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Tourism destination zoning in rural regions:

A consumer-based approach in Terres de l'Ebre

This document puts into question the conventional way of delineating tourism destinations. It intends to show a model of spatial analysis, to find new interpretations of the reality, more balanced and more optimized, in comparison with other territorial views most of them based on administrative boundaries. This paper portrays a methodological exercise that aims to structure tourism geographies into new tourism areas on the basis of visitor's consumption patterns, which would be better fitted to the needs of tourist demand.

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Tourism destination zoning in rural regions:

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1. Introduction

Tourism destination is regarded as a defined geographical area toward which people travel to visit certain attractions (Leiper 1995). Tourism destinations have historically been developed by administrations, who often cast an identity through its brand name and that is considered by visitors as a unique entity. Normally destinations, coincide with the administrative boundaries by the administration who handles. Moreover, most of the literature about tourism destination organisation and management is based on the product offer existent in the area and less cases on the tourist gaze. It is true that the tourist come to the area because of its resources, but the important thing is to know if the managers of the destinations can use strategies for its development prioritizing entrepreneurial, product, and market criteria (Blasco, Guia, Prats 2010).

Other study-cases have put into doubt the traditional tourism management. Some international destinations managed by different countries and regions have been analysed. The conclusions of those study-cases were that another type of management and tourism zoning could be beneficial for the destination. At the moment, the University of Girona follows a study line about cross-border tourism. The border of the Pyrenees and the border between Mexico and the United States have been studied (Blasco, Guia & Prats, 2011 and 2012). The projects consisted in the categorization and thematic grouping in clusters of the tourism products and resources in boundary destinations, based on the time distance between these tourism resources.

The present study aims to follow the same investigation line, using the same methodology, but with a differential feature from the previous studies. This study would like to analyse a destination which it is not divided by the international boundaries but regional, province and local internal boundaries. Departing from an already existent destination, we are going to answer the following question: Is there an effective strategy for tourism development in a destination from the tourist perspective and considering its tourism resources, without being fragmented by administrative boundaries?

It is perceived that inside the local destinations we can discover the same *modus operandi* as in the case of destinations with international boundaries, but in a smaller scale. Each municipality works for the tourism promotion into their local administrative boundaries. The bordering towns from different regions do not have tourism information from the other town. If there are some connexions and collaboration, it's mainly because some of the tourism professionals working in the tourism information offices and the private tourism stakeholders are sensitive of what the tourist need.

In the present case, it is intended to see if in a more local scale, there are also promotional inconsistencies due to local and regional administrative boundaries, and if so, it should be applied other criteria to manage tourism in a destination into a local and regional level, than just the administrative one. The intention is to let bring out combinations between the tourism resources that are closer to the tourists needs, regardless the existence of intra or inter boundaries.

It is well known that most of the tourism consumption patterns of space are affected by the spatial distribution of resources, which includes distance between attractions, their intensity and their specificity.

The most common tourists movement within a destination is a hub-and-spoke or base-camp pattern (McKerker & Lau, 2008; Chancellor & Cole, 2008), particularly in rural regions where car-based movements are predominant (Connell & Page, 2008).

Geography provides a useful approach for tourism development and management. Basing the study on the affirmation that tourism destinations are the most appropriate analysis unit in tourism research (Haywood, 1986), it could be added that the spatial distribution of the attractions of a destination can determine the potential of a destination (Chhetri & Arrowsmith, 2008); the same way that the type of attractions should indicate the market share that destination should invest for.

As the attractions are the basic elements on which tourism is developed (Lew, 1987: 554), this study is going to provide a way of developing and manage a tourism destination, based on the

spatial distribution of the attractions and the tourists' consumption pattern of these attractions, without taking into account the administrative boundaries.

Combining geographical information, based on the distances between attractions, and a hierarchical cluster analysis techniques; we obtain a good method to identify effective consumption-based tourism zones. This study proposes a method to delineate geographical tourism clusters, containing attractions that are closest to each other in time distance. Furthermore, locations that provide infrastructure for visitors are more likely to attract a greater number of visitors than those without (Chhetri & Arrowsmith, 2008). For that reason and in order to determinate the destination base-camp, we have also taken into account the accommodation hubs as a simplification of tourism infrastructure.
These clusters and the containing tourism attractions will finally be analyzed together, to see the spatial distributions and the predominant category, in order to facilitate the detection of the market share, which could offer the tourism managers a basis for marketing opportunities.

This method have been applied in a case-study to the *Terres de l'Ebre* region, as it is a border region in a tourism developing process, which still didn't have a reliable tourism development strategy. This case study, in addition to test conceptual frameworks, could signify an opportunity to target and redirect the tourism development, based on the resulting clusters from this case-study.

2. Theoretical approach

2.1- Tourism destination boundaries and their management

A tourism destination is one of the key concepts of institutionalized tourism, but researchers and practitioners still disagree on how it should be defined. The classical and most cited concepts of tourism destination are the ones done by the Economic Geography–Oriented Researchers, as Leiper (1995), which argue that destinations are places toward which people travel and where they choose to stay for a while to experience certain perceived attractions. (Saraniemi & Kylänen, 2011) criticize the classical research reviewing the Economic-Geography Oriented research, the Marketing Management-Oriented Research and The Customer-Oriented Research to finally introduce the cultural approach in order to offer a holistic perspective of the tourism destinations. Going beyond the modernist dualism, these authors consider the tourism destination as a dynamic and historical-spatial unit that evolves over time and space through certain discourses and practices.

Tourism Destinations are the most appropriate unit of analysis in tourism research (Blasco, Guia & Prats, 2012). According to Blasco, Guia & Prats (2010:9), there are nowadays several academic debates about the tourism destinations: 1) the propensity of a tourist to travel distances according to the motivation to visit a certain attraction (Di Matteo, Di Matteo 1996:103), 2) the importance of territorial management of brands and tourism attractions and their territorial distribution (Blasco, Guia & Prats 2009 and 2010), 3) the influence of historical and sociological aspects in the creation of collective identity in the new tourist destinations (Palmer, 1999: 313) and 4) the disconnection of many products between the current market and the demand (Urry 1990). All these debates converge on the same idea: the importance of the concept of real and psychological space by tourists on one hand and by the organizers of the destination on the other, and their decisive influence on the sustainable development of the tourism region.

One of the most important challenges arising from the goal of sustainable tourism development is the destination planning. Tourism destination management requires the territorial use and the issues development. Despite considerable advancement in the methodological processes, there is still no clear conceptual destination model to address these issues. Existing models have largely been developed through a fragmented case-study approach and have not yet achieved a sufficiently integrated conceptual basis for a comprehensive understanding of the spatial characteristics of destination regions (Dredge, 1999). Fagence (1995) acknowledges that the main contributions of these models lie in establishing the relevance of certain geographical concepts such as spatial interaction between components, distance decay from origins to destinations, nodal hierarchies, tour circuits, and specialization between destinations and nodal interdependency. Tourism planning, as it involves a wide range of interrelated land uses, has usually not been considered in its entirety, but has been compartmentalized for the sake of expediency. However, the stimulus for local planners to become more involved in destination planning and management stems from changes that have been occurring in the profession over the last two decades (Dredge, 1999).

Lovelock (2011), argue that effective governance is thus a central element of a holistic and balanced approach to sustainable tourism. While tourism governance may be influenced by a broad range of actors, it is generally agreed that the state has a critical role to play because of the noted characteristics of the sector. Indeed, the holistic ambitions of sustainable tourism development and the multidisciplinary nature of tourism entail that only governments and public authorities can coordinate efforts in sustainable tourism policy at both the national and local levels.

The view of local government has become less holistic, and it is increasingly common for local governments to support a pro-economic development approach to local tourism policy, focusing just on the marketing and promotion of tourism (Beaumont and Dredge, 2009, p.8). The operational objectives of regional tourism organisations, their organisational skill sets, funding structures and processes have often been geared towards marketing, with little or no attention given to tourism planning or sustainable tourism (Lovelock, 2011).

However, in addressing the pragmatic concerns associated with destination management, Ashworth & Dietvorst (1995) argue that it is essential to integrate tourism into local place management policy, due the tourism reliance upon a community's stock of natural and human resources. For Dredge (1999), referring to the land use planning as a previous identification for spatial development, it should also be carried out at the local or regional level as opposed to market-oriented tourism which is most commonly carried out at the regional level or above.

The boundaries of a destination are hard to define, as they are being constantly produced and reproduced through complex practices and discourses: to some tourists, tourism companies, local people and other market actors, the destinations may appear totally different in terms of shape, content and relationships. An evolution from a pure supply-side or production oriented definition to a more demand-side or customer oriented perspectives can thus be observed (Blasco, et al. 2012). Lew & McKerker (2006) define the local destination as the area containing the products and activities that could normally be consumed in a daytrip from the heart of the destination and that are normally promoted by the destination as part of its overall suite of products. According to Dredge (1999) boundaries of destination regions should be tied to travel patterns and characteristics. Depending upon characteristics of the visit (e.g., mode or distance travelled), destination regions may be large or small and may or may not overlap. Planners must be aware that these regions exist at different scales in one location and that the use of administrative boundaries (local, regional or international) commonly adopted in land-use planning may limit proper conceptualization and planning of the destination region.

In the vast majority of the cases, destination boundaries are delimited by administrative boundaries, with no regard to other alternative configurations that could have higher potential (Blasco, et al. 2012). Tourism knows no borders, it's actually rather its antithesis: while boundaries are basically used to administrate territories, tourism is essentially the act of crossing them to the point that some borders are to be attractions in themselves (Blasco, et al. 2010). There are potential interdependencies arising from inter and intra destinations in the border that are being missed because the planning and territory tourism consumption is done

in administrative criteria, which does not always leads to optimal development (Blasco et al. 2010).

The way in which advances in the technologies of mobility and modes of transport have influenced the expansion of territorial boundaries over the centuries, from terrestrial to marine to aerial dimensions, is examined and related to contemporary forms of tourism (Sofield 2006). Moreover, the overall 'myth of the international frontiers' endows such areas with a degree of the 'exotic', appealing to travellers in search of out-of-the-ordinary environs they can add to their list of 'collected destinations' (Butler, 1996: 216; Ioanides, et al. 2006).

Dredge (1999) support the concept of Tourist Generating Regions or Markets, used to collectively refer to the usual place of residence of potential tourists, instead of focusing upon inappropriate geographical boundaries. Accordingly, any given destination can be as diverse or as limited as the market itself. While tourists go to a destination in order to experience its features or characteristics perceived to be of interest, specific demands and expectations are derived from motivations and preferences of tourists and are influenced by conditions within their diverse generating markets.

Ioanides, et al. (2006), studied the transboundary collaboration in the Bothnian Arc Project, a cross-border collaborative effort between Sweden and Finland. The tourism's relationship to political boundaries is a topic that has been explored only superficially. Ioanides, et al. (2006) concern the obstacles inhibiting tourism's development in a cross-border setting and, particularly, the tensions arising when the respective national interests of the two neighbouring countries do not coincide with the mutual benefits to be derived through close transfrontier collaboration at the regional level. The Bothnian Arc Project is focused on studying the development and marketing of this cross-border region as a single destination. Attention is paid to the advantages that tourism activities are in a position to derive from cross-border collaborative planning efforts, but it is also argued that there are often forces that dampen the success of such initiatives. Borders here are not subjected to a barrage of bureaucratic controls, cultural and religious differences, having to deal with a foreign currency and, perhaps more significantly, the fear of the unknown and concerns about personal safety. The investigation

shows that even if the border in this region has effectively disappeared, obstacles remain to achieving mutual regional benefits.

Although the presence of two fundamental and contradictory visions grounded in the European project: regionalisation and internationalisation revealed by Nilsson & Eskilsson (2010); according to Ioanides, et al. (2006), within the EU, as a consequence of greater integration, there is a tendency of accelerating efforts on the part of regional and local authorities in neighbouring countries to develop partnerships. Most of these cooperative initiatives were based on common interests such as industrial sector decline, territorial proximity, economic and urban structures and policy aims. Such projects aim for the exchange of knowledge and information but also seek to ensure the implementation of sector-specific policies on either side of the border in a coordinated fashion.

Transboundary collaboration is particularly vital and has many benefits for visitor management and marketing efforts in cases where countries share natural and/or cultural resources, as is the case of the Pyrenees region. According to Blasco, et al. (2010), now the destination is a geographical region that is considered by visitors as a unique entity, although is administratively divided by three countries and their internal regions and counties. Ioanides, et al. (2006), argue that since many cultural and natural resources are bound by political lines, most conservation problems cannot be solved without the joint involvement of administrators in neighbouring countries. Cross-border cooperation in ecosystems management can help facilitate the standardization of conservation controls on both sides of the border. This has the potential to offer protection of migratory species, water bodies, and scenic landscapes that cross boundaries.

In the case of the non-international boundaries, there is a lack of studies which centralize this topic. However, due the permeability of the international borders of the EU and other parts of the world, many transboundary studies can be taken into account. Regional and local boundaries share similar problems, nowadays, to international boundaries, as international boundaries became just political and administrative lines, without physical impediments. At the meso-level, regional and local government, largely through resourcing and legislative

impediments, it could be found the same reluctance to commit to a fully collaborative cross-border planning and management model (Lovelock & Boyd, 2006: 143).

2.2- Tourism attractions within a destination

According Blasco, et al. (2010), most of the literature on destinations organization is build on the point of view of supply, while rarely they are situated studies that start from the point of view of demand. Tourists consume the territory because the products in it. Tourism is an especially dynamic economic sector that recently has been merged in a strong process of reconfiguration, through a hyper segmentation; demand has acquired an especially relevant role in the configuration of tourist products (Blasco, et al. 2009).

Attractions are the basic elements on which tourism is developed (Lew, 1987: 554); in general, referred to all objects, phenomena or even facilities that potentially could be used for recreation (Chhetri & Arrowsmith, 2008).

Tourism nodes comprise two primary components according to Dredge (1999), which are quite often interdependent: attraction complexes and service components. Attraction complex comprise any facility that tourists visit or contemplate visiting. In essence, a destination region is a location that a person chooses to visit for at least one night in order to experience some feature or characteristic perceived as satisfying a leisure time experience (Leiper, 1990 & 1995). A tourist may go to various points within the region; however, where the visit involves an overnight stay in a different location, a new destination region is invoked.

The service component can have a significant influence over the spatial structure and evolution of the destination. For example, accommodation establishments are likely to locate as close as possible to the attractions of the destination region (Dredge, 1999). The elongated accommodation development characteristic of coastal destinations is an example of this trend (Smith, 1992).

Chhetri & Arrowsmith (2008) argued that locations that provide infrastructure for visitors, such as accommodation, shops, kiosks, picnic and camping grounds, and information centres are more likely to attract a greater number of visitors than those without.

Dredge (1999), supported the concept of “counties”, which recognizes that within any single destination region there are precincts or nodes characterized by different tourism emphasis, such as areas in which one particular style or focus of tourism dominates. The atmosphere of a

destination is derived in part from the cohesiveness of and consistency within these counties. Moreover, counties can encompass one or many nodes which possess similar styles of tourism. The existence of such counties supports the notion that any one destination region is likely to be able to fulfil a variety of tourist needs and expectations. Furthermore, if well planned, these areas can co-exist and even create a synergy where the attraction of the region is more than the sum of its constituent areas. Dredge (1999) also support the Circulation routes explained by Lue, Crompton & Fesenmaier (1993), which point out that these routes are chosen based on the motivations of and benefits sought by tourists in the destination.

2.3- Within destination travel patterns

Lue, et al. (1993) identified five relevant patterns of single and multi-destination pleasure trips to tourist travel. a) There is the single destination pattern where a single node means the reason for the pleasure trip. b) There is the en-route pattern where visitor has a main destination but stops briefly at other attractions. c) At the base-camp or hub-and-poke pattern, the visitor stays at one location used as a "base camp" to visit other places of interest in the region doing day trips. d) At the regional tour pattern, the visitor has several destinations within a given region. e) The trip chaining pattern represents a tourism vacation visitor has several destinations encompassing several regions. It is assumed that in these models the points visited are not simply attractions, sights, or objects at which a given motivation is being fulfilled, but are nodes which contain tourism services and facilities. According to Dredge (1999), this model provide a good starting point for the exploration of the nodal structure of destination regions and ultimately, the conceptualization of a spatial model for destination region planning and design.

(Dredge, 1999) has evolved the Lue et al base-camp pattern to the multiple node destination region, which describes the situation where a destination comprises more than one node (attraction complex and service components). It incorporates many of the ideas generated by Lue et al in their base-camp pattern and identified three levels of nodes: primary, secondary, and tertiary. According to Dredge (1999), it is not necessary for a destination to possess a primary node. The synergy created between secondary nodes may in itself be sufficient to draw people to the region.

Most models which deal with travel patterns and linkages have been developed primarily based on North American destination regions where the automobile travel dominates. According to Dredge (1999) these models have limited applicability to other types of destination regions. Furthermore, while the travel patterns generated in a particular region are inextricably related to its physical characteristics (for example, the availability, cost, distance, and condition of

routes among points of interest), these models do not tend to recognize these factors and as such are of limited utility to planners.

Connell & Page (2008) argue that even within the tourism studies and transportation literature published across a wide spectrum of social science journals, there is a surprising neglect of the impact of the car on tourism travel patterns, behaviour and activities. However, in domestic tourism, the car is now the most important mode of transport for tourists travelling to, and within, a destination. Connell & Page add that the use of the car is a dynamic and complex phenomenon in tourism, yet its powerful role in shaping tourism patterns and destinations has not really been explored in any detail by researchers.

Moreover, in nature-based and rural or mountain destinations, automobile use can be considered as an important variable in modelling intradestination movements due the lack of other options. Tourists who do not have access to an automobile must rely on the poor local public transport system, specialist transport providers, or walking.

One of the essential characteristics of drive tourism is its nature of multiple destinations, as self-driving tourists develop their own personal itineraries. Shih (2006) argued that every destination within a certain area should be configured with appropriate touring facilities according to the network characteristics relating to its position on various touring routes.

Chancellor & Cole (2008) found that 93% of the visitors to Jackson County were single destination travellers, among which 71% were base-campers, and 12% were static. Although there is need for further research on this topic it seems reasonable to assume that in rural and natural areas the most common pattern of movement is car-based hub-and-spoke or a combination of hub-and-spoke and static patterns (Blasco, et al. 2012).

Additionally, hub-and-spoke or base-camp pattern is territorially compatible with stop-over secondary destinations in multiple-destinations patterns (Blasco et al, 2012; Dredge, 1999, Lue et al, 1995). Therefore, Blasco et al (2012) have taken as reference the hub-and-spoke or base-camp patterns to draw consumption-based destinations boundaries to find alternative divisions of space with the highest tourism potential attractiveness.

According to Lew & McKerker (2006), the perceived renown of an attraction represents an important set of movement considerations. Tourists feel obliged to visit primary attractions even if they are located in relatively out of the way places. However, the multidestination travel decision is influenced not only by the motivations of the tourist by the attractions, but also by the geographic characteristics such as distance and opportunity configuration (Shih, 2006). According to Lew & McKerker (2006), time spent in a destination area is arguably the single most influential criterion shaping tourist behaviour, because it can directly constrain or expand the number and range of potential activities available and the depth at which individual activities can be experienced. Most tourists are "outcome" oriented, and seek to maximize time spent at a place by minimizing transit time. They prefer to follow the most direct routes and eschew trips requiring long transit times unless there is a substantial pay-off at the end (Lew & Mckerker, 2006).

According to Blasco et al (2012), the distances travelled by base-campers have been documented in only a few papers (Smallwood, Lynnath & Moore, 2012; Chancellor and Cole, 2008). In both cases, rural-mountain area and a nature-based tourism destination, the maximum distances covered by visitors were between 93 and 105 km, and between 80 and 100 minutes.

The intensity with regard to attractions number also affects consumption patterns. According Blasco et al (2012: 5) low intensity is correlated with more fixed patterns of consumption, while higher intensity implies higher variety. However, there are different consumption patterns depending on other variables. For instance, Nyaupane & Graefe (2008) demonstrated that short-distance visitors participate in a few, but more in depth activities during their trips, whereas long-distance visitors are interested in a variety of activities within a short period of time, most of which are less intense.

Travel to and within the destination region is manipulated by the use of markers. The term marker is drawn from MacCannell's (1976) work relating to attractions. A marker is any item of information about a potential attraction and may be promotional or informational in nature.

Leiper (1990) defines two types of markers: detached markers and contiguous markers. The detached ones are made up of generating and transit markers, with the former located in the market and the latter along the travel route. Markers may perform a number of functions, including trip motivation, destination selection, itinerary planning, activity selection, nucleus identification, name connotation, and souvenirs. In relation to destination planning and design, detached markers influence tourism patterns within the destination and thus may have a significant influence in determining which nodes to be visited, in what sequence, and for what length of time (Dredge, 1999: 782).

Finally several authors categorized the attractions within their studies. Chhetri & Arrowsmith (2008) classified the attractions features as nature-based, recreation-based, cultural and/or historic-based and infrastructure-based opportunities. Nature-based opportunities included scenic lookouts, waterfalls, walking tracks and unique geomorphic features. Recreational-based opportunities comprised rock climbing areas, boat launch sites, picnic grounds and barbeque sites. Significant buildings, monuments, ruins, aboriginal artworks and cave paintings were considered as recreational opportunities for their cultural and historical significance. The infrastructure opportunities included accommodation, information centres, horse hire venues, golf course, caravan park and boating facilities.

Blasco et al (2010) classified the attractions as culture-based, active tourism, ski, nature-based, itineraries, leisure, wellness and infrastructure-based opportunities.

2.4- Tourism zoning in rural regions

Blasco et al (2012) argued that tourism zoning is not a major area of research yet. Most of the movements patterns research has focused on the analysis of tourism movements patterns in small areas such as cities, counties, nature parks or theme parks (Connell & Page, 2008; Dietvorst, 1995; Peterson & Zillinger, 2011; Shoval & Raveh, 2004); whereas the analysis of mobility patterns in greater regions is much less explored.

At a regional level, Chancellor & Cole (2008) studied travel patterns, activity choices, sources of travel information, and demographic information of visitors to the rural region of Jackson County.

Van der Knaap (1999) analysed the tourist time-space patterns from the sustainability point of view by 1) obtaining an overall insight into the use of the physical environment by tourists, and applying exploratory spatial data analysis techniques and dynamic cartography; and 2) constructing and analyse tourist recreation complexes using network analysis techniques.

Blasco et al (2012) proposed a method to identifying consumption pattern-based tourism areas of high potential within larger areas, such as regions, states, group of countries, cross-border regions, etc.; without any regard to internal administrative boundaries. With this method larger areas can be divided into smaller "local-like" relevant tourism destinations, which could otherwise be difficult to detect. The method consisted in the hierarchical cluster analysis to find relevant tourism zones within a region, departing from the attractions of the given region and networked with the accommodation hubs.

Dredge (1999) has already identified the important paper of the attraction nodes and the service hubs. Also according to Leiper (1995), Dredge (1999) argued that nodes comprise two primary components which are quite often interdependent: attraction complexes and service components. Attraction complex comprise any facility that tourists visit or contemplate visiting. Attraction complexes may be located in one geographical location or in spatially distinct clusters within the destination region. The complementary nature of attractions usually increases the overall appeal of the individual nuclei contained within the complex. The complexes usually have a synergetic relationship with each other, thus increasing the overall

touristic interest to a level greater than the sum of its individual parts. Leiper also observes that the nuclei (and thus entire complexes) can be organized into a hierarchical structure according to the significance of the attraction.

Chhetri & Arrowsmith 2008 when analysing the range of recreational opportunities in Natural environments, affirmed that the tourism potential can be affected by the spatial distribution of attractions and their accessibility to visitors. This is partly because areas where tourist attractions are spatially dispersed require relatively longer travel times between attractions than those areas with a greater concentration of attractions. This is particularly important for short-duration trips, such as single-day visits. Therefore, the varying recreational potential of areas in turn could hold different degrees of likelihood of visits.

How visitors arrange their space-time budgets in recreation areas? Time is of obvious central importance, especially as tourism is generally defined in terms of the use of time and the tourism visit with its diverse activities is severely constrained by the availability of time (Dietvorst, 1995).

While other studies as Chancellor & Cole (2008) took into account the geodesic distance (or straight-line distance), Blasco et al (2012) used the distance time between the attractions to calculate the possible attraction nodes, as a way of take into account the geographical characteristics of the region.

As Lew & McKerker (2006) pointed to an extremely complicated task of documenting and then attempting to make sense of hundreds or thousands of individual travel routes, some going from A to B using the most direct route, some going indirectly, and others making intervening stops at Points C, D, or E; Blasco et al (2012) assumed the most direct route between points.

2.5- GIS technology and hierarchical cluster analysis

Cluster analysis is an exploratory data analysis tool, which aims are sorting different objects into groups in a way that the degree of association between two objects is maximal if they belong to the same group and minimal otherwise.

Clusters, whether territorial or thematic / specialized, have been a topic widely discussed in the academic literature, especially with regard to the offer (Porter 1998 and 2003), but not so much from the point of view of demand.

Several recent studies analyze the clusters construction in the tourism sector, but according to Blasco, et al (2010), most of the published articles depart from the basis of the pre-existing tourism destinations, without questioning them; which causes the Inability to bring out new tourism realities with new territorial criteria.

As we are dealing with spatial data, the consideration of GIS-based techniques is essential. Chancellor & Cole (2008) argued that the power of GIS is this ability to electronically store, manipulate, and display data in a spatial format (map). Therefore, spatially oriented concepts can be modelled and mapped, which provides easy viewing of the data to aid in analysis.

In recent years, GIS have made a contribution to various facets of recreational resource management. These contributions range from a simple resource inventory to building a spatial decision support system. The development of GIS-based inventories has introduced flexibility, objectivity and efficiency in managing the spatial database of recreational resources. GIS provide procedures and tools for acquiring spatial information as well as making data more accessible, repeatable and useable. Recreational features, such as walking tracks, scenic vistas, waterfalls, unique geomorphic features and historical and cultural sites of interest can be stored as spatial objects, along with their attribute information, in a geographical database. Data can be stored in GIS as points, lines and areas to represent spatial properties of recreational features (Chhetri & Arrowsmith, 2008).

Lau and Mckercher (2008) studied intradestination tourist movement patterns using GIS; as Chancellor & Cole (2008) when studied travel patterns in Jackson County by identifying tourists' home of origin and the spatial relationship between attractions visited. Chhetri & Arrowsmith 2008 used geographical information system (GIS)-based technique to measure the recreational potential of natural tourist destinations in the Grampians National Park, Australia, in order to develop a set of predictors of scenic attractiveness derived from data collected via questionnaire.

Geographic Information System (GIS) offers an opportunity for the analysis of the spatial component of tourism. However, current commercial GIS programs cannot yet easily add time as a dynamic component, although one can approximate the dynamics of time by taking different time frames of a situation and display them sequentially (Van der Knaap, 1999). However, intervalling the time is a loss of data accuracy that could not be assumed in the present study.

Moreover, there is a number of GIS-oriented software that can run cluster analysis of spatial data, but with limitation. Clusters in GIS based-programmes can only be calculated on the similarity or dissimilarity of Euclidean or Manhattan distances from given points, thus do not offer the option of Ward method (Blasco et al, 2012).

Otherwise, the Statistical analysis software SPSS allows a broader range of clustering algorithms, for instance the Ward algorithm (Aldenderfer, & Blashfield, 1984).

According to Ferreira & Hitchcock (2009), and to immerse ourselves further into the analysis of clusters, it should be explained that an important type of clustering methods is hierarchical cluster analysis. There are two main types of hierarchical clustering methods: agglomerative and divisive. An agglomerative hierarchical method begins with each object as its own cluster. It then successively merges the most similar clusters together until the entire set of data becomes one group. Within the group of hierarchical clustering method it could be found that of Ward (1963). While Ward's method is similar to the linkage methods in that it begins with N clusters, each containing one object, it differs in that it does not use cluster distances to group objects. Instead, the total within-cluster sum of squares is computed to determine the next two groups

merged at each step of the algorithm (Ferreira & Hitchcock 2009:1927). Ferreira & Hitchcock argued that for clusters of equal sizes, Ward's method and complete linkage worked best.

Ferreira & Hitchcock also agreed with the Blashfield's (1976) comparative of four types of hierarchical clustering methods (single linkage, complete linkage, average linkage, and Ward's method) using Cohen's statistic to measure the accuracy of the clustering methods. Ward's method performed significantly better than the other clustering procedures; the second best was complete linkage; average linkage gave relatively poor results. Ferreira and Hitchcock (2009:1937) finally found that for almost every pattern of cluster sizes, Ward's method had the highest mean Rand index. Complete linkage often rated second best. The only time Ward's method was not superior was in the case of one very large group and three small groups.

3. Presentation of the case study

Terres de l'Ebre is a southern region of Catalonia regional state (in Spain), that includes the following supralocal counties: *Montsià*, *Baix Ebre*, *Ribera d'Ebre* and *Terra Alta*. Borders with Valencia regional state on the south, with the Aragó regional state on the west, and to the *Camp de Tarragona* region on the north. The tourism destination has been created few years ago, due to the local demand. Nowadays the *Terres de l'Ebre* region belongs to the Tarragona province. It is in the process of a new administrative territorial delimitation of Catalonia, where the actual *Tarragona* province will be divided in *Terres de l'Ebre* and *Camp de Tarragona*. When the new administrative delimitation was approved, *Terres de l'Ebre* region ceased to belong to *Costa Daurada* destination, and created a new tourism destination brand: *Terres de l'Ebre*. The new destination, still managed by the Tarragona province administration, was received with great excitement by local institutions, the private tourism sector and the residents. It was expected that the new tourism destination would represent better the rural, natural and cultural attributes of the *Terres de l'Ebre* region than the ancient brand *Costa Daurada*, which was associated to the sun & beach and mass tourism of *Salou*.

Terres de l'Ebre most distinctive geographical feature is the lower course of the Ebro River, which runs between the mountains of *els Ports,* declared Natural Park, and the Cardo-Boix Mountains. At the end of the course, the river has created the alluvial plain of the *Ebre* delta, declared Natural Park.

The recent recognition of the *Terres de l'Ebre* as a Biosphere Reserve could mean an opportunity to bring new economic inputs, international publicity of the region and international recognition of their heritage: nature, landscape, history and culture.

Most of the population of the *Terres de l'Ebre* region lives in the *Baix Ebre* and *Montsià* counties, close to the coastline, and the riverbank. The more inhabited localities are (by number): *Tortosa*, *Amposta*, *Sant Carles de la Ràpita*, *Deltebre* and *Alcanar*. They also have a

representative weight *Gandesa* and *Mora d'Ebre*, which are the capital of the *Terra Alta* and *Ribera d'Ebre* counties, respectively.

Table 1: Inhabitants the 2012

County	Inhabitants
Baix Ebre	83.125
Montsià	72.121
Ribera d'Ebre	23.867
Terra Alta	12.713

Source: Idescat

The communication routes of the *Terres de l'Ebre* are particularly good from north to south following the coastline, due to the importance of the Mediterranean corridor (railway, N-340 and AP-7). The C-12 is a quite good route which connects *Amposta*, *Tortosa* and *Mora d'Ebre* with *Lleida* following the *Ebre* riverbank. The N-420 is another quite good route which connects *Reus, Falset, Mora d'Ebre, Gandesa, Calasseit* and *Alcanyís*. The rest of the routes are local or regional ones and they have very important quality differences depending on the geography of the area, the proximity to the regional state boundaries and the population of the area.

Strict setting criteria of human geography would probably reduce the *Terres de l'Ebre* region to *Baix Ebre* and *Montsià*. Most part of the *Ribera d'Ebre* county is linked nowadays more to Reus than Tortosa regarding to the daily life, thanks to the railway line that connects Casp with Reus and Tarragona, stopping in la Ribera d'Ebre. It should be noted that this county has a strong character transition between *Lleida* (the northern half) and Reus (especially the southern half), the *Pas de l'Ase*, makes the dividing line between the north and the south.

The *Terra Alta* case is different. The area is not widely connected by road with *Amposta* and *Tortosa*. The only administrative possible ties with Catalonia are through the connections with the *Baix Ebre* and *Ribera d'Ebre*. This area is more connected to the *Matarranya* and *Baix Aragó-Casp* counties, in the *Aragó* regional state due the geography.

Finally, at the very south of the *Terres de l'Ebre* region, along the borderline of the *Sénia* River, a commonwealth between municipalities have been created. The *Mancomunitat de la Taula del*

Sénia is a young association of border towns with strong social ties, situated in the three regional states of *Catalunya*, *Valencia* and *Aragó*. It was created in order to facilitate the demand for local infrastructure, the economic and tourism development, and the social interaction. The creation of this commonwealth was an inspiring element that induced the author of this study to be interested in the topic of non-international boundaries.

As a summary regarding the border issue, *Terres de l'Ebre*, along with the areas of the *Maestrat* and *Matarranya* (including the Catalan speakers' counties of *Aragó* and *Baix Aragó-Casp*) are border areas with a particular human exchange, and with a medium-low level of communication infrastructure.

Terres de l'Ebre have several interesting tourism areas: *Els Ports* Natural Park and its National Hunting Reserve; the bike greenway from the *Vall de Zafan* linking the region of *Terra Alta* and *Baix Ebre* to the *Ebre* delta Natural Park; the *Cardó* and *Montsià* mountains; the *Benifallet* caves; the historical enclaves of *Horta de Sant Joan*, *Miravet* or *Arnes*; the *Ebre* Battle interpretation centres; the *Ebre* landscape and its activities (from *Mequinensa* to *Deltebre*); the Assut of Xerta; the beaches diversity of the Ebre coast (rock or sand, big or small beaches and family tourism towns like *l'Ametlla de Mar*, *l'Ampolla, Sant Carles de la Ràpita, Les Cases Alcanar*, etc.); the cave paintings of Levantine art (World Heritage) in *Ulldecona* and *el Perelló*; the Iberian settlement of *Tivissa* and *Alcanar*; the city of *Tortosa,* which has a remarkable historic and architectural heritage; etc. As the most part of the *Terres de l'Ebre* region is natural and rural area, one of the tourism market shares is rural and natural tourism contributing to the maintenance of the traditional rural activities, which actually are still the basis of the *Terres de l'Ebre* economy.

Map 1: Geographical, political and road map of the *Terres de l'Ebre* region

Source: Institut Cartogràfic de Catalunya

4. Research method

In this study has been analysed the distribution of the tourism products in the *Terres de l'Ebre* region and its relevance in the tourism market, connected with the distribution of the tourism accommodation services, as a first step to consider development strategies of tourism zoning in the region, without considering the local and the regional boundaries.

The empirical analysis to consider tourism zoning strategies is conducted in five stages: 1) the identification of the attractions, their relevance and tourism category 2) identification of the distances between the attractions themselves, 3) the application of the clustering method, 4) the identification of the tourism accommodations hubs and 5) the classification of the tourism areas outgoing from the cluster analysis according to their attractions and their accommodation hubs.

4.1- Identification of the attractions, their relevance and tourism category

What is the value of a tourism resource? It is not easy to answer this question. First of all tourists do not appreciate just how different the resources are, on the other hand, it is very difficult to translate the subjective perception of a visitor in objective parameters that enable to organize information. Therefore, to obtain a reliable database of the tourism products, the data has been extracted from secondary sources: markers. The basis of this study has been the systematic collection of information of tourism guidebooks with the aim of interpreting the hierarchical organization of the tourism resources of the destination. This methodology has been already used in other case studies of the Tourism Department of the University of *Girona* and INSETUR.

The guidebooks are, despite the recent growth of digital information, a powerful tool of prescribing in tourism: visitors follow very faithfully the instructions that recommend the guidebooks. Guidebooks act as a Marker (MacCannell's, 1976) as an information item of a potential attraction and promotional or informational of its nature. Markers may perform a number of functions, including trip motivation, destination selection, itinerary planning, activity selection, nucleus identification, name connotation, and souvenirs. In relation to destination planning and design, detached markers influence tourism patterns within the destination and thus may have a significant influence in determining which nodes to be visited, in what sequence, and for what length of time (Dredge, 1999).

In addition, a tourism guidebook is a very efficient indicator of the tourist gaze of a given territory. Therefore, the study of tourism guidebooks is used as an interpreter of the social construction of a destination.

The results of the guides' analysis will reflect then the tourist gaze of the territory of this study-case, whereby they will be taken into account to explain the tourism attractions which contain each resulting cluster from this study, its relevance and its nature.

Several tourism guidebooks from different sources and different scales (local, regional, national and international) have been examined in order to extract the products and its relevance.

Various tourism guides covering the *Terres de l'Ebre* region have been detected. To select a convenient sample, it was taken into account that the guides should cover the whole *Terres de l'Ebre* Region, keep updated, be addressed to the general public and represent the possible different scales.

Some International guidebooks were analysed, but without obtaining any data of the *Terres de l'Ebre* region. Many national and regional guidebooks have been detected. Some local guidebooks have been also taken into account but, some of them have been discarded as have been considered to do not represent the general public.

Finally 9 tourism guidebooks have been used to extract information: 2 local guides, 5 regional guides and 2 national guides.

Within the selected guides, a total number of 354 basic attractions have been identified. In some cases, when the tourism guidebooks did not specify enough, the information of the tourism attractions has been extended with information identified through other sources to obtain reliable information about its location and the tourism type.

Tourism attractions have been categorized according to different criteria. On one hand, according to Lue, et al. (1993), the attractions have been classified into those with an international level of attractiveness (level 1), those with a regional level of attractiveness (level 2) and those with a local level of attractiveness (level 3).

On the other hand, each attraction has been classified in regard of their nature, nature-based attractions, culture-based attractions, active tourism attractions, leisure/entertainment attractions, spa & wellness attractions, sun & beach attractions. Each category offered several options to specify the kind of attraction, in order to provide deepening possibilities in the field, in the case than an interesting pattern of the variables has been detected. The nature-based attractions included protected and declared natural areas, interesting landscapes, bird-watching and wildlife tourism and panoramic views. The culture-based attractions consisted of protected and recognized cultural elements, religious heritage, civil heritage, archaeological

sites and caves paintings, museums, expositions and projections, festivities and traditions, performances and events, historical facts, traditional and rural activities, charming towns, gastronomy, celebrities, pilgrim places and finally crafts and industrial tourism. As active tourism attractions it has been considered all the activities that in general were related with the sport in open areas like climbing, water activities, sailing and nautical tourism, caving, hiking and trekking, cycling, canoeing and kayaking, golf, horse ridding, boat excursions, safari trips, paragliding and other air modalities, hunting and fishing, and motor sport. The category leisure and entertainment represented those attractions which offered shopping possibilities, night leisure and thematic parks. The spa & wellness attractions were those offering thermal springs and spas. As sun & beach attractions were included those on the coast, but also the inland beaches from lakes and rivers.

In order to establish an empiric method of the attractions classification, the tourism guidebooks have been awareness analysed before extracting the data. It has been considered several items to decide if each Tourism attraction should be classified in level 1, 2 or 3.

First of all, it has been considered the own guide classification; such as stars, points or various types of recommendations (in the future we will refer to all of them as stars). But also it has been considered the existence or not of a picture of the attraction and its size, the length of the text dedicated to explain the attraction and the highlighted position of the attraction compared to the rest of the text.

Furthermore, it has been considered the scale of the guidebook to decide the level of the attraction, this way the results have been differentiated for each of the scales: Spain, Catalonia and *Terres de l'Ebre/Costa Daurada*. For example, just appearing in an international guide, could be a strong enough reason to consider the attraction as level 1, either if it doesn't appear a picture or the text is a short one. On the other hand, the existence of a picture in a local guide is not enough to classify the attraction as level 1.

Taking into account the national guides, the fact of appearing in those guides has been considered as to be classified at least as level 2. It has been considered level 1 those tourist attractions explained using a large text, pictures or a highlighted position on the page. The rest

of the attractions appearing in the two Spanish guides analysed has been considered level 2 attractions.

In the case of the regional guides, as the Catalonian guides, it has been considered level 1 the attractions with big and medium pictures, 1 and 2 stars, a notable highlighted position, or a half page text. It has been also considered level 1 if an attraction was explained using a minimum of a paragraph but also had a sufficient highlighted position, and a small picture or a star.

It has been classified as level 2 the attractions which had a star, and those attractions explained with a text of a paragraph minimum, a small picture or a sufficient highlighted position. It has been also classified as level 2 if it was a medium picture without a text explanation or in the case of an attraction of less than a paragraph but with a really highlighted position.

In the level 3, it has been included the attractions explained without picture, no highlighted position, and a text of less than a paragraph. No attractions has been rejected, as considered that appearing in a regional guide was reason enough to be classified at least level 3.

Finally, for the local guides of *Terres de l'Ebre* and *Tarragona* province, the applied method of interpreting the data was the following:

To be classified as level 1, an attraction should have been represented by a big picture with a minimum of a paragraph, a medium picture with a minimum of a half page text, a really highlighted position with a minimum of a paragraph or a medium picture and, finally, a small picture with a minimum of a half page text and a highlighted position.

At the level 2 have been included those attractions represented by a big picture with a short text or a mention, the ones represented by a medium picture with a paragraph of text, the medium highlighted attractions with a paragraph or a small picture, the ones with a half page text without picture and low highlighted position, and finally the ones with small pictures and a minimum of a paragraph of text.

Finally, in the level 3 have been included, the rest of the attractions, except some which have been rejected as they were just mentioned on the text, and had no highlighted position and no picture.

After the creation of the 9 databases (one database for each travel guidebook), an aggregation of the results have been made. Through the aggregation, it could have been known the classification level average (level one, two or three) that the guides gave to each tourism attraction, and how many guides have mentioned each tourism attraction. In some of the cases the classification level average had a number with decimals a result. In those cases the results were given in round figures, classifying them into the closest level.

It should be mentioned that a cleaning database have been done in this point, ignoring the category given to the tourism attractions mentioned just in one guide. The attractions which had appeared just in one guide were not eliminated from the clusters, but their attractiveness level was not shown. In other words, showed results of the attractions attractiveness level in each resulting cluster have been just those tourism attractions that were mentioned in at least two guides. Doing this, it has been assured that the classification of each tourism guide was not induced by the type, or the particular orientation of the guide. The relevance of each tourism attractions could be considered a substantiated general classification.

Despite this database cleaning, the results obtained from the tourist guides analysis is a representation from the reality, not exactly the reality. This study is based on the analysis of nine guides, which means that it have been used a limited number of sources. Furthermore in this case-study the same type of sources has been analyzed. Although the tourist guides are an accurate source to use for extracting the tourism attractions, for future analysis, it could be interesting the use of other sources types, like Tour Operator and Travel Agencies catalogues, tourism web pages, and local tourism office brochures; to see if deeper and a higher number of details could be obtained. It could be conclude this way: the more number and type of reliable sources we had, the more reliable would be the interpretation of the reality.

4.2- Identification of the distances between the attractions themselves

In order to create the clusters between the detected attractions on the previous stage, it should be know the distance between each of the tourism attractions. Another database has been created to know the distance between each tourism attraction, using some information obtained in the previous database. The resulting matrix containing these distances has been afterwards used to calculate the clusters depending on the proximity of the tourism attractions themselves.

After considering the rural characteristics of the region, it have been decided that the best option for calculating the real distance between each tourism attraction should be the real travel distance, instead of using the standard geodesic distance used in many other studies to avoid bizarre results. Due to the time difference that could imply the movement from one point to another depending on the type of road used, in this case-study, distance have been measured also in travel time used to go from one point to another, following the criteria of Blasco, et al. (2012). We should remember that *Terres de l'Ebre* is a region crossed by two main roads, but that the rest of the roads are between flat rural lands and mountain regions, and moreover, divided by a big river that do not offer crossing possibilities everywhere.
Two matrixes have been created containing the distances in time and in kilometres between the towns where the attractions were located. For calculating the time-distance and kilometres-distance, it has been used two very practical tools: *Via Michelin* and *Google Maps*. These web pages calculate the best route from one point to another in time and kilometres. Paying routes options have been declined, after considering that not everybody is willing to use these routes in base-camp tourism excursions. It have been obtained a total of 3.192 distances in each matrix (The distance of the towns from themselves has been removed from this total, as its zero), after calculating the distance of each town between all of them.

As a limitation it could be said, that calculating the distance between the towns that locate the tourism attractions, it has not been calculated the exact distance between the attractions. V*ia*

Michelin and *Google Maps* calculate the distances from city centres, but as we are dealing with a rural and nature tourism destination, most of the attractions are situated outside of the towns. The best option for knowing the distance would be calculating the distance between the exact points of every tourism attraction. This option have been rejected as it would have taken so many time to obtain the data of the exact position and much more time to calculate the distance between the 354 attractions (that would imply 124.962 searches each matrix.) without obtaining very significant result differences. To minimize this limitation we have considered the influence area of various inhabited and remote villages, which belong to big towns, as another town. This way *Bítem*, which belong to the municipality of *Tortosa*, have been taken into account. This is also the case of *Poble Nou del Delta* and *Eucaliptus, which belong* to the municipality of *Amposta*. This consideration had implied the revision of the tourism attraction database, in order to rename the attractions towns of the new considered towns.

4.3- Application of the clustering method

The next step has been the cluster analysis, in order to determinate which of the territories counted on compact enough distances between the tourism attractions, to be considered a cluster from the perspective of the tourist consumption. The previous matrix was exported to SPSS program, to start the clustering process. They have been knit together 57 municipalities which contained 354 tourism attractions. The maximum distance between the attractions before the clustering was 166 minutes and 155 kilometres from *Vinaròs* to *Mequinensa*.

It have been used the hierarchical cluster analysis to find the tourism zones within the *Terres de l'Ebre* region. The cluster analysis is an exploratory data analysis tool which aims to joint different objects into groups, taking into account their similarities. We use the Ward algorithm, to build clusters following the criteria of the study-line followed by the UdG aforementioned.

As we are dealing with spatial data, considering the use of GIS techniques it was a necessary step. The amount of GIS-oriented software prepared to run cluster analysis is numerous. However, some important limitations have been found. The clusters can only be calculated on the similarity or dissimilarity of Euclidean or Manhattan distances between given points. The statistical analysis software SPSS, in contrast, allows a wider range of clustering algorithms than the GIS-based software; for instance the Ward algorithm (Ward 1963). On the other hand, SPSS cannot show spatial data; what means that, even so, the results ought to be afterwards represented on a map to an easier interpretation.

From the application of the cluster analysis, 5 clusters were resulting, which were represented afterwards on a map.

4.4- Identification of the tourism accommodations hubs

In order to find out the most important accommodation hubs of the clusters, the number of beds of all kind of lodgement types should be known. The data should be found in beds or accommodation capacity in number of persons, which would enable the comparison between accommodation types. In the future we are going to refer to the accommodation capacity in number of persons, as beds.

To obtain data about accommodation it has been used the existing databases from the *Departament d'Empresa i Ocupació* of the *Generalitat de Catalunya*. The containing data of these databases are the official ones and keep updated every year. These databases distinguish between the different accommodation types and between the different tourism brands of Catalonia. It has been easy to extract the number of beds from the hotel, camping and rural accommodation databases, as they have been given.

On the other hand, the case of the apartment and the housing for tourist use databases, the offered data did not indicate the number of beds. In the case of the apartments, the information about the beds number was finally found by consulting the web pages of the given contacts by the *Generalitat de Catalunya* database. In the case of the housing for tourist use, it has been estimated a number of 4 beds each house, as the information could not be easily found.

It has also been checked the accommodation of *Tortosa* and *Amposta*. As it has been explained on the previous stage**,** it has been taken some villages into account, because it has been considered that they were separated enough from the belonging town. These were the cases of the village and its influence area of *Poble Nou del Delta* and *Eucaliptus* belonging to *Amposta*, and the village of *Bítem* belonging to the municipality of *Tortosa*. The official databases do not separate the accommodations situated in the area of *Tortosa* from the ones situated in the area of *Bítem*, and neither do that in the case of *Amposta* and *Poble Nou del Delta-Eucaliptus*. In these two cases, it has been checked the accommodations one by one, to verify to which town and its influence area belong each accommodation.

Moreover, there were some border towns, which the guides included when recommending attractions in Terres de l'Ebre region. The accommodation information of these towns has been found outside from the Terres de l'Ebre data base. The information about *Bellmunt del Priorat, el Lloar* and *el Molar was* found in the *Tarragona* database given by the *Departament d'Empresa i Ocupació* of the *Generalitat de Catalunya.* As administratively some of these border towns belonged to other regions, no information was available in the databases from the *Departament d'Empresa i Ocupació* of the *Generalitat de Catalunya*. To get the accommodation number of *Vinaròs, la Pobla de Benifassà, Arenys de Lledó, Lledó, Queretes, Faió* and *Mequinensa*, the information was found out consulting the official web pages of the *Generalitat Valenciana* and *Gobierno de Aragon*. In both cases, the total has been obtained one by one, as there was not an open database with the totals. In the case of *Generalitat Valenciana*, the beds number of the tourism apartments could not be extracted, as the *Generalitat Valenciana* did only facilitate this information. Moreover, the *Generalitat Valenciana* databases did not gather the information about the housing for tourist use.

After collecting all the data, it have been extracted the accommodation hubs. By adding all the available bed in each municipality, it has been obtained the total of beds offered in each municipality. It has been considered a minimum of 100 beds by municipality to be an accommodation hub.

Moreover, it has been considered three levels of accommodation hubs depending on the number of beds offered in each municipality: level 3 accommodation hubs from 100 beds to 300 beds, level 2 accommodation hub from 300 to 800 beds and level 1 accommodation hub with more than 800 beds. By considering these 3 levels it's really easy to represent the different quantity of existent lodgement in a map, identifying each category with a different colour.

4.5- Classification of the tourism areas outgoing from the cluster analysis according to their attractions and their accommodation hubs

To the spatial distribution of the resulting clusters from the analysis, it have been added the information of the accommodation hubs and the distribution, relevance and nature of the attractions. By crossing all this data, it can be seen the attributes and shortcomings of the resulting tourism clusters. As the need of the geographical interpretation, maps were generated to allow for visual analysis of the spatial relationship

First of all, the existence or not of attractions with a high relevance has been pointed out, which can determine the capacity of the resulting tourism cluster to attract international tourism. Secondly, the distribution of the attractions within the resulting clusters has been considered, to see if there were enough attractions in the cluster and analyze their distribution.
Another thing taken into account was the nature of the attractions within the resulting tourism clusters. The nature of the attractions can indicate the local and regional tourism managers which can be the marketing strategy and the market share that they should invest for.

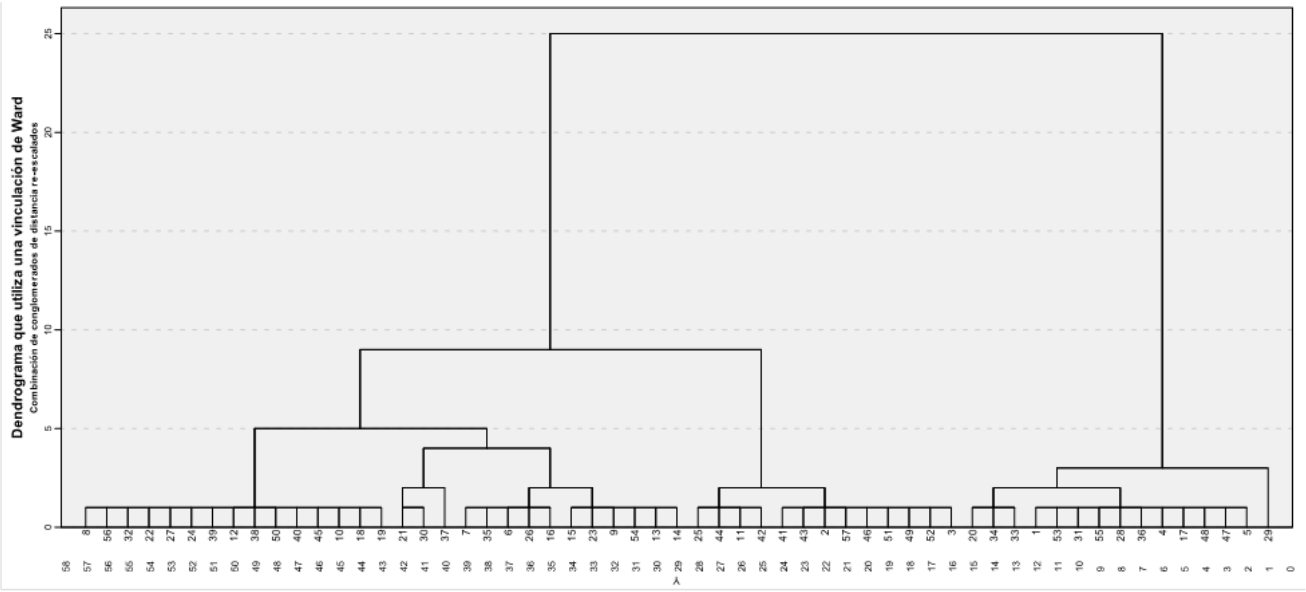
After the attractions analysis, the accommodation information of each resulting cluster has been analysed. Important information extracted from the attraction analysis has been crossed with the accommodations hubs of each cluster to analyse the possibilities of the base-camp or hub-and-spoke tourism mobility pattern. The number of available beds in each resulting cluster has been considered; but also the lodgement type and the spatial distribution of the beds. Using the time distance database, it has been checked if the accommodation hubs can give service to the resulting clusters. This is important in order to really conduct the resulting clusters to become the tourism distribution of the future; because, as we have explained before, the base-camp tourism choose a destination due to its attractions, where this attractions should have a central point to set the base-camp. At this stage, concentric circles from the level 1 and level 2 accommodation hubs to the towns which contained attractions have been created. It have been differentiated two types of possible spokes from the

accommodation hubs: the half-day trips are supposed as 30 minutes travel time or less, and the day trips of more than 30 minutes travel time and less than 80. It should be remembered here that the maximal distance covered by a hub-and-spoke tourist is between 80 and 100 minutes.

5. Analysis

5.1- Resulting clusters from application of the Ward method

Image 1: Resulting Dendrogram from the Cluster Analysis: Rescaled distance cluster composition



From the application of the hierarchical cluster analysis using the Ward method, a dendogram has been obtained. From the dendogram has been extracted that the cluster 5 and cluster 6 solutions were the two possible clearest ones.

The next step has been analyzing which municipalities belong to each cluster in both solutions, 5 and 6 clusters, in order to choose one of the possible solutions.

Taking the 6 clusters solution would have create a cluster exclusively for *la Pobla de Benifassà*. It could be thought that this town could better be part of another cluster together with other towns of the Valencia regional state, but after analysing its characteristics, it has been considered the 5 clusters solution. *La Pobla de Benifassà* and the Natural Park of *la Tinença de Benifassà,* which includes a couple more or really small and bad communicated villages and farmhouses, belong administratively to the regional state of *València*. However the natural

entrance to this area is through *la Sénia*, as the communications with the other *València* regional state towns are very bad and really far away.

Table 2: Resulting from the Cluster Analysis: Municipalities belonging to each cluster and maximum travel distance

Municipality name	Cluster number	Maximum distance in minutes	Maximum distance in km
Alcanar	1	97 min: Pobla de Benifassà – l'Ametlla de Mar	85 km: Pobla de Benifassà – l'Ametlla de Mar
Amposta			
Poble Nou del Delta - Eucaliptus (Amposta)			
Deltebre			
El Perelló			
La Galera			
La Pobla de Benifassà			
La Sénia			
L'Ametlla de Mar			
L'Ampolla			
Mas de Barberans			
Sant Carles de la Ràpita			
Sant Jaume d'Enveja			
Ulldecona			
Vinaròs			
Aldover	2	41 min: Alfara de Carles - Prat de Comte	38 km: Alfara de Carles - Rasquera
Alfara de Carles			
Benifallet			
Ginestar			
Paüls			
Pinell de Brai			
Prat de Comte			
Rasquera			
Roquetes			
Tivenys			
Tortosa			
Bítem (Tortosa)			
Xerta			
Arenys de Lledó	3	49 min: Villalba dels Arcs - Queretes	44 km: Villalba dels Arcs - Queretes
Arnes			
Batea			

Bot			
Caseres			
Corbera d'Ebre			
Queretes			
Gandesa			
Horta de Sant Joan			
Lledó			
Villalba dels Arcs			
Ascó	4	46 min: La Fatarella - el Lloar	34 km: La Fatarella - el Lloar
Bellmunt del Priorat			
Benissanet			
El Lloar			
El Molar			
Flix			
Garcia			
La Fatarella			
La Torre de l'Espanyol			
Miravet			
Mora d'Ebre			
Palma d'Ebre			
Riba-roja d'Ebre			
Tivissa			
Vinebre			
Faió	5	45 min: Mequinensa - la Pobla de Massaluca	33 km: Mequinensa - la Pobla de Massaluca
La Pobla de Massaluca			
Mequinensa			

After choosing the 5 cluster solution, the next step has been analyzing carefully the spatial distribution of the municipalities belonging to each cluster, to check the travel distance within the cluster.

Broadly speaking, there are some really rural areas in the *Terres de l'Ebre* region, like the *Ebre* delta, the *Ports* mountains, the *Tinença de Benifassà*, *Pàndols i Cavalls* mountains, *Pas de l'Ase*, *Lo Tormo*, *Tivissa-Vandellòs* mountains, *Cardó-Boix* mountains, *Montsià* mountains and *Godall* mountains. These rural areas directly affect the distribution of the clusters, while there are some well connected points due to the C-12, N-340, AP-7 and N-420. However, no cluster

exceed from the recommended 100 minutes or 105 km maximal distances covered by the rural and nature based tourist taking into account the base-camp movements (Smallwood, Lynnath & Moore, 2012; Chancellor & Cole, 2008). Just the cluster number 1 is close to the maximum time distance within two points of the cluster that a base-camper is likely to cover.

Taking into account these rural and natural areas, becomes evident the reason why in rural and nature based destinations is better to calculate the travel distance than the geodesic distance. For instance, *Alfara de Carles* is geodetically quite close to *Arnes*, but are naturally separated by *els Ports* mountains, which implies the need to turn the mountains. Moreover, between the options of taking into account the kilometres or time distance, a priority has been given to time distance. The differences in time between driving the same kilometres through a national route or to a local route can cause the inclusion or the exclusion of attractions into the range of possibilities of a base-camper.

Map 2: The cluster distribution and the including towns

Source: ICC

Legend:

Cluster	Towns
1	
2	
3	
4	
5	

Afterwards, the spatial distribution of each cluster has been represented on a map, what has helped to better analyse each resulting cluster.

The Cluster number 1 corresponds totally with the actual *Montsià* county. But also includes the Delta and coastal area of the *Baix Ebre* county, and the two border municipalities of *Vinaròs* and *la Pobla de Benifassà* from the *València* regional state. This extension corresponds mainly to the influence area of the N-340 and AP-7 routes.

La *Pobla the Benifassà* belongs administratively to the *Baix Maestrat* county, which capital is Vinaròs. The only connecting route to the county capital, pass through *la Sénia* town. This is the same route used to arrive to *els Ports* Natural Park of *la Sénia* area. It is also interesting to say that the *Ulldecona* swamp is situated in the València regional state side of the border on the way of *la Pobla de Benifassà*, and that is actually tourism promoted by the municipality of *la* Sénia, as it is the natural entrance door. The communications routes to the other towns of *Valencia* regional state are very bad.

Vinaròs is only 9 kilometres from *Alcanar*, the nearest town, and have many social and economic ties with *Alcanar*, *Ulldecona*, *la Sénia* and *Sant Carles de la Ràpita*. The mentioned towns and *la Pobla de Benifassà*, belong to the *Mancomunitat de la Taula del Sénia* together with many other towns of the border area, which nowadays collaborate for the tourism and economic development of the border area.

Deltebre, which has historically belonged to *Tortosa,* is nowadays an independent town that belongs to the *Baix Ebre* county. Until September 2010 to cross the river *Ebre* it was necessary to use the last bridge situated in *Amposta*, or to use the boat which connected directly to *Sant Jaume d'Enveja*, situated just in front on the other side of the river. Going to *Sant Jaume d'Enveja* by boat could have meant 20 minutes waiting time and 2 kilometres, but the other option had been 25 minutes and 27 kilometres. The new bridge offers the possibility to go from each town centre in 6 minutes. The cluster analysis included *Deltebre* to the cluster 1 due to its new vicinity with the south side of the *Ebre* Delta and the north-west connection to the N-340 and the AP-7 thought *Amposta* and *L'Ampolla*.

The case of *l'Ametlla de Mar*, *L'Ampolla* and *Vinaròs*, is another example of the interesting pattern of the variables by analyzing them thought the tourist gaze. Due to the existence of the N-340, and the AP-7, the tourists could see these apparently distant points as a part of the same destination, due the time distance reduction.

The Cluster number 2 includes mainly the riverside and inland towns of *el Baix Ebre* county from *Tortosa* up. It also includes some of the left side towns of the *Ebre* River, which belong to *la Ribera d'Ebre* county, like *Rasquera* and Ginestar.

It is interesting to note that *Rasquera* and *Ginestar* are in front of *Miravet*, which is situated on the right side of the *Ebre* River. In contrast, *Miravet* is not included in cluster 2. This is because the main road, the C-12, which connects the riverside towns, passes on the left side of the *Ebre*. There is a boat connecting this road with the town, what produces the increase of the journey time. Another option could be taking the inland route which connects *Pinell de Brai* and *Miravet*, but it is a winding road. The best option, then, is taking T-324, connecting *Mora d'Ebre* with *Miravet*, what make that *Miravet* rests included into the cluster 4.

Pinell de Brai and *Prat de Comte* belong nowadays administratively to the *Terra Alta* county. Even so, they are the closest towns to the *Ebre* river of the *Terra Alta* mountain region. *Prat de Comte* is for four years better connected to *Xerta* and the C-12, due to an arrangement of the roads N-230 and T-330. This arrangement and the lightly remoteness from the more inland towns of la *Terra Alta*, produces that this town stay with the cluster 2. *Pinell de Brai* is also well connected to the C-12 through the C-43, as well as directly connected with *Prat de Comte* through the N-230.

Paüls and *Alfara de Carles* are situated on the medium top of the Ports Mountains, geodetically close to the towns of the *Terra Alta* county. However as they are situated on the north-east side of the mountains they are only well connected through the C-12, which includes this two towns with the cluster 2.

The Cluster 3 is a conjunction of towns from the *Matarranya* county belonging to *Aragó* regional state, and the Terra Alta county belonging to *Catalunya* regional state. The

administrative boundary of these two regions is the *Algars* River. *Arenys de Lledó*, *Caseres*, *Queretes* and *Lledó* belong to *Matarranya* county, while *Arnes*, *Batea*, *Bot*, *Gandesa*, *Horta de Sant Joan* and *Villaba dels Arcs* belong to the *Terra Alta* county. Historically these two regions have had an important social exchange due to the geography. The analyzed guides recommended places to visit from both sides of the boundaries as if they were the same destination, and the cluster analysis had confirmed their relationship taking into account the travel time.

The cluster 4 joints most of the towns of the *Ribera d'Ebre* county. It also comprises some border towns situated in the *Priorat* county, which belong to the *Camp de Tarragona* region and the *Costa Daurada* tourism brand, and a town belonging to the *Terra Alta* county.
El Lloar, *el Molar* and *Bellmunt del Priorat*, are three of the border towns recommended by the guides when visiting *Terres de l'Ebre* region, which actually are situated in *el Priorat* county. If we take into account that the *Priorat* is a really mountainous area with generalized winding roads, it could be said that *el Lloar*, *el Molar* and *Bellmunt del Priorat* are close to the *Ribera d'Ebre* county, especially to *Mora d'Ebre* and *Garcia*.
The case of *la Fatarella* is quite clear. This town is quite far away from the other towns of the *Terra Alta* county, especially those close to the boundary or the *Algars* River. On the other hand, this town is quite close to *Ascó*, *Vinebre* and *la Torre de l'Espanyol*, through the T-733, and is also connected to *Mora d'Ebre* through the TV-7231 and the N-420.

The most interesting cluster, because of the variables pattern and the number of borders, is the cluster number 5. It includes just three towns; two of them are from outside of the *Terres de l'Ebre* region and the three of them from different counties.
Mequinensa, located at the confluence of three rivers: the *Ebr*e, the *Segre* and *Cinca*, belongs to the *Baix Cinca* county of the *Aragó* regional state.
La Pobla de Massaluca belongs to *Terra Alta* county. It is linked by road to Faió *and Villalba dels Arcs*, but is closer to *Faió*. Taking into account that *Villalba dels Arcs* is already far away from

the rest of the towns of la *Terra Alta*, it is reasonable that this town is more closely related to the outside populations of the region.

Faió is located just in the border area of *Terra Alta*, *Matarranya*, *Baix Aragó*, *Baix Aragó-Casp*, *Segrià* and *Ribera d'Ebre* counties and between the rivers *Ebre* and *Matarranya*. Historically has been considered into the *Matarranya* county, but nowadays belongs to *Baix Aragó-Casp* county, in the *Aragó* regional state. The number of local borders found in this area, could be an interesting thing to analyze better in other cases-study.

The three towns are geodetically quite close, but as the connection is by winding roads, the maximal time is 45 minutes.

5.2- Tourism attractions of each cluster

First of all the attractiveness level of the attractions is going to be pointed out, which would determine the capacity of the resulting tourism clusters/zones to attract international tourism. Secondly, the number and distribution of the attractions within the resulting clusters/zones are going to be considered, to see if there are enough attractions within each cluster/zone and analyze their spatial distribution. Another thing to take into account is the nature of the attractions within the resulting tourism clusters/zones. The predominant nature of the attractions will indicate the local and regional tourism managers which can be the marketing strategy and the market share that they should invest for.

Zone 1:

Table 3: Tourism Attractions from Cluster 1, their attractiveness level and tourism category

Tourism attraction	Location	Attractiveness level	Tourism category					
			Nature	Culture	Active Tourism	Spa& wellness	Sun & beach	Leisure & entertainment
Ebre delta	Deltebre	1	*					
Punta del Fangar	Deltebre	1	*				*	
Word Human Heritage of the Cabra Feixet caves paintings	El Perelló	1		*				
Ebre delta Natural Park	In general	1	*					
Ebre delta	L'Ampolla	1	*					
Ebre delta	Poble Nou del Delta– Eucaliptus (Amposta)	1	*					
Ebre delta	Sant Carles de la Ràpita	1	*	*	*		*	*
Ebre delta	Sant Jaume d'Enveja	1	*					
Remei hermitage	Alcanar	2	*	*				
Iberian settlement of la Moleta del Remei	Alcanar	2	*	*				
Les Cases d'Alcanar	Alcanar	2		*	*		*	*
Marjal beach at les Cases	Alcanar	2	*	*			*	*
Alcanar's old town	Alcanar	2		*				
Amposta	Amposta	2	*	*				
Montsià museum (Nowadays Terres de l'Ebre museum)	Amposta	2	*	*				
Amposta's Castle	Amposta	2		*				
Monumental bridge	Amposta	2	*	*				
Carrova tower	Amposta	2		*				
Riumar beach	Deltebre	2	*				*	
Eco-museum	Deltebre	2	*	*				
Ebre river mouth	Deltebre	2	*					
Garxal lagoon	Deltebre	2	*					
Rice, fruits and orchard farming	Deltebre	2	*	*				
Marquesa beach	Deltebre	2	*				*	
Canal Vell lagoon	Deltebre	2	*	*				
Via Augusta remains	El Perelló	2		*				

Perelló beaches	El Perelló	2	*				*	
Santa Llúcia beach	El Perelló	2	*				*	
L'Ametlla de Mar beaches	L'Ametlla de Mar	2	*		*		*	
Sant Jordi d'Alfama Castle beach	L'Ametlla de Mar	2	*	*			*	
L'Ametlla de Mar	L'Ametlla de Mar	2		*	*		*	*
Fishing port	L'Ametlla de Mar	2		*				
Cafafat	L'Ametlla de Mar	2			*		*	
L'Ampolla	L'Ampolla	2		*	*		*	*
Les Olles lagoon	L'Ampolla	2	*		*		*	
Cap Roig	L'Ampolla	2	*				*	
Fishing port and marina	L'Ampolla	2		*	*			
La Tancada lagoon	Poble Nou del Delta – Eucaliptus (Amposta)	2	*	*	*			
Casa de Fusta museum	Poble Nou del Delta – Eucaliptus (Amposta)	2	*	*	*			
L'Encanyissada lagoon	Poble Nou del Delta – Eucaliptus (Amposta)	2	*	*	*			
L'Encanyissada itinerary	Poble Nou del Delta – Eucaliptus (Amposta)	2	*		*			
Punta de la Banya	Sant Carles de la Ràpita	2	*					
Trabucador beach	Sant Carles de la Ràpita	2	*		*		*	
Fishing port and fish market	Sant Carles de la Ràpita	2	*	*				
Sant Carles de la Ràpita	Sant Carles de la Ràpita	2	*	*	*		*	*
Fishing tradition	Sant Carles de la Ràpita	2		*				
La Guardiola tower	Sant Carles de la Ràpita	2	*	*				
Sant Pere Canal	Sant Carles de la Ràpita	2	*	*				
Navegació Canal and Casotes	Sant Carles de la Ràpita	2		*				
La Trinitat Saltworks	Sant Carles de la Ràpita	2	*	*				
Carles III	Sant Carles de la Ràpita	2		*				
Gola de Migjorn mouth and beach	Sant Jaume d'Enveja	2	*	*	*		*	
Buda island	Sant Jaume d'Enveja	2	*					
Word Human Heritage of the Serra de Godall caves paintings	Ulldecona	2	*	*				
Citrus groves	Alcanar	3	*	*				
Sant Miquel church	Alcanar	3		*				
Fishing gastronomy in les Cases d'Alcanar	Alcanar	3		*				
Carrer Nou tower	Alcanar	3	*	*				
Seasonal migration of sheep	Amposta	3	*	*				
El Grau	Amposta	3		*				
Ullals de Baltassar	Amposta	3	*	*				
Assumpció church	Amposta	3		*				
La Cava	Deltebre	3		*				
Muntell de les Verges	Deltebre	3	*	*				
Touristic boats at the Ebre mouth	Deltebre	3	*		*			
Font del Perelló hospital remains	El Perelló	3		*				
El Perelló	El Perelló	3		*				
Sant Cristòfol hermitage	El Perelló	3	*	*				
Olive trees	La Galera	3	*	*				
Els Ports	La Sénia	3	*		*			
Fishing	L'Ametlla de Mar	3		*				
Pottery museum	L'Ametlla de Mar	3		*				
L'Ampolla camping sites	L'Ampolla	3		*				
The Holidaymakers	L'Ampolla	3		*				
Barranc de la Galera in els Ports itinerary	Mas de Barberans	3	*		*			
Els Eucaliptus	Poble Nou del Delta– Eucaliptus (Amposta)	3	*		*		*	

Sant Antoni salt works (Nowadays Món Natura)	Poble Nou del Delta–Eucaliptus (Amposta)	3	*	*				
Poble Nou del Delta	Poble Nou del Delta–Eucaliptus (Amposta)	3		*				
Els Alfacs natural port	Sant Carles de la Ràpita	3	*	*	*		*	
Església Nova building	Sant Carles de la Ràpita	3		*				
Mussels platforms in Alfacs bay	Sant Carles de la Ràpita	3	*	*	*			
Eels, eels and frogs	Sant Jaume d'Enveja	3	*	*				
Ulldecona's old town	Ulldecona	3		*				
Ulldecona Castle and Iberian settlement	Ulldecona	3	*	*				
Correbous (bullfighting)	Alcanar	-		*				
Sant Jaume Iberian settlement	Alcanar	-		*				
Alcanar beach area	Alcanar	-					*	*
Ciment beach	Alcanar	-					*	
Embolats and capllaçats bulls	Amposta	-		*				
Canal of the right	Amposta	-		*				
Ebre river	Amposta	-	*	*	*			
Fàbregas modernist house	Amposta	-		*				
Musical tradition of la Lira and la Fila	Amposta	-	*	*				
Oriola Iberian necropolis	Amposta	-		*				
Ebre river	Deltebre	-	*		*			
Embolats and capllaçats bulls	Deltebre	-		*				
Horse riding in Hípica Delta in Riumar	Deltebre	-	*		*			
Cova Mallada prehistoric settlement	El Perelló	-		*				
Coll de les Forques hill	El Perelló	-	*	*				
Fullola castle and tower remains	El Perelló	-		*				
Moros beach	El Perelló	-	*				*	
Morro de Gos beach	El Perelló	-	*				*	
GR-92 coastal walkway	El Perelló	-	*		*		*	
Farming cooperative	El Perelló	-		*				
Honey	El Perelló	-		*				
La Galera pottery	La Galera	-		*				
Medieval tower	La Galera	-		*				
Ulldecona's swamp over the Sénia river	La Pobla de Benifassà	-	*		*			
La Tinença de Benifassà and Santa Maria de Benifassà convent	La Pobla de Benifassà	-	*	*				
El Faig Pare monumental tree	La Sénia	-	*					
El Retaule beech forest	La Sénia	-	*					
GR-92 coastal walkway	L'Ametlla de Mar	-	*		*		*	
L'Àliga beach	L'Ametlla de Mar	-		*			*	
Fishermen and pirates	L'Ametlla de Mar	-		*				
GR-92 coastal walkway	L'Ampolla	-		*	*			
Rice food	L'Ampolla	-		*				
Parroquial church	L'Ampolla	-		*				
L'Arenal beach	L'Ampolla	-	*		*		*	*
Fish auction	L'Ampolla	-		*				
Lo Goleró lagoon	L'Ampolla	-	*					
Mas de Barberans	Mas de Barberans	-	*	*				
Olives trees	Mas de Barberans	-	*	*				
Herds of bulls at Barranc de Lloret	Mas de Barberans	-	*	*				
Dry Stone typical construction	Mas de Barberans	-		*				

Ternasco (lamb)	Mas de Barberans	-		*				
Rice farming	Poble Nou del Delta–Eucaliptus (Amposta)	-	*	*				
Glorieta	Sant Carles de la Ràpita	-		*				
King prawns	Sant Carles de la Ràpita	-		*				
Carles III square	Sant Carles de la Ràpita	-		*				
Sant Joan tower	Sant Carles de la Ràpita	-	*	*				
Els Sosars	Sant Carles de la Ràpita	-	*	*				
Mare de Déu de la Ràpita festivities	Sant Carles de la Ràpita	-		*				
International Folkloric Festival	Sant Carles de la Ràpita	-		*				
Garbí Park	Sant Carles de la Ràpita	-	*					
Sebastià Joan Arbó	Sant Carles de la Ràpita	-		*				
Rice farming	Sant Jaume d'Enveja	-	*	*				
La Platjola lagoon	Sant Jaume d'Enveja	-	*					
Migjorn point of view	Sant Jaume d'Enveja	-	*					
Sant Jaume d'Enveja	Sant Jaume d'Enveja	-	*	*	*			
Monumental Oleander in Balada	Sant Jaume d'Enveja	-						
Barraca del Tio Blanco (typical house)	Sant Jaume d'Enveja	-		*				
L'Alfacada lagoon	Sant Jaume d'Enveja	-	*					
Serrallo beach	Sant Jaume d'Enveja	-	*				*	
Sant Lluc church	Ulldecona	-		*				
Loreto hermitage	Ulldecona	-		*				
Sol-de-Riu beach: Sénia river mouth	Vinaròs	-	*				*	
Vinaròs	Vinaròs	-		*				*

Legend

International attractiveness level	1
National and regional attractiveness level	2
Local attractiveness level	3
Too few guides speaking about it	-

Taking into account the attractiveness level of the tourism attractions in zone 1, it could be highlighted the nature-based attraction of the *Ebre* delta as a level 1 attraction. As the *Ebre* delta and its Natural Park is a vast area which agglutinates numerous towns, most of the guides mentioned the Natural Park of the *Ebre* delta in general and afterwards also related directly some of the towns with the *Ebre* delta. The *Ebre* delta and its Natural Park contain a lot of particular attractions, but it is interesting to note the especial importance given by the tourism guides to the particular attraction *la Punta del Fangar, classified as* level 1. Another tourism attraction which the guides considered to have international attractiveness level is the Word Human Heritage of the *Cabra Feixet* caves paintings situated in el Perelló. It is interesting to note that the local tourism boards actually facilitate and promote more the visit to the cave

paintings of the Godall mountain in Ulldecona, providing guidance and interpretation services and controlling the access to facilitate the maintenance. However, the guides pointed to the Perelló caves paintings to a more international level.

When analysing the tourism attractions with national and regional attraction level, it should be highlighted the existence of a great number of attractions in the same area of the international level attraction of the *Ebre* delta. They have been categorized mainly as nature-based and culture-based attractions, but also offering sun & beach and active tourism options: *Eco-museum*, *Ebre* river mouth, *Garxal* lagoon, *Encanyissada* lagoon, *Encanyissada* itinerary, rice, fruits and orchard farming, *Marquesa* natural beach, *Canal Vell* lagoon, *les Olles* lagoon, *la Tancada* lagoon, *Punta de la Banya*, *el Trabucador beach*, Trinitat salt works, *Sant Pere* canal, the *Navegació* canal and *Casotes*, *Gola de Migjorn* mouth and beach, *Riumar* beach and *Buda* island. These attractions, belonging to Amposta, *Poble Nou del Delta - Eucaliptus, Sant Carles de la Ràpita, Deltebre, Sant Jaume d'Enveja* and *l'Ampolla*, are specific areas of the *Ebre* delta, which the guides gave them a special and distinguished consideration separately from the *Ebre* delta tourism attraction. All these second level attractions take profit from the importance of the *Ebre* delta as a unique international attraction, but also help to improve the significance of the *Ebre* delta Natural Park. Analyzing better the categories of this level 2 attractions, it is found that the most frequent categories are: protected and declared natural areas, interesting landscapes, bird-watching and wildlife, panoramic views, traditional and rural activities, charming towns, gastronomy, hiking, cycling canoeing and kayaking, safari trips, boat excursions and sun & beach.

Really close to the *Ebre* delta at the adjacent towns like *Sant Carles de la Ràpita*, *Amposta* and *l'Ampolla*; the guides mentioned some national-regional level attractions that are closely related with the *Ebre* delta, but categorized mainly as culture-based. Other representative categories were also sun & beach and active tourism, and in some of the towns leisure & entertainment attractions. These three towns act as the entrance doors of the *Ebre* delta from the N-340, the AP-7 and the C-12, the most important communication routes that cross the area. *Amposta* offers culture-based attractions, some archaeological attractions like the *Montsià* museum (Nowadays *Terres de l'Ebre Museum*) and the Castle and some civil heritage

as the bridge and the town, but also nature-based attractions like the views to the river and the *Montsià* museum (Nowadays *Terres de l'Ebre Museum*) related to the river. *Sant Carles de la Ràpita* offers the civil heritage of *Carles III* époque, the fishing traditional activities and gastronomy, the views to the *Ebre* delta and *Alfacs* bay from the *Guardiola* tower, and the charming town, leisure & entertainment and beaches of *Sant Carles de la Ràpita*. *L'Ampolla* offers the natural cliffs and beaches of *Cap Roig*, the fishing gastronomy and traditional activity, and the charming town, leisure & entertainment and beaches of *l'Ampolla*.

The rest of the cluster that surrounds the *Ebre* delta, offers some second level attractions not related with the *Ebre* delta directly and mainly categorized as nature-based, culture-based and sun & beach attractions. These attractions are mostly distributed around the N-340 and AP-7 routes, close to the coast line. In *Alcanar, Ulldecona* and *el Perelló*, the guides noted some culture-based and nature-based attractions not situated on the first line of the coast, but close to coastal enclaves: the cave paintings of the *Godall* mountains, the *Remei* hermitage, the Iberian settlement of el *Remei*, the *Alcanar*'s ancient town and the remains of the *Via Augusta*. The rest of the attractions detected on the guides were related directly with the coast as sun & beach attractions but offering characteristics of nature-based attractions, culture-based attractions and active tourism: *Les Cases d'Alcanar*, *Marjal* beach, *Perelló* beaches, *Santa Llúcia* beach, *l'Ametlla de Mar* beaches, *Sant Jordi d'Alfama* Castle beach, *l'Ametlla de Mar* and *Calafat*. Some of these attractions also offer leisure & entertainment options when they come to urban places. The synergy created between these many and close secondary nodes may be it self sufficient to draw people to the region, without being necessary possessing a primary node (Dredge 1999).

Following N-340 and the AP-7 line and in the *Ebre* delta, there are also numerous attractions with a local attractiveness level. These attractions signify a further increase of the tourism offer diversity, which ensure the viability of the zone 1. Most of the third level attractions offered in this cluster are culture-based attractions. Nature-based attractions also play an important role. Not as numerous, it has been observed than some of the nature-based attractions also offers active tourism and sun & beach options.

As a résumé it could be said that zone 1 is a nature-based cluster depending on the *Ebre* delta Natural Park with an important playing role of the sun & beach attractions and the culture-based attractions. Most of the natural attractions were defined as natural areas, interesting landscapes, bird-watching and wildlife tourism and panoramic views. Secondly, zone 1 could be also defined as a culture-based tourism area, due the numerous culture-based attractions of level 2 and 3. Most of those culture-based attractions were defined as religious heritage, civil heritage, archaeological sites and caves paintings, Museums, expositions and projections, festivities and traditions, traditional and rural activities, charming towns and gastronomy. It has to be mentioned the importance of two protected and recognized cultural elements: the *Cabra Feixet* caves paintings (attractiveness level 1) and the *Godall* mountains caves paintings (attractiveness level 2), because, as it was noted by the guides, they are recognized as Human Word Heritage.

The sun & beach attractions are important around the coast, as it's mainly a coastal cluster, but it could be considered as sun & beach attractions with a great importance of the natural characteristics of the beaches.

Zone 2:

Table 4: Tourism Attractions from Cluster 2, their attractiveness level and tourism category

Tourism attraction	Location	Attractiveness level	Tourism category					
			Nature	Culture	Active Tourism	Spa& wellness	Sun & beach	Leisure & entertainment
Meravelles caves	Benifallet	1	*		*			
Tortosa	Tortosa	1		*				*
Sant Hilarion de Cardó ancient monastery and spa	Benifallet	2	*	*				
Cathedral del vi: modernist winery by Cesar Martinell	Pinell de Brai	2		*				
Pinell de Brai	Pinell de Brai	2		*				
Vall de Zafan greenway	Prat de Comte	2	*		*			
Suda Castle	Tortosa	2		*				
Tortosa's Cathedral	Tortosa	2		*				
Reials Col·lègis building	Tortosa	2		*				
Caro hill	Tortosa	2	*					
Ebre river	Tortosa	2	*					
Assut	Xerta	2	*	*				
Els Ports Natural Park	Alfara de Carles	3	*					
Benifallet	Benifallet	3		*				
Desert de Cardó hermitages	Benifallet	3	*	*				
Orchards, canals and farms	Bítem (Tortosa)	3	*	*				

Rasquera's Baskets	Rasquera	3		*				
La Vila i el Solà old town	Rasquera	3	*	*				
Pastissets (dessert)	Rasquera	3		*				
Tivenys	Tivenys	3		*				
Despuig palace	Tortosa	3		*				
Episcopal palace	Tortosa	3		*				
Oliver de Boteller palace	Tortosa	3		*				
Cathedral cloister	Tortosa	3		*				
Verge de la Cinta chapel	Tortosa	3		*				
Verge Estrella altarpiece of the cathedral	Tortosa	3		*				
Transfiguració altarpiece of the cathedral	Tortosa	3		*				
Santa Clara convent	Tortosa	3		*				
Príncep gardens and Porcar ancient spa	Tortosa	3		*				
Llotja de Mar building	Tortosa	3		*				
Oriol palace	Tortosa	3		*				
Jewish quarter and ancient doorway	Tortosa	3		*				
Ebre battle at the river	Tortosa	3		*				
Eixample de Tortosa district	Tortosa	3		*				
Ancient modernist Slaughterhouse	Tortosa	3		*				
Renaixement festivity	Tortosa	3		*				
Tortosa's market	Tortosa	3		*				
Tortosa's ramparts	Tortosa	3		*				
Pastissets	Tortosa	3		*				
Papa Luna's Baptismal pile at the cathedral	Tortosa	3		*				
Estat bridge	Tortosa	3		*				
Greco modernist house	Tortosa	3		*				
Santa Cinta festivities	Tortosa	3		*				
Teodor Gonzalez park	Tortosa	3	*	*				
Romeus ancient doorway	Tortosa	3		*				
Aldover	Aldover	-	*	*			*	
Cardó mountains	Benifallet	-	*					
Ebre river	Benifallet	-	*		*			
Mare de Déu de Dalt hermitage	Benifallet	-		*				
Castellot de la Roca Roja Iberian settlement	Benifallet	-	*	*				
Ginestar	Ginestar	-		*				
Paüls	Paüls	-	*	*				
Recreational area of Sant Roc hermitage	Paüls	-	*					
Els Ports Natural Park	Paüls	-	*					
Cherries	Paüls	-	*	*				
Paüls springs	Paüls	-	*		*			
Santa Magdalena from Pàndols mountains hermitage	Pinell de Brai	-	*	*	*			
Els Ports Natural Park	Prat de Comte	-	*		*			
Prat de Comte	Prat de Comte	-		*				
Sant Domingo sanctuary	Rasquera	-	*	*	*			

Ebre observatory	Roquetes	-						
Esquerra canal	Tivenys	-						
Ancient Moorish city	Tortosa	-						
Matheu house	Tortosa	-		*				
Les salvatges (Hispanic goats)	Tortosa	-	*	*				
Pulpits of the cathedral nave	Tortosa	-		*				
Teodor Gonzalez and Joan Abril i Guanyabens	Tortosa	-		*				
Santa Creu ancient hospital	Tortosa	-		*				
Brunet house	Tortosa	-		*				
River and maritime trade tradition	Tortosa	-		*				
Banc d'Espanya building	Tortosa	-		*				
El Cargol hill	Tortosa	-	*					
El Portell hill	Tortosa	-	*					
Garrofetes del Papa (dessert)	Tortosa	-		*				
L'Atxa order	Tortosa	-		*				
Fish market	Tortosa	-		*				
Arabic necropolis remains	Tortosa	-		*				
Capmany palace	Tortosa	-		*				
Alfons XII square	Tortosa	-		*				
Dolors church remains	Tortosa	-		*				
The Cathedral treasure	Tortosa	-		*				
Pas de l'Ase (natural passage)	Xerta	-	*	*				
Xerta	Xerta	-	*	*				

Legend

International attractiveness level	1
National and regional attractiveness level	2
Local attractiveness level	3
Too few guides speaking about it	-

Taking into account the attractiveness level of the tourism attractions, in zone 2; it could be highlighted 2 attractions corresponding to an international attractiveness level. On one hand the tourism guides recognized the nature-based and active tourism attraction of the *Meravelles* Caves with stalactites and stalagmites situated in *Benifallet*. On the other hand it has been detected the culture-based attraction of *Tortosa* as a whole, emphasizing the religious and civil heritage. These two first level attractions are both by the *Ebre* river and connected by the C-12. While *Benifallet* is geodetically situated in the middle of the cluster, *Tortosa* is on the corner of the cluster.

The guides mentioned some national-regional level attractions that are closely related with culture-based attractions mainly, but also certain nature-based attractions. As culture based attractions, the guides noted three civil and religious elements from *Tortosa* (the cathedral, the *Suda* castle and the *Reials Col·legis*) and two in *Pinell de Brai* (the whole town and the modernist winery). As nature-based attractions they highlighted *Caro*, a view point in els *Ports* Natural Park and the *Ebre* River at *Tortosa.* As culture and nature-based attractions the guides highlight the ancient monastery and spa of *Cardó* and the views to the *Assut* Muslim construction of the *Ebre* river at *Xerta*. Finally the guides noted the green route of *Vall de Zafan* crossing *Prat de Compte*, which also goes by the *Assut* of Xerta. This cycling itinerary can connect the *Terra Alta* county with *Tortosa* and the *Ebre* delta, following the ancient railway, but the guides pointed *Prat de Compte* as the starting point in the zone 2.

Finally some third level attractions in zone 2 were mentioned by the guides. Most of them are culture-based attractions, which practically all of them are situated in *Tortosa*. They correspond mainly to civil and religious culture-based attractions. There are also certain nature-based attractions related with the mountain and rural areas close to *Tortosa*.

Summarizing, the zone 2 could be identified as a culture-based area of civil and religious heritage, where most of the attractions are situated in *Tortosa* city. Nature-based tourism attractions are complementary to the culture-based ones, mainly identified as viewpoints and interesting landscapes. The concentration of attractions in *Tortosa* and the existence of an international level attraction, indicates that this is the central attraction point of the zone 2 which determine the cluster as culture-based. *Benifallet* caves although is international attraction, do not offer a nearby concentration of nature-based attractions and active tourism attractions to determine the cluster category. On the other hand, *Benifallet* caves could take profit of the proximity of the *Tortosa* attractions and the proximity of other secondary attractions, to be the nature-based alternative of the cluster.

Zone 3:

Table 5: Tourism Attractions from Cluster 3, their attractiveness level and tourism category

Tourism attraction	Location	Attractiveness level	Tourism category					
			Nature	Culture	Active Tourism	Spa& wellness	Sun & beach	Leisure & entertainment
Horta de Sant Joan	Horta de Sant Joan	1	*	*	*			
Arnes' square	Arnes	2	*	*				
Arnes	Arnes	2	*	*				
Batea	Batea	2		*				
El forat de la Donzella and Sant Josep hermitage	Bot	2	*	*				
Corbera's old town remains and Ebre Battle interpretation centre	Corbera d'Ebre	2		*				
Modernist winery by Cesar Martinell	Gandesa	2		*				
La Fontcalda sanctuary and ancient spa	Gandesa	2	*	*	*	*	*	
Arxiprestal de l'Assumpció church	Gandesa	2		*				
Coll del Moro Iberian settlement and necropolis	Gandesa	2	*	*				
Sant Salvador hermitage and Santa Bàrbara mountain	Horta de Sant Joan	2	*	*	*			
Mas de la Franqueta recreational area and Estrets river	Horta de Sant Joan	2	*	*	*		*	
Els Ports Natural Park	Horta de Sant Joan	2	*		*			
Estrets river	Horta de Sant Joan	2	*		*		*	
Roques d'en Benet hill	Horta de Sant Joan	2	*		*			
Arcaded square of the church	Horta de Sant Joan	2		*				
Villalba dels Arcs	Villalba dels Arcs	2		*				
Algars river	Arenys de Lledó	3	*				*	
Els Ports Natural Park	Arnes	3	*		*			
Batea's wine	Batea	3		*				
Pinyeres' abandoned village and Sant Joan d'Algars fortress-church	Batea	3		*				
Vall de Zafan greenway and ancient train station	Bot	3	*		*			
Santa Madrona de la Serra de Cavalls hermitage	Corbera d'Ebre	3		*				
Studies Centre of the Ebre Battle	Gandesa	3		*				
Cavaller hill at Pàndols mountains	Gandesa	3	*	*	*			
Ebre Battle remains at Pàndols and Cavalls mountains	Gandesa	3		*				
Ancient Town Hall and arcaded square	Gandesa	3		*				
Del castellà d'Amposta Palace	Gandesa	3		*				
Picasso centre and ancient hospital	Horta de Sant Joan	3		*				
Pablo Ruiz Picasso	Horta de Sant Joan	3		*				
Algars river Natural Reserve	Horta de Sant Joan	3	*		*		*	
Canaletes river	Horta de Sant Joan	3	*		*		*	

Santa Madrona hermitage	Arnes	-	*	*				
La Beata Maria (spirit)	Arnes	-		*				
Estrets river	Arnes	-	*		*		*	
Gothic castle	Batea	-		*				
Collet de Sant Antoni hill	Bot	-	*	*				
Aucalar castle	Bot	-		*				
Els Muladins	Bot	-		*				
Matarranya's county forest	Caseres	-	*		*			
Caseres	Caseres	-	*	*	*			
Almudèfer castle and abandoned village	Caseres	-		*				
Algars river	Caseres	-	*		*			
Doctor Ferran	Corbera d'Ebre	-		*				
The bandids legend	Corbera d'Ebre	-		*				
Cavalls mountains	Corbera d'Ebre	-						
Ca Sunyer house	Gandesa	-						
Cal Pardo house	Gandesa	-		*				
L'Inquisitor house	Gandesa	-		*				
Barons de Purroy's house	Gandesa	-		*				
Liori house	Gandesa	-		*				
Clotxa and wine fest	Gandesa	-		*				
Gandesa	Gandesa	-	*	*				
Terra Alta's wine DO	Gandesa	-		*				
De Baix street and les Grases down street	Horta de Sant Joan	-		*				
Delme house	Horta de Sant Joan	-		*				
Els Ports Eco-museum	Horta de Sant Joan	-		*				
El Berenador	Horta de Sant Joan	-	*					
El Ventador	Horta de Sant Joan	-	*		*			
Olles de Baubo	Horta de Sant Joan	-	*		*			
Vall de Zafan greenway	Horta de Sant Joan	-	*		*			
Santa Rosa de Vitero hermitage	Lledó	-	*	*				
Lledó	Lledó	-		*				
Vall de Zafan greenway	Lledó	-	*		*			
Arenys de Lledó	Arenys de Lledó	-	*	*				
Queretes	Queretes	-		*				
Tolls de l'Algars (natural pool)	Queretes / Arnes	-						
Bot	Bot	-	*	*				
Bot's name and shield	Bot	-		*				

Legend

International attractiveness level	1
National and regional attractiveness level	2
Local attractiveness level	3
Too few guides speaking about it	-

Taking into account the attractiveness level of the tourism attractions in the zone 3, there is a unique attraction, which possesses an international attractiveness level. The guidebooks highlighted *Horta de Sant Joan* as a whole and a departing point to visit nature-based, culture-based and active tourism attraction. Afterwards the guides also highlighted some concrete attractions of level 2 or 3 in *Horta de Sant Joan*.

As national-regional attractiveness level the guides pointed to a combination of nature-based and culture-based tourism attractions.

There were certain cases where the guides pointed the villages as a centre of natural and cultural resources and tourism products, without précising which or where those resources were. Most of these attractions were categorized as protected and declared natural areas, panoramic views, interesting landscapes, traditional and rural activities, charming villages, and religious and civil heritage.

As a mountain and nature-based area, the guides also highlighted the active tourism attractions, which makes possible mainly, water activities, hiking and trekking, climbing and safari trips. Finally the guides pointed to some sun & beach options at the mountain rivers.

The tourism attractions with local attractiveness level are a mix of culture and nature-based attractions, including active tourism attractions. *Gandesa* and *Corbera d´Ebre* offer many cultural-based attractions which were categorized as historical facts and civil and religious heritage. *Horta de Sant Joan* together with *Arnes* and *Arenys de Lledó* offer nature-based and active tourism attractions at the mountain streams and *els Ports* Natural Park.

Horta de Sant Joan is also cited by the guides as a local level attraction when talking about the *Pablo Ruiz Picasso* museum and celebrity, the painter who unveiled the town.

Finally the guides mentioned *Batea* offering gastronomy and charming village attractions; while *Bot* offered cycling possibilities at the green way of *Vall de Zafan*.

As a summary it could be said that zone 3 could be distinguished by their natural-based together with active tourism attractions, and culture-based attractions. The two most

important attractions hubs of this cluster are first of all *Horta de Sant Joan - Arnes*, offering more number of natural-based and active tourism attractions, and *secondly Gandesa* offering more historical and patrimonial culture-based attractions.

Zone 4:

Table 6: Tourism Attractions from Cluster 4, their attractiveness level and tourism category

Tourism attraction	Location	Attractiveness level	Tourism category					
			Nature	Culture	Active Tourism	Spa & wellness	Sun & beach	Leisure & entertainment
Miravet Castle	Miravet	1	*	*				
Sebes Natural Reserve	Flix	2	*					
El pas de l'Ase i el camí de sirga de l'Ebre (towpath)	Garcia	2	*	*				
Fatarella's mountains hermitages and viewpoints	La Fatarella	2	*	*				
La Fatarella	La Fatarella	2	*	*				
Miravet	Miravet	2	*	*				
Passing boat over the Ebre	Miravet	2	*	*				
Pottery tradition	Miravet	2		*				
Ebre river	Miravet	2	*	*	*			
Móra Castle remains and Calvari viewpoint	Mora d'Ebre	2	*	*				
Riba-roja swamp	Riba-roja d'Ebre	2	*		*		*	
Castellet de Banyoles Iberian settlement	Tivissa	2	*	*				
Tivissa	Tivissa	2	*	*				
Ascó	Ascó	3		*				
Montsant mountains	Bellmunt del Priorat	3	*					
Miravet's siege	Miravet	3		*				
Flix	Flix	3		*				
Flix swamp	Flix	3	*		*			
Mora d'Ebre	Mora d'Ebre	3	*	*				*
Arcades bridge over the Ebre	Mora d'Ebre	3	*	*				
Montagut house	Mora d'Ebre	3		*				
Mínimes' convent	Mora d'Ebre	3		*				
Palma d'Ebre	Palma d'Ebre	3	*	*				
Riba-roja d'Ebre	Riba-roja d'Ebre	3		*				
Berrús hermitage	Riba-roja d'Ebre	3	*	*				
Serra d'Almos, Darmós and Llaveria districts	Tivissa	3	*	*				
Vinebre	Vinebre	3		*				
Sant Enric d'Ossó i Cervelló	Vinebre	3		*				
Siurana river	Bellmunt del Priorat	-						
Mud pottery	Benissanet	-		*				
Benissanet	Benissanet	-		*				
Serra musical museum	Benissanet	-		*				
Montsant mountains	El Lloar	-						
El Molar	El Molar	-	*	*				

Mare de Déu del Remei hermitage	Flix	-	*	*				
Santa Magdalena hermitage	Garcia	-		*				
Garcia	Garcia	-	*	*				
Les Camposines	La Fatarella	-		*				
La Torre de l'Espanyol	La Torre de l'Espanyol	-		*				
Sant Antoni hermitage	La Torre de l'Espanyol	-	*	*				
Camí de Sirga (towpath)	Mora d'Ebre	-	*	*				
l'Aubarera i l'Illa	Mora d'Ebre	-	*					
La Mora Morisca fest	Mora d'Ebre	-		*				
De baix square	Mora d'Ebre	-		*				
Parroquial de Sant Joan Baptista reconstructed church	Mora d'Ebre	-		*				
Sant Jeroni and Sant Madrona hermitages recreational areas	Mora d'Ebre	-	*	*				
Corpus festivity	Tivissa	-		*				
Barranc de la Font de Vilella Cave paintings	Tivissa	-		*				
Agricultural museum-house	Vinebre	-		*				
Sant Miquel hermitage and Iberian settlement	Vinebre	-	*	*				

Legend

International attractiveness level	1
National and regional attractiveness level	2
Local attractiveness level	3
Too few guides speaking about it	-

In the zone 4 the guides have mentioned just one attraction with international attractiveness level: The *Miravet* castle, classified as nature-based due its views to the *Ebre* river and culture-based as religious-civil heritage and historical facts.

Twelve attractions with a national-regional attractiveness level have been detected, four of which are located in *Miravet, which already has a level 1 attraction*. Practically all the second level attractions are classified as both culture and nature-based attractions. The particular classifications of the level 2 attractions have been: protected and declared natural areas, interesting landscapes, bird-watching and wildlife tourism, panoramic views, religious heritage, traditional and rural activities, crafts, charming towns and archaeological sites. It has also been mentioned the active tourism possibilities at *Miravet* and *Riba-roja d'Ebre* due to the water activities at the river.

What is interesting to note in zone 4, is that the attractions with international, national and regional attractiveness level are situated mainly on the south of the cluster. *Mora d'Ebre,*

Garcia, Miravet, and *Tivissa* are quite close from each other. These attractions could take more profit of the proximity of the *Miravet* Castle which has international attractiveness level. *Riba-roja d'Ebre* and *la Fatarella* and Flix keeps more separate from this hub while *Vinebre* acts as a nexus point.

When adding the attractions with local attractiveness level, we can see that most of the tourism attractions are situated close to the C-12 route and by the *Ebre* river. This pattern could be produced by geographical reasons, as the areas surrounding the river valley are mountainous. It should be taken into account that the main communication route crossing this entire cluster is the C-12, which also passes by the river. These third level tourism attractions are also categorized as cultural with an important role of nature.

As a summary, it could be said that zone 4 is a combination of nature and culture-based attractions. In general most of the attractions are situated mainly by the river and the C-12, which could be explained by geographical and communication reasons. It is important to note that there is not a large number of attractions taking into account the size of the cluster. The first level attractions and many of the second level attractions are situated really close to zone 2, what could produce interactions between these two clusters. This interaction should be analysed better adding the accommodation hubs information.

Zone 5:

Table 7: Tourism Attractions from Cluster 5, their attractiveness level and tourism category

Tourism attraction	Location	Attractiveness level	Tourism category					
			Nature	Culture	Active Tourism	Spa& wellness	Sun & beach	Leisure & entertainment
Faió ancient town	Faió	3	*	*				
La Pobla de Massaluca	La Pobla de Massaluca	3		*	*			
Matarranya river	La Pobla de Massaluca	3	*	*	*			
Berrús hermitage	La Pobla de Massaluca	-		*				
Mequinensa swamp	Mequinensa	-	*		*		*	

Legend

International attractiveness level	1
National and regional attractiveness level	2
Local attractiveness level	3
Too few guides speaking about it	-

The zone 5 is the most critical case. As the guides did not point to attractions with an international, national and regional attractiveness level; this could be a cluster with difficulties to develop long distance tourist flows. It also has to be taken into account the few attractions number detected by the guides, which gives more impediments to the tourism development. However, focusing towards local tourism, the most predominant categories of this cluster are the nature, culture and active tourism; in particular panoramic views, interesting landscapes, charming towns, historical facts, hiking and water activities.

5.3- Tourism accommodation hubs of each cluster

Finally, we are going to consider the number of available beds in each resulting cluster, the lodgement type, and the spatial distribution of the beds using the time distance database. The objective is to check if the accommodation hubs can give service to the resulting clusters. This is important in order to really conduct the resulting clusters to become the tourism destinations of the future. As we have explained before, the base-camp tourism chooses a destination due to its attractions, where these attractions should have a central point to set the base-camp.

Zone 1:

Table 8: Accommodation hubs from Cluster 1

Municipalities	Cluster number	Hotel beds	Camping beds	Rural accommodation beds	Apartments beds	Housing for tourist use	Total beds
Alcanar	1	162	2307	46		20	2535
Amposta	1	163		61			224
Camarles	1				7		7
Deltebre	1	322	1377	110	9	128	1946
L'Aldea	1	70		23			93
L'Ametlla de Mar	1	193	2244	5		160	2602
L'Ampolla	1	491	954	4		40	1489
La Galera	1			17			17
La Sénia	1	138					138
Mas de Barberans	1			20	13		33
Masdenverge	1	15		27			42
Sant Jaume d'Enveja	1			29			29
Santa Bàrbara	1	91		14			105
Sant Carles de la Ràpita	1	894		9		20	923
Ulldecona	1	47			14		61
Perelló, El	1	881		28	90	28	1027
Poble Nou del Delta - Eucaliptus (Amposta)	1	75	828	63		20	986
Vinaròs	1	783	1304		-	-	2087
Total beds cluster 1	1	4325	9014	456	133	416	**14344**

Legend:

Level 1 hub: More than 800 beds	
Level 2 hub: From 300 to 800 beds	
Level 3 hub: From 100 to 300 beds	

Map 3: Accommodations hubs in cluster 1

Source: ICC

Concentric circles from Alcanar's accommodation hub		
Half Day Trips	Cluster 1	Alcanar, Amposta, Poble Nou del Delta-Eucaliptus, La Galera, La Sénia, Sant Carles de la Ràpita, Ulldecona and Vinaròs.
Day Trips	Cluster 1	Deltebre, el Perelló, La Pobla de Benifassà, l'Ametlla de Mar, l'Ampolla, Mas de Barberans and Sant Jaume d'Enveja.
	Cluster 2	Aldover, Alfara de Carles, Benifallet, Ginestar, Paüls, Pinell de Brai, Prat de Compte, Rasquera, Roquetes, Tivenys, Tortosa, Bítem and Xerta.
	Cluster 3	Batea and Gandesa.

Concentric circles from Poble Nou del Delta's accommodation hub		
Half Day Trips	Cluster 1	Alcanar, Amposta, Poble Nou del Delta-Eucaliptus, Deltebre, Sant cares de la Ràpita, Sant Jaume d'Enveja
Day Trips	Cluster 1	El Perelló, La Galera, La Pobla de Benifassà, la Sénia, l'Ametlla de Mar, l'Ampolla, Mas de Barberans, Ulldecona and Vinaròs.
	Cluster 2	Aldover, Alfara de Carles, Benifallet, Ginestar, Paüls, Pinell de Brai, Prat de Comte, Rasquera, Roquetes, Tivenys, Tortosa, Bítem and Xerta.
	Cluster 3	Gandesa

Concentric circles from Deltebre's accommodation hub		
Half Day Trips	Cluster 1	Amposta, Poble Nou del Delta-Eucaliptus, Deltebre, el Perelló, l'Ampolla, Sant Carles de la Ràpita and Sant Jaume d'Enveja.
Day Trips	Cluster 1	Alcanar, la Galera, la Sénia, l'Ametlla de Mar, Mas de Barberans, Ulldecona and Vinaròs.
	Cluster 2	Aldover, Alfara de Carles, Benifallet, Ginestar, Paüls, Pinell de Brai, Prat de Comte, Rasquera, Roquetes, Tivenys, Tortosa, Bítem and Xerta.
	Cluster 3	Caseres, Corbera d'Ebre and Gandesa
	Cluster 4	Ascó, Benissanet, el Molar, la Torre de l'Espanyol, Miravet, Mora d'Ebre, Tivissa and Vinebre.

Concentric circles from l'Ametlla de Mar's accommodation hub		
Half Day Trips	Cluster 1	El Perelló, l'Ametlla de Mar and l'Ampolla.
Day Trips	Cluster 1	Alcanar, Amposta, Poble Nou del Delta, Deltebre, la Galera, la Sénia, Mas de Barberans, Sant Carles de la Ràpita, Sant Jaume d'Enveja, Ulldecona and Vinaròs..
	Cluster 2	Aldover, Alfara de Carles, Benifallet, Paüls, Pinell de Brai, Prat de Comte, Rasquera, Roquetes, Tivenys, Tortosa, Bítem and Xerta.
	Cluster 3	Batea, Caseres, Corbera d'Ebre, Gandesa, Horta de Sant Joan and Villaba dels Arcs.
	Cluster 4	Ascó, Bellmunt del Priorat, Benissanet, el Lloar, el Molar, Flix, Garcia, Ginestar, la Fatarella, la Torre de l'Espanyol, Miravet, Mora d'Ebre, Tivissa, Riba-roja d'Ebre and Vinebre.

Concentric circles from l'Ampolla's accommodation hub		
Half Day Trips	Cluster 1	Amposta, Deltebre, El Perelló, l'Ametlla de Mar, l'Ampolla, Sant Carles de la Ràpita, Sant Jaume d'Enveja
	Cluster 2	Roquetes and Tortosa
Day Trips	Cluster 1	Alcanar, Poble Nou del Delta, la Galera, la Pobla de Benifassà, la Sénia, Mas de Barberans, Ulldecona and Vinaròs.
	Cluster 2	Aldover, Alfara de Carles, Benifallet, Ginestar, Paüls, Pinell de Brai, Prat de Comte, Rasquera, Tivenys, Bítem and Xerta.
	Cluster 3	Arenys de Lledó, Caseres, Corbera d'Ebre, Gandesa, Horta de Sant Joan, Lledó and Villaba dels Arcs.
	Cluster 4	Ascó, Bellmunt del Priorat, Benissanet, el Lloar, el Molar, Flix, Garcia, la Fatarella, la Torre de l'Espanyol, Miravet, Mora d'Ebre, Palma d'Ebre, Tivissa, Riba-roja d'Ebre and Vinebre.

Concentric circles from Sant Carles de la Rapita's accommodation hub		
Half Day Trips	Cluster 1	Alcanar, Amposta, Poble Nou del Delta, Deltebre, la Galera, l'Ampolla, Sant Carles de la Ràpita, Sant Jaume d'Enveja and Vinaròs.
Day Trips	Cluster 1	Perelló, la Pobla de Benifassà, la Sénia, l'Ametlla de Mar, Mas de Barberans and Ulldecona.
	Cluster 2	Aldover, Alfara de Carles, Benifallet, Ginestar, Paüls Pinell de Brai, Prat de Comte, Rasquera, Roquetes, Tivenys, Tortosa, Bítem and Xerta.
	Cluster 3	Bot, Corbera d'Ebre, Gandesa, Horta de Sant Joan, Lledó and Villalba dels Arcs.
	Cluster 4	Benissanet, Garcia, Miravet and Mora d'Ebre.

Concentric circles from el Perelló's accommodation hub		
Half Day Trips	Cluster 1	Amposta, Deltebre, el Perelló, l'Ametlla de Mar, l'Ampolla
	Cluster 2	Ginestar, Rasquera and Tortosa.
Day Trips	Cluster 1	Alcanar, Poble Nou del Delta la Galera, la Sénia, Mas de Barberans, Sant Carles de la Ràpita, Sant Jaume d'Enveja, Ulldecona and Vinaròs.
	Cluster 2	Aldover, Alfara de Carles, Benifallet, Paüls, Pinell de Brai, Prat de Comte, Roquetes, Tivenys, Bítem and Xerta.
	Cluster 3	Arenys de Lledó, Arnes, Batea, Bot, Caseres, Corbera d'Ebre, Gandesa, Horta de Sant Joan, la Fatarella, Lledó and Villalba dels Arcs.
	Cluster 4	Ascó, Bellmunt del Priorat, el Lloar, El Molar, Benissanet, Flix, Garcia, la Torre de l'Espanyol, Miravet, Mora d'Ebre, Palma d'Ebre, Tivissa, Riba-roja d'Ebre and Vinebre.
	Cluster 5	La Pobla de Massaluca

Concentric circles from Sant Carles de la Vinaròs's accommodation hub		
Half Day Trips	Cluster 1	Alcanar, Sant Carles de la Ràpita, Ulldecona and Vinaròs.
Day Trips	Cluster 1	Amposta, Poble Nou del Delta, Deltebre, el Perelló, la Galera, la Pobla de Benifassà, la Sénia, l'Ametlla de Mar, l'Ampolla, Mas de Barberans and Sant Jaume d'Enveja.
	Cluster 2	Aldover, Alfara de Carles, Benifallet, Paüls, Pinell de Brai, Prat de Comte, Rasquera, Roquetes, Tivenys, Tortosa, Bítem and Xerta.
	Cluster 3	Arenys de Lledó

Legend

Half-day trips: 30 minutes or less from the accommodation Hub
Day trips: more than 30 and less than 80 minutes from the accommodation Hub
See the table 3 to check the attractions list of each town

As it can be seen in figures, zone 1 offers an important number of accommodations, up to 14344 places, and many accommodation hubs along the cluster. The maximum accommodation concentration is along the coastline, following the typical elongated accommodation characteristics of coastal destinations (Dredge, 1999); and the *Ebre* delta, confirming the

international attractiveness level of the *Ebre* delta and the great concentration of secondary attractions within this area. All the coastline and the *Ebre* delta accommodation hubs are level 1, offering more than 800 beds each hub.

There are also three level 3 accommodation hubs, two of them situated close to the Ebre delta. The third one is situated in la Sénia, the door to *els Port* Natural Park and *la Tinença de Benifassà*.

The inexistence of level 2 accommodation hubs, together with the spatial distribution of the level 1 accommodation hubs, point to clearly to state that tourists in zone 1 lodge along the coast and the *Ebre* delta, and moves to other close points following the hub-and-spoke or base-camp pattern. The distribution of the accommodation makes possible the hub-and-spoke pattern along the cluster as the time distances from accommodation hubs to the tourism attractions) do not overcome the maximal 80 - 100 minutes recommended by the previous studies about base-camp tourism patterns in rural and natural areas (Smallwood, Lynnath & Moore, 2012; Chancellor & Cole 2008). Only *L'Ametlla de Mar* to la *Pobla de Benifassà* are close to overcome the limits. In this case as has been explained when the clusters number has been chosen, *la Pobla de Benifassà* should be counted in this cluster.

Nevertheless, the existence of accommodation hubs close to the boundaries of the cluster could imply the existence of hub-and-spoke patterns that combine attractions from neighbouring clusters. For instance, due to the proximity of *l'Ametlla de Mar* and *Vinaròs* to the border of the cluster, it could be found an important number of tourists who takes profit from the attractions of cluster 1 and other border attractions. This is an important point to take into account in further analysis, which should investigate first of all the neighbouring clusters, and afterwards the real tourism pattern.

Taking into account the accommodation type, it could be observed that the camping offer by far more beds than the other categories types; but also hotels offer an important number of beds. It is interesting to note that most of the rural accommodation offered (299 beds), is situated in the *Ebre* delta area, which corresponds with one of the attractions with international attractiveness level categorized as a nature-rural area.

The number of rural accommodation and housing for tourist use, show also important figures if is taken into account its nature of territorial dispersion in low crowded areas and few number of accommodations pro house. It should be considered that these accommodation types are not as focused as the hotels or the camping, which could offer a large number of beds in a single business. It is also important to note that a very important area of zone 1 is plenty of accommodation to host sun & beach mass tourism along the coast; a tourism modality which should offer a lot of beds in a short period of time. After stating the previous points, it should be considered 456 beds of rural accommodations and the 416 of housing for tourists use as quite important figures.

Zone 2:

Table 9: Accommodation hubs from Cluster 2

Municipalities	Cluster number	Hotel beds	Camping beds	Rural accommodation beds	Apartments beds	Housing for tourists use	Total beds
Ginestar	2			4			4
Benifallet	2	24		14			38
Alfara de Carles	2	8		14			22
Pinell de Brai, El	2	20					20
Prat de Comte	2	6					6
Rasquera	2			31			31
Paüls	2			26			26
Aldover	2	8					8
Tivenys	2			4			4
Tortosa	2	685		27			712
Xerta	2	30					30
Total beds cluster 2	2	781	0	120	0	0	**901**

Legend:

Level 1 hub: More than 800 beds	
Level 2 hub: From 300 to 800 beds	
Level 3 hub: From 100 to 300 beds	

Map 4: Accommodation hubs in cluster 2

Source: ICC

Concentric circles from Tortosa's accommodation hub		
Half Day Trips	Cluster 1	Amposta, els Perelló, la Galera, l'Ampolla and Mas de Barberans.
	Cluster 2	Aldover, Alfara de Carles, Benifallet, Paüls, Roquetes, Tivenys, Tortosa, Bítem and Xerta.
Day Trips	Cluster 1	Alcanar, Poble Nou del Delta, Deltebre, la Pobla de Benifassà, la Sénia, l'Ametlla de Mar, Sant Carles de la Ràpita, Sant Jaume d'Enveja, Ulldecona and Vinaròs.
	Cluster 2	Ginestar, Pinell de Brai, Prat de Comte and Rasquera.
	Cluster 3	Arenys de Lledó, Arnes, Batea, Corbera d'Ebre, Queretes, Gandesa, Horta de Sant Joan, Lledó and Villalba dels Arcs.
	Cluster 4	Ascó, Bellmunt del Priorat, el Lloar, el Molar, Flix, Garcia, la Fatarella, la Torre de l'Espanyol, Miravet, Mora d'Ebre, Palma d'Ebre, Tivissa, Riba-roja d'Ebre and Vinebre.
	Cluster 5	la Pobla de Massaluca

Legend

Half-day trips: 30 minutes or less from the accommodation Hub
Day trips: more than 30 and less than 80 minutes from the accommodation Hub
See the table 3 to check the attractions list of each town

In zone 2 there is just one accommodation hub. *Tortosa* practically centralizes the entire accommodation offer with a total of 712 beds from a total of 901, what confirms the importance of the *Tortosa*'s attractions in this cluster. Although the maximal distances within

the cluster do not overcome the recommended ones by the previous studies about base-camp tourism patterns in rural and natural areas (Smallwood et al. 2012; Chancellor & Cole 2008), the location of the accommodations hub on the corner of zone 2, is not the optimal for the hub-and-spoke pattern. The situation of this accommodation offered so in the corner of the hub, could signify that the real tourist pattern do not correspond totally with the zone 2. If tourists take as base-camp Tortosa the real pattern could signify visiting the elements of the zone 2, but taking advantage of certain nearby attractions of zone 1. As said before, this could be an interesting point to start a further analysis, comparing the results of this study with the real tourists' pattern.

Most of the accommodation beds offered in this cluster are hotel beds in the city of Tortosa. The second accommodation type is the rural accommodation. It is interesting to note that there are no available beds in camping, housing for tourist use and apartments typologies. A further analysis of the tourists' patterns could also give response to these phenomena of concentration of hotels beds in a city, which point to be non holiday tourism, but beak tourism.

Zone 3:

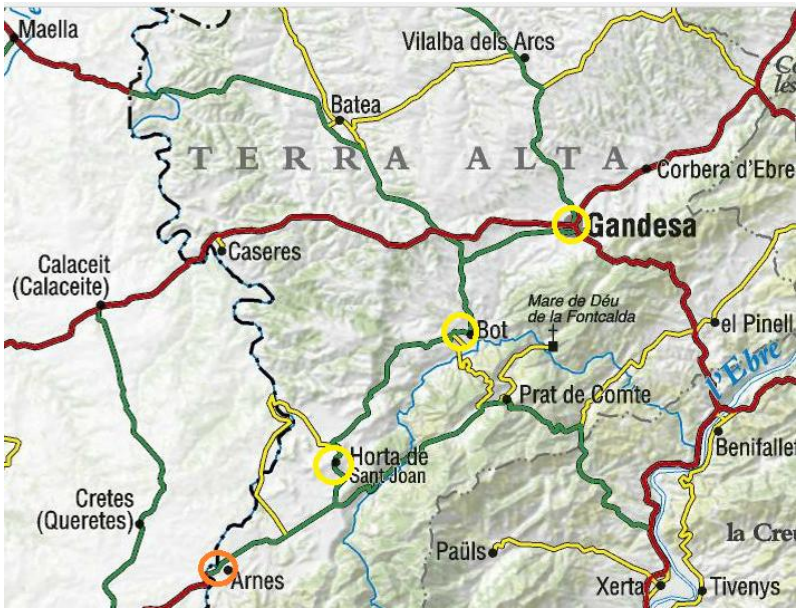
Table 10: Accommodation hubs from Cluster 3

Municipalities	Cluster number	Hotel beds	Camping beds	Rural accommodation beds	Apartments beds	Housing for tourist use	Total beds
Gandesa	3	109					109
Horta de Sant Joan	3	139		59	16	36	250
Batea	3	34		9			43
Bot	3	18	195	16			229
Arnes	3	208	243	56			507
Caseres	3			5			5
Corbera d'Ebre	3			4			4
Vilalba dels Arcs	3	20		15	4		39
Queretes	3	24		19			43
Lledó	3			14			14
Arenys de Lledó	3	14		12			26
Total beds cluster 3	3	566	438	209	20	36	**1269**

Legend:

Level 1 hub: More than 800 beds	
Level 2 hub: From 300 to 800 beds	
Level 3 hub: From 100 to 300 beds	

Map 5: Accommodations hubs in cluster 3



Source: ICC

Concentric circles from Arnes' accommodation hub		
Half Day Trips	Cluster 2	Prat de Comte
	Cluster 3	Arenys de Lledó, Arnes, Bot, Queretes, Horta de Sant Joan and Lledó.
Day Trips	Cluster 1	Amposta, el Perelló, la Galera and Mas de Barberans.
	Cluster 2	Aldover, Alfara de Carles, Benifallet, Ginestar, Paüls, Pinell de Brai, Rasquera, Roquetes, Tivenys, Tortosa, Bítem and Xerta.
	Cluster 3	Batea, Caseres, Corbera d'Ebre, Gandesa and Villalba dels Arcs.
	Cluster 4	Ascó, Bellmunt del Priorat, Benissanet, el Molar, Flix, Garcia, la Fatarella, la Torre de l'Espanyol, Miravet, Mora d'Ebre, Tivissa and Vinebre.
	Cluster 5	Faió and La Pobla de Massaluca.

Legend

Half-day trips: 30 minutes or less from the accommodation Hub
Day trips: more than 30 and less than 80 minutes from the accommodation Hub
See the table 3 to check the attractions list of each town

With a total of 1269 available beds, the zone 3 is the second in accommodation places, far away after zone 1. The distribution of the accommodation beds in relation with the cluster dimensions and the distribution of its attractions are practically optimal. Taking into account the previous analysis of the guides, the most important and numerous attractions were located close to *Horta de Sant Joan* and *Gandesa*. *Arnes*, which is only 8.5 km from *Horta Sant Joan* (and thus close to an international level attraction and to other important attractions), is the accommodation hub with more accommodation beds. With 507 places it is classified as a level 2 hub. *Gandesa*, *Horta de Sant Joan* and *Bot* are a level 3 accommodation hub. The four hubs are distributed in line along the area with more concentration of tourism attractions of the cluster. As the accommodations are well placed on the cluster, the real hub-and-spoke pattern of the tourists may agree with the spatial distribution of the cluster. Therefore it could be stated that the tourism industry development have been practically optimal according the hub-and-spoke pattern in natural and rural areas.

The most offered accommodation type in zone 3 is the hotel, followed very close by the camping. It is also really important the number of rural accommodation, which is the typology better distributed along the cluster. This accommodation type is not as focused as hotels or camping, which could offer a large number of beds in a single business. Taking into account the nature of territorial dispersion in low crowded areas and few number of accommodations pro house of the rural accommodation, it should be emphasized the 209 beds offered by this modality.

Zone 4:

Table 11: Accommodation hubs from Cluster 4

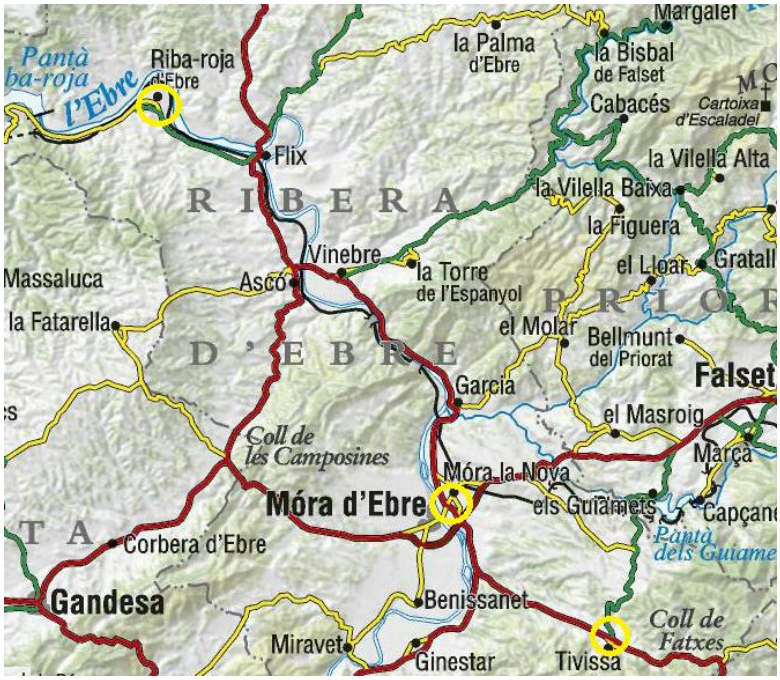
Municipalities	Cluster number	Hotel beds	Camping beds	Rural accommodation beds	Apartments beds	Housing for tourist use	Total beds
Miravet	4			28			28
Móra d'Ebre	4	205				4	209
Palma d'Ebre, La	4			9			9
Benissanet	4	61					61
Riba-roja d'Ebre	4	42	195				237
Fatarella, La	4	27					27
Flix	4	65		10			75

Ascó	4			5			5
Tivissa	4	18	138	15			171
Vinebre	4	59					59
Bellmunt del Priorat	4	7		4			11
El Molar	4			6			6
Total beds cluster 4	4	484	333	77	0	4	**898**

Legend:

Level 1 hub: More than 800 beds	
Level 2 hub: From 300 to 800 beds	
Level 3 hub: From 100 to 300 beds	

Map 6: Accommodations hubs in cluster 4



Source: ICC

Zone 4 is the one with more problems to develop tourism from the offer point of view. This cluster is offering just 898 beds, distributed basically between three level 3 hubs: *Tivissa, Mora d'Ebre* and *Riba-roja d'Ebre*. It should be said that the attraction with international attractiveness level is situated in a corner of the cluster, close to zone 2 and zone 3, what could. As it could be seen above, from *Arnes* and *Tortosa*, the accommodations hubs of zone 3 and 2,

it's possible to realize a day-trip to *Miravet*. As it has been said on the attractions analysis, many of the national-regional level attractions in cluster 4 are situated close to *Miravet*.

The territorial distribution of the beds also is not the perfect to develop this cluster as a tourist brand. Just Mora d'Ebre is situated quite central of the cluster and the attractions. Tivissa is on a corner of the cluster, but quite close of many level 3 and 2 attractions and the level 1 attraction. *Riba-roja d'Ebre*, in contrast, is situated on a very corner of the cluster, and separated from the most important attractions.

According the accommodation type, it should be stated that while *Mora d'Ebre* offers practically all hotel beds; *Riba-roja d'Ebre* and *Tivissa* are offering more camping places.

Zone 5:

Table 12: Accommodation hubs from Cluster 5

Municipalities	Cluster number	Hotel beds	Camping beds	Rural accommodation beds	Apartments beds	Housing for tourist use	Total beds
La Pobla de Massaluca	5		123	22			145
Mequinensa	5	67	344		88		499
Faió	5	17	340				357
Total beds cluster 5	5	84	807	22	88	0	**1001**

Legend:

Level 1 hub: More than 800 beds	
Level 2 hub: From 300 to 800 beds	
Level 3 hub: From 100 to 300 beds	

Map 7: Accommodations hubs in cluster 5

Source: ICC

Concentric circles from Mequinensa's accommodation hub		
Half Day Trips	Cluster 5	Faió and Mequinensa.
Day Trips	Cluster 3	Batea, Queretes, Corbera d'Ebre, Gandesa, and Villalba dels Arcs.
	Cluster 4	Ascó, Flix, Garcia, la Fatarella, la Torre de l'Espanyol, Mora d'Ebre, Palma d'Ebre, Riba-roja d'Ebre and Vinebre.
	Cluster 5	la Pobla de Massaluca

Concentric circles from Mequinensa's accommodation hub		
Half Day Trips	Cluster 5	Faió, la Pobla de Massaluca and Mequinensa.
Day Trips	Cluster 2	Aldover, Benifallet, Ginestar, Pinell de Brai, Prat de Comte, Rasquera, Tivenys and Xerta.
	Cluster 3	Arenys de Lledó, Arnes, Batea, Bot, Caseres, Corbera d'Ebre, Queretes, Gandesa, Horta de Sant Joan, Lledó and Villalba dels Arcs.
	Cluster 4	Ascó, Benissanet, el Molar, Flix, Garcia, la Fatarella, la Torre de l'Espanyol, Miravet, Mora d'Ebre, Palma d'Ebre, Riba-roja, Tivissa and Vinebre.

Legend

Half-day trips: 30 minutes or less from the accommodation Hub
Day trips: more than 30 and less than 80 minutes from the accommodation Hub
See the table 3 to check the attractions list of each town

Revising the conclusions extracted from the guides analysis, it have been considered that the zone 5 may have difficulties to attract international and national tourism, as the tourism attractions do not have international and national attractiveness level. However, there are a total of 1001 beds offered in this small cluster. This cluster is just composed of three towns, but the three of them are considered accommodation hub. *Mequinensa* and *Faió*, situated by the *Ebre* river, are considered a level 2 accommodation hub and la *Pobla de Massaluca* level 3.

Taking into account the accommodation types, it is notable that practically all the offer is camping. The number of hotel beds, apartment beds and rural accommodation beds is really low.

Therefore, we could state that this small cluster can host a quite relevant number of regional and local tourism (considering its size) staying mainly in camping to visit local attractiveness level attractions.

6. Conclusion

Tourism is an especially dynamic economic sector that recently has been merged in a strong process of reconfiguration. Through a hyper segmentation, demand has acquired an especially relevant role in the configuration of tourist products. This document puts into question the conventional way of delineating tourism destinations. It intends to show a model of spatial analysis, to find new interpretations of the reality, more balanced and more optimized, in comparison with other territorial views most of them based on administrative boundaries. This study portrays a methodological exercise that aims to structure tourism geographies into new tourism zones on the basis of visitor's consumption patterns on the spatial distribution, *which* would be better fitted to the needs of tourist demand. This way, this study contributes to a greater understanding of destination zoning and its boundaries, which to date have received little research attention.

It has been acknowledged the hub-and-spoke or base-camp pattern as the most common pattern in rural areas, where the car-based movement is essential. It have been done an important research in order to obtain information of what elements influence the travel pattern of tourists who follow this travel pattern. Following the criteria of Leiper (1995), we found that the tourism nodes comprise two primary components which are quite often interdependent: attraction complexes and service components. Chhetri & Arrowsmith (2008), when analysing the range of recreational opportunities in Natural environments, affirmed that the tourism potential can be affected by the spatial distribution of attractions and their accessibility to visitors. This is partly because areas where tourist attractions are spatially dispersed require relatively longer travel times between attractions than those areas with a greater concentration of attractions. Taking into account the attractiveness level of attraction, together with the spatial distribution, and the existence of accommodation hubs; it has been acknowledged that the areas containing relevant tourism attractions, where their distances from the accommodation hub and within themselves fall within a certain standard range of

base-camp patterns of visitors consumption, may have more attractiveness potential than traditional administrative-based destinations.

Therefore, this study contributes to rethink the destinations using demand criteria instead of taking the administrative-based destinations, breaking with the predetermined boundaries that usually interfere negatively in the tourism development.

Following the same investigation line that the University of Girona about cross-border tourism, and using the same methodology, it has been implemented in the Terres de l'Ebre rural destination, to analyse a destination which it is not divided by the international boundaries, but also has many administrative internal and external borders. It has been collected data about the attractions and the accommodation of the original destination analyzed, and the distances between the attractions themselves and the accommodations.

To obtain data about the attractions, have been used an independent marker (MacCannell's, 1976). The tourism guidebooks are, despite the recent growth of digital information, a powerful tool of prescribing in tourism: visitors follow very faithfully the instructions that recommend the guidebooks. In relation to destination planning and design, markers like the tourism guidebooks influence tourism patterns within the destination and thus may have a significant influence in determining which nodes to be visited, in what sequence, and for what length of time. The results of the guides' analysis reflect the tourist gaze of the territory of this study-case, whereby they have been taken into account to explain the tourism attractions which contain each resulting cluster from this study, its relevance and its nature.

The accommodation data has been obtained from the *Generalitat de Catalunya, Generalitat Valenciana and Gobierno de Aragon* public databases, and extended using secondary sources. It has been gathered the number of beds or places and the accommodation type by municipality.

Finally a distance matrix has been created, prioritizing the time distance above the kilometres distance, due the rural characteristics of the region. This distance matrix has been used to calculate hierarchical clusters using the *Ward* method in order to obtain the ideal spatial distribution of the attractions detected on the guides. Ward method has been selected as the clustering mechanism, as performed significantly better than the other clustering procedures

Blashfield's (1976) and tend to give more uniform clusters, which is appropriate to obtain a destinations based in base-camp travel patterns.

From the application of the Ward method cluster mechanism, 5 new tourism zones were found. The resulting clusters has been analysed to see the attractions distribution within the cluster, the predominant attractions category, the existence of attractions with international attractiveness level or an agglomeration of several attractions with national-regional attractiveness level and the spatial distribution of the tourism accommodations, which act as a base camp to visit the attractions.

The zone 1 is a nature-based cluster depending on the *Ebre* delta Natural Park with an important playing role of the sun & beach attractions and the culture-based attractions. Most of the natural attractions were defined as natural areas, interesting landscapes, bird-watching and wildlife tourism and panoramic views. In a second level, zone 1 could be also defined as a culture-based tourism area, due the numerous culture-based attractions of level 2 and 3. Most of those culture-based attractions were defined as religious heritage, civil heritage, archaeological sites and caves paintings, Museums, expositions and projections, festivities and traditions, traditional and rural activities, charming towns and gastronomy. It has to be mentioned the importance of two protected and recognized cultural elements: the *Cabra Feixet* caves paintings (attractiveness level 1) and the *Godall* mountains caves paintings (attractiveness level 2), because, as it was noted by the guides, they are recognized as Human Word Heritage. The sun & beach attractions are important around the coast, as it's mainly a coastal cluster, but it could be considered as sun & beach attractions with a great importance of the natural characteristics of the beaches.

Zone 1 offers an important number of accommodations, up to 14344 places, and many accommodation hubs along the cluster. The maximum accommodation concentration is along the coastline, following the typical elongated accommodation characteristics of coastal destinations (Dredge, 1999); and the Ebre Delta, confirming the international attractiveness level of the *Ebre* delta and the great concentration of secondary attractions within this area.

The inexistence of level 2 accommodation hubs, together with the spatial distribution of the level 1 accommodation hubs, point to clearly to state that tourists in cluster 1 lodge along the coast and the *Ebre* delta, and moves to other close points following the hub-and-spoke or base-camp pattern. Nevertheless, the existence of accommodation hubs close to the boundaries of the cluster could imply the existence of hub-and-spoke patterns that combine attractions from neighbouring clusters. For instance, due to the proximity of *l'Ametlla de Mar* and *Vinaròs* to the border of the cluster, it could be found an important number of tourists who takes profit from the attractions of zone 1 and other border attractions. This is an important point to take into account in further analysis, which should investigate first of all the neighbouring clusters, and afterwards the real tourism pattern.

The camping offers by far more beds than the other categories types; but also hotels offer an important number of beds. It is interesting to note that most of the rural accommodation offered (299 beds), is situated in the *Ebre* delta area, which corresponds with one of the attractions with international attractiveness level categorized as a nature-rural area.

The zone 2 could be identified as a culture-based cluster of civil and religious heritage, where most of the attractions are situated in *Tortosa* city. Nature-based tourism attractions are complementary to the culture-based ones, mainly identified as viewpoints and interesting landscapes. The concentration of attractions in *Tortosa* and the existence of an international level attraction, indicates that this is the central attraction point of the zone 2 which determine the cluster as culture-based. *Benifallet* caves although is international attraction, do not offer a nearby concentration of nature-based attractions and active tourism attractions to determine the cluster category. On the other hand, *Benifallet* caves could take profit of the proximity of the *Tortosa* attractions and the proximity of other secondary attractions, to be the nature-based alternative of the cluster.

Most of the accommodation beds offered in this cluster are hotel beds. In zone 2 *Tortosa* practically centralizes the entire accommodation offer, what confirms the importance of the *Tortosa*'s attractions. The location of the accommodations hub on the corner of zone 2 is not the optimal for the hub-and-spoke pattern. The situation of this accommodation offered so in

the corner of the hub, could signify that the real tourist pattern do not correspond totally with the zone 2. If tourists take as base-camp Tortosa the real pattern could signify visiting the elements of the zone 2, but taking advantage of certain nearby attractions of cluster 1. As said before, this could be an interesting point to start a further analysis, comparing the results of this study with the real tourists' pattern.

The zone 3 could be distinguished by their natural-based together with active tourism attractions, and culture-based attractions. The two most important attractions hubs of this cluster are first of all *Horta de Sant Joan - Arnes*, offering more number of natural-based and active tourism attractions, and *secondly Gandesa* offering more historical and patrimonial culture-based attractions.

With a total of 1269 available beds, the zone 3 is the second in accommodation places, far away after zone 1. The distribution of the accommodation beds in relation with the cluster dimensions and the distribution of its attractions are practically optimal. Taking into account the previous analysis of the guides, the most important and numerous attractions were located close to *Horta de Sant Joan* and *Gandesa*. As the accommodations are well placed on the cluster, the real hub-and-spoke pattern of the tourists may agree with the spatial distribution of the cluster. The most offered accommodation type in zone 3 is the hotel, followed very close by the camping. It is also really important the number of rural accommodation, which is the typology better distributed along the cluster.

The zone 4 is a combination of nature and culture-based attractions. In general most of the attractions are situated mainly by the river and the C-12, which could be explained by geographical and communication reasons. It is important to note that there is not a large number of attractions taking into account the size of the cluster. The first level attractions and many of the second level attractions are situated really close to zones 2 and 3, what could produce interactions between these clusters. Adding the accommodation hubs information to better analyse this interactions, it could be found that from *Arnes* and *Tortosa* (the accommodations hubs of zones 3 and 2), it's possible to realize a day-trip to *Miravet*, (the place

where could be found the attraction with international attractiveness level and many of the national-regional level attractions of zone 4); while from within the cluster it could not be developed an important flow of tourist, as has too few accommodation offer.
According the accommodation type, *Mora d'Ebre* offers practically all hotel beds and *Riba-roja d'Ebre* and *Tivissa* are offering more camping places

The zone 5 is the most critical case from the point of view of attractions. As the guides did not point to attractions with an international, national and regional attractiveness level; this could be a cluster with serious difficulties to develop long distance tourist flows. It also has to be taken into account the few attractions number detected by the guides, which gives more impediments to the tourism development. However, focusing towards local tourism, the most predominant categories of this cluster are the nature, culture and active tourism.
However, this small cluster can host quite relevant number tourists (considering its size), what could signify that this is a cluster with regional and local tourism potential, staying mainly in camping to visit local attractiveness level attractions.

The resulting zones are more uniform in time distance, and tend to agglutinate similar attractions due the geographic ties of its attractions. However, as Terres de l'Ebre region is a tourism developing area, it has been detected big tourism potential difference between the resulting zones. The zone 1, the most populated area, is a zone with a great potential, due the concentration of many regional level attractions concentration along the coast and in the *Ebre* delta (which is also an international level attraction). It also counts on a lot of accommodations hubs and number of beds, which assure its viability. The zone 2, with a medium potential, is very focused on the cultural attractions and the accommodations of Tortosa, which is the most populated city and the capital of Terres de l'Ebre region. Zone 3, is a really rural and natural mountain area, which also have good tourism perspectives, due the number and distribution of the attractions in relation with the accommodation hubs. Zone 4 is going to have problems to generate tourism flows as do not offer a large number of beds; moreover the distribution of the most important attractions close neighbouring zones, offers the possibility that these

attractions act as a spokes from other accommodation hubs mainly of zones 2 and 3. The zone 5, although offers a large number of accommodation, count on attractions valorised as local attractiveness level; therefore, would also have problems to generate tourism flows.

Moreover, while cluster 1, 3 and 5, offer a quite clear geographical solution, there are some doubts concerning cluster 2 and especially to cluster 4. The distribution of the attractions and the position of the accommodation hubs in relation to the attractions could offer other interpretations and thus different delineation of the tourism zones

To cheek that the resulting zones are the best solution, the resulting zones from the clustering could be compared with the tourists' real patterns. The use of Global Positioning System (GPS) devices, here in combination with questionnaires and overview camera (Pettersson & Zillinger, 2011) and representing it using GIS with the method of Van der Knaap (1999), should be taken into account for further research which aims to test the real tourists' patterns.

Another important point found to take into account in further analysis, is the territorial extension of this methodology to the neighbouring destinations, what also will check if the border towns included in this analysis are really better fitted in the identified zones, or another tourism zoning is possible expanding or reducing the resulting zones.

Further research could also focus on analysing possible multiple destinations patterns due drive tourism, with the help of a network analysis between all the resulting tourism zones (Shih, 2006) .

For further research, it should be also considered some limitations found on the methodology. First of all, the tourism attractions identification of this study is based on the analysis of nine guides, which means that it have been used a limited number of sources. Furthermore in this case-study the same type of sources has been analyzed. Although the tourist guides are an accurate source to use for extracting the tourism attractions, for future analysis, it could be interesting the use of other sources types, like Tour Operator and Travel Agencies catalogues, tourism web pages, and local tourism office brochures; to see if deeper and a higher number of details could be obtained. It could be conclude this way: the more number and type of reliable sources we had, the more reliable would be the interpretation of the reality.

Secondly, it could be said, that calculating the distance between the towns that locate the tourism attractions, it has not been calculated the exact distance between the attractions. V*ia Michelin* and *Google Maps* calculate the distances from city centres, but as we are dealing with a rural and nature tourism destination, most of the attractions are situated outside of the towns. The best option for knowing the distance would be calculating the distance between the exact points of every tourism attraction. This option have been rejected as it would have taken so many time to obtain the data of the exact position and much more time to calculate the distance between the 354 attractions (that would imply 124.962 searches each matrix.) without obtaining very significant result differences. To minimize this limitation it has been taken into account various inhabited and remote villages and their influence area, as a contender of attractions differentiated from their belonging municipality.

Another limitation found, is the impossibility of the use of the GIS-oriented software by its limitation on the cluster analysis. The statistical analysis software SPSS which cannot show spatial data, in contrast, allows a wider range of clustering algorithms than the GIS-based software; for instance the Ward algorithm.

Finally, a limitation was found on the focus of this study. The clustering process of this study, only takes into account, tourism pattern criteria based on the geographical distribution of the accommodation and the attractions. It doesn't take into account *socio-cultural* premises and the linkages between attractions themselves and their images when defining the new tourism destination, what could lead on functional destination without identity. Saraniemi & Kylanën (2011) introduce an alternative view to destinations grounded in cultural geography and the cultural approach to marketing that forms their cultural critique.

7. References

Books and research papers:

Aldenderfer, M. S., & Blashfield, R. K. (1984). *Cluster analysis*. Newbury Park etc.: Sage.

Arimond, G., & Elfessi, A. (2001). A clustering method for categorical data in tourism market segmentation research. *Journal of Travel Research, 39*(4), 391-397. doi:10.1177/004728750103900405

Blasco Franch, D. (2009). Clusters turísticos en Cataluña. *Revista De Economía, Sociedad, Turismo y Medio Ambiente,* (8), 77-97.

Blasco D., Guia J., & Prarts Ll. (2011) Heritage tourism clusters in three borders of Mexico. *Journal of Heritage Tourism* (Article accepted, unpublished).

Blasco D., Guia J., & Prats Ll. (2012) Tourism destination zoning in mountain regions: a consumer-based approach. *Tourism Geographies* (Article accepted, unpublished).

Boley, B. B., Nickerson, N. P., & Bosak, K. (2011). Measuring geotourism: Developing and testing the geotraveler tendency scale (GTS). *Journal of Travel Research, 50*(5), 567-578. doi:10.1177/0047287510382295

Butler, R. W. (1996) The development of tourism in frontier regions: Issues and approaches, in: Y. Gradus & H. Lithwick (Eds) *Frontiers in Regional Development*, pp. 213–229

Butler, R. W., Pearce, D., & International Academy for the Study of Tourism. (1999). *Contemporary issues in tourism development*. London etc.: Routledge.

Cai, L. A., Liu, J. (., & Huang, Z. (2008). Identifying rural tourism markets: A practical tool. *Journal of Hospitality & Leisure Marketing, 17*(3-4), 418-434. doi:10.1080/10507050801985153

Cerezo Medina, A. (2011). Propuesta metodológica con SIG para la evaluación de la potencialidad del territorio respecto a actividades ecoturísticas y de turismo activo. Aplicación en la sierra de las nieves (Málaga, España). *Investigaciones Turísticas, 0*(1) Retrieved from http://www.investigacionesturisticas.es/iuit/article/view/6

Chancellor, C., & Cole, S. (2008). Using geographic information system to visualize travel patterns and market research data. *Journal of Travel & Tourism Marketing, 25*(3-4), 341-354. doi:10.1080/10548400802508440

Chhetri, P., & Arrowsmith, C. (2008). GIS-based modelling of recreational potential of nature-based tourist destinations. *Tourism Geographies, 10*(2), 233-257. doi:10.1080/14616680802000089

Connell, J., & Page, S. J. (2008). Exploring the spatial patterns of car-based tourist travel in loch Lomond and Trossachs National Park, Scotland. *Tourism Management, 29*(3), 561-580. doi:http://dx.doi.org/10.1016/j.tourman.2007.03.019

Dietvorst, A. G. J. (1995). In Ashworth G. J. (Ed.), *Tourist behaviour and the importance of time-space analysis*. Wallingford: CAB INTERNATIONAL.

Di Matteo, L. DiMatteo, R. (1996) An Analysis of Canadian Cross-border travel. *Annals of Tourism Research*, 23 (1), 103-122

Dolnicar, S., & Grün, B. (2008). Challenging "Factor–Cluster segmentation". *Journal of Travel Research, 47*(1), 63-71. doi:10.1177/0047287508318910

Dolnicar, S., Kaiser, S., Lazarevski, K., & Leisch, F. (2012). Biclustering: Overcoming data dimensionality problems in market segmentation. *Journal of Travel Research, 51*(1), 41-49. doi:10.1177/0047287510394192

Dredge, D. (1999). Destination place planning and design. *Annals of Tourism Research, 26*(4), 772-791. doi:http://dx.doi.org/10.1016/S0160-7383(99)00007-9

Ferreira, L., & Hitchcock, D. B. (2009). A comparison of hierarchical methods for clustering functional data. *Communications in Statistics - Simulation and Computation, 38*(9), 1925-1949. doi:10.1080/03610910903168603

Ferreira Lopes, S. D., Rial Boubeta, A., & Varela Mallou, J. (2010). Segmentación post hoc del mercado turístico español: Aplicación del análisis cluster en dos etapas. *Estudios y Perspectivas En Turismo, 19*(5), 592-606.

Formica, S., & Kothari, T. H. (2008). Strategic destination planning: Analyzing the future of tourism. *Journal of Travel Research, 46*(4), 355-367. doi:10.1177/0047287507312410

Fragence, M. (1995) Changing Paradigms of Orthodoxy: The Case of Spatial Models in Tourism Planning*. Les Cahiers du Tourisme*. Aix-en-Provence: Centre Des Hautes Etudes Touristiques.

Hu, C., Han, Y. (., Jang, S. (., & Bai, B. (2005). E-relational characteristics on hospitality and tourism program web sites. *Journal of Hospitality & Tourism Research, 29*(4), 508-522. doi:10.1177/1096348005276496

Ioannides, D., Nielsen, P.A., & Billing, P. (2006). Transboundary collaboration in tourism: The case of the Bothnian Arc. *Tourism Geographies, 8*(2), 122-142. doi:10.1080/14616680600585380

Lew, A. (1987). A framework of tourist attraction research. *Annals of Tourism Research*, 14(4) 553-575: doi: 10.1016/0160-7383(87)90071-5.

Lew, A., & McKercher, B. (2006). Modelling tourist movements: A local destination analysis. *Annals of Tourism Research, 33*(2), 403-423. doi: http://dx.doi.org/10.1016/j.annals.2005.12.002

Leiper, N. (1990). Tourist Attraction Systems. Annals of Tourism Research, 17, 367-384.

Leiper, N. (1995). Tourism Management. Melbourne: RMIT Press.

Lacosta Aragüés, A. (2006). Las dinámicas espaciales de los nuevos destinos turísticos. *Turismo y Cambio Territorial: ¿eclosión, Aceleración, Desbordamiento?,* , 33-34.

Lovelock, B. and S. Boyd (2006). Impediments to cross-border collaborative model of Destination Management in Catlins, New Zeland. *Tourism Geographies,* 8(2), 143-161.

Lovelock, B (2011) Single Worthwhile Policy, Seeking Legitimacy and Implementation: sustainable tourism at the regional destination level, New Zealand. *Policy Quarterly,* 7 (4).

Lue, C.C. Crompton J.L. & Fesenmaier D.R. (1993) Conceptualization of multidestination pleasure trips, *Annals of Tourism Research*, 20(2), 289-301.

MacCannell, D. (1976) *The Tourist: A New Theory of the Leisure Class*. New York: Stoke Books.

McKercher, B., Chan, A., & Lam, C. (2008). The impact of distance on international tourist movements. *Journal of Travel Research*, 47(2), 208-224. doi:10.1177/0047287508321191

Mckercher, B., & Lau, G. (2008). Movement patterns of tourists within a destination. *Tourism Geographies*, 10(3), 355-374. doi:10.1080/14616680802236352

Murphy, A. E. (2003). Illustrating the utility of a modified gap analysis as a regional tourism planning tool: Case study of potential Japanese and German travellers to the Cowichan region. *Journal of Travel Research, 41*(4), 400-409. doi:10.1177/0047287503041004009

Nicolau, J. L. (2008). Characterizing tourist sensitivity to distance. *Journal of Travel Research, 47*(1), 43-52. doi:10.1177/0047287507312414

Nilsson, J. H., Eskilsson, L., & Ek, R. (2010). Creating Cross-Border destinations: Interreg programmes and regionalisation in the Baltic sea area. *Scandinavian Journal of Hospitality and Tourism, 10*(2), 153-172. doi:10.1080/15022250903561978

Nyaupane, G. P., & Graefe, A. R. (2008). Travel distance: A tool for Nature-Based tourism market segmentation. *Journal of Travel & Tourism Marketing, 25*(3-4), 355-366. doi:10.1080/10548400802508457

Palmer, C. (1999). Tourism and Symbols of identity. *Tourism Management*, 20, 313-321.

Pettersson, R., & Zillinger, M. (2011). Time and space in event behaviour: Tracking visitors by GPS. *Tourism Geographies, 13*(1), 1-20. doi:10.1080/14616688.2010.529932

Porter, M.E. (1998). Clusters and the new economics of competition. *Harvard Business Review*, 76(6), November/December 1998

Rodríguez-Díaz, M., & Espino-Rodríguez, T. F. (2008). A model of strategic evaluation of a tourism destination based on internal and relational capabilities. *Journal of Travel Research, 46*(4), 368-380. doi:10.1177/0047287507308324

Saraniemi, S., & Kylänen, M. (2011). Problematizing the concept of tourism destination: An analysis of different theoretical approaches. *Journal of Travel Research, 50*(2), 133-143. doi:10.1177/0047287510362775

Saraniemi, S., & Kylänen, M. (2011). Problematizing the concept of tourism destination: An analysis of different theoretical approaches. *Journal of Travel Research, 50*(2), 133-143. doi:10.1177/0047287510362775

Shih, H. (2006). Network characteristics of drive tourism destinations: An application of network analysis in tourism. *Tourism Management, 27*(5), 1029-1039. doi:http://dx.doi.org/10.1016/j.tourman.2005.08.002

Shoval, N., & Isaacson, M. (2007). Tracking tourists in the digital age. *Annals of Tourism Research, 34*(1), 141-159. doi:http://dx.doi.org/10.1016/j.annals.2006.07.007

Shoval, N., & Raveh, A. (2004). Categorization of tourist attractions and the modelling of tourist cities: Based on the co-plot method of multivariate analysis. *Tourism Management, 25*(6), 741-750. doi:http://dx.doi.org/10.1016/j.tourman.2003.09.005

Smallwood, C.B., Lynnath, E.B. & Moore, S.A. (2012). An analysis of visitor movements patterns using travel networks in a large marine park, north-western Australia, *Tourism Management*, 33(3), 517-528.

Smith, R. (1992). Beach Resort Evolution: Implications for Planning. *Annals of Tourism Research*, 19:304±322.

Sofield, T. H. B. (2006). Border tourism and border communities: An overview. Tourism *Geographies, 8*(2), 102-121. doi:10.1080/14616680600585489

Urry, J. (1990). *The Tourist Gaze. Leisure and Travel in Contemporary Societies*. Newbury Park: Sage Publications

Van der Knaap. (1999). Research report: GIS-oriented analysis of tourist time-space patterns to support sustainable tourism development. *Tourism Geographies, 1*(1), 56-69. doi:10.1080/14616689908721294

Wachowiak, H. (2006). *Tourism and borders :Contemporary issues, policies, and international research*. Aldershot: Ashgate.

Woodside, A. G., & Dubelaar, C. (2002). A general theory of tourism consumption systems: A conceptual framework and an empirical exploration. *Journal of Travel Research, 41*(2), 120-132. doi:10.1177/004728702237412

Wu, C., & Carson, D. (2008). Spatial and temporal tourist dispersal analysis in multiple destination travel. *Journal of Travel Research, 46*(3), 311-317. doi:10.1177/

Tourism Guidebooks:

Arbusá Mirabitllas, G., & Reial Automòbil Club de Catalunya. (2005). *Els millors racons de les terres de l'ebre: 40 rutes per recórrer l'ebre amb automòbil*. Barcelona: RACC Club.

Ángel Ingelmo, Manuel Monreal, Ignacio Gonzalez Orozco. (2007).Cataluña, Col·lecció: Guias azules de España. Madrid: Ediciones Gaesa

Barcelona y Cataluña (2003). (3ª ed.). Madrid: El País Aguilar.

Cataluña (1997). . Madrid: Michelin.

Cataluña y Andorra, Col·lecció Trotamundos (2005). .Madrid: Salvat Editores

Fiona Dunlop. (2012). España, Col·lecció: National Geographic. (4ª ed.). RBA publicaciones (Bonalletra Alcompás SL)

José Ángel Cilleruelo, (actualitzat per:) Xavier Martínez i Edo. (2010). Cataluña, Col·lecció: Guia total. Madrid: ediciones grupo Anaya

Manuel Rivera, Alfredo Gavin. (2002). Tarragona y Costa Daurada, Litoral e Interior.Col·leccio: Azimut / Turismo - 1.Valls: Edicions Cossetània

Spain (2007). . :Lonely Planet

Web sites:

Diputació de Tarragona. (2013). *Terres de l'Ebre, on t'aturen els detalls*. Retrieved on December the 20th 2012, from http://www.terresdelebre.travel/

Generalitat de Catalunya. (2013). *Gencat.cat*. Retrieved on February the 10th 2013, from http://www.gencat.cat/

Generalitat Valenciana. (2012). *Portal Oficial de Turisme de la Comunitat Valenciana*. Retrieved on July the 17th9 2013, from http://va.comunitatvalenciana.com/home/home/116571

Goodrich, J. N. (2001). Book review: Tourism and development in mountain regions. *Journal of Travel Research, 39*(4), 468-469. doi:10.1177/004728750103900417

Gobierno de Aragón. (2013). Gobierno de Aragón. Retrieved on July the 18th 2013, from http://www.aragon.es/

Google. (2013). Google Maps. Retrieved on July the 25 th 2013 from https://maps.google.es/

Institut Cartogràfic de Catalunya. (2013).*ICC*. Retrieved on August the 6th 2013, from http://www.icc.es/

Michelin. (2012). *Via Michelin mapas y itinerarios*. Retrived on July the 25 th 2013, from http://www.viamichelin.es/

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