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Keywords

travel, tourism and hospitality clusters, hotels' economic performance, U.S. hotel industry

Disciplines

Hospitality Administration and Management | Tourism and Travel

Comments

Required Publisher Statement

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The Effect of Tourism Clusters on U.S. Hotel Performance

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Abstract

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Summary

A five-year analysis of tourism clusters finds that hotels generally benefit from being part of a cluster of tourist-related businesses. However, not all clusters or hotels benefit to the same extent—or at all in some cases. The cluster effect is stronger for luxury and upscale hotels, and chain-managed hotels also seem to benefit more than their independent competitors. Clusters in resort and airport locations seem to confer lower benefits than those in small-metro areas and towns, urban, or suburban areas. These results support the concept that economies of agglomeration lead to benefits from being co-located with other tourism businesses.

The impact of clusters on firms' competitiveness and location planning have been extensively studied (e.g., Asheim, Cooke, and Martin 2008; Bannister and Stolp, 1994; Karaev, Kohand, and Szamosi 2007; Michaelides and Papazian 2007; Piperopoulos and Scase 2009; Puig, Marques, and Ghauri 2009; Saxenian 1996; Spencer et al. 2010). Although it is well established that location is a key element of a hotel's strategy (Crotts, Mason, and Davis 2009; Jones 1999), we have so far seen little research that analyzes the effects of agglomeration for the service industries in general, and travel, tourism, and hospitality businesses in particular.

Introduction

The favorable economic effects of industrial clusters have been observed for nearly a century (Marshall 1920). Defined as a geographical concentration of interrelated firms and institutions (Porter, 1998), clusters result in enhanced returns and growth for firms in the cluster (for example, see Devereux, Griffith, and Simpson 2007; Ellison and Glaeser 1999).

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Similar to Porter (1998), we use quantitative indicators to identify geographical concentrations of hotels and related institutions or organizations¹. Porter found that these so-called industrial clusters demonstrably enhance productivity, innovation, and competitiveness through (1) better access to well-trained human resources, (2) proximity to clients and faster detection of their needs, (3) proximity to suppliers, and (4) collaboration between clustered firms in improving operational, production, and logistical methods. The competition between producers provokes good ideas and leads to innovation. To see if this type of enhancement applies to tourism clusters, we analyze the effects on hotels by comparing their revenues over a five-year period.

It is of both academic and applied interest to understand the drivers of economic performance of hotels located within and outside of clusters (Kim and Oh 2004). In this paper, we seek to test empirically whether the benefits for hotels of being located in a geographically concentrated cluster leads to better economic performance.

To make this assessment, we test whether the performance of hotels located within geographical clusters differs from those outside a cluster by analyzing hotel performance data from 2007 through 2011. We use workforce data available from the U.S. Bureau of Labor Statistics to identify geographically concentrated tourism clusters (as in Delgado, Porter, and Stern 2013; Peters 2005, for example). We also use industry-wide multi-year revenue per available room (RevPAR) data available from STR Global to compare hotel performances within and outside clusters (<http://www.strglobal.com>).

Studies on Clusters and Co-location

Although hospitality firms have long formed de facto clusters in successful destinations that offer natural features or an attractive heritage, in recent years, there has been a growing interest in studying location economies, or the advantages of concentrating in a particular venue. Henderson (1986) demonstrated that concentrated industries are able to increase their factors of productivity, a finding that fits Marshall's (1920) concept of externality. If an externality is due to the ability to acquire more and better resources (Tallman et al. 2004), then it is a resource-based externality or supply externality (Flyer and Shaver 2003).

Several authors have shown that the geographic concentration of the tourism industry was largely justified by the presence of significant economies of location (Capone and Boix 2008) or the reduction of consumers' searching costs (Chung and Kalnins 2001). In addition to confirming the importance of the so-called externalities of demand (Canina, Enz, and Harrison 2005; Freedman and Kosova 2012; Kuah 2002), these factors also help to explain the territorial agglomerations of the hospitality industry (Scott and Laws 2008). Those studies set the stage for a deep analysis of the

economic performance of the hospitality industry taking into consideration its particularities and location.

The effects of industrial agglomerations and clustering have been extensively studied in manufacturing and other related industries (e.g., Buenstorf and Klepper 2010; Enright 1999; Maine, Shapiro, and Vining 2010; Mukkala 2007; Ottaviano and Thisse 2001; Porter 2000). Generally speaking, these studies show that firms located within industrial clusters perform better than firms located outside clusters, primarily due to location-related synergistic effects, despite the proximity to competitors and the collaborative relations established (Erkus-Öztürk 2009; Novelli, Schmitz, and Spencer 2006; Yang 2012). Although it is tempting to extend these results to the service industries, we note that the travel, tourism, and hospitality industries' idiosyncratic factors may either enhance or reduce the cluster effects commonly observed in manufacturing-related industries.

Canina, Enz, and Harrison (2005) and Enz, Canina, and Liu (2008) made a significant contribution in this area by analyzing the effect of hotels' co-location on price within a geographical cluster. They found that the benefits of co-location were greater for hotels belonging to lower-segmented competitors than for more luxurious properties. To define their clusters, these authors assumed the already classified tracts defined by STR². To take this analysis to the next step, our study uses empirical indicators to measure the geographical concentration. Another characteristic of Canina, Enz, and Harrison's paper is that the analysis only considers hotels. To extend this, we determine the geographical cluster of tourism businesses using well-known concentration measures (as the Bureau of Labor Statistics³ and The Harvard Institute for Strategy & Competitiveness⁴ do, among others). Another interesting difference of our study is that we compare the economic performance of hotels belonging with those not belonging to clusters, considering their characteristics (i.e., market scale, company types, and location segments).

In light of the above, we argue that the synergistic effects that proximity generates justify the existence of localization economies. This should be reflected in the economic performance of the hotels located within tourism clusters. We believe that the synergistic effects are due to (1) the cooperation among dependent businesses (e.g., hotels and theatres, travel agencies, and public or private tourism developers), and (2) the vibrant competition among hotels that enhances productivity and innovation (Nordin 2003). Thus, our primary hypothesis tests the differences between the hotels located within and outside clusters and we formally state the following:

Hypothesis 1 (H1): The economic performance of hotels located within a geographical touristic cluster will be better than that of hotels located outside touristic clusters.

While H1 tests the basic premise of the geographical cluster effect, we also want to examine whether hotels' particular characteristics can affect how the hotels benefit from being in a cluster.

The specific location of a cluster may influence how it affects hotels. For example, an airport hotel may not benefit from being close to a theater or a cinema, as the client may be just looking for a place to rest. However, having tourist-attracting businesses nearby may be interesting for a city hotel whose clients are looking for cultural, gastronomic or leisure activities.

In this context, we argue that hotels located in relatively isolated environments will benefit less from the cluster effect as they do not have economic generators or tourist-related businesses nearby. Moreover, hotels that do not benefit from other firms' cooperation (such as airport or interstate hotels) will have less economic benefits. Therefore, we propose the following hypothesis:

Hypothesis 2 (H2): Economic benefits derived from being in a cluster will be lower for hotels less dependent on other touristic activities.

At the same time, and following the line of research of Enz, Canina, and Liu (2008) and Canina, Enz, and Harrison (2005), the economic benefits of a cluster may depend on a hotel's chain scale (which Canina and Enz term strategy). Their studies show that the benefits of co-location are higher for economy hotels than for luxury and upscale ones. Contrary to that finding, we would expect that hotels with a differentiating strategy (upscale and luxury) would have greater ability to enhance their economic performance due to the benefits of co-location.

Hotels with a more developed service offering, with a better trained workforce, and with a clientele more interested in culture would have a higher absorptive capacity to integrate the possibilities that the cluster effect creates into their value creation strategy (Cohen and Levinthal 1990; Zahra and George 2002). Thus, we propose the following hypothesis:

Hypothesis 3 (H3): Economic benefits derived from being in a cluster will be higher for luxury and upscale hotels.

With regard to the hotel industry's complex ownership and management structures, scholars have argued that the nature of the management structure can explain performance differences between hotels (e.g., Botti, Bric, and Cliquet 2009; O'Neill and Carlback 2011; Perrigot, Cliquet, and Piot-Lepetit 2009). However, if indeed the geographical clustering effect is present, then we should be able to recognize it regardless of the ownership structure. Therefore, we propose the following hypothesis:

Hypothesis 4 (H4): Regardless of the ownership structure, the economic performance of hotels within a geographical cluster will be better than those outside the clusters.

Research Approach

The outline of our study is as follows. To explore our four hypotheses, we first develop a procedure for classifying locations as inside or outside a geographical cluster. After we develop a measure for cluster concentration, we identify various characteristics of hotels (i.e., location, quality or price segment, and ownership structure). Finally, we compare the economic performance of U.S. hotels for 2007 through 2011.

Identification of Geographical Clusters

A well-established approach for calculating the level of clustering within a specific region (for this study, a county) is to measure the relative specialization of an industry in a particular location with respect to the entire population of interest (in this case, the United States; see Lazzarretti and Capone 2006; O'Donoghue and Gleave 2004; Porter 2003; Segarra-Oña et al. 2012). The relative specialization of a territory (also called "relative concentration") is calculated through the Location Quotient (LQ) or Hoover-Balassa index. LQ measures the ratio between the local and national percentage of workforce attributable to an industry, as follows:

$$LQ = \frac{\frac{E_{is}}{E_s}}{\frac{E_i}{E}}$$

So, the rate used to measure the specialization levels was the LQ, where E_{is} is the number of employees in state S in sector i ; E_s is the number of employees in state S ; E_i is the number of employees in the United States in sector i ; and E is the total number of employees in the United States.

LQ is one of the most used and well-supported measures of agglomeration (Delgado, Porter, and Stern 2013; Miret-Pastor, Segarra-Oña, and Peiró-Signes 2011; Segarra-Oña et al. 2012; U.S. Bureau of Labor Statistics³). Although the adequacy of the agglomeration indices is currently under discussion, according to Kominers (2008), no index is perfect to completely characterize the determinants of agglomeration across industries. We used the data available from the U.S. Bureau of Labor Statistics³¹ (last version available 2010) to calculate the LQ for each county within the United States.

Identifying tourism businesses involves certain assumptions, because there is no formal consensus to define tourism in a statistical fashion. To use appropriate statistical

data for calculation, some authors, such as Lazzeretti and Capone (2006), identify tourism with hospitality. Other studies include industries such as transport and recreational activities (European Commission 2003). We adopted an intermediate position as in Leidner (2004), and applied the following Nomenclature statistique des Activités économiques dans la Communauté Européenne (NACE) codes: “Travel agencies and tour operators, 633; Hotel and other accommodations, 551-552; Restaurants, bars, canteens, catering, 553-555” and their 2003 North American Industry Classification System (NAICS) equivalent codes, “Arts, entertainment, and recreation (NAICS 71) and Accommodation and food services (NAICS 72).”

We use counties as the unit of analysis for calculating geographic cluster specialization, because that is the smallest U.S. geographical unit for which there are data of this type. As concentration standards have not been established formally for the hospitality industry, we set concentration cutoff levels for differentiating cluster areas based on other studies. Miller et al. (2001) suggested inferring the presence of a cluster when the LQ is above 1.25, while Malmberg and Maskell (2002) suggested using an LQ over 3. O’Donoghue and Gleave (2004) tried to resolve this problem by developing a standard location quotient (SLQ), which identifies those locations that show extraordinary LQ concentration values (i.e., their residuals show statistical significance at a 5% confidence level with a residual value over 1.96). A study on the Spanish touristic clusters (Segarra-Oña et al. 2012) helped us to decide the cutoff levels as follows. We classified counties with an LQ higher than 3 as “highly concentrated clusters,” counties with SLQ values between 1.98 and 3 were classified as “medium concentrated clusters,” and the counties with an LQ between 1.25 and 1.98 were classified as “low concentrated clusters.” The regions with LQ scores below 1.25 were considered to be outside of clusters. Exhibit 1 includes a map of the United States color-coded to show the relative locations of high, medium, and low clusters and non-cluster counties. Note that high concentrated clusters may not occupy an entire county, even if that county is all in red (especially due to the size of counties in the Western United States). Likewise, a low-concentrated or no-cluster county may have small clusters that are not sufficient to register in this measurement.

Not surprisingly, the map shows strong clusters in some well-known tourist areas such as Las Vegas, Atlantic City, Orlando, Yellowstone (West Yellowstone, Idaho), Grand Canyon National Park (South Rim and Tusayan, Arizona), and the Hawaiian Islands.

Hotel Performance Data and Analysis

STR Global’s hotel performance data includes annual and monthly supply, demand, and revenues for each property

for our study period of 2007 through 2011. For our performance measure, we used the well-accepted RevPAR (see, for example, Chung and Kalnins 2001). Furthermore, RevPAR is closely related to gross operating profit per available room (GOPPAR; Canina, Enz, and Harrison 2005), which takes into account operation costs.

We restructured the database so that data for each property were considered as a single case and created performance variables on a time basis (e.g., RevPAR2007 represents room RevPAR for the year 2007). The database contained comparable information for 27,208 hotel properties within the United States.

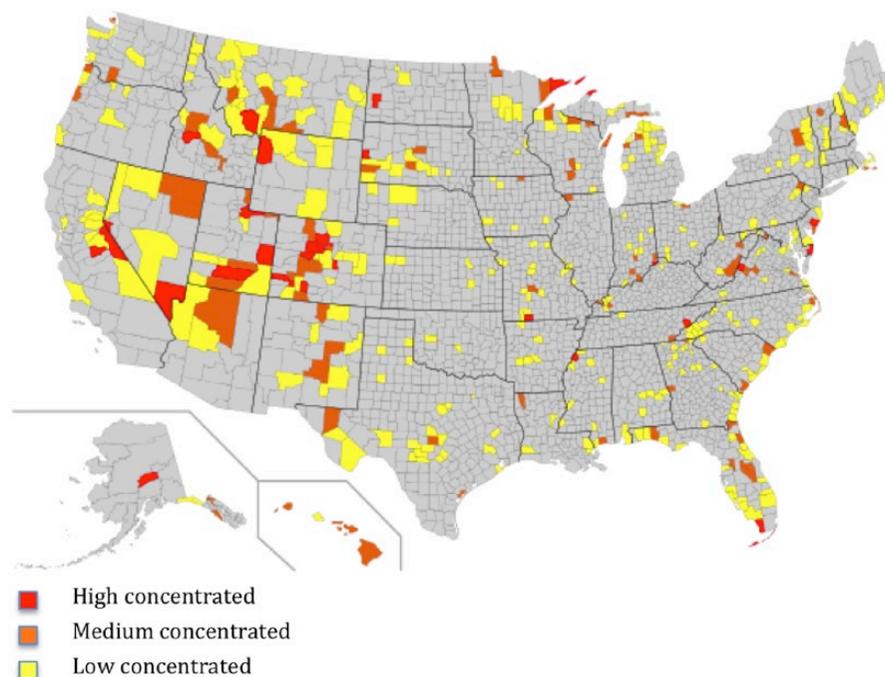
Next, we identified hotel properties within one of the four cluster categories based on the ZIP codes for the counties in question. To match ZIP codes with counties, we used U.S. Postal Service ZIP Codes compiled by the U.S. Census Bureau for 1999, the last year it tabulated its decennial data by ZIP code. The match of counties and ZIP codes put 4,339 properties into a county with one of the three cluster densities, while the remaining 22,867 properties were located outside of counties having clusters.

Results and Discussion

We conducted a series of analyses of variance (ANOVAs) to test the cluster effect on hotel performance by comparing RevPAR values for the properties inside the three cluster categories with those outside of any cluster. Then we split the sample according to location, ownership structure, and price and market segment categories. For the hotels’ location, we used the commonly accepted categories for hotels developed by STR (namely, urban, suburban, airport, resort, small metro or town, and interstate). We distinguished three categories of ownership structure: chain-managed, franchised, or independent properties. We also used STR’s hotel segment categories to clarify differences according to the property segment. Finally, we designated properties within clusters as belonging to a “high,” “medium,” or “low” concentrated cluster, and we used Scheffe’s pairwise comparison procedure following the ANOVA. Summarized ANOVA results with sample sizes, means, and *F* values are reported in Exhibit 2.

Generally speaking, hotels within clusters show significantly ($p < .001$) greater RevPAR performance than those outside clusters over the five-year period. Mean RevPAR for properties in clusters was between \$6.10 (USD) and \$7.70 higher than RevPAR for properties outside the clusters, supporting H1, this paper’s primary hypothesis.

Segmented results for specific locations show significant differences ($p < .001$) for airport, resort, and small-metro or town locations, but not always in the expected direction. We found that clustered airport and resort hotels do not perform as well as one would expect based on clustering theory. Airport properties in clusters, for example, perform on

Exhibit 1:**Geographical Clusters within the United States for the Hospitality, Travel, and Tourism Industry.**

average between \$6.70 and \$9.30 below airport hotels outside the clusters. Similarly, in-cluster resort hotels' mean RevPARs are significantly and consistently lower than those of resort properties outside the clusters. However, small-metro or town hotels in clusters performed on average \$7.90 to \$10.90 better than properties located in small towns outside tourism clusters. Overall, these results provide support for the second hypothesis, regarding the effects of clustering on hotels that do not rely on other tourism resources. Neither airport hotels nor resorts depend on secondary tourism activities to the extent that other types of property do. Resorts make a point of being as comprehensive as possible, and we have already mentioned the key function of airport hotels, which is to house travelers in transit.

These differences between hotels in clusters and those outside are depicted in Exhibit 3. We used solid lines to represent the mean RevPAR values for in-cluster hotels and dotted lines for out-of-cluster hotels. For comparison purposes, we established the same scale ratio in all the graphs, so we can visually compare the differences between the two groups among different segments.

The results using average daily rate as a measure of product quality or segmentation demonstrated consistently higher performances in luxury and upscale properties within clusters (compared with similar hotels outside of clusters).

Luxury properties in clusters achieved between \$11.30 and \$18.10 over the RevPAR values of luxury properties outside the clusters, and the difference for upscale hotels ranged from \$5.70 to \$9.10 ($p < .001$). These findings validate H3, particularly because midscale and economy in-cluster properties were not able to improve RevPAR over similar-level properties outside clusters. As shown in Exhibit 4, there is virtually no difference in the mean RevPAR values of the two groups.

With regard to the ownership structure of the hotels, only chain-managed hotels in clusters had consistently higher RevPARs, ranging \$20.70 to \$27.00 than those outside these clusters ($p < .001$), while franchisee-managed and independent hotels in clusters were not able to improve significantly over those outside the clusters. We note, however, that RevPAR values for independents in tourism clusters were higher than those outside (Exhibit 5). That said, these differences were significant only in 2011. Because these results suggest the presence of a moderating effect of ownership structure above and beyond the clustering effect, H4 is not validated. We are nevertheless able to draw important conclusions from these results.

Finally, we see that hotels do better in clusters with higher concentrations. To determine this, we segmented hotels in clusters according to the cluster concentration based on the LQ value of the county. Scheffe's pairwise

Exhibit 2:
ANOVA Results.

	Segment	2007			2008			2009			2010			2011		
		n	M	F	n	M	F	n	M	F	n	M	F	n	M	F
Total	All	22,868	55.0	124.4***	22,410	54.9	90.55***	21,923	46.3	122.63***	21,485	48.1	105.5***	20,982	52.8	130.24***
Price	Out-cluster	4,339	62.7		4,315	61.4		4,314	52.5		4,319	54.3		4,339	60.3	
	In-cluster	2,924	106.9	17.46***	2,917	105.9	14.86***	2,922	86.8	20.63***	2,923	91.7	19.14***	2,924	99.7	35.61***
Luxury	Out-cluster	469	120.9		468	118.4		468	98.1		468	103.8		469	117.8	
	In-cluster	6,347	64.8	64***	6,330	65.2	42.52***	6,332	55.6	61.55***	6,339	57.0	70.83***	6,347	61.7	107.46***
Upscale	Out-cluster	1,775	72.2		1,768	71.1		1,767	61.3		1,769	63.7		1,775	70.7	
	In-cluster	6,687	46.4	0.82	6,663	45.8	0.17	6,657	38.3	2.99	6,663	39.0	0.81	6,687	42.3	3.39
Midprice	Out-cluster	1,349	47.0		1,343	45.6		1,338	39.2		1,343	39.5		1,349	43.5	
	In-cluster	2,791	33.8	3.52	2,777	33.1	0.11	2,772	27.7	2.68	2,780	28.2	3.6	2,791	30.6	7.26**
Economy	Out-cluster	455	35.2		448	33.3		453	28.8		453	29.6		455	32.7	
	In-cluster	2,212	27.3	0.21	2,206	26.7	0.03	2,205	22.6	0.29	2,207	23.0	0.34	2,212	24.9	0.15
Budget	Out-cluster	291	27.6		288	26.6		288	22.9		286	23.3		291	25.2	
	In-cluster	2,277	93.3	2.63	2,269	93.6	0.36	2,274	76.5	0.02	2,275	81.3	0.3	2,277	86.6	4.5*
Urban	Out-cluster	314	86.4		309	91.1		314	76.9		314	83.2		314	94.3	
	In-cluster	9,590	54.7	5.54*	9,570	53.9	0.94	9,565	44.4	0.22	9,572	45.6	0.41	9,590	49.9	0
Suburban	Out-cluster	998	57.2		995	54.9		993	44.8		995	45.0		998	49.8	
	In-cluster	1,421	64.2	7.65**	1,418	63.4	12.84***	1,417	51.2	8.67**	1,420	52.4	11.97***	1,421	57.0	11.3***
Airport	Out-cluster	137	57.0		137	54.1		136	44.5		137	44.1		137	48.6	
	In-cluster	3,218	40.4	6.43*	3,202	40.5	0.56	3,201	35.9	0.54	3,205	36.5	0.25	3,218	38.9	0.32
Interstate	Out-cluster	735	42.3		729	41.0		730	36.4		731	36.9		735	39.4	
	In-cluster															

(continued)

Exhibit 2: (continued)

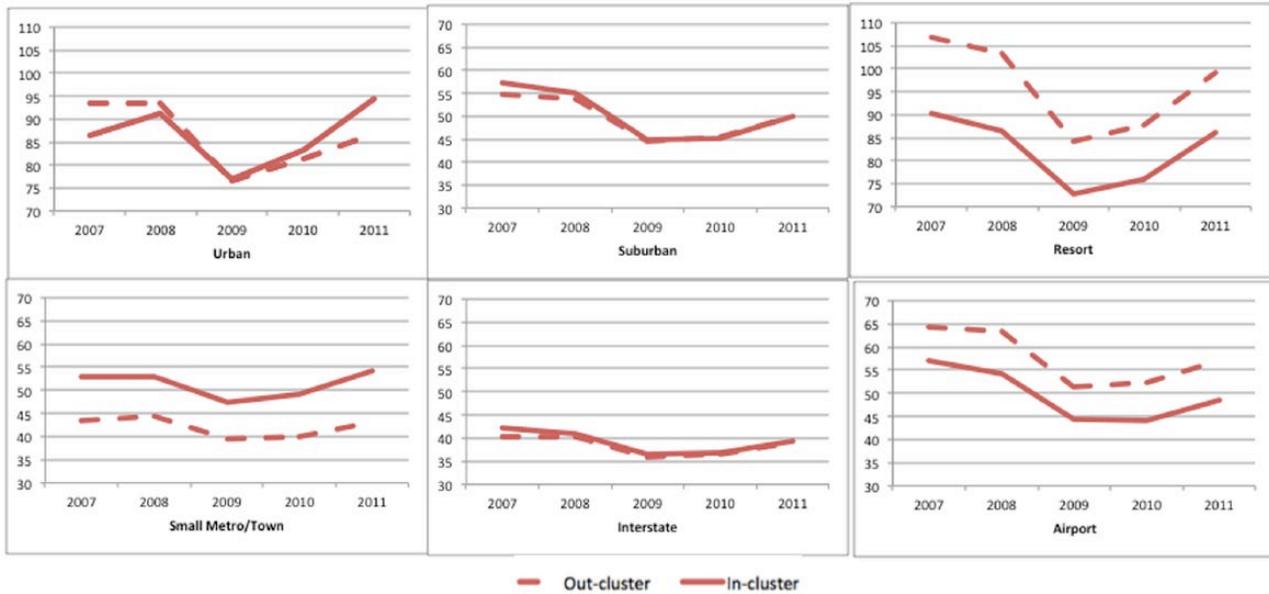
Segment	2007			2008			2009			2010			2011		
	n	M	F	n	M	F	n	M	F	n	M	F	n	M	F
Resort															
Out-cluster	574	106.8	18.81***	573	103.3	21.77***	574	84.1	16.79***	573	87.8	14.69***	574	99.1	12.85***
In-cluster	941	90.3		936	86.4		935	72.6		935	76.0		941	86.3	
Small metro/town															
Out-cluster	3,881	43.6	121.69***	3,861	44.4	102.64***	3,857	39.5	111.88***	3,867	40.0	131.44***	3,881	43.1	147.77***
In-cluster	1,214	52.9		1,209	52.9		1,206	47.4		1,207	49.3		1,214	54.1	
Chain management															
Out-cluster	3,494	67.8	83.76***	3,493	66.5	83.02***	3,494	54.1	90.25***	3,494	56.7	85.36***	3,494	61.4	109.29***
In-cluster	517	93.9		517	92.1		517	74.9		517	78.8		517	88.4	
Franchise															
Out-cluster	16,181	51.6	0.34	16,127	51.5	1.79	16,116	43.6	1.65	16,136	44.6	1.06	16,181	48.5	8.37**
In-cluster	3,240	51.9		3,219	50.8		3,218	44.2		3,222	45.1		3,240	50.0	
Independent															
Out-cluster	1,286	91.5	1.13	1,273	90.5	0.45	1,278	74.0	2.25	1,282	78.0	2.75	1,286	83.5	6.69**
In-cluster	582	95.5		579	93.0		579	78.3		580	83.2		582	92.6	
Cluster concentration															
Low	20,695	56.7	72.48***	20,628	56.4	52.47***	20,624	47.3	63.99***	20,647	48.7	60.7***	20,695	52.8	79.01***
Medium	3,043	59.0		3,024	58.4		3,028	50.2		3,029	51.8		3,043	57.5	
High	916	65.7		911	63.1		910	53.2		911	55.6		916	61.6	
Total	380	85.8		380	81.4		376	68.7		379	71.1		380	79.9	

Note. ANOVA = analysis of variance.

*Statistically significant at $p < .05$. **Statistically significant at $p < .01$. ***Statistically significant at $p < .001$.

Exhibit 3:

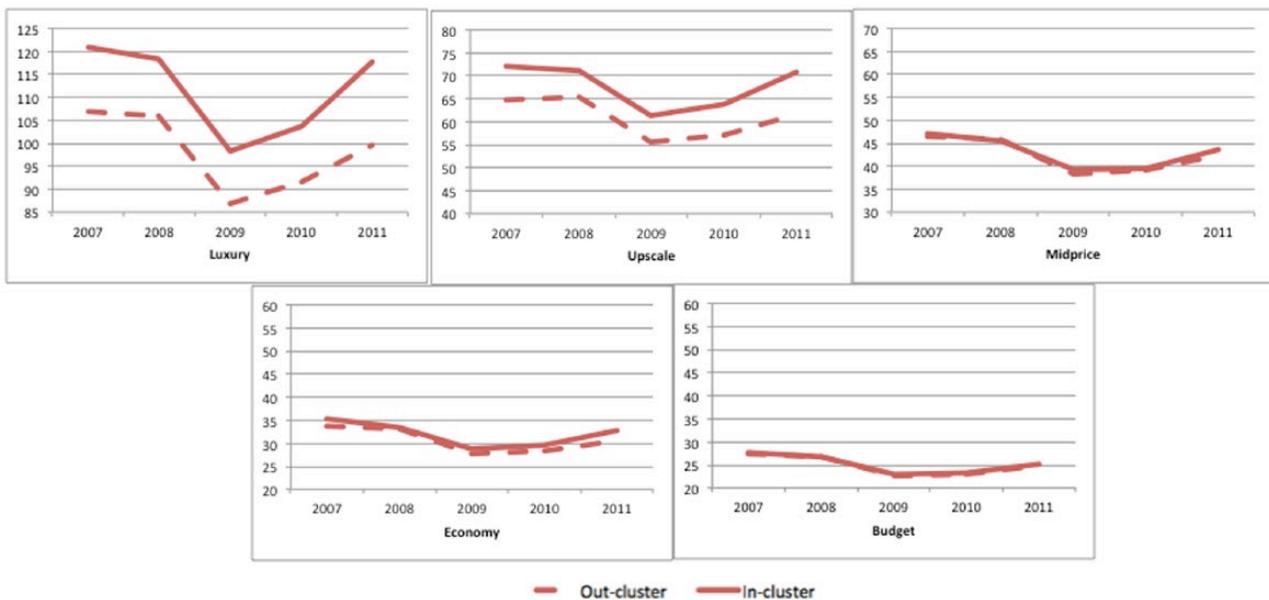
Average RevPAR In-Cluster versus Out-Cluster by Location.



Note. RevPAR = revenue per available room.

Exhibit 4:

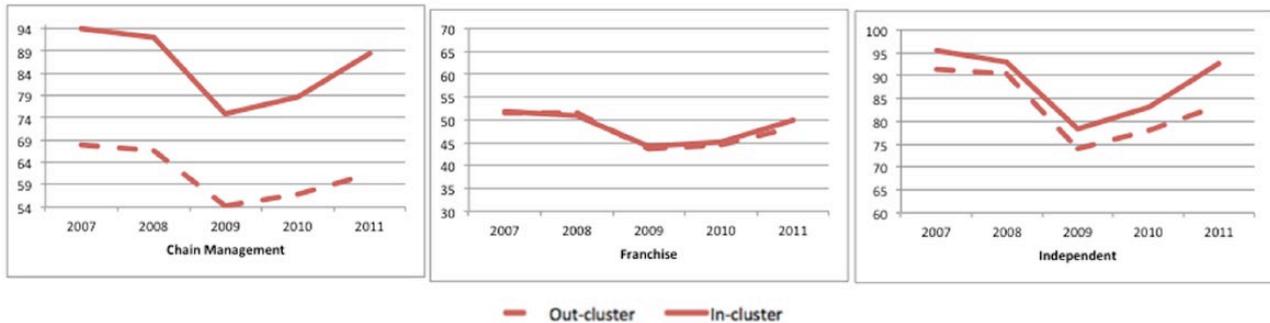
Average RevPAR In-Cluster versus Out-Cluster by Price Segment.



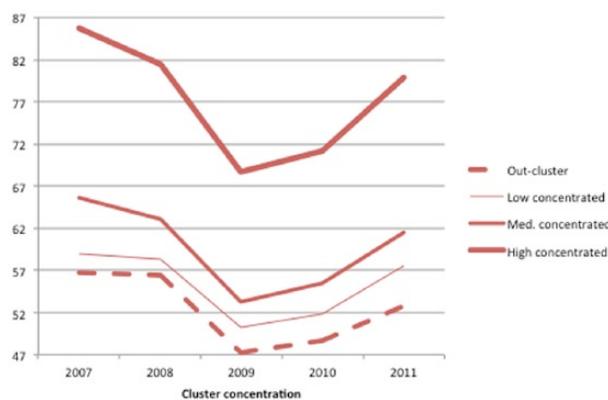
Note. RevPAR = revenue per available room.

comparison shows significant differences ($p < .001$) between out-of-cluster properties and in-cluster properties. Exhibit 6 shows this result: the higher the concentration, the higher the RevPAR level.

Even though ANOVA results indicate that, in general terms, RevPAR values are higher in properties located in tourism clusters, we cannot determine whether those results are caused by being located in clusters. Therefore, to address

Exhibit 5:**Average RevPAR In-Cluster versus Out-Cluster by Ownership Affiliation.**

Note. RevPAR = revenue per available room.

Exhibit 6:**Average RevPAR In-Cluster Concentration versus Out-Cluster.**

Note. RevPAR = revenue per available room.

this issue, we conducted a regression analysis study creating dummy variables to isolate the effect of location (urban, suburban, airport, interstate, and small metro or town), affiliation (chain, franchised, and independent), and price level (luxury, upscale, midprice, economy, and budget). For the sake of clarity, we only report models for 2011, but we received similar results for the previous years. In the regression models, RevPAR is considered as being dependent on the cluster membership, the property location, affiliation, and price level.

The proposed model is as follows, being C the constant and E the error:

$$\begin{aligned} \text{RevPAR} = & C + \beta_1 \text{Chain} + \beta_2 \text{Franchise} + \beta_3 \text{Luxury} + \\ & \beta_4 \text{Upscale} + \beta_5 \text{Midprice} + \beta_6 \text{Economy} + \\ & \beta_7 \text{Urban} + \beta_8 \text{Suburban} + \beta_9 \text{Airport} + \\ & \beta_{10} \text{Interstate} + \beta_{11} \text{Resort} + \beta_{12} \text{Cluster} + E. \end{aligned}$$

The value of β_{12} helps to determine whether the clustering itself creates a difference in the hotels' performance indicators. Similarly, β_2 and β_3 will help to evaluate whether property affiliation has a significant influence on RevPAR. For this analysis, we consider independent budget properties located in small towns outside the cluster as the base category.

We assessed the significance of dummy variables as a set, using the R^2 -change method and ignoring the individual t -tests produced by default for each dummy β coefficient. We then can evaluate the relative predictive power of location, affiliation, price level, and cluster membership by analyzing beta weights in the regression.

Regression results in Exhibit 7 indicate that acting in an isolated way, cluster membership has a positive effect on RevPAR, confirming our first hypothesis. Chain-managed and franchised hotels act negatively on RevPAR (compared with independents) in accordance with ANOVA results. This indicates that the advantage that properties get from increasing occupancies at whatever rate the brand sets is not enough to overcome the higher prices achieved by independents, even if they have lower occupancy. Regression results on location confirmed also that urban and resort locations generally perform better than the other locations, while interstate locations have the lowest RevPAR. Finally, it is no surprise that price level has a positive effect on RevPAR.

Although the regression analysis confirms the ANOVA results, we need to incorporate the joint effect of cluster membership and location, affiliation, and price level to assess the other hypotheses. Therefore, we added a set of interaction terms to the model. The significance of the change of R^2 for the two equations (i.e., the equation with the interaction terms and the equation without them) indicates that the new models constitute a significantly better fit. This indicates a linear relationship of each of these variables to the independent variables.

Analyzing cross effects, we find that price level empowers cluster effect on RevPAR. The higher the price level, the

Exhibit 7:
Linear Regressions and Linear Regressions Considering Interaction Terms.

	RevPAR	ADR	Occ	RevPAR	ADR	Occ
Constant	36.182	76.51	0.465	34.779	73.407	0.459
Chain	-6.417 (-0.056)	-26.256 (-0.18)	0.132 (0.281)	-6.837 (-0.06)	-25.742 (-0.177)	0.137 (0.293)
Franchise	-19.873 (-0.206)	-36.681 (-0.297)	0.031 (0.078)	-18.304 (-0.189)	-33.188 (-0.268)	0.035 (0.088)
Luxury	65.378 (0.561)	84.32 (0.566)	0.123 (0.257)	63.436 (0.545)	81.136 (0.544)	0.126 (0.263)
Upscale	39.641 (0.467)	52.177 (0.48)	0.098 (0.28)	38.503 (0.453)	49.667 (0.457)	0.102 (0.292)
Midprice	20.359 (0.235)	29.329 (0.264)	0.028 (0.078)	20.179 (0.233)	28.875 (0.26)	0.03 (0.083)
Economy	9.133 (0.074)	14.62 (0.093)	-0.008 (-0.016)	8.703 (0.071)	13.848 (0.088)	-0.007 (-0.014)
Urban	25.055 (0.187)	22.248 (0.13)	0.082 (0.149)	26.383 (0.197)	25.521 (0.149)	0.077 (0.139)
Suburban	1.951 (0.024)	-2.018 (-0.019)	0.042 (0.126)	3.099 (0.038)	-0.08 (-0.001)	0.042 (0.125)
Airport	4.553 (0.027)	-4.156 (-0.019)	0.089 (0.127)	6.142 (0.036)	-1.616 (-0.007)	0.088 (0.126)
Interstate	-2.175 (-0.02)	-5.531 (-0.039)	0.004 (0.01)	-1.269 (-0.012)	-3.753 (-0.027)	0.003 (0.008)
Resort	24.87 (0.146)	31.716 (0.146)	0.053 (0.076)	28.255 (0.166)	36.866 (0.17)	0.06 (0.085)
Cluster	1.752 (0.015)	4.738 (0.033)	-0.012 (-0.025)	5.248 (0.046)	11.961 (0.082)	0.021 (0.045)
Cluster × Chain				7.973 (0.026)	7.134 (0.018)	-0.026 (-0.021)
Cluster × Franchise				-6.581 (-0.051)	-14.735 (-0.09)	-0.013 (-0.025)
Cluster × Luxury				14.563 (0.045)	24.66 (0.06)	-0.026 (-0.02)
Cluster × Upscale				7.485 (0.044)	17.343 (0.08)	-0.032 (-0.046)
Cluster × Midprice				2.033 (0.011)	5.649 (0.023)	-0.017 (-0.022)
Cluster × Economy				3.495 (0.011)	6.945 (0.017)	-0.012 (-0.009)
Cluster × Urban				-6.983 (-0.018)	-20.689 (-0.041)	0.051 (0.032)
Cluster × Suburban				-6.106 (-0.028)	-9.524 (-0.034)	-0.003 (-0.003)
Cluster × Airport				-10.394 (-0.018)	-15.058 (-0.02)	0.001 (0.001)
Cluster × Interstate				-3.964 (-0.015)	-7.593 (-0.023)	0.004 (0.003)
Cluster × Resort				-11.523 (-0.05)	-18.543 (-0.063)	-0.01 (-0.01)
ANOVA F	1,605.582***	1,600.794***	552.185***	850.668	857.968	290.667
R ²	.396***	.395***	.184***	.399	.401	.185
F change				16.789***	29.202***	4.570***
R ² change				.004***	.007***	.001***

Note. ANOVA = analysis of variance; RevPAR = revenue per available room; ADR = Average Daily Rate; Occ = Occupancy. Values in parentheses refer to standardized beta coefficients.

*Statistically significant at $p < .05$. **Statistically significant at $p < .01$. ***Statistically significant at $p < .001$.

bigger the impact of cluster membership on RevPAR, validating H3.

Regarding affiliation, being chain managed in a cluster decreases the RevPAR gap over independent properties, which indicates a bigger cluster effect in chain-managed hotels. The cluster effect in franchised hotels is slightly smaller than in independents and its value is negative. This indicates a strong positive cluster effect for chain-managed properties, a small positive effect for independents, and a small negative effect for franchised properties. Therefore, we can say that affiliation moderates the cluster effect on performance, but the cluster effect is not positive whatever the affiliation, rejecting H4.

Finally, cluster membership has a heterogeneous impact on RevPAR. According to the results, the cluster effect is

clearly stronger in interstate and small-metro or town properties and lower in resorts and airport properties. Thus, economic benefits derived from being in a cluster are lower for hotels that are less dependent on other tourism activities, confirming H2.

Conclusion

The analysis of hotels located inside and outside of clusters suggested that being located in a cluster improves a hotel's economic performance, in line with previous studies' results applied to service industries (Lazzeretti, Boix, and Capone 2008) and in support of our first hypothesis. Segmented results showed that luxury and upscale properties in clusters performed consistently better than similar properties

outside clusters. This confirmed our third hypothesis, but it also highlights the need for more research to see the extent to which well-structured hotels, with human and financial resources and previous experience, are taking advantage of their ability to identify and apply knowledge, as suggested by absorptive capacity theory (Cohen and Levinthal 1990; Zahra and George 2002). Likewise, chain-managed hotels inside clusters excel compared with chain-managed properties outside clusters. More to the point, the chain properties prospered when they were inside a cluster, while independent and franchised hotels did not. This finding echoes that of O'Neill and Carlbäck (2011), who pointed out that the intangible asset value of hotel brands (e.g., shared resources, guest loyalty programs, and yield management systems) allows chain-managed hotels to achieve better economic performance (both in recession and growth economic cycles). Further research is needed here to disentangle the practical implications.

Hotels in clusters in small-metro areas and towns performed consistently higher than their comparable segment properties out of the clusters, as compared with resort or airport locations. Those town-based hotels are more dependent on other tourism facilities, such as restaurants, shopping areas, nature spots, and recreation, to attract guests. Further research should analyze the type of relationship involved here.

These results have interesting implications for owners and operators, because the importance of location is amplified by the cluster effect. This suggests that hotel owners and operators should collaborate with other firms in the region to enhance the cluster concentration as a higher degree of clustering is also correlated with higher performance. Although the hotel industry is famously competitive, the cluster effect argues for an element of cooperation over competition. In this regard, the traditional microeconomic model of competition is not applicable due to the need to cooperate to promote a destination (Jackson and Murphy 2006). Research suggests that the collaborative and competitive interactions between local firms create geographic externalities that play an important role when tourism destinations compete with each other globally (Erkus-Öztürk 2009; Ferreira and Estevao 2009; Lazzarretti, Capone, and Cintiet 2010; Novelli et al., 2006; Richards and Wilson 2006).

When firms allocate resources, they consider a wide variety of variables such as, for example, economic, legal, and political issues, accessibility, basic services, site costs, environmental regulations, labor availability, taxes, and incentives (Jiang, Frazier, and Prater 2006; MacCarthy and Atthirawong 2003). However, a certain level of competitive advantage resides in the “know-how,” in the capacities, in the information, in the motivation, or in the geographic externalities produced (Lazzarretti, Capone and Cinty, 2010). All of these are aspects related to the local business environment (Ingram and Roberts 2000) that the

competitors located outside the cluster find it more difficult to obtain (Nassimbeni 2003). These results open a deep line of study. Intangible relations established among the different businesses that constitute a tourism cluster should be identified. This will let both policymakers implicated in the promotion of the destinations and business managers take decisions that enhance the economic performance of hotels, restaurants, and other tourism-related activities.

The challenge now is to use both qualitative and quantitative methodologies to analyze the relational function of the cluster—that is, how and why agglomeration economies arise. The roles of public, tourist, and educational institutions need to be disentangled.

One other aspect of this study is that it opens a window on the impact of the financial crisis on hotel performance between 2007 and 2008. All segments show a similar pattern, with a RevPAR decline until 2009 and a recovery period that goes through 2011. However, the smaller differences between the in-cluster and out-of-cluster properties that occurred in 2009 (shown in Exhibit 2) suggest that in-cluster hotels are more sensitive to a crisis environment than out-of-cluster properties. The clustered hotels also recovered more quickly, as shown by the increasing gap between the two groups in 2010, which continues in 2011. Moreover, significant differences appear in 2011 in segments such as economy, urban, franchise, and independent. These results suggest that properties in clusters recover more rapidly than properties outside clusters, and that opens a new line of study and further research is needed.

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Notes

1. See Harvard University/Porter's website, <http://www.isc.hbs.edu/competitiveness-economic-development/research-and-applications/Pages/cluster-studies.aspx> (see submarket) submarket: a geographic area that is a subset of a market. A market is made up of one or more submarkets.
2. <http://www.strglobal.com/resources/glossary/en-gb> (see submarket)
3. <http://www.bls.gov/data/#calculators>
4. <http://www.clustermapping.us> (see submarket) submarket-a geographic area that is a subset of a market. A market is made up of one or more submarkets

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