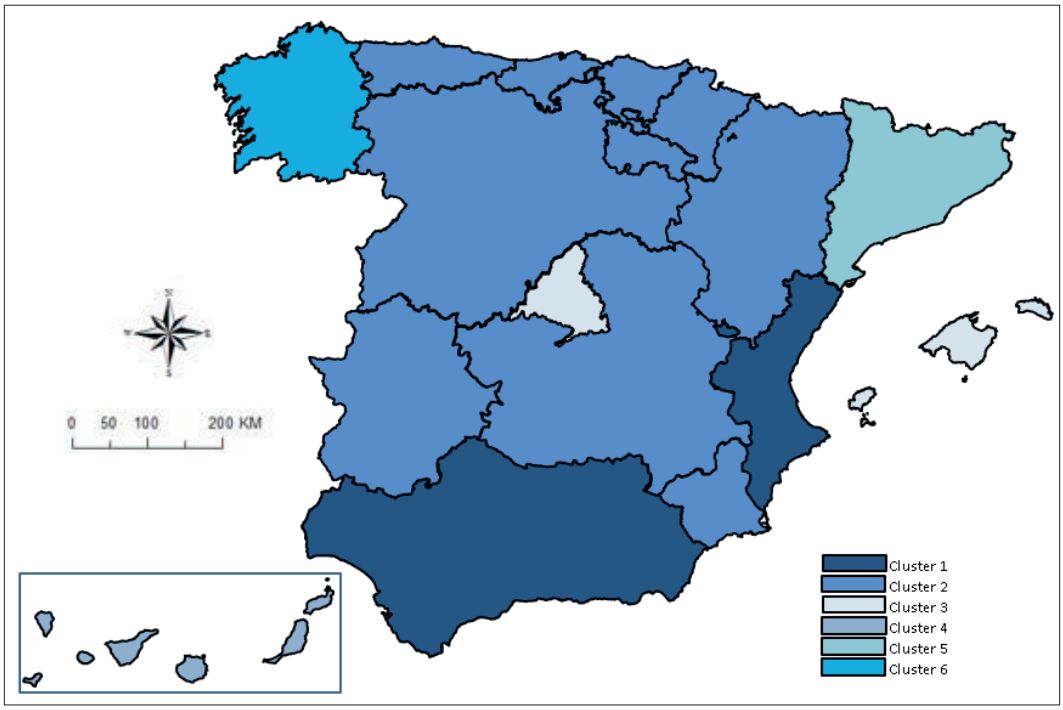
Cluster	Regional configuration per cluster
Cluster 1	2 regions: Andalusia, Valencian Community
Cluster 2	10 regions: Aragón, Asturias, Cantabria, Castilla y León, Castilla La Mancha, Extremadura, Murcia, Navarra, Basque Country , La Rioja
Cluster 3	2 regions: Balearic Islands, Madrid
Cluster 4	1 region: Canary Islands
Cluster 5	1 region: Catalonia
Cluster 6	1 region: Galicia

Source: Authors' own.

Table 5 shows the mean scores obtained for the different clusters in each of the dimensions determined. These scores enable the importance of each dimension to be assessed in the different clusters.

Cluster 1 is made up of the regions of Andalusia and the Valencian Community (Table 4), which stand out for having the highest average scores in Dimensions 1 and 5 (Table 5). This means that these regions are important in the hotel and tourist flat types of accommodation, since they show a balance between tourist supply and demand for such accommodation and present an economic impact mainly in terms of employment. These regions are also relevant in the camping-type of accommodation, where tourist efficiency is achieved. Andalusia and the Valencian Community are regions located mostly on the Mediterranean coast, and stand out in holiday tourism, since their variety of tourism is largely centred on "sun and beach" tourism. Andalusia is a region that is valid for both national and international tourism, while the Valencian Community is especially relevant in national tourism (Sánchez-Sánchez and Sánchez-Sánchez, 2022c). In these regions, the type of tourism that attracts the most tourists involves the more traditional hotel type, although other types of alternative accommodation (tourist flats and campsites) are gaining ground in tourist preferences.

Figure 2: Regional representation according to the clusters of membership.



Source: Authors' own.

Table 5: Average cluster scores according to dimensions.

Dimensions	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6
Dimension 1. Hotels and Tourist Apartments: Labour Dynamism and Supply-Demand Balance	1.530	-0.489	0.021	2.650	-0.365	-0.501
Dimension 2. Campsites: Labour dynamism and supply-demand balance	0.757	-0.315	-0.193	-0.891	3.502	-0.591
Dimension 3. Hostels: Labour dynamism and supply-demand balance	0.731	-0.269	-0.325	-0.736	-0.224	2.839
Dimension 4. Tourist Apartments and Hostels: Tourism Effectiveness	-0.817	-0.362	2.149	0.572	0.450	-0.065
Dimension 5. Campsites: Tourism Effectiveness	0.833	0.040	0.353	-1.310	-0.422	-1.038

Source: Authors' own.

Cluster 2 is the largest cluster, composed of the regions of Aragon, Asturias, Cantabria, Castilla y León, Castilla La Mancha, Extremadura, Murcia, Navarra, Basque Country, and La Rioja. These

regions do not stand out in any of the five dimensions determined; in fact, in 4 of the 5 dimensions that characterise tourist accommodation, they have a negative average score, since these regions have below-average scores, which shows that the tourism impact in its different versions of accommodation is not very important.

Cluster 3 is made up of the regions of Madrid and the Balearic Islands, which are the most efficient in terms of tourist accommodation in tourist flats and hostels, since they have the highest average score in Dimension 4. These regions stand out from the rest in aspects related to the degree of occupancy in said accommodation.

Cluster 4 comprises the Canary Islands, which obtains the highest score in Dimension 1, and hence this region stands out in terms of employment impact and the balance between tourism supply and demand derived from hotels and tourist flats. This region is one of the most important in Spain in terms of tourism demand and holiday tourism, given that, in 2021, it accounted for 10.1% of tourists with respect to the national total (INE, 2022), where tourists are mainly foreigners, and the predominant type of tourism is that of "sun and beach" (Sánchez-Sánchez and Sánchez-Sánchez, 2022c).

Cluster 5 is made up of the region of Catalonia, which is the highest-scoring region in Dimension 2. This region is characterised by the impact of the type of tourist accommodation of the campsite, especially important in the effect it has on employment aspects and on tourism supply and demand. It should be noted that a wide tourism supply and demand does not guarantee the efficiency of the sector; in fact, Catalonia does not particularly stand out in Dimension 5, which measures the tourism efficiency of the campsite. This region is located on the Spanish Mediterranean coast, where a variety of tourism offers both inland tourism (cultural, nature, sports, gastronomic, etc.) and "sun and beach" tourism. This complementarity brings added value to this region, where the significant impact of an alternative type of accommodation to the traditional one can be seen.

Cluster 6 is made up of a single region, Galicia, which is the region with the highest score in Dimension 3, and therefore stands out from the rest of the regions in terms of hostel tourist accommodation. It specifically stands out in terms of employment impact and in terms of tourist supply and demand for this type of accommodation. This result is highly interesting, given that Galicia is a region where inland tourism is predominant; the preference of this type of tourism is for alternative accommodation instead of traditional hotels.

5. Discussion and Conclusions

The significant increase in tourism over the last decade worldwide has led to the emergence of new types of tourist accommodation. This diversity of accommodation requires studies that analyse the accommodation sector in its various modalities, given that their characterisation will allow tourism managers to adopt strategies to manage possible changes in the accommodation models of tourist destinations.

With regard to the hypotheses established in the study, the regional analysis of the different types of accommodation allows the following conclusions to be reached:

a) The study identifies five determining dimensions of the Spanish tourist accommodation sector. These dimensions segment and characterise the different types of tourist accommodation, with the aspects that have the greatest impact on the accommodation sector being those affecting the labour market, tourism efficiency, and supply and demand in the sector. The dimensions extracted show a positive (albeit uneven) economic impact on regional economies. With regard to the type of accommodation and tourist destinations, it has been found that the most important regions in terms of the most traditional tourist accommodation, that of the hotel, are those of Andalusia, the Canary Islands, and the Valencian Community, with these destinations also bearing relevance in the form of tourist flats. These regions are significant, especially in holiday tourism where the predominant type of tourism is "sun and beach" tourism (Sánchez-Sánchez and Sánchez--Sánchez, 2022c), and demonstrates that the most traditional accommodation is preferred by this type of tourism. Both hotels and tourist flats located in these regions show a strong impact on employment aspects, and reflect the balance between supply and demand in the sector. In terms of alternative accommodation modalities to hotels, the region of Catalonia stands out especially regarding campsites, while the region of Galicia is noticeable in the hostel modality. However, it is the regions of the Balearic Islands, Madrid, and Galicia that are the most efficient in terms of tourism, given the optimum level achieved in terms of occupancy in the tourist flat and hostel

modalities. In Madrid and Galicia, the predominant type of tourism is cultural and inland tourism, and it is shown in these regions that it is the alternative accommodation to hotels that achieves tourism efficiency. This seems to indicate that the more traditional accommodation (the hotel), in spite of presenting constant growth, presents low levels of occupancy, which does not allow it to achieve efficiency.

In view of the unequal regional impact generated by the dimensions that determine tourist accommodation, it can be concluded that the impact of the accommodation sector in Spain is heterogeneous and depends on the tourist destination analysed. This renders it possible to make the following considerations:

a.1. A relationship can be established between the location of the tourist destination, the preferred type of tourism, and the type of accommodation that produces the greatest impact. It is the tourist destinations located in the Mediterranean area where the accommodation sector has the most positive impact. Thus, tourists who choose "sun and beach" tourism (the predominant type of tourism in the Mediterranean area and the Spanish archipelagos) prefer more traditional accommodation such as hotels (Canary Islands, Andalusia, Valencian Community). This type of accommodation has a greater impact on the labour market and enjoys longer stays, which generates a stronger economic and social impact than short-stay accommodation (Sellers-Rubio and Casado-Díaz, 2018; Parte-Esteban and Alberca-Oliver, 2015; Barros and Machado, 2010). However, other alternative accommodation, such as the tourist flat, is strongly emerging, which, in regions located in coastal areas, exerts a strong impact on employment and manages to achieve tourist efficiency: an efficiency that hotels fail to achieve.

It can therefore be stated that the location of accommodation plays a major role in the development of the tourism industry: a result similar to that provided by Lado-Sestayo et al. (2016), Shoval et al. (2011), and Sharpley (2000). Therefore, as indicated by Saló et al. (2014), the development of the accommodation industry and tourist destinations must be based on the private and public cooperation of the agents involved in the tourism sector.

a.2. On the other hand, it shows that, in general, the Spanish tourist accommodation sector is not oversized, since all accommodation modalities show a balance between supply and demand. Moreover, this result is consolidated by showing that all types of accommodation achieve tourist efficiency, with the exception of hotels. This may be due to the high seasonality of "sun and beach" tourism, which is the preferred type of accommodation. Another factor that may influence the inefficiency of hotels is the time period analysed, since the COVID-19 pandemic may undoubtedly affect the results given that security is fundamental for tourists, who are therefore more reluctant to stay in hotels (Richards and Morrill, 2021; Gursoy and Chi, 2020). Alternative accommodation to hotels allows for greater control of socialisation (Craig & Karabas, 2021; Craig, 2020). The tourist has assumed social distance to be part of the new normality acquired as a consequence of the health crisis (Hong et al., 2020; Mulder, 2020; Rice et al., 2020), which puts alternative accommodation in a good position (Ma et al., 2020; Gössling et al., 2020), since most allow social interaction to be more limited, which provides a greater feeling of security and confidence for the tourist (Şengel et al., 2020).

b) The empirical results show the need for authorities and managers to understand the importance of the tourist accommodation sector and its impact on tourist destinations. With regard to the practical implications that can be drawn thereof, these factors can affect both the business sector and the institutions themselves. Regarding the former, when the tourism enterprise has to decide on the feasibility of the business project, not only must an assessment be carried out in order to ascertain the type of accommodation that provides the most positive effect, but a decision regarding the most favourable location must also be made, while taking into account that certain types of accommodation may be more beneficial than others and that certain locations may be more attractive than others. Regarding institutions, regional governments should support policies that enable tourist destinations to achieve strategic development objectives through the appropriate balance of accommodation and should promote investment to modernise facilities, thereby making the different companies related to the tourism accommodation sector profitable, competitive, and with incentives to settle within their territory. In both cases, the aim is to generate synergies

and increase tourism efficiency, which will undoubtedly translate into increased profits for the tourism industry.

The most important limitation of the study presented involves the lack of official data on tourists' ratings and opinions regarding the various types of accommodation. This information would have greatly benefitted the study, since it would have made it possible to identify the determinants of tourist behaviour in relation to the different types of accommodation and tourist destinations. This information would have allowed both the business sector and political agents to invest in the goods and services in greatest demand by tourists, and also to offer complementary tourism that could possibly exert a positive influence on the choice of accommodation and tourist destination.

For future research, it would be interesting to validate the model presented here in other countries that are direct competitors of Spain, since this may help in the development of tourism planning strategies to improve competitiveness with such countries. Given that location is a determinant of the success of the tourist destination, another possible line of research could include the generalisation of the model to other territorial areas in which geographical units smaller than those studied in our analysis are considered, such as tourist spots, municipalities, and cities. However, it should be borne in mind that this extension would involve a significant restriction: the possible insufficiency of official data.

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