US touristic clusters: the impact of the geographic effect on hotel’s economic performance.

Abstract

The importance of geographical concentration and, therefore, its synergistic effects, has been widely studied through the years but mostly from a manufacturing perspective. In this paper, USA touristic clusters are identified and mapped using the location coefficient. Then, touristic cluster identification will be used to classify hotels as properties inside or outside touristic clusters. We analysed five-year economic data from Smith Travel Research (STR) database using an event study technique to compare the economic performance among a total of 27207 hotels, 4339 of those located in touristic clusters and those which are outside, considering that the aim of the research is to determine if the cluster effect is affecting the economic performance of hotels. Hotels are segmented and compared to similar groups in terms of revenues, scale (luxury, upscale, mid-price, economy and budget), location (urban, suburban, airport, interstate, resort and small metro/town) and affiliation (chain, independent or franchise) and then each of the hotel inside a previously classified touristic cluster is compared to a similar group of hotels that do not belong to any geographic agglomeration. Though economic performance mean values are higher of those properties located in clusters, specific analysis suggest that the cluster effect is not affecting all the hotels in the same way.

Key words: US touristic clusters, cluster effect, hotels economic performance, synergic concentration, positive externalities

1.- Introduction.

Despite the popularity of the cluster concept and considering that the tourism industry presents considerable spatial concentration levels, the study of touristic clusters is quiet recent (Jackson and Murphy, 2002, Michael, 2003, Jackson, 2006, Brown and Geddes, 2007, Miller et al., 2008, Bernini, 2009, Lazzaretti and Capone, 2009, Erkus-Öztürk, 2010, Weidenfeld et al., 2010, Segarra-Oña et al., 2012) and it is at an early stage (Debbage and Ioannides, 2008).

The touristic concentration has been traditionally considered due to the existence of natural characteristics or a heritage attraction (Secondi et al., 2011). However, several authors have shown that the geographical concentration of the hotel industry was largely justified by the presence of significant economies of location (Capone and Boix, 2008). The importance of geographical concentration and the evidence of the existence of industrial clusters and, therefore, the synergistic industrial concentration that is superior to the sum of its individual effects, have been widely studied through the

These localization’s economies have been minus valuated at the service sectors, given that industrial agglomerations have traditionally been justified by the presence of externalities in supply, harder to find in the service industry. However, some research shows that services’ industries, when clustering, reduce consumer’s search costs (Chun and Kalnis, 2001), which would confirm the importance of the so-called externalities of demand (Canina et al., 2005, Freedman and Kosova, 2012) and would help to explain territorial agglomerations of the hospitality industry.

If, as expected after the economic crisis at 2007, the tourism industry will have a slower recovery compared to other economic activities (Smeral, 2010), it is urgent to deepen in the understanding of profitability and performance of hotels related to cluster effects to aware hotel managers to face with needed changes and provide the information to take optimum decisions to maintain and improve its competitiveness (Neely, 1999, So et al., 2006, Manzanec et al., 2007, Cabral et al., 2008).

Therefore, the crisis is having direct consequences for the tourism industry, but it can also be an opportunity, since we can find a least resistance scenario to confront changes (Scott et al, 2008) and greater intra-industrial cohesion (Quarantelli, 1998). These advantages could be clearer in tourist clusters, where cooperation, partnerships and existing networks in specialized destinations are a source of tourism innovation (Pikkemaat and Peters, 2005) which can be reinforced by the need to cope with a crisis.

In this research, once the cluster mapping is done, we compare those hotels located inside and outside touristic clusters to see if the fact of being located within a tourist cluster has any effect on the economic performance of the hotels considering a broad period of time (2007-2011) and analyzing if the category of the hotel (luxury, upscale, midprice, economy and budget), the location (urban, suburban, airport, interstate, resort and small metro/town) or the management type (chain, franchise or independent) are acting as moderating factors and therefore affecting the hotels from benefitting from the positive externalities generated from being in a cluster.

This is known in the literature as cluster (Porter, 1998), geographical or district effect (Becattini, 1990, Signorini, 1994) or synergic concentration (Segarra-Oña and De-Miguel, 2009) and has been widely demonstrated at the manufacturing industry but the research on the services industries’ studies are still scarce.
Taking into account the above, the main objective of this work will be to assess if the performance along the time of hotels belonging to touristic clusters differs from those allocated outside. So, the work will review the existing literature on touristic clusters, and, using labor data, we will identify and map the US touristic clusters for later analyzing and evaluating one by one the economic performance of 4339 hotels which are located in a cluster since 2007 until 2011 with regard to its comparison group. After the statistical analysis using an event methodology, results and their discussion are presented. The paper ends summarizing the conclusions and standing the limitations of the study. Also further research is suggested.

2. Literature review.

The acceptance, in recent years, of the importance that clusters have for competitiveness (Bannister, 1994, Saxenian, 1996, Wright and Burns, 1998, Karaev et al., 2007, Michaelides and Papazian, 2007, Asheim et al., 2008, Puig et al., 2009, Piperopoulos and Scase, 2009, Spencer et al., 2010), has supposed an important change in the appraisal of the locating of the businesses.

Until date, studies on tourism clusters have focused mainly on the role played by the territory, the different actors and social and productive relations (Van der Berg et al, 2001, Nordin, 2003, Flowers and Easterling, 2006, Hall, 2005), as well as in the knowledge transfer produced (Hallin and Marnburg, 2008).

While firms when allocating consider economic issues, legal and political issues to facilitate location decisions (Jiang et al., 2006) and also accessibility, basic services, site costs, environmental regulations, industrialization, labor availability, host taxes and incentives, host government cooperation or exchange controls (Bass et al., 1977, MacCarthy and Atthirawong, 2003), there is an academic consensus standing that some competitive advantages reside, in the “know-how”, in the capacities, in the information, in the motivation or the geographic externalities produced (Lazzeretti and Capone, 2009). All of them are aspects related to the local business’ environment (Ingram and Roberts, 2000) and that the competitors located outside the cluster find more difficult to obtain (Nassimbeni, 2003). Until date, studies on tourism clusters have focused mainly on the role played by the territory, different actors and social and productive relations (Van der Berg et al, 2001, Nordin, 2003, Flowers and Easterling, 2006, Hall, 2005), as well as in the knowledge transfer produced (Hallin and Marnburg, 2008).

The cooperation and competition links are the basis of the cluster dynamics (Porter, 1998) but this is a transversal concept that still keeps the researcher’s attention.
The benefits of the so called “coopetition” (Brandenburger and Nalebuff, 1996, Bengtsson and Kock, 2000) have been applied to the analysis of the value chain (Yin, 2011) and the relations buyers-suppliers (Wilhelm, 2011) and is also considered a key aspect in applied operations techniques as the lean manufacturing (Holweg, 2007).

The definition of the touristic clusters involves a high degree of complexity, on one hand, it involves private investments as hotels, travel organizers, attraction and leisure activities, but also public or hybrids (public-private) as railroads, roads, museums, theatres, or municipal services (Rüdiger, 2004) and, on the other hand, public policy implications regarding personal and political security (Vargas-Vargas et al., 2010). So, the creativity and interaction of the different local partners are increasingly playing a more important role (Richards and Wilson, 2006) and also the existence of tourism clusters is enabling areas to compete globally while working together locally (Erkus-Öztürk, 2009, Novelli, 2006, Ferreira and Stevao, 2009).

So far, much of the existing literature on touristic clusters is focused on developing countries and in emerging tourist destinations (Sharma et al., 2007, Cabral et al., 2008, Erkus-Öztürk, 2009 and 2010). But at the United States, as one of the top world tourist destination (UNWTO, 2012), the hypothesis that says that there are territories with high enough levels of tourism specialization for deemed tourist clusters must be raised. This work will have as a first objective, to validate this hypothesis through the illustration of a tourist cluster mapping of the United States, so we will implement a simple ratio of territorial specialization, following the idea that the geographical agglomeration is the essential of all geographical concentrated cluster (O’Donoghue and Gleave, 2004).

Signorini (1994) was the first to attempt to quantify the district effect\(^1\), showing that the productivity of companies within the district is greater than that of companies outside it. Subsequently, other studies have made similar comparisons focusing on different aspects such as technical efficiency (Hernández and Soler, 2003), the ability to export (Melitz, 2003), the generation of externalities (Miret and Segarra, 2010) and the ability to innovate (Cainelli, 2008).

In this line, Krugman (1991a, 1991b) focuses on the interaction between the structure of the market and economic geography, considering the geographical concentration as the most obvious fact of the existence of dynamic economic activity. In

\(^1\) In this work we consider it to be equivalent to dynamic concentration, synergic concentration and cluster.
this work we will interpret the existence and importance of specialized territories as tourist clusters. There is a certain consensus regarding that the implementation of the concept of cluster tourism is appropriate (Jackson and Murphy, 2002), however its use is very recent and it still is in an embryonic stage (Nordin, 2003).

As known, the justification of a traditional manufacturing cluster is based on that a specialized territory has access to more and better resources (Flyer and Shaver, 2003, Tallman et al, 2004) and, albeit studies on these economies of localization have been focused almost exclusively in manufacturing industries, due, mainly to the difficulty on verifying the presence of external economies in the service industry (Canina et al., 2005) references to the tourism cluster can be found at Porter cluster’s seminal work (Porter, 1998). Yet studies that relate services sectors with clusters dynamics and regional policy aspects are minority (Berg et al, 2001) and cooperation and complementarities are important but understudied components of tourism clusters (Weidenfeld et al., 2011).

Despite this, in recent years there is a growing interest in studying localization economies based on the demand side. This idea was already present in Marshall’s work (1890), who believed that crowds allowed consumers exploit economies posed by reducing the costs of search.

This benefit is particularly important in industries with a high degree of heterogeneity in their products because these require expensive searches for the consumer (Fischer and Harrington, 1996, Freedman and Kosova, 2012). Specialized territories allow the consumer to have and to evaluate a variety of different services within the same area. These external economies based on demand are especially important in the service industry, due to the effect that location has, as an intrinsic part of the service offered, also considering related aspects as gaining the customer's attention by evoking desired emotional responses in customers (Voss et al., 2008). When a company (public, private or hybrid) invests in making a location more attractive, the rest of the businesses (say hotels) located in their vicinity can also benefit, which also implies a positive externality.

These externalities of demand would justify the existence of clusters in the service industries in general and, in particular, the touristic clusters, but in any case should be noted two peculiarities of the touristic clusters:

1. Tourism clusters are the result of the location of complementary companies which do not necessarily belong to the same sector (Novelli, 2006), but which
benefit from the existence of networks, alliances and other dynamics between them (Weidenfeld et al, 2010, Saxena, 2005, Tinsley and Lynch, 2001, Presenza and Cipollina, 2010), since the location of new business directly or indirectly related to tourism not only add value to the companies inside the same cluster but also the touristic experience itself.

2. The prominence of cooperation over competition. The traditional microeconomic model of competition is not applicable because in this case companies are required to cooperate to promote a destination (Von Friedrichs and Gummesson, 2006). In the tourism market, the first thing sold to the customer is the destination. Therefore, services and products must be combined to offer the specific experience sought by the customer (Michael, 2003).

The concept of touristic cluster can be applied to a wide typology of service industries as the financial cluster (Cook et al., 2007) and to other service sectors (Pandit et al, 2008). Findings show that strong service clusters promote entrepreneurship, which in turn promotes cluster strength in a self-reinforcing dynamic, that some firms are able than others to better benefit from cluster location due to superior firm competencies and absorptive capacity and that, cluster strength contributes to the ability of entrepreneurial firms to expand overseas.

This new perspective has opened up the possibility of studying tourism clusters (Michael, 2003; Jackson and Murphy, 2006). Most of these studies have focused either on specific sectors such as tourism conventions (Bernini, 2009) or the food and wine tourism (De Oliveira and Fensterseifer , 2003) and, specially, on studying touristic clusters in emerging economies (Erkus-Öztürk, 2009, Sharma et al., 2007). But, from the hotel industry, there are few studies done (Edgar et al., 1994, Baum and Haveman, 1997, Sharma et al., 2007, Brida et al., 2010) and there is still a research gap relating touristic clusters and hotel profitability.

Our study focuses on the analysis of economic results considering the agglomeration of service companies. And studies, particularly, the economic performance of hotels belonging to a touristic cluster.

3. Research model.

The ability of a destination to skip a decline phase can come by the ability of their hotels to take advantage of the externalities generated and by transforming them into better economic results. This becomes especially important, on one hand, for policy
makers in charge of the touristic promotion and, on the other hand and, becoming of particular importance, for hotel managers to set their strategies and their decisions.

Considering the stated below, our research question will expect to find better economic performance along a period of time in hotels located in touristic clusters that those of the same category, prize range, type of hotel and location that are outside the cluster due to the benefits derived from the synergic concentration of firms and the generation of positive externalities.

Given these arguments, we propose the following hypothesis:

\[ H1 \text{ Economic performance of hotels located inside a touristic cluster remains better that hotels located outside.} \]

There are different methods that have been used for the cluster identification and the subsequent preparation of cluster maps. Porter (2003) applied simple statistical indexes based on the location quotient. This method of localization is simple and flexible, although not free of criticism. New methods have emerged in recent years as those based on the comparison of spatial distributions (Brenner, 2006), measuring bilateral distances between companies (Marcon and Puech, 2003, Duranton and Overman, 2005), the Herfindhal index (Sapir, 1996; Aiginger and Pfaffermayr, 2004) or the absolute entropy index (Aiginger and Davies, 2004). However, since our aim is not to define the geographical scope of the cluster but rather to compare territories whose boundaries have already been determined, the LQ method is considered to be appropriate for our analysis.

In our case, we calculated the level of specialization of each territory, measuring the greater or lesser weight of an activity in a specific territory, with regard to the average for the total amount of the territories. When a region has a strong expertise in a specific industry, we suspect the existence of a cluster in that territory calculating the specialization of a territory (also called relative concentration) is through the location quotient (LQ) or Hoover-Balassa index (Kim, 1995).

The term tourism industry is still used regarding industries directly related to tourism and non-hotel businesses, in line with the Leidner’s work (2004). NCIS sectors that identify the whole tourism industry can be considered: “Arts, entertainment, and recreation” (NCIS 71) and “Accommodation and food services” (NCIS 72). Data for LQ calculation was extracted from U.S. Bureau of Labor Statistics Database for the year 2010.
LQ forces to establish an arbitrary cutoff for cluster consideration. Miller et al. (2001) considered that there is a cluster when LQ is above 1’25, and Malmberg and Martell (2002) when LQ its over 3. O’Doneghue & Gleave (2004) tried to solve this problem by developing SLQ (Standard location quotient), which identifies those location that show extraordinary concentration values (LQ), that is their residuals show statistical significance at a 5% confidence level (residual value over 1’96).

In this paper, LQ values higher than 3 were considered highly concentrated touristic clusters. Then SLQ calculus determined a LQ cutoff of nearly 2 which was considered as medium concentrated touristic clusters and finally, counties with an LQ over 1.25 were considered as low concentrated touristic clusters.

So, being more specific, we split our first hypothesis:

\( H1a \) Economic performance of hotels located inside a low concentrated touristic cluster remains better that hotels located outside.

\( H1b \) Economic performance of hotels located inside a medium concentrated touristic cluster remains better that hotels located outside.

\( H1b \) Economic performance of hotels located inside a high concentrated touristic cluster remains better that hotels located outside.

As previous works alert us from heterogeneity within the cluster (Freedman and Kosova, 2012, Cook, 2009) and that there are considerable differences among the different types of hotels (Segarra-Oña et al., 2012), we will analyse the effect of hotel segmentation on the main hypothesis.

Segmentation in the industry has been used basically to identify consumer characteristics (Bowie and Buttle, 2004) or user’s attitude (Bowen, 1998). In geographical terms, segmentation can be by country, region city, town and even neighbourhood (Lewis and Chambers, 1989), urban, suburban, rural and beach, by population density, size of city or climate (Paley, 2001). In this paper, we segmented US hotels by location. According to STR data classification, we classified hotels into six groups: urban, suburban, airport, interstate, resort and small metro/town. Thus, we offer the following:

\( H2 \) Property location influences economic performance of hotels within a touristic cluster.

We will also analyse economic performance of hotels using a category segmentation which validity has already been checked in previous works (Canina, Enz
and Harrison, 2005) that considers luxury, upscale, midscale, economy and budget, so we propose the following:

**H3 Property level influences economic performance of hotels within a touristic cluster.**

Yet, to better complete the analysis and considering previous results warning about the different performances of hotels depending on their management type (O’Neill and Carlbäck, 2011, Perrigot et al., 2009, Botti et al., 2009), we will study the performance of hotel in within the touristic clusters taking into account if they are a franchise, belong to a chain or are independent, so we state the final hypothesis:

**H4 Property management influences economic performance of hotels within a touristic cluster.**

The proposed research model is presented in Figure 1

**Figure 1. Hypotheses representation.**

3. **Data selection and methodology.**

3.1 **Touristic clusters identification.**

Since there is no global figure that describes the development of the tourism sector as a whole and there is certainly an indicator’s problem definition of the tourism sector. Some authors just identify tourism with hospitality as Lazzeretti and Capone (2009), another studies include other industries as transport and recreational activities (European Commission, 2003). We preferred to adopt an intermediate position as in Leidner (2004), and to define tourism in a statistical way, NACE codes sectors and subsectors, were matched to their equivalent NCIS code, available at the US Bureau of Labour Statistics:

**Table 1. NACE and NCIS equivalent codes.**

<table>
<thead>
<tr>
<th>NACE codes</th>
<th>NCIS codes</th>
</tr>
</thead>
</table>

9
- Restaurants, bars, canteens, catering (NACE 553-555)
- Travel agencies and tour operators (NACE 633)
- Hotel and Other Accommodations (NACE 551-552)

<table>
<thead>
<tr>
<th>Restaurants, bars, canteens, catering (NACE 553-555)</th>
<th>Arts, entertainment, and recreation (NCIS 71)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Travel agencies and tour operators (NACE 633)</td>
<td>Accommodation and food services (NCIS 72).</td>
</tr>
</tbody>
</table>

The rate used to measure the specialization levels was the location quotient.

\[
LQ = \frac{E_{is}}{E_s} \div \frac{E_i}{E}
\]

Where:

- \(E_{is}\) is the number of employees in state S in sector i (i defined as tourism sector)
- \(E_s\) is the number of employees in state S
- \(E_i\) is the number of employees in USA in sector I (i defined as tourism sector)
- \(E\) is the total number of employees in USA

The same methodology had previously been used to analyze the performance of clusters in the Spanish region of Valencia (Miret et al., 2010) and to study the Spanish touristic clusters (Segarra et al., 2012). The data used in the analysis was taken from the US Bureau of Labour Statistics (last version available 2010).

Regarding the geographical division, we thought about considering the local labour markets as the location variable to measure, as it has been considered in previous works to locate a regional tourism clusters in Valencia (Miret and Segarra, 2010) or at a national level in Italy (Lazzeretti and Capone, 2009, Capone and Boix, 2008). However, the resulting maps would be too much fragmented. On the other side, using state level labor market shows big areas within states that rather don’t match with cluster findings or that don’t show existing clusters because other industries employment within the same state are hiding the evidence.

Therefore, we decided to use geographic county areas officially recognized, which makes the analysis more simple, understandable and useful especially for agents responsible for tourism planning and decision making.

As we said before, we considered three different concentration levels and we decided to set up a cluster colour scale so we can show higher concentrations and lower concentration cluster in a graphic way. Counties with an LQ higher than 3, highly concentrated touristic clusters, were coloured in red. Counties with an LQ higher than SLQ value (1.98) and lower than 3, medium concentrated touristic clusters, were
coloured in orange. Finally counties with an LQ between 1.25 and 1.98, low concentrated touristic clusters, were coloured in yellow as shown in figure 2.

[Insert figure 2 here]

3.2 In cluster and out cluster comparison. Data collection and methodology.

Hotel performance data for the study was provided by Smith Travel Research. Data for the US market with the variables supply, demand and revenues for each property, year and month was provided, rising over 4+ million data points. The main variables provided in the dataset and their definition are shown in table 2.

Table 2 Variable definition.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>PropSup</td>
<td>Number of rooms available that day (if daily data); number of room-nights available that month (monthly data)</td>
</tr>
<tr>
<td>PropDem</td>
<td>Number of rooms sold that day (if daily data); number of room-nights sold that month (monthly data)</td>
</tr>
<tr>
<td>PropRev</td>
<td>Room revenue (SUS) for that day (or month)</td>
</tr>
<tr>
<td>CompSup</td>
<td>Number of competitors rooms available that day (if daily data); number of competitors room-nights available that month (monthly data)</td>
</tr>
<tr>
<td>CompDem</td>
<td>Number of competitors rooms sold that day (if daily data); number of competitors room-nights sold that month (monthly data)</td>
</tr>
<tr>
<td>CompRev</td>
<td>Competitors room revenue (SUS) for that day or month</td>
</tr>
<tr>
<td>#Rooms</td>
<td>Number of rooms in a hotel</td>
</tr>
<tr>
<td>Zip</td>
<td>US Zip Code</td>
</tr>
<tr>
<td>Operation Code</td>
<td>Chain, Franchise, Independent, Leased, Owned</td>
</tr>
<tr>
<td>Scale</td>
<td>Economy chain through luxury chain; independents</td>
</tr>
<tr>
<td>Price</td>
<td>Pricing level (Five levels: budget, economy, midscale, upscale, luxury)</td>
</tr>
<tr>
<td>Location</td>
<td>Characteristics of location: Urban, rural, airport, interstate, etc.</td>
</tr>
</tbody>
</table>

As we don’t know how many properties are involved, if they vary along the time or which characteristics have the properties in each case for the competitors variables (CompSup, CompDem and CompRev), these variables were dismissed.

Our intention was to study hotel performance and evolution over the last years between properties inside touristic cluster and those outside them. Therefore, previous data treatment was needed to handle the study.

First, we aggregated data for each year, so variables supply, demand and revenues were aggregated calculating the mean for the total months available in a year. Identification data remained as reported originally.

Secondly, we calculated the main variables needed to make the study for each property and year. Variables and their definition are shown in table 3.

Third, we restructured database so data for each property was considered as a single case, that is, we joined all data available for each property in a single row creating variables in a time basis (Pe. revPAR2007 will be the rooms revenue per
available rooms for the year 2007, revPAR2008 will be the revPAR value for the year 2008 and so forth).

Table 3 New variables created from the original dataset.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of Occupancy</td>
<td>The percentage of available rooms occupied for a given period. It is computed by dividing the number of paid guest rooms occupied for a period by the number of rooms available for the same period.</td>
</tr>
<tr>
<td>Average Daily Rate</td>
<td>Total guest room revenue for a given period divided by the total number of paid occupied rooms during the same period.</td>
</tr>
<tr>
<td>RevPAR</td>
<td>Room’s revenue divided by the annual number of available rooms.</td>
</tr>
</tbody>
</table>

Forth, as we were interested in the evolution in the short, medium and long term, considering specially the crisis environment, we establish year 2007 as benchmark year for the event study following Hendricks et al. (2007).

We selected 2007, because at that time subprime mortgage crisis started in the US and that event has been conditioning the touristic market evolution in the US.

As a result, we dismissed data previous to 2007 and cases with missing data for the year 2007. At this point, we have a total of 27208 properties for which data was available.

Finally, we identified properties in and outside the touristic clusters. As we explained before, US counties were identified as being touristic clusters or not attending to de LQ value. STR data doesn’t provide the county in which the property is based, but zip code, state and MSA variables were available. Then, we used zip codes to locate properties into counties and subsequently into clusters. To match zip codes with counties we used US Postal Service Zip Codes for 1999 available in the US Census Bureau. We used 1999 data as Census Bureau no longer tabulates decennial data by U.S. Postal Service ZIP Codes and there are not updated versions since then.

After matching counties and zip codes, cluster classification was immediate. 4339 properties were classified in touristic clusters and the rest, 22867 properties, outside touristic clusters.

Anova results on mean revPAR over de period 2007-2011 between the two groups show significant differences overall and for many of the segmented groups made attending scale, price, location and affiliation. Properties in clusters show grater revPAR value over those outside clusters as shown in table 4.

But these results might be hiding real performance evolution as they are influenced by a higher structural revPAR. That is, higher values of revPAR in in-cluster properties over outcluster properties doesn’t mean necessarily that their performance
evolution has been better over the period as revPAR starting point in 2007 could not be the same. Therefore other methodology is necessary to answer our research questions.

Table 4. Economic variables comparison. ANOVA results.

<table>
<thead>
<tr>
<th>Segment</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Std.Dev</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>Outside</td>
<td>22868</td>
<td>50.75</td>
<td>36.59</td>
<td>140.73</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>In-cluster</td>
<td>4339</td>
<td>58.18</td>
<td>43.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Urban</td>
<td>Outside</td>
<td>2277</td>
<td>86.28</td>
<td>63.73</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In-cluster</td>
<td>314</td>
<td>86.26</td>
<td>45.37</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Suburban</td>
<td>Outside</td>
<td>9590</td>
<td>49.69</td>
<td>28.61</td>
<td>0.41</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In-cluster</td>
<td>998</td>
<td>50.32</td>
<td>33.30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Airport</td>
<td>Outside</td>
<td>1421</td>
<td>57.62</td>
<td>27.46</td>
<td>10.96</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In-cluster</td>
<td>137</td>
<td>49.62</td>
<td>21.83</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interstate</td>
<td>Outside</td>
<td>3218</td>
<td>38.38</td>
<td>17.52</td>
<td>1.11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In-cluster</td>
<td>735</td>
<td>39.15</td>
<td>19.44</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Resort</td>
<td>Outside</td>
<td>574</td>
<td>96.24</td>
<td>61.98</td>
<td>18.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In-cluster</td>
<td>941</td>
<td>82.19</td>
<td>62.76</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Small Metro/Town</td>
<td>Outside</td>
<td>3881</td>
<td>42.07</td>
<td>20.72</td>
<td>131.58</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In-cluster</td>
<td>1214</td>
<td>51.26</td>
<td>33.39</td>
<td></td>
</tr>
<tr>
<td>Affiliation</td>
<td>Chain Management</td>
<td>Outside</td>
<td>3494</td>
<td>61.30</td>
<td>51.83</td>
<td>91.51</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In-cluster</td>
<td>517</td>
<td>85.62</td>
<td>66.66</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Franchise</td>
<td>Outside</td>
<td>16181</td>
<td>47.92</td>
<td>25.91</td>
<td>0.72</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In-cluster</td>
<td>3240</td>
<td>48.35</td>
<td>26.99</td>
<td></td>
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<tr>
<td></td>
<td>Independent</td>
<td>Outside</td>
<td>1286</td>
<td>83.44</td>
<td>67.22</td>
<td>2.34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In-cluster</td>
<td>582</td>
<td>88.52</td>
<td>64.85</td>
<td></td>
</tr>
<tr>
<td>Cluster Concentration</td>
<td>Outside (O)</td>
<td>(L, M, H)</td>
<td>20695</td>
<td>52.36</td>
<td>36.55</td>
<td>67.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(O, M, H)</td>
<td>3043</td>
<td>55.31</td>
<td>37.13</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(O, L, H)</td>
<td>916</td>
<td>59.70</td>
<td>49.38</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(O, L, M)</td>
<td>380</td>
<td>77.45</td>
<td>67.75</td>
<td></td>
</tr>
</tbody>
</table>

Letters in parentheses in Cluster concentration indicate the group from which this group was significantly different at a p-value<0.05 level according to the Shaffe’s pairwise comparison procedure. F-statistics and associated p-values are derived from one-way ANOVA’s.

3.3 The event study methodology.

We used an event study technique to determine whether properties inside touristic clusters perform better than those outside.

We followed in some way the methodology used by Barber and Lyon (1996) and then followed by others like Hendricks et al. (2007) to select comparison groups for each property, although special adjustments have been made to adapt it to our purposes and our reality. The first step is to determine the way to estimate the performance.

On the contrary to other industries, hotel industry has peculiar aspects that makes difficult to use traditional measures (as ROA, e.g.) to evaluate performance.

For example, many hotels are owned by chains, so individual results for each property are unavailable in many cases or unrealistic in others as they may not reflect individual property performance, also specific effects like location or price range are being hidden by aggregated results.

Therefore, data in a property level is crucial to evaluate the performance in this study. Demand, supply and revenue data provided initially is clearly inappropriate to
evaluate performance. Supply is a variable with little evolution within a property as only provides the rooms available on sale in each month, and this will change only because property refurbishing interventions or property enlargements. Demand will be an indicator of a property evolution but will be insufficient to compare within properties as properties might not have the same available rooms (supply). Finally, revenue will depend on the demand and the property scale between other aspects, so properties revenue comparison won’t show property performance, neither property evolution.

Then, we built other variables that have been used to show property performance. First, occupancy (demand/supply) shows the efficiency of the property in filling the hotel. An industrial analogy will be how well are they doing in using full production capacity. The Average daily rate, ADR (revenue/demand), is showing at which price hotels are able to sell their rooms, and therefore it is showing how much will the client pay for the service. The revPAR (revenue/supply) is showing the economic efficiency of the property, how good is the revenue in the property per unit (room), and have been traditionally used as a performance indicator in the lodging industry (Chung & Kalnins, 2001; Ismail, Dalbor, & Mills, 2002, Kalninsa and Chung, 2004). Note revPar is also ADR over occupancy.

We compared the performance of each firm belonging to touristic clusters against a preselected comparison group.

To estimate if hotels in clusters had a better evolution that those outside the cluster, we estimated abnormal performance as the change in the sample firm’s performance minus the change in the median performance of the comparison group (Hendricks et al., 2007). The change in the level of performance for both, sample firm and comparison group, is calculated comparing the level of performance in the studied year versus the level of performance in the base year (2007). This method is preferred over comparing each year with the previous year as these might lead to bias the results.

The change can be measured as a variation in the level of performance or a percentage of change in the level of performance. For measuring occupancy, ADR and revPAR, both measures can provide similar information, but we decided to track the disparity in the level of performance, as it seems easier to interpret. Then the interpretation of an upturn of occupancy rate from 70% to 73% from one year to the next might be that the change in the level of occupancy is +3% rather than the percent change in occupancy is +4.28%. To better evaluate firm’s performance, we have chosen besides, occ., ADR and revPAR, the % of variance in demand and revenue to help analysis.
As mentioned before, variance in supply is minimal, so there is no sense in keeping that variable. Also, absolute variables demand or revenue have no sense as their value for the sample firm and the comparison group might be quite different so bias in either sense is possible.

To establish comparison groups we focused on revPAR value. It has been used in previous works to study hotel performance and it is closely related to operating profit per available room (Enz et al., 2005) which takes into account costs of operation. We checked this relation as Enz et al. (2005) did using PKF Consulting Hospitality Research Group data. Pearson Correlation between revPAR and operational profit per available room from a group of 2740 properties with data from 2007 to 2010 (10960 data points) was 0.813 (p<0.01). This result suggests that both measures are strongly linked. As some error in this correlation might be due to different cost structures in each segment, we controlled for costs by assuring comparison groups in the same scale and similar ADR value.

Following Barber and Lyon (1996), we decided to evaluate each firm against a portfolio of firms is better than using only one firm to compare and, therefore, we used a step procedure to select the firms belonging to the comparison groups.

Some factors might be affecting revPAR that will be hiding the touristic cluster effect, therefore we think that we should control for this variability in the comparison groups. We controlled for location (urban, suburban, airport, interstate, resort and small metro/town), affiliation (chain management, franchise and independent) and scale (luxury chains, upper upscale chains, upscale chains, midscale W/ F&B chains, midscale W/O F&B chains, economy chains and independents) within each comparison group. Price (luxury, upscale, midprice, economy, budget) was not controlled directly by the correspondent variable as hotels can be affected by the region in which it is located. Hotels in high populated regions are expected to have higher ADR than those located in other regions, therefore controlling ADR and scale we consider to be more accurate in terms of the similarity between the sample and the comparison group than to do it by price. For example, the ADR for a luxury hotel in central US might be way lower than the ADR for a luxury hotel in Manhattan or Boston.

To determine the comparison groups we followed Barber and Lyon (1996) guidelines to assure well-specified and powerful statistics and an adapted procedure from Hendricks et al. based on revPAR value:
**Step 1.** For each property in the sample (in touristic cluster) we identify all firms outside touristic clusters with the same characteristics (location, affiliation and scale) that have a revPAR within the 95-105% of the sample firm for the benchmark year (2007). We also control for ADR to be in the 90-110% filter to guarantee the maximum similarity of the firms in each group.

**Step 2.** If we don’t find any firms in Step 1, revPAR filter is increased 5% in each side controlling also characteristics and ADR to be in the 90-110% and property characteristics (location, affiliation and scale).

**Step 3.** If we don’t find any firms in Step 2, we maintain revPAR filter in the 90-110% and firms characteristics filter and we eliminate ADR filter.

**Step 4.** If we don’t find any firms in Step 3, we maintain firms characteristics filter and we look for the closest match in revPAR.

After determining sample’s comparison groups, median values for each variable were calculated as shown in table 5. As benchmark year was 2007, will have a total of 4 values for Occ, ADR, revPAR, %variance of demand and revenue for each sample firm.

**Table 5 Median values for each variable analyzed.**

<table>
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<tr>
<th>Step</th>
<th>Properties in the sample</th>
<th>Average group size</th>
</tr>
</thead>
<tbody>
<tr>
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<td>33,41</td>
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<tr>
<td>Step 2</td>
<td>186</td>
<td>1,76</td>
</tr>
<tr>
<td>Step 3</td>
<td>162</td>
<td>11,02</td>
</tr>
<tr>
<td>Step 4</td>
<td>231</td>
<td>1</td>
</tr>
</tbody>
</table>

Outliers can affect significantly mean values of abnormal performance indicators, therefore, we ran non-parametric tests such as Wilcoxon signed-rank test on the median values and binomial sign test of the percentage of firms experiencing positive abnormal performance to help and focus the interpretation of the results. Consistent with our hypothesis we tested significance using one-tailed test.

Finally, in order to test our hypothesis, we split the sample in 3 groups according to the cluster concentration classification made earlier in this paper. We considered low, medium and high concentrated clusters to check if the greater the concentration of the cluster the better the hotel performance. Then, we ran the same statistics previously explained within each group attending to location, affiliation and hotel category.

**5 Empirical results.**

In analysing the results we will get more focused in non parametric results to avoid the influence that outliers might be causing in the mean results.
The results on the overall sample (table 6) provide evidence that the first year after the subprime mortgage crisis, hotels in the clusters were significantly (p-value ≤ 0.01) more affected than those outside the clusters as it can be seen in all the performance indicators. For example, the median change in revPAR from 2007 to 2008 have been -0.75$ in sample firms than those in their comparison groups, and only 45.23% of the sample firms got better results than those in their comparison groups. These results are due to the reduction in the median occupancy level (-0.59%) and in the median ADR value (-0.55$), which obviously have been affected by the negative evolution of the demand and revenues (-1.04% and -1.50% respectively).

Although this negative evolution in the first year continues on 2009, a small turnover occurs over the following years but overall there is not a significant difference over the period 2007-2011. Therefore, we can reject our first hypothesis that stated that in-cluster properties will perform better on the long term in an economic crisis environment.

To better understand what is happening and to check for hypothesis 2, 3 and 4, we segmented our sample attending to their industry sector and quality levels (scale), their location and their affiliation (chain, franchise or independent), and we used the three cluster concentration categories already mentioned in this paper, low, medium and high concentrated. The results on the segmented samples for revPAR are shown in tables 7-11. Results on ADR, occupancy, % change in demand and % change in revenues, although not reported where used to explain the results and they are available from the authors.

Results for hotel level segmentation show quite a few differences that must be underlined. Properties in-cluster belonging to Luxury segment show consistently better and greater results every year than those outside the clusters, as mean, median and % of positive abnormal results are always positive. For example, in the overall period revPAR increased in median $2.87 (p-value ≤ 0.01, mean $3.29, 58.03% positive) per year more in in-cluster properties that those outside the cluster when other variables were controlled (location and affiliation).

For this segment and period median ADR increased $0.93 per year and occupancy 0.12% per year, which is telling that revPAR increased is due because of an ADR improvement rather than an occupancy improvement. Going further, if we look to % variance of demand and revenues in this case, we see a significant increase on revenues.
Assuming supply is almost constant we will conclude that in-cluster properties in luxury hotels have increased significantly their revPAR over those outside the cluster because of a larger increase on revenues.

On the other side, from midprice to budget in-cluster properties have stronger negative results that those outside clusters. In all cases those differences are statistically significant as shown in table 7. Therefore, hotel level segmentation evidences how strategic orientation is affecting the results, as upper priced in-cluster properties have significantly better results that those outside the cluster and in mid-low priced works the other way around. Figure 3 shows more clearly this differences in accumulated revPAR change.

Table 8 suggest that chain management or franchise is not making a difference on the results in and outside the cluster. According to results shown in table 8, we should underline the significantly better results of in-cluster independent hotels over those independents outside the cluster.

When we segmented the sample by property location, immediately raised an extraordinary difference on the results in urban properties in cluster over those outside the cluster. By the year 2011 almost 75% of in-cluster urban properties had better results that their comparison group with a median increase on the revPAR of $6.86 (per year from 2007 (p-value ≤ 0.01). Again, ADR, occupancy, %change in demand and revenues were also significantly (p-value ≤ 0.01) higher, although the increase was higher on revenues than on the demand. On the other hand, suburban and airport hotels in-cluster, perform significantly (p-value ≤ 0.01) worse than those outside the cluster, while in-cluster Resort and Metro/town properties over the studied period seem to perform similarly as their comparison groups (See table 9 and figure 4).

Finally segmentation of the sample by cluster concentration (LQ level) show that properties in low concentrated clusters have better results over their comparison groups that those in medium or high concentrated (See table 10).

Our analysis of the performance of in-cluster over out-cluster properties shows that negative economic environment affects more to in-cluster properties specially in the short term. The first effect might be caused because of the relative impact that negative economic evolution has on undiversified economies. Touristic clusters rely on single touristic attractions (for example, gaming in Las Vegas or Atlantic city or theme parks in Orlando), therefore hotel properties are more sensible to a variance in the touristic attractions demand as no other reason is supporting the industry. On the other hand, touristic clusters have more strength to face adverse conditions, they have more
resources, higher economy scales and a higher influence in the sales channel, which should lead to a quicker recovery on the performance indicators as economy takes again the path of growth.

Even general performance is not positive, some in-cluster properties in selected segments have shown extraordinary better results over their comparison groups, while other segments behave the opposite. Analysing results will lead us to say the upper priced urban hotels in touristic cluster have performed way over similar properties located outside clusters, even in the first steps of an economic crisis. This might be for various reasons; urban hotels are often located near touristic attractions, tourist wants to be within walking distance of tourist attractions so there is usually a higher demand for this type of properties and results are in concordance with previous studies that focus on the necessity to identify differences between segments, indicating a need for unique combinations of skills and assets within each segment (Shea and Roberts, 2008) and also confirm the complex scheme of interaction between the geographic location, price and services (Urtasun and Gutierrez, 2006). Accordingly to these authors, in an urban context greater benefits can be found in geographic agglomerations with competitors with different services but greater costs that benefits were found in geographic agglomerations with competitors with similarly priced hotels, what would explain why luxury hotels, which are more differentiated, are able to get higher economic revenues inside a tourism cluster than those located outside.

Low concentrated clusters seem to have better results than those medium or high concentrated. We think that this might be caused by market saturation. That is, heavily concentrated markets are force high competitive environments when there is a demand restriction due to an adverse economic situation, hence, pressure to captivate clients forces to focus strategies on price (reflected in the ADR) or in volume (reflected on occupancy) which, eventually, may affect revPAR.

Figures 3 to 5 show accumulated revPAR change from 2007 through 2011 for each level, location and affiliation.

**Figure 3.** revPAR change from 2007 through 2011 depending on the hotel category.
Figure 4. revPAR change from 2007 through 2011 depending on the hotel location.

Figure 5. revPAR change from 2007 through 2011 depending on the hotel affiliation type.

6 Conclusion, limitations and further research.

This study identifies the existing touristic clusters in the US using labour data from the US census and applying a LQ standard indicator. The map shows strong
clusters in some well-known touristic areas as Las Vegas, Atlantic City, Orlando, Hawaii islands, but also in others that we had hardly consider that it conforms a touristic agglomeration. And can also be seen that “hot touristic spots” have influenced nearby areas (counties) and high concentrated areas are work as seeds where other less concentrated clusters have been developing.

Based on the former justification of a cluster and its dynamics regarding that a specialized territory has access to more and better resources (Tallman et al, 2004) and creates what some authors call "externalities resource-based" (Flyer and Shaver, 2003) and that similarly, the concept of cluster had been previously and mainly used in manufacturing industries, we analysed a key part of the touristic clusters, hotels, analysing its performance compared to, in all extend, alike hotels allocated outside clusters.

ANOVA analysis of hotels located in and out of these touristic clusters gives preliminary results showing significant differences and suggesting that being located in a touristic cluster can be related to the better economic performance of hotels, that would be aligned with previous studies results applied to services industries (Lazzeretti and Capone, 2008) and would confirm hypothesis 1, but when we segmented the sample, results showed how economic performance differed depending on the sample heterogeneity, what reinforces previous studies such Freedman and Kosova (2012). ANOVA analysis showed better results for luxury and upscale hotels in-cluster compared to those located outside the cluster but results wouldn’t be the same for mid-price to budget hotels. In the same way, when studying hotel economic performance considering the property location, we found out that airport hotels located in clusters were performing much better that those located outside, but there were not any significant difference when considering urban, suburban or interstate hotels, and resort and town hotels were performing significantly worse than those that would not belong to a touristic cluster.

When analysing highly, medium and low concentrated clusters results and according to Shaffe’s pairwise comparison, there are significant differences among out-cluster properties and in-cluster properties. We can see that the higher the concentration is, the higher the level of revPAR over the period 2007-2011. As we said before, greater revPAR value over the period considered not necessarily mean better evolution over the period considered, so, as we can say that touristic agglomerations are somehow affecting the economic hotel performance, the first hypothesis could not be fully accepted. When analysing the sample considering cluster concentration, we found out
that hotels located in low concentrated clusters were performing better than those located in medium or high ones, so we can accept H1a hypothesis and reject H1b and c, which have important managerial implications when considering the benefits and costs of where to locate a new hotel.

Data provided by STR, allowed us to determine whether there are differences in the major variables as occupancy, average daily rate, revenues, expenses or margins between hotels belonging to a US touristic cluster and hotels outside. Segmented studies were also run attending to the property location (airport, city centre, resort or beach), if it belonged to a chain or was a self-managed hotel and its price (from luxury to budget).

In addition, year variation was calculated to determine if the variables evolution were significantly different.

Our analysis of the economic indicators using the economic crisis as an initial point using an ES (event study) analysis shows mixed results.

First, the only group that is performing significantly better when analysing the property location is the urban one.

Secondly, it reinforces the previous findings that showed that luxury in-cluster hotels were performing much better than those located outside the cluster, in line with previous studies that determined the importance of differentiation within a cluster (Freedman and Kosova, 2012, Urtasun and Gutierrez, 2006, Canina et al., 2005), and the heterogeneous performance within agglomeration domains (Chung and Kalnins, 2001, Yang et al 2012), also showing that luxury hotels have a higher ability to benefit from the agglomerations externalities. Even if their prices are eroded easily when collocating (Enz et al., 2008), it still seems to be more profitable. This result allows us to accept the third hypothesis that affirms that property level influences economic performance of hotels within a touristic cluster.

Those findings are consistent if we consider that usually luxury hotels are located in the city center (Egan and Nield, 2000).

Thirdly, there is an interesting conclusion showing that independent hotels perform better in-cluster that those out-cluster. This could be because those hotels have a more agile managerial structure and are able to take its own decisions, which better allow them to react to the environment and better benefit of the agglomeration externalities and reinforces previous findings (Chung and Kalnins, 2001).

This results have important managerial implications, considering that the allocation decision is one of the most important. Taking into account the possible cluster effect or the importance of the destination will not be enough, it is also important
to consider the differentiation level of the property and the property management. We can conclude that the luxury and urban hotels are clearly benefitting from being allocated in a touristic cluster, especially if it is a low concentrated touristic cluster.

That hotel manager should try not to allocate their properties in a highly concentrated cluster has also been clarified. Also that in an economic crisis situation hotel in-cluster are, in general, performing better that those out-cluster.

Albeit findings have a solid basement due that we analysed more than 27000 properties using different years data, the study has also its limitations. First, we are not able to explain why against all forecast, airport and suburban in-cluster hotels are performing worse that those out cluster and second that the period of time studied, from 2007 to 2010 may be biasing results.

To solve this, the study should be replicated in a period with more economic stability and should also be interesting to analyse deeper the dynamics of US touristic clusters, especially focusing on the modern key topics regarding innovation and sustainability to see if better economic performance is also aligned with better environmental and innovative attitude.

Acknowledgements
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### Table 6. Abnormal changes in the performance results for the total sample.

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<th></th>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
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<tr>
<td>the % of demand</td>
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<td>-1.04</td>
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<td>0.72</td>
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<tr>
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<td>(0.9)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>the % of revenue</td>
<td>-0.07</td>
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<td>(0.59)</td>
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<td>-0.59</td>
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<td>(-4.4)a</td>
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<td>(-1.02)</td>
<td>(-0.35)</td>
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<td>(-0.03)</td>
<td>(-0.9)</td>
<td>(1.05)</td>
</tr>
</tbody>
</table>

Results on abnormal changes: T-statistics for the mean, Wilcoxon signed-rank test Z-statistic for the median, and binominal sign test Z-statistic for the percent positive are reported in parentheses.

a Significantly different from zero (50\% in the case of percent positive) at the 1\% level for one-tailed test.
b Significantly different from zero (50\% in the case of percent positive) at the 2.5\% level for one-tailed test.
c Significantly different from zero (50\% in the case of percent positive) at the 5\% level for one-tailed test.
Table 7. Abnormal changes in the performance results segmented by hotel level.

<table>
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<th></th>
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<td>% pos.</td>
<td>Mean</td>
<td>Median</td>
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<td>467</td>
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<td>2,30</td>
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<td></td>
<td>(0,59)</td>
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<td>(0,56)</td>
<td>(2,54)</td>
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<td>-0,60</td>
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<td>-1,29</td>
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<td>(-1,3)</td>
</tr>
</tbody>
</table>

Results on abnormal changes. T-statistics for the mean, Wilcoxon signed-rank test Z-statistic for the median, and binomial sign test Z-statistic for the percent positive are reported in parentheses.

a Significantly different from zero (50% in the case of percent positive) at the 1% level for one-tailed test.
b Significantly different from zero (50% in the case of percent positive) at the 2.5% level for one-tailed test.
c Significantly different from zero (50% in the case of percent positive) at the 5% level for one-tailed test.

First value indicated refers to the number of properties in the segment.
Table 8. Abnormal changes in the performance results segmented by affiliation.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>% pos.</td>
<td>Mean</td>
<td>Median</td>
<td>% pos.</td>
<td>Mean</td>
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<tr>
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<td>(-0.93)</td>
<td>(-0.26)</td>
<td>(2.79)a</td>
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<td>0.85</td>
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<tr>
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<td>(-7.63)a</td>
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<td>(-0.57)</td>
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<td>(3.1)a</td>
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<td></td>
<td>580</td>
<td>582</td>
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<td>55.69</td>
<td>3.35</td>
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<td>(-0.39)</td>
<td>(-0.71)</td>
<td>(-1.21)</td>
<td>(2.16)b</td>
</tr>
</tbody>
</table>

Results on abnormal changes. T-statistics for the mean, Wilcoxon signed-rank test Z-statistic for the median, and binomial sign test Z-statistic for the percent positive are reported in parentheses.

a Significantly different from zero (50% in the case of percent positive) at the 1% level for one-tailed test.
b Significantly different from zero (50% in the case of percent positive) at the 2.5% level for one-tailed test.
c Significantly different from zero (50% in the case of percent positive) at the 5% level for one-tailed test.

First value indicated refers to the number of properties in the segment.
## Table 9. Abnormal changes in the performance results segmented by location.

<table>
<thead>
<tr>
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</thead>
<tbody>
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<td>7,00</td>
<td>12,03</td>
<td>13,30</td>
<td>74,84</td>
<td>3,69</td>
<td>4,56</td>
<td>66,88</td>
<td>4,82</td>
<td>5,45</td>
<td>66,88</td>
<td>6,63</td>
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<tr>
<td>Resort</td>
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<td>50,43</td>
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<tr>
<td>Small Metro/Town</td>
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</tbody>
</table>

Results on abnormal changes. T-statistics for the mean, Wilcoxon signed-rank test Z-statistic for the median, and binomial sign test Z-statistic for the percent positive are reported in parentheses.

- a Significantly different from zero (50% in the case of percent positive) at the 1% level for one-tailed test.
- b Significantly different from zero (50% in the case of percent positive) at the 2.5% level for one-tailed test.
- c Significantly different from zero (50% in the case of percent positive) at the 5% level for one-tailed test.

First value indicated refers to the number of properties in the segment.
Table 10. Abnormal changes in the performance results segmented cluster concentration.

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</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>% pos.</td>
<td>Mean</td>
<td>Median</td>
<td>% pos.</td>
<td>Mean</td>
<td>Median</td>
<td>% pos.</td>
<td>Mean</td>
<td>Median</td>
<td>% pos.</td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
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<td>(-6.84)</td>
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<td>(-0.88)</td>
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<td>(-0.83)</td>
</tr>
</tbody>
</table>

Results on abnormal changes. T-statistics for the mean, Wilcoxon signed-rank Z-statistic for the median, and binomial sign test Z-statistic for the percent positive are reported in parentheses.

a Significantly different from zero (5% in the case of percent positive) at the 1% level for one-tailed test.
b Significantly different from zero (5% in the case of percent positive) at the 2.5% level for one-tailed test.
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