

EXPLORING HOTEL TYPOLOGIES ACCORDING TO WATER SAVING MEASURES APPLICATION THROUGH A CLUSTER ANALYSIS. THE CASE OF LLORET DE MAR (COSTA BRAVA)

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Water is essential to economic activities, including tourism (Cole, 2012). Guaranteeing water supply in quality and quantity is a fundamental priority of the tourism sector. Tourists do not only drink water to satisfy their basic needs, but they also consume it through leisure and recreational activities such as playing golf, relaxing in spas or swimming in pools (Gössling et al., 2012). The diversity of local characteristics means that at this scale, and especially during the high summertime season, the relationship between tourism and water consumption is complex and may lead to important socioenvironmental consequences. Water restrictions and low water quality negatively affect the reputation and competitiveness of tourist destinations. This was observed during episodes of hydric crises affecting two of the most important Spanish tourist destinations: Benidorm (Rico-Amorós, Saurí, Olcina-Cantos, & Vera-Rebollo, 2013) and Mallorca (Kent, Newnham, & Essex, 2002). The adoption of water saving measures leads to lower water consumption rates. Thanks to the development of mechanisms with different degrees of technification a more efficient water use can be achieved.

There are numerous reasons that explain hotel managers' keenness to promote and develop green practices in relation to water saving (Quazi, Khoo, Tan, & Wong, 2001). They can be linked to a high level of environmental awareness, a will to reduce operational costs or due to compulsory environmental legislation, among others. Conversely, the barriers that obstruct the adoption of green measures to save water must be identified (Chan, 2008; Kasim, Gursoy, Okumus, & Wong, 2014). These barriers include the lack of economic resources, a low level of environmental awareness or mistrust over the potential benefits of developing green practices (Kasim et al., 2014).

The study presented in this article relied on surveying hotel managers in the municipality of Lloret de Mar (Costa Brava, Spain) with a double objective. The first aim was to describe the current implementation of water saving measures developed in

the hotel sector of this well-known Mediterranean tourist destination. The second aim was to explore and analyse the main incentives and barriers that may explain the number and typology of water efficiency initiatives implemented in the hotels. Through a cluster analysis, the variables related with the number of water saving measures and the main incentives and obstacles behind their application were explored. This analysis allowed uncovering how hotels' management decisions were affected by factors such as their degree of proactivity, the level of environmental awareness shown by hotel managers or their degree of technification. The following table shows the main characteristics of each hotel typology and the proactivity, awareness and technification degrees in relation to water saving measures adopted.

The intensity/frequency/number of water saving measures adoption varies depending on the structural and organizational characteristics of the hotels in each resulting cluster. Thus, hotels with a large number of water saving initiatives developed, whether basic or advanced, and therefore considered to be highly proactive, are characterized by offering a larger floor area and belonging to a high star-rated category. Moreover, they often offer numerous hotel services that require water to operate, such as pools, gardens or laundry, among others. The presence of services and infrastructures with hydric requirements is a key factor to promote green practices that mitigate water consumption. The municipality of Lloret de Mar was one of the first international tourist destinations in the Spanish Mediterranean coast and its hotel infrastructure was developed in the mid-20th Century. However, Lloret de Mar hotels are a good example of modernization: the year of construction of a hotel does not reduce the proactivity and technification degree when it comes to water saving. In fact, the more proactive and high-tech hotels include many of the pioneering hotels that opened before the 1980's. They implemented modernization processes in their premises that led to higher efficiency in water use. Building on the presence of high-tech hotels and of those with environmental or quality certifications, the transfer of know-how among businesses and their cooperation through associative organizations must become a fundamental tool to promote higher water efficiency. In this sense, the Hotel Union of Lloret de Mar (*Gremi Hoteler de Lloret de Mar*, in Catalan) can play an active role in leading initiatives of this type. Its consolidated structure would facilitate know-how exchanges in relation to the best water-saving practices among industry members.

	High category	Mature	High capacity	Hotel chain affiliation	Proactive	Aware	High-tech
Cluster A	✓	✓	✓	—	✓	✓	✓
Cluster B	✗	✓	✗	✗	—	✓	✗
Cluster C	✓	✗	✓	✓	—	—	✓
Cluster D	✗	✓	—	✓	—	✗	✗
Cluster E	✗	✗	✗	✗	✗	—	✗

Conversely, hotels with low proactivity include small businesses with low economic and technical capacity. In this sense, the case of Lloret de Mar strengthens the hypothesis by Videras & Alberini (2000). According to these authors, small hotels with fewer services and infrastructures that require water generate low environmental impact. This might explain the low proactivity degree shown by this group. Nevertheless, it must be noticed that this type of hotels have lower economic and technical resources to minimize the impact of their activity through, for instance, the application of water saving mechanisms (Kasim et al., 2014). Finally, and according to the results, affiliation to a hotel chain does not seem to critically influence proactivity, environmental awareness or the degree of technification.

The exploration and analysis of the main incentives that explain the implementation of water saving actions can be summarised in the following points. The most common incentive behind any decision oriented to saving water is most commonly related to the reduction of economic costs. Several of the surveyed hotels applied measures to reduce water consumption with an eye on reducing the total amount charged in water bills. At this point, it is worth underlining the high efficiency of water saving measures described in this study as 'basic actions' leading to significant economic savings without requiring large investments nor high technical knowledge. On the other hand, there are several hotels whose managers are highly motivated to reduce their environmental impacts and thus have adopted advanced mechanisms to save water in their facilities. However, the two clusters that display high environmental awareness are really different between them in other regards. Hotels of a high category, highly proactive, with high-tech facilities and high hotel capacity belong to the first one. Low-medium category hotels with low-tech mechanisms and low hotel capacity compose the other. This observation suggests that high keenness and environmental awareness are necessary but not enough to develop and apply water saving measures in Lloret de Mar. Although environmental awareness is a fundamental starting point, other factors such as possessing sufficient economic resources and/or technical knowledge, are critical to achieving a significant reduction in water consumption.

Two of the main obstacles to reduce water consumption reported by surveyed hotel managers are the allegedly large economic investments required and the lack of knowledge. Thereby, local, regional and/or national administrations should become more involved in the development and implementation of water saving measures in the hotel sector. Through informative programmes disseminating the numerous possibilities that can be adopted to save water, together with grants and subsidies or tax incentives, some of the barriers perceived by hotel managers could be overcome. With these and other actions, hotel managers could feel better advised when adapting their infrastructures to reduce water consumption. Moreover, in this case study the commitment of the hotel sector to deal with environmental impacts derived from tourism activities is clear. In this sense, none of the hotels surveyed denied the fundamental role that the sector must play in applying water saving measures for a more sustainable use of the common hydric resources. Their commitment can be considered to be the first milestone to move towards a reduction in water consumption and the minimization of the pressure and the overexploitation of water resources in tourist destinations where, such as in the case of Lloret de Mar, tourism-related activities are the main consumer.

The acquisition of deeper knowledge on the incentives and obstacles perceived by hotel managers when implementing water saving measures is critical to improve water resources management in tourist destinations along the Mediterranean coast. This study has focused on the municipality of Lloret de Mar, a tourist destination with a consolidated hotel industry that receives sizeable international tourist flows. Through a cluster analysis, hotel typologies have been identified and analysed. The definition of five hotel typologies in regard to water saving initiatives could contribute to understanding the degree of awareness, proactivity and technification of hotels that have not been included in this study or even of new hotels that are being projected. Following this classification, local and regional administrations could more accurately define the best strategies for hydric resources management and water saving programmes in the accommodation sector. In the case of hotels with a low degree of awareness, it is fundamental for the administration to promote actions towards raising environmental awareness. On the other hand, hotels with low levels of proactivity should be the target of training and empowerment actions promoted by the administration and/or hotel associations. Finally, the provision of grants, subsidies and tax reductions could increase the technification degree in those hotels that currently enjoy few or no advanced water saving measures.