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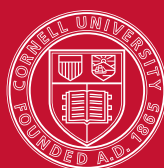


Product Tiers and ADR Clusters: Integrating Two Methods for Determining Hotel Competitive Sets

Cornell Hospitality Report

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by Jin-Young Kim and Linda Canina, Ph.D.



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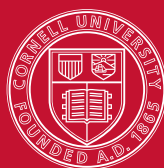
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Product Tiers and ADR Clusters:

Integrating Two Methods for Determining Hotel Competitive Sets

by Jin-Young Kim and Linda Canina

EXECUTIVE SUMMARY

Despite the importance of accurately identifying a hotel's competitors, determining those competitors is not a simple task. A common and easily implemented approach is to categorize products in terms of product type, but competition may occur across different types of products depending on how consumers perceive goods as substitutes. As an alternative, we identify the competitive set using cluster analysis based on hotels' average daily rate (ADR). A cluster analysis of the ADR of 49 hotels in one urban tract in the U.S. found five competitive clusters, in which upscale properties were in some cases competing directly with economy hotels. This analysis indicates that some properties have a discrepancy between their intended product type and their perceived competitive position, based on ADR. By integrating and comparing the results of the two methods for the purpose of performance evaluation, managers, owners, analysts, and investors can ascertain the market position of a hotel as determined by its guests, and make inferences regarding the hotel's value proposition, property condition, service offerings, and management acumen. In particular, the analysis points out performance benchmarks for hotels that are underperforming their competitive set and those that are outperforming their competitors.

ABOUT THE AUTHORS

A Ph.D. candidate at the Cornell University School of Hotel Administration, **Jin-Young Kim** holds a Master of Science degree from Cardiff University, where she was a British Chevening Scholar. Her primary research focus is hospitality finance. She was a sales manager for Micros-Fidelio Korea and assistant manager in the strategic planning department at Samsung Corporation.



Linda Canina, Ph.D., is an associate professor in the Cornell School of Hotel Administration's finance, accounting, and real estate department, and also serves as editor of the *Cornell Hospitality Quarterly* (lc29@cornell.edu). Her research interests include asset valuation, corporate finance, and strategic management. She has expertise in the areas of econometrics, valuation, and the hospitality industry. Canina's current research focuses on strategic decisions and performance, the relationship between purchased resources, human capital and their contributions to performance, and measuring the adverse selection component of the bid-ask spread. Her recent publications include "The

Impact of Strategic Orientation on Intellectual Capital Investments in Customer Service Firms" (with C. Enz and K. Walsh), in *Journal of Service Research*, as well as articles in *Academy of Management Journal*, *Journal of Finance*, *Review of Financial Studies*, *Financial Management Journal*, *Journal of Hospitality and Tourism Research*, and *Cornell Hospitality Quarterly*.

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Determining a hotel's competitive set is a prerequisite to any type of competitive analysis, including valuation, strategy formulation, and most types of evaluation analyses. An accurate determination of which hotels are competitors plays a critical role in the usefulness of competitive analysis. This determination can be made from the perspectives of management or consumers. In either case, if key competitors are left out of the analysis, the result could be misleading findings and poor strategic and competitive analysis. For this reason, in this report we present a comparison and integration of management-derived and consumer-derived competitive sets.

A variety of theoretical approaches have been developed to address the task of competitor identification, with competitive groups often conceptualized according to resource similarity or market commonality.¹ The supply-based resource-similarity approach would identify competitors by the hotels' attributes, while the demand-based market-commonality method would emphasize the attributes of the hotels' patrons.² A common and easily implemented approach used in the identification of close competitors is to categorize products in terms of a product type, which embodies the resource-based framework.³ Similar types or tiers of products resemble one another in terms of overall outward characteristics. Thus, sellers of similar types of products tend to be direct rivals for certain customers' patronage. A marketer might argue, however, that the consumer perspective regarding a hotel in relation to its competitors is equally important because consumers' perceptions of similarities regarding use, brands, preferences, and information determine a choice set, or the group of substitutes that they will consider for a lodging stay.⁴ For example, although all luxury hotels belong to a single product tier, consumers may

not consider all luxury hotels when they make a purchase decision. Instead, only the hotels that consumers are actually considering will represent the set of products judged to be substitutes. Thus, depending on the purpose of analysis, it may be prudent to identify competitive sets based on customers' perceptions, as well as the hotel's product tier.

We propose that determining the relevant set of competitors is not a simple matter, even at the property level. While the managers and owners of hotel properties and lodging companies have the best information available to identify their competitors, it is probably difficult for them to agree on a single set of hotels in that group. Others, external to the firm, who may be interested in performing a competitive analysis of a property or hotel company, must rely on broad classifications involving ratings or amenities, among other measures, if they do not have access to the information available to managers.

In this report, we focus on competition among hotels at the local level. First, we investigate the competitive set using the supply-side system, which represents the product tier and the nominal or intended market position of the property. Second, we identify the competitive set by cluster analysis using average daily rate, which reflects both managers' and consumers' perspective of the hotel's competitive position. We draw managerial implications of our findings and apply an integrated framework to performance evaluation.

Categorizations of Competitive Sets

In the U.S. lodging industry, product tier and price group similarity are the most common broad classifications used to identify a particular hotel's competitive set. Product-tier classifications are based on service, features, and amenities, while the price group accounts for the consumers' choice in terms of willingness to pay a particular rate for a given product type. The most widely used hotel categorization was developed by Smith Travel Research (STR), which defines chain scale segments by the actual average room rates of the major chain brand categories at the national level. The resulting chain scales are luxury, upper-upscale, upscale, midscale with food and beverage facilities, midscale without

¹ M.-J. Chen, "Competitor Analysis and Interfirm Rivalry: Toward a Theoretical Integration," *The Academy of Management Review*, Vol. 21, No. 1 (1996), pp. 100-134

² B. Clark, and D. Montgomery, "Managerial Identification of Competitors," *Journal of Marketing*, Vol. 63 (1999), pp. 67-83

³ M. A. Peteraf, and M. E. Bergen, "Scanning Dynamic Competitive Landscapes: A Market-Based and Resource-Based Framework," *Strategic Management Journal*, Vol. 24 (2003), pp. 1027-1041.

⁴ T. Levitt, "Marketing Myopia," *Harvard Business Review*, Vol. 38, No. 4 (1960), pp. 45-56; G. S. Day, A. D. Shocker, and R. K. Srivastava, "Customer-Oriented Approaches to Identifying Product-Markets," *Journal of Marketing*, Vol. 43 No. 4 (1979), pp. 8-19; M. Porter, *Competitive Strategy*, (New York: Free Press, 1980); Chen, *op. cit.*; B. Clark, and D. Montgomery, "Managerial Identification of Competitors," *Journal of Marketing*, *Journal of Marketing*, Vol. 63 (1999), pp. 67-83; M. A. Peteraf, and M. E. Bergen, "Scanning Dynamic Competitive landscapes: A Market-Based and Resource-Based Framework," *Strategic Management Journal*, Vol. 24, pp. 1027-1041; and W. Desarbo, G. Rajdeep, and J. Wind, Who Competes with Whom? A Demand-Based Perspective for Identifying and Representing Asymmetric Competition," *Strategic Management Journal*, Vol. 27, pp.101-129.

F&B, and economy. More generally, hotel properties can be classified into a full-service category (luxury, upper-upscale, upscale, midscale with F&B) and a limited-service category (midscale without F&B and economy). Independent hotels at various levels of room rates are categorized separately into a single category. We note that the scale segment categories summarize the core characteristics of properties under a particular flag at the national level. One would expect hotels of the same chain scale to share a certain degree of common characteristics and to compete for the same demand base.

The methods used to determine the competitive set based on chain scale categories are useful for many purposes. For example, a developer who would like to analyze opportunities in a given location might develop a competitive analysis by product tier, by price group, or by chain scale, and then compare the characteristics and performance measures across these groupings to determine which type of hotel property to develop. If an investor would like to evaluate the performance of a property's management relative to managers of properties with similar characteristics, then a competitive analysis of the properties in the same product tier or chain scale might be appropriate.

A brand is typically classified into a particular product category at the national level, and the hotel's product tier can be viewed as the owner's and manager's intended target position. At the local level, the physical attributes of the properties change over time even though the product tier may remain the same; new entrants come to the market; and existing properties improve their physical or qualitative attributes (or fail to do so). All of these factors affect the nature of the competition to varying degrees. Moreover, depending on the local mix of properties, the consumer's choice set is not limited to a particular product tier. That is, competition inevitably occurs across diverse product segments.

Although hoteliers must be aware of product tiers, the role played by consumers' perceptions is critical to the determination of a competitive set. A hotel's position is determined to a great extent by the way the consumer views that property as against its competition. The essential point is that the competitive set from the guest's perspective consists of the properties viewed as substitutes for each other.

To operationalize both the product characteristics and consumer preferences we chose to categorize the market based upon ADR using cluster analysis. Long-established economic theory suggests that items with similar attributes tend to sell for similar prices in a competitive market,⁵ and price theory asserts that the market price reflects the inter-

action between demand and supply considerations. We note that the ADR, which is the average rates that are accepted by consumers, reflects the current competitive position of the properties in the local market. From the consumers' point of view, ADR reflects their preference consistent with their value assessment according to price-and-quality perceptions.⁶ If the offered price is not consistent with the intended level of value, the customer will not accept the deal and search further. From the property's point of view, while the objective is to maximize profit, the rate should be appropriate to the hotel's quality, since the consistency is important for the property's reputation and long-run performance.⁷

Some market-segment classifications are based on market price. For example, STR defines market price segments by the average room rate regardless of whether the property is chain or independent. STR's chain scales are formed by categorizing properties according to the distribution of actual ADRs at the local level. The classification of a property is based upon its ADR percentile within the local ADR distribution. For example, in metropolitan market areas, the market price segments are constituted according to average room rate as follows: luxury, top 15 percent of ADR; upscale, next 15 percent; mid-price, middle 30 percent; economy, next 20 percent; and budget, lowest 20 percent. In rural or non-metro markets, the luxury and upscale segments are collapsed into upscale (top 30 percent of average room rates), thus forming four price segment categories (upscale, mid-price, economy, and budget segments).

Instead of applying fixed percentiles within the local hotel distribution, we used cluster analysis, albeit still based on ADR. Cluster analysis identifies groups of homogeneous objects by using underlying similar factors and it does not constrain the number of categories or predetermine the cut-off points in advance.⁸ Consequently, the number of clusters and cut off points are specific to the market in question.

⁵ Alfred Marshall, *Principles of Economics: An Introductory Volume*, 8th edition (London: Macmillan, 1920).

⁶ W.B. Dodds, K.B. Monroe, and D. Grewal, "Effects of Price, Brand, and Store Information on Buyers' Product Evaluations," *Journal of Marketing Research*, Vol. 28, No. 3 (1991), pp. 307-319; R. Kashyap and D.C. Bojanic, "A Structural Analysis of Value, Quality, and Price Perceptions of Business and Leisure Travelers," *Journal of Travel Research*, Vol. 39 (2000), pp. 45-51; H. Oh and M. Jeong, "An Extended Process of Value Judgment," *Hospitality Management*, Vol. 23 (2004), pp. 343-362; V. Zeithaml, "Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence," *Journal of Marketing*, Vol. 52 (1988), pp. 2-22.

⁷ P. Milgrom and J. Roberts, "Price and Advertising Signals of Product Quality," *Journal of Political Economy*, Vol. 95, No. 41 (1986), pp. 796-821; H. Oh, "Service Quality, Customer Satisfaction, and Customer Value: A Holistic Perspective," *International Journal of Hospitality Management*, Vol. 18, No. 1 (1999), pp. 67-82.

⁸ B. Everitt, *Cluster Analysis*, 4th edition (London: Oxford University Press, 2001).

EXHIBIT 1**Characteristics of properties by product tier (with independent as a separate tier)**

Product tier	Number of Properties	Mean			Standard Deviation		
		ADR	Occupancy	RevPAR	ADR	Occupancy	RevPAR
Luxury	7	\$347.05	83.20%	\$284.06	\$120.54	5.46%	\$81.37
Upper-Upscale	12	\$232.43	85.00%	\$198.08	\$33.87	7.30%	\$35.44
Upscale	3	\$186.73	91.00%	\$169.91	\$30.16	0.70%	\$27.54
Midscale with F&B	5	\$137.72	85.90%	\$118.23	\$8.25	3.50%	\$8.41
Midscale without F&B	2	\$132.25	89.30%	\$118.41	\$4.68	12.60%	\$20.81
Economy	2	\$129.66	90.10%	\$116.82	\$1.51	3.80%	\$6.30
Independent	18	\$184.55	82.10%	\$150.39	\$45.03	4.80%	\$33.70
Overall Sample	49	\$210.47	84.50%	\$176.40	\$83.95	6.00%	\$65.34

Data Sample and Results

The data used for this analysis were obtained from Smith Travel Research for one tract unit in an urban metropolitan area in the United States. Our purpose here is to illustrate the methodology and to show the different insights from cluster analysis and product tiers in determining the competitive set. Because our sample is the 49 properties in this tract, which in this case is a subset of a metropolitan statistical area (MSA) composed of three zip codes, the results of our analysis cannot necessarily be generalized to all markets. Having said that, we verified that similar results were found from other MSAs.⁹ We computed annual ADR, occupancy, and revenue per available room (RevPAR) for 2004 based on the monthly revenue, room supply, and demand.

Product-tier Categorization

The average and standard deviation of room rates, occupancy, and RevPAR by product tier are shown in Exhibit 1. As expected, average ADR and RevPAR increase as the level of service quality and physical attributes change from the low-cost provider to the highly differentiated provider. We note that the standard deviation of ADR is much higher for the luxury segment than it is for any other segment, and the standard deviation decreases dramatically as the level of amenities and service quality diminishes from luxury towards economy. Note that the variability of both ADR and RevPAR for the luxury segment in this local market is even

higher than that of the independent segment, which comprises properties of various rates and product types.

The ADR range for the luxury properties is \$241.82 to \$530.26, a large span of \$288.44. This wide range may be due to the differences in the quality of the amenities, physical property, and service among the luxury properties. As a result of the intangibility of many of the characteristics of a luxury property, there is considerable room for variability in the quality of the service encounter, amenities, and physical property. Therefore the task of determining the competitive set is particularly challenging for the luxury segment in this market.

In this particular market, the mean ADRs of both sets of midscale properties (with F&B and without F&B) are close to the mean of economy properties.¹⁰ The average RevPAR of the limited service midscale properties (without F&B) is actually slightly higher than that of the full-service midscale properties. Although the average ADR of the limited-service midscale properties (\$132.25) is notably lower than that of the full-service midscale hotels (\$137.72), the limited service hotels achieve a considerably higher occupancy rate (89.3%) than do those full-service properties (85.9%). It seems likely that both sets of midscale properties in this area are part of the same competitive set, along with at least some economy hotels.

Rather than being in their own category, independent properties can be classified according to their ADR and by

⁹ We examined a broader sample in urban areas encompassing the states of New York, Illinois, Texas, and California and found patterns similar to those of our study.

¹⁰ Pairwise t-tests and Wilcoxon tests showed that mean ADRs were statistically different between luxury, upper-upscale, and upscale segments. However, the differences were not significant between the midscale with F&B, midscale without F&B, and economy segments.

EXHIBIT 2**Characteristics of properties by product tier (with independent included in the other tiers)**

Product Tier	Number of Properties	Mean			Standard Deviation		
		ADR	Occupancy	RevPAR	ADR	Occupancy	RevPAR
Luxury	7	\$347.05	83.18%	\$284.06	\$120.54	5.46%	\$81.37
Upper-Upscale	17	\$234.36	83.64%	\$196.25	\$31.50	6.54%	\$31.84
Upscale	10	\$187.54	83.28%	\$156.23	\$16.87	5.99%	\$18.99
Midscale with F&B	9	\$140.15	85.05%	\$119.01	\$8.40	4.46%	\$6.32
Midscale without F&B	2	\$132.25	89.31%	\$118.41	\$4.68	12.57%	\$20.81
Economy	4	\$124.59	90.09%	\$112.20	\$10.14	2.34%	\$9.12
Overall Sample	49	\$210.47	84.50%	\$176.40	\$83.95	6.00%	\$65.34

Note: Independents are categorized with chain market tiers according to ADR.

EXHIBIT 3**Characteristics of properties grouped by market price**

Product Tier	Number of Properties	Mean			Standard Deviation		
		ADR	Occupancy	RevPAR	ADR	Occupancy	RevPAR
Luxury	19	\$284.12	83.80%	\$236.37	\$88.01	7.00%	\$64.61
Upscale	17	\$186.81	82.90%	\$154.62	\$23.32	5.00%	\$20.54
Mid-Price	13	\$133.77	87.70%	\$117.23	\$9.62	4.80%	\$9.71
Overall Sample	49	\$210.47	84.50%	\$176.40	\$83.95	6.00%	\$65.34

whether they offer food and beverage facilities. As shown in Exhibit 2, five of the eighteen independents were classified as upper-upscale, seven as upscale, four as midscale with food and beverage, and two as economy.

Exhibit 3 presents the average and standard deviation of room rate, occupancy, and RevPAR by the market price segment. Even though the price segment groups are determined by the distribution of ADR, the variability of ADR is not much different than it is in the product tier groups. Each price segment group includes hotels in various product tiers. So, for instance, the luxury price segment includes luxury, upper upscale, and upscale properties, and the midprice segment includes both types of midscale hotels, as well as economy properties.

The heterogeneity within the product tier and the ensuing possibility of competition across those segments becomes

clearer by looking at the distribution of properties in the scatter plot of ADR by scale segment shown in Exhibit 4 (next page). This shows the overlaps in the various ranges of ADR among the different product segments. Indeed, we see no clear demarcation between the scale segments in terms of ADR. Within the ADR range of \$200 and \$250, for instance, luxury, upper upscale, upscale, and independent properties compete in this local market. Likewise, in the rate range of \$120 to \$160, one finds a competitive set of upscale, midscale hotels with or without F&B facilities, economy, and independent hotels. The properties are most densely populated in the ADR ranges between \$170 and \$260. Clearly, the high heterogeneity of product tiers that fall within specific ranges of ADR supports the idea that it is not likely that only the properties within a particular product segment are viewed as substitutes by guests.

EXHIBIT 4

ADR range by product tier

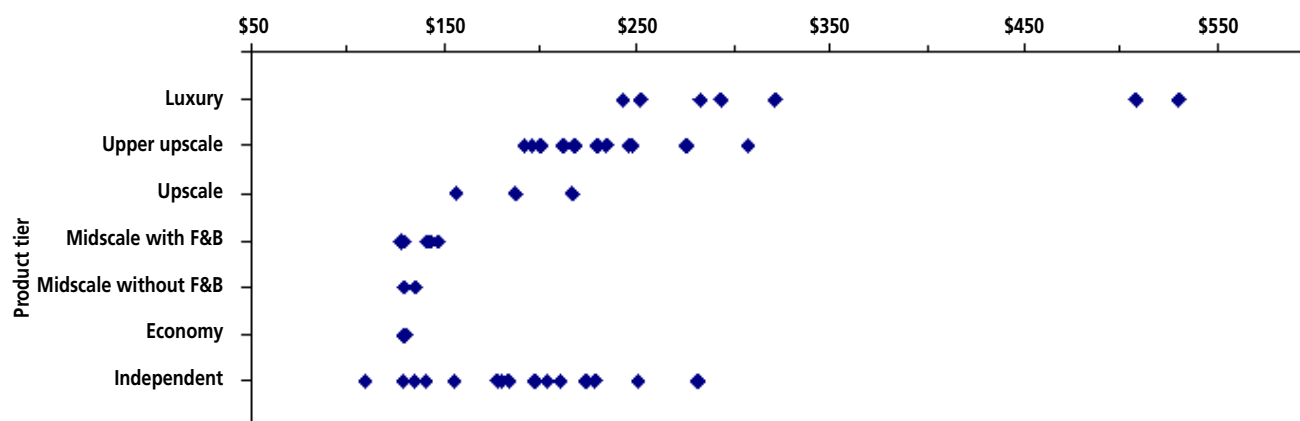
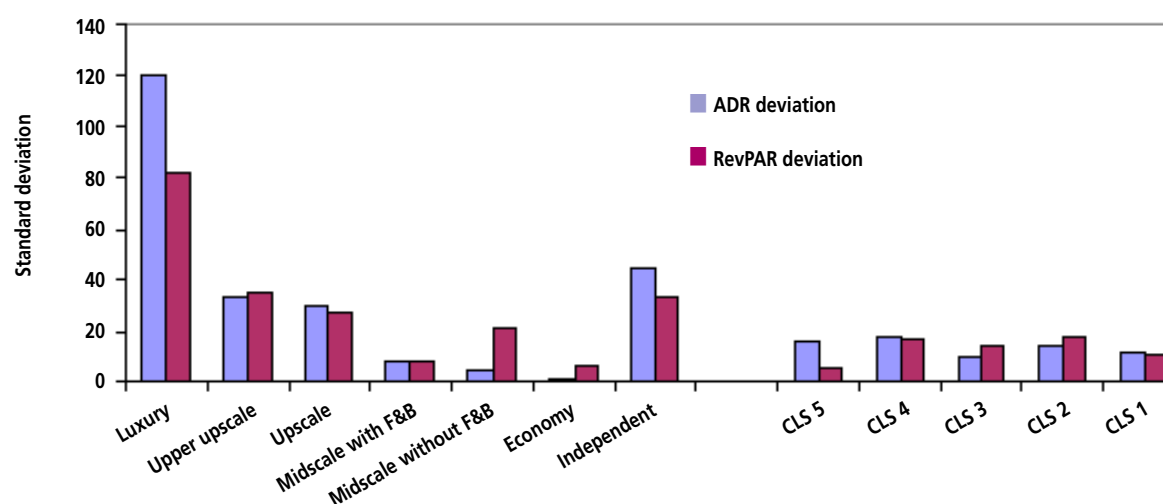


EXHIBIT 5

Within-group standard deviation of ADR and RevPAR by product tier and by cluster



Cluster Analysis Categorization

The findings thus far support the notion that local lodging competition is a complex matter. This was made even more evident when we performed the cluster analysis, using Ward's minimum variance method.¹¹ Five clusters were suggested by the pseudo F statistic, the pseudo t^2 statistic,

¹¹ Ward's minimum variance method is one of the agglomerative clustering algorithms where the clustering procedure starts by putting each single object in a separate cluster. In the subsequent steps, the distance between the clusters is estimated and the closest clusters are combined to build new aggregate clusters. Ward's method is designed to minimize information loss which occurs in the clustering process. Hence, at each stage of agglomeration, Ward's method minimizes the increase in the total within-cluster sum of squared error. See: B. Everitt, and G. Dunn, *Applied Multivariate Data Analysis*, 2nd Edition (London: Arnold; New York: Oxford University Press, 2001).

and cubic clustering criterion in our sample.¹² Exhibit 5 illustrates that the standard deviation of ADR, occupancy rate, and RevPAR are lower for the clusters than they are for the product tier segments. This implies that the cluster analysis successfully grouped together the homogeneous properties, based on their rates.¹³

¹² Multivariate normality is rarely satisfied in cluster analysis because the clusters are not formed by randomly allocating the objects into the clusters. Therefore, ordinary significance tests such as F test are not valid for testing differences between clusters. Alternatively, statistics such as pseudo F and pseudo t^2 statistics are examined in cluster analysis (SAS Institute Inc. *SAS/STAT User's Guide* (Cary, NC: SAS Institute Inc. 1988)).

¹³ The pairwise t-tests and Wilcoxon tests of the differences in the mean ADRs and the mean RevPARs among the clusters were significantly different at the 1% level with the exception of the mean ADRs and RevPARs between clusters 4 and 5, which were significantly different at the 10% level in the Wilcoxon test.

EXHIBIT 6**Product tiers of properties by cluster**

Cluster Number	Number of Properties	Number of Properties in Cluster in Each Product Tier					
		Luxury	Upper-Upscale	Upscale	Midscale with F&B	Midscale without F&B	Economy
CLS 5	2	2					
CLS 4	6	3	3				
CLS 3	10	2	8				
CLS 2	15		6	9			
CLS 1	16			1	9	2	4

EXHIBIT 7**Characteristics of properties by cluster and product tier**

Cluster Number	Number of Properties	Characterization of Cluster Based on Tier	Mean					
			ADR		Occupancy		RevPAR	
			Cluster	Scale	Cluster	Scale	Cluster	Scale
CLS 5	2	Luxury	\$519.02	\$347.05	77.00%	83.20%	\$399.38	\$284.06
CLS 4	6	Luxury	\$293.51	\$347.05	84.40%	83.20%	\$247.66	\$284.06
CLS 3	10	Upper-Upscale	\$238.85	\$234.36	85.90%	83.64%	\$205.31	\$196.25
CLS 2	15	Upscale	\$196.34	\$187.54	81.70%	83.28%	\$160.42	\$156.23
CLS 1	16	Midscale with F&B	\$136.28	\$140.15	87.20%	85.05%	\$118.72	\$119.01
Standard Deviation Relative to Group Mean								

The product tier of each of the properties in a cluster is shown in Exhibit 6.¹⁴ None of the cluster-based competitive sets contains the full set of properties within a given product tier. The luxury segment, which had the largest dispersion in terms of ADR, is divided into three different clusters. Cluster 5 consists of two of the seven luxury properties, Cluster 4 consists of three luxury and three upper-upscale properties, and Cluster 3 consists of two luxury and eight upper-upscale properties. Cluster 2 consists of six upper-upscale and nine upscale hotels, and Cluster 1 contains one upscale property,

¹⁴ We verified that the pattern shown in Exhibit 6 is not atypical for our sample market. ADR clustering was performed for other urban tracts across different geographical areas for the years 2000 through 2004 by setting the number of clusters as the number of different market scale segments within the tract (excluding the independent segment). If the ADR difference between the scale segments is substantially large, the cluster will coincide with the scale segment. In no instance, did we find the properties included in each cluster were the same as those included in the scale segment. Similarly, we found the same result with the price segment as well.

nine midscale hotels with food and beverage, two midscale properties without food and beverage, and four economy properties. Similar to the luxury hotels, the upper-upscale properties are also spread out across three clusters. Two clusters contain upscale properties. However, all of the midscale and economy properties are in Cluster 1.

The summary statistics for ADR, occupancy rate, and RevPAR for each of the identified clusters are presented in Exhibit 7. For ease of comparison, the summary statistics by product tier are included as well. To compare the characteristics of the cluster-based competitive sets to those of the product tiers, we classified each of the clusters into a corresponding product category. This was accomplished by choosing the minimum distance measure (the absolute value of the distance) between each cluster and each product tier. This method classifies Cluster 4 and Cluster 5 as separate luxury clusters. Cluster 3 is characterized as upper-upscale, Cluster 2 is closest to upscale, and Cluster 1 is mostly mid-scale with F&B.

For the overall sample, the standard deviation of ADR is significantly lower for the cluster-based competitive sets than for the product-tier competitive sets. The variability of the cluster-based ADR is \$12.28 versus \$46.62 for the product-tier based ADR, and the same is true for the overall variability of occupancy and RevPAR. The overall variability for occupancy is only slightly lower (5.27 percent for the clusters versus 5.57 percent for the product tiers), but RevPAR variability is much lower (\$14.00 for the clusters and \$35.05 for the product tiers).

At \$171.97, the difference in ADR between the cluster- and product-defined competitive sets is the greatest for the two hotels in Cluster 5, as against the nominal luxury

hotels, and diminishes in lower tiers. Similarly, the RevPAR difference for Cluster 5 and the luxury segment is a considerable \$115.32. The two luxury properties in Cluster 5 are clearly at the high end of this market, and do not seem to be comparable to any other luxury properties in terms of ADR and RevPAR. At the same time, the average occupancy of these two luxury properties is lower than hotels in any other cluster or product segment.

The standard deviations for ADR and RevPAR are lower for all of the cluster solutions except for Cluster 1, where the reverse is true. We believe that this is due to the diversity of properties in this cluster.

The apparent market (and competitive) position of hotels in this sample is considerably different for hotels in the luxury and the upper-upscale segments. To analyze this situation, we computed the absolute value of the difference between a property's ADR, occupancy, and RevPAR and the corresponding value for the reference group (cluster and tier) and then averaged these differences in values by scale segment. The results are shown in Exhibit 8.

The overall average differences for ADR, occupancy, and RevPAR are higher when the product tier is used as the reference group (\$26.75 for ADR, 4.32 percent for occupancy, and \$23.18 for RevPAR). The cluster reference group significantly improves on the product tier group, especially for ADR and RevPAR (\$10.20 for ADR, 3.89 percent for occupancy, and \$11.00 for RevPAR).¹⁵ The differences between the values for ADR and RevPAR for the luxury segment for the two different reference groups are striking. The average

¹⁵ Paired t-tests and signed rank tests showed that the overall mean differences for ADR ($p < .01$) and RevPAR ($p < .05$) were significantly lower when the cluster was used as the reference group.

EXHIBIT 8

Product tiers of properties by cluster

Product Tier	Number of Properties	ADR Reference Group		Occupancy Reference Group		RevPAR Reference Group	
		Cluster	Scale	Cluster	Scale	Cluster	Scale
Luxury	7	\$11.11	\$98.27	2.40%	4.64%	\$7.78	\$65.90
Upper-Upscale	17	\$10.30	\$23.74	4.45%	4.60%	\$13.45	\$25.91
Upscale	10	\$12.62	\$12.81	3.87%	4.69%	\$15.25	\$13.71
Midscale with F&B	9	\$7.33	\$6.04	3.36%	3.23%	\$4.74	\$4.71
Midscale without F&B	2	\$4.02	\$3.31	8.89%	8.89%	\$14.71	\$14.71
Economy	4	\$11.68	\$7.57	2.85%	1.85%	\$7.80	\$6.26
Overall	49	\$10.20	\$26.75	3.89%	4.32%	\$11.00	\$23.18

of the absolute value of the difference between a particular property's ADR and the cluster's ADR is \$11.11, but the average difference is \$98.27 when the product tier is used as the reference group. For RevPAR the average differences are \$7.78 for the cluster and \$65.90 for the product segment. For occupancy, the difference between the two reference groups is also the largest for the luxury segment. Thus, we conclude that the characterizations of the competitive sets are distinctly different between the cluster-based groups and the product-based groups.

Managerial Implications: Integrating the Two Categorizations

Our purpose here is not merely to highlight the differences in the definition of competitive sets based on the types of analysis. Certainly, the properties included in the competitive sets under the two methods are not the same. The important issue is how this information can be used for competitive analysis.

One potential use for the comparison of the two methods is simply to provide information about the properties with similar ADRs but different product types. Since the properties in this analysis sit in relatively close proximity, the ADR they command is associated with the guest's purchase choice based on the property's perceived quality and relative price. We infer that this decision reflects the current condition of the lodging product. By this logic, ADR cluster analysis summarizes the current competitive conditions in the local market. On the other hand, the product tier approach reflects the product type as a summary of the managers' and owners' market target. Therefore, a difference between the product segment and the characteristic of the ADR cluster indicates a possible inconsistency between the property's intended market position and its perceived competitive position. Identifying these differences may provide a means to evaluate a property's competitive operating, pricing, or marketing strategy. In the sample market we analyzed, there is a broad spectrum of luxury properties and upper-upscale properties that are intermingled in terms of average rate. The low-ADR luxury properties that are grouped into the cluster characterized as lower product tier, for instance, may need to re-evaluate their current position. To restore consistency, these properties may consider such approaches as renovation or upgrading amenities and service or, on the other hand, rebranding into a lower tier.

Another possible use for the integration of the two methods is to evaluate a property's performance. The competitive set often serves as a benchmark in performance evaluation to determine whether the property outperforms or underperforms its peers. A comparison of the performance of a particular hotel to the performance of hotels that are nominally in the same product tier but are in a higher

(or lower) cluster may reveal ways in which to improve performance. Since the use of different benchmarks leads to different results, it is important to have a meaningful reference group. As a straightforward example, consider the two luxury properties with ADRs significantly higher than that of the luxury group. Both of these properties outperform their product tier, but it is clear that not all of the luxury properties are the appropriate benchmark.

Let us examine the competition in this local market in greater detail. We used RevPAR for our performance measure, which is common in the lodging industry. Other profitability measures such as operating profit or net profit margin would be good proxies, but these other measures were not available to us in this dataset. That said, RevPAR is closely related to other performance measures such as gross operating profit.¹⁶ Exhibits 9A and 9B (overleaf) show the difference between each property's ADR, occupancy, and RevPAR relative to the average value for each of three reference groups that we have discussed (i.e., ADR cluster, product tier, and cluster-to-tier reference group). The cluster-to-tier reference group is defined as the same-tier properties within the cluster.

As an example, look at Property 1, one of the two luxury properties in Cluster 5. The difference in the cluster RevPAR is computed as the Property 1's RevPAR less Cluster 5's average RevPAR; the difference in the tier RevPAR is defined as Property 1's RevPAR less the luxury tier's average RevPAR; and the difference in the cluster-to-tier RevPAR is defined as Property 1's RevPAR less the RevPAR for Cluster 5's luxury tier. The differences for ADR and occupancy were computed similarly. Let's start with Properties 1 and 2, which are the two luxury properties in the top cluster, and have higher rates than any other properties, including the other luxury properties. As noted above, the average ADR for these properties is \$519.22, whereas the average ADR for the luxury properties in Cluster 4 is \$299.11, and the average ADR for the luxury properties in Cluster 3 is \$213.06. As a consequence, even with their slightly lower occupancy, the average RevPAR for the two properties in Cluster 5 is about \$145 higher than the average RevPAR of the luxury properties in Cluster 4.

Cluster 4 consists of three luxury hotels and three upper-upscale properties. If these three luxury properties are in a good competitive position then each of these properties ought at least to outperform relative to the cluster in terms of RevPAR. Properties 4 and 5 indeed outperform the cluster, and they outperform average of the three luxury properties in Cluster 4, but they underperform relative to the overall luxury tier. Given the stratospheric ADR for the two top

¹⁶ L. Canina, C. Enz, and J. Harrison, "Agglomeration Effects and Strategic Orientations: Evidence from the U.S. Lodging Industry," *Academy of Management Journal*, Vol. 48, No. 4 (2005), pp. 565-581.

EXHIBIT 9A
Average between each hotel and its reference groups for RevPAR, occupancy, and ADR, Clusters 5, 4, and 3

Property Number	Cluster	Product Tier	RevPAR Reference Group			Occupancy Reference Group			ADR Reference Group		
			Cluster	Scale	Cluster/Scale	Cluster	Scale	Cluster/Scale	Cluster	Scale	Cluster Scale
1	5	Luxury	-\$3.75	\$111.58	-\$3.75	0.01	-0.05	0.01	-\$11.24	\$160.73	-\$11.24
2		Luxury	\$3.75	\$119.08	\$3.75	-0.01	-0.07	-0.01	\$11.24	\$183.21	\$11.24
3	4	Luxury	-\$5.45	-\$41.85	-\$12.30	0.01	0.03	0.00	-\$10.95	-\$64.49	-\$16.55
4		Luxury	\$7.36	-\$29.03	\$0.52	-0.05	-0.04	-0.06	\$27.92	-\$25.63	\$22.31
5		Luxury	\$18.62	-\$17.77	\$11.78	0.06	0.08	0.05	-\$0.16	-\$53.70	-\$5.76
6		Upper-Upscale	-\$21.24	\$30.17	-\$14.40	-0.02	-0.01	-0.01	-\$18.48	\$40.67	-\$12.87
7		Upper-Upscale	-\$16.02	\$35.39	-\$9.18	-0.02	-0.01	-0.01	-\$12.03	\$47.12	-\$6.42
8		Upper-Upscale	\$16.73	\$68.14	\$23.57	0.02	0.02	0.03	\$13.69	\$72.84	\$19.29
9	3	Luxury	\$0.57	-\$78.18	-\$7.18	-0.01	0.02	-0.01	\$2.97	-\$105.23	-\$5.17
10		Luxury	\$14.93	-\$63.82	\$7.18	0.01	0.04	0.01	\$13.31	-\$94.89	\$5.17
11		Upper-Upscale	-\$21.96	-\$12.90	-\$20.02	-0.06	-0.03	-0.06	-\$10.16	-\$5.68	-\$8.13
12		Upper-Upscale	-\$21.30	-\$12.24	-\$19.36	-0.04	-0.01	-0.04	-\$15.41	-\$10.92	-\$13.37
13		Upper-Upscale	-\$13.49	-\$4.43	-\$11.56	-0.10	-0.07	-0.09	\$12.08	\$16.56	\$14.11
14		Upper-Upscale	-\$3.74	\$5.32	-\$1.80	0.02	0.04	0.02	-\$9.22	-\$4.73	-\$7.18
15		Upper-Upscale	\$5.21	\$14.27	\$7.14	0.04	0.06	0.04	-\$4.72	-\$0.23	-\$2.68
16		Upper-Upscale	\$6.06	\$15.12	\$8.00	0.04	0.06	0.04	-\$4.31	\$0.18	-\$2.27
17		Upper-Upscale	\$15.10	\$24.16	\$17.03	0.04	0.06	0.04	\$7.35	\$11.84	\$9.39
18		Upper-Upscale	\$18.63	\$27.70	\$20.57	0.05	0.07	0.05	\$8.10	\$12.59	\$10.14

luxury properties, the other luxury properties' underperformance relative to their product tier may not be problematic. If the two luxury properties in Cluster 5 are excluded from the set of luxury properties, these luxury properties in Cluster 4 outperform the remaining luxury scale segment. Thus, the performance benchmark that reflects the current competitive position would be the cluster-tier group. If their internal goal is to achieve further higher performance in the local market, then the reference group will be the luxury properties in Cluster 5.

Property 3, the other luxury property in Cluster 4, underperforms relative to the cluster. Looking at Property 3's occupancy, which is higher than that of any of its reference groups, it appears that Property 3 is following a strategy of "buying" occupancy by reducing ADR. Indeed, its ADR is lower than that of each of its reference groups. Property 3's results underscore the point that higher occupancy alone does not necessarily imply higher RevPAR. Investors in this property would be wise to evaluate its pricing policy and marketing effectiveness, as well as the state of the physical property and quality of service. The fact that this property is pricing even lower than certain upper-upscale properties

is useful information that would not have been provided by analyzing product-tier segments alone.

In contrast to Property 3's underperformance, Property 8 is an upper-upscale property that outperforms other properties in Cluster 4, which, as we noted comprises luxury properties as well as other upper-upscale properties (Properties 6 and 7). Property 8 outperforms with regard to RevPAR, occupancy, and ADR as against all reference groups. It is clear that the management and the strategies of this property are effective. As a result, even though Properties 6 and 7 outperform relative to their product tier, they would be wise to evaluate the strategies of Property 8 to improve their positions.

Underperformance characterizes Properties 9 and 10, which are luxury properties included in Cluster 3, grouped mostly with upper-upscale properties. Since the top performing upper-upscale properties are in Cluster 4 and the lower performing upper-upscale properties are in Cluster 2, we conclude that the upper-upscale properties in Cluster 3 command rates in the middle range of the upper-upscale scale segment. Not surprisingly then, the two luxury properties outperform the cluster as a whole. As we explain below, we think that investors should evaluate these properties

Average between each hotel and its reference groups for RevPAR, occupancy, and ADR, Clusters 2 and 1

Property Number	Cluster	Product Tier	RevPAR Reference Group			Occupancy Reference Group			ADR Reference Group		
			Cluster	Scale	Cluster/Scale	Cluster	Scale	Cluster/Scale	Cluster	Scale	Cluster Scale
19	2	Upper-Upscale	-\$21.01	-\$56.84	-\$25.06	-0.18	-0.20	-0.17	\$21.34	-\$16.68	\$13.36
20		Upper-Upscale	-\$1.43	-\$37.25	-\$5.47	0.01	-0.01	0.02	-\$4.84	-\$42.86	-\$12.82
21		Upper-Upscale	\$4.96	-\$30.86	\$0.92	0.01	-0.01	0.02	\$3.02	-\$34.99	-\$4.96
22		Upper-Upscale	\$6.89	-\$28.94	\$2.85	0.04	0.02	0.05	-\$1.02	-\$39.04	-\$9.00
23		Upper-Upscale	\$7.98	-\$27.85	\$3.94	-0.02	-0.04	-0.01	\$14.11	-\$23.91	\$6.13
24		Upper-Upscale	\$26.85	-\$8.97	\$22.81	0.07	0.05	0.08	\$15.28	-\$22.74	\$7.29
25		Upscale	-\$30.69	-\$26.51	-\$28.00	-0.08	-0.10	-0.09	-\$19.27	-\$10.47	-\$13.95
26		Upscale	-\$20.94	-\$16.75	-\$18.24	-0.03	-0.05	-0.04	-\$19.17	-\$10.36	-\$13.85
27		Upscale	-\$10.34	-\$6.16	-\$7.65	0.02	0.00	0.01	-\$16.77	-\$7.97	-\$11.45
28		Upscale	-\$9.91	-\$5.72	-\$7.22	0.00	-0.01	0.00	-\$12.66	-\$3.86	-\$7.34
29		Upscale	-\$3.19	\$1.00	-\$0.50	-0.01	-0.03	-0.02	-\$0.35	\$8.45	\$4.97
30		Upscale	-\$1.26	\$2.93	\$1.43	-0.01	-0.03	-0.02	\$1.48	\$10.28	\$6.80
31		Upscale	\$5.99	\$10.18	\$8.69	0.00	-0.02	-0.01	\$7.55	\$16.36	\$12.88
32		Upscale	\$8.66	\$12.85	\$11.35	0.08	0.07	0.08	-\$8.88	-\$0.08	-\$3.56
33		Upscale	\$37.44	\$41.63	\$40.13	0.10	0.08	0.09	\$20.18	\$28.98	\$25.50
34	1	Upscale	\$24.08	-\$13.44	\$0.00	0.04	0.08	0.00	\$19.94	-\$31.33	\$0.00
35		Mid with F&B	-\$12.50	-\$12.79	-\$12.79	-0.05	-0.02	-0.02	-\$7.88	-\$11.75	-\$11.75
36		Mid with F&B	-\$4.72	-\$5.01	-\$5.01	0.01	0.03	0.03	-\$6.76	-\$10.63	-\$10.63
37		Mid with F&B	-\$1.48	-\$1.77	-\$1.77	-0.12	-0.10	-0.10	\$19.27	\$15.40	\$15.40
38		Mid with F&B	-\$1.33	-\$1.62	-\$1.62	-0.01	0.02	0.02	-\$0.94	-\$4.81	-\$4.81
39		Mid with F&B	\$1.19	\$0.90	\$0.90	-0.04	-0.02	-0.02	\$7.48	\$3.60	\$3.60
40		Mid with F&B	\$3.08	\$2.79	\$2.79	-0.01	0.01	0.01	\$5.18	\$1.31	\$1.31
41		Mid with F&B	\$4.34	\$4.05	\$4.05	-0.03	-0.01	-0.01	\$10.00	\$6.13	\$6.13
42		Mid with F&B	\$4.80	\$4.51	\$4.51	0.01	0.03	0.03	\$4.11	\$0.24	\$0.24
43		Mid with F&B	\$9.23	\$8.94	\$8.94	0.04	0.06	0.06	\$4.38	\$0.51	\$0.51
44		Mid without F&B	-\$15.02	-\$14.71	-\$14.71	-0.07	-0.09	-0.09	-\$7.33	-\$3.31	-\$3.31
45		Mid without F&B	\$14.40	\$14.71	\$14.71	0.11	0.09	0.09	-\$0.71	\$3.31	\$3.31
46		Economy	-\$19.03	-\$12.51	-\$12.51	0.04	0.01	0.01	-\$26.83	-\$15.15	-\$15.15
47		Economy	-\$6.35	\$0.17	\$0.17	0.00	-0.03	-0.03	-\$7.68	\$4.00	\$4.00
48		Economy	-\$3.25	\$3.27	\$3.27	0.02	-0.01	-0.01	-\$6.67	\$5.02	\$5.02
49		Economy	\$2.56	\$9.07	\$9.07	0.06	0.03	0.03	-\$5.55	\$6.13	\$6.13

relative to luxury properties in Cluster 4, and not the two in Cluster 5. The upper-upscale properties in Cluster 3 that underperform relative to their product tier should probably evaluate themselves relative to the upper-upscale properties in Cluster 3 only.

The above examples demonstrate the analyses that are possible using these comparisons. If a property represents the highest product tier within the cluster and there are no

other same-tier properties in a higher cluster, as is the case with Properties 1 and 2, then the best reference group is the cluster-tier. If properties from a particular product tier appear in a higher rate cluster and they outperform their cluster-tier, then the comparison would be properties in a higher cluster that occupy the same product tier. We see several examples of this situation. Cluster 4 contains the luxury Properties 4 and 5, which might best be compared to

Properties 1 and 2. Then, although Property 10 is in Cluster 3, it should use as its benchmark the luxury properties in Cluster 4 (Properties 4 and 5). The upper upscale properties in Cluster 2 (Properties 21 through 24) should look at the performance of the upper-upscale hotels in Cluster 3; and Property 34, the sole upscale property in Cluster 1, might well compare itself to other upscale properties in Cluster 2.

Hotels that do not outperform their cluster-tier should not first look at nominally similar properties in the higher cluster, but instead should start by benchmarking those in the same cluster-tier, after which they might consider those in the same product tier but in a higher cluster. This applies to Property 3 in Cluster 4, which should start by comparing itself to Properties 4 and 5, because they are the other luxury hotels in that cluster. Likewise, Property 9 in Cluster 3 should first compare itself to Property 10, the other luxury property in that cluster. Properties 19 and 20 have several other upper upscale hotels as benchmarks before they look at the upper upscale properties in Cluster 3.

A slightly different approach would be used by hotels that outperform the cluster even though they represent one of the lower product tiers in that cluster. In this instance, the first reference group is the higher tier properties within the cluster. Then, these solid performing hotels could compare themselves to other properties in the same product tier within the cluster, followed by properties of a similar tier in a higher cluster. So, the upper-upscale Property 8 in Cluster 4 might first benchmark against the luxury properties in that cluster (although it already is outdoing them) and then look at the other upper-upscale hotels in Cluster 4. In Cluster 3, the upper-upscale Properties 13 through 18 could first consider the two luxury properties in that cluster, then look at each other, and finally benchmark Properties 6 through 8, in Cluster 4. A similar approach applies to upscale Properties 31 through 33 in Cluster 2; and the mid-market, full-service properties in Cluster 1 (Properties 39 through 43).

Finally, if a property is in one of the lower product tiers of a cluster and also underperforms the cluster, then its relevant reference group is properties in the same product tier within the cluster. Examples of this type of comparison are found in Cluster 4, with upper upscale Properties 6 and 7; in Cluster 3, with upper upscale Properties 11 through 14; in Cluster 2, for upscale Properties 25 through 30; and in Cluster 1, for the midmarket Properties 35 through 38.

Summary of Results and Managerial Implications

The evaluation of a hotel's competitive position is an important element for successful strategic management and performance evaluation. However, identifying competitors is not always a straightforward matter. In this report, we have shown that the characteristics of the competitive sets as well as the outcome of relative performance evaluation may differ

as a result of the method used to determine the competitive set. We note that there is no simple answer to the question of how to best determine a hotel's competitive set. In this report, we applied two different methods, cluster analysis based on ADR and product tier based previously established categories.

We believe that the ADR cluster analysis reflects the consumers' value analysis for a set of competitors, and thus stands as a value indicator for the balance they see between quality and price. As a result, we argue that clustering ADR averages allows one to delineate competitive sets that reflect the current competitive characteristics of the local market, as a first step in integrating supply- and demand-based perspectives.

We note that our approach does not mean that the product-tier category is not important. Product-tier is a key metric for both managers and consumers since it provides information about the property's intended position. For example, consumers' value perception for two hotels would be vastly different in the case where they quoted \$150 per room rates for two similar properties as compared to the case where consumers are quoted the identical rate but they know one property is luxury and the other is an upscale.

The integration of the two measures, product tier and the ADR cluster, suggests that a more complete picture of competitive market structures begins to emerge when the two perspectives are considered in concert than when each is used separately. Our analysis here indicates how the two measures can be applied in tandem to uncover important insights on a hotel's strategic orientation versus its current competitive position. For the tract that we studied, the primary empirical findings and practical implications are:

- The variability of ADR decreases as the analysis shifts down market from luxury to economy segments. This implies that there is less variability in the characteristics of low-cost properties as there are in high-end properties. Determining competitive groups is more difficult for the highly differentiated high-end properties than for low-cost properties.
- The average variability of ADR and RevPAR is less for cluster-based groups than it is for product tiers. Stated another way, properties in cluster-based competitive sets are more similar in terms of ADR and RevPAR than are hotels in competitive sets grouped by product tier.
- Most clusters contain hotels in more than one product tier. From the guests' perspective, competition occurs across product tiers.
- Hotels in most product tiers are categorized into different clusters when relative ADR or RevPAR is considered.

We found substantially different ADRs for the properties within each product tier.

- The average RevPAR difference between a particular hotel and the reference competitive group is less when one compares it to the cluster reference group than when the reference group is the hotel's nominal product tier. The performance of hotels within competitive groups established by cluster analysis is more similar than for those in competitive groups established by product tier.

—When differences exist between a particular hotel's product tier and market characterization of the cluster (by ADR), this indicates that there may be inconsistencies between the targeted market or product type and consumers' perceived quality. If the cluster market level characterization is higher than the product tier, the quality perceived by consumers is higher than managers' target market and product type. On the other hand, if the cluster market characterization is lower than the product tier, the quality perceived by consumers is lower than managers' target market or product type.

—If the property in question is grouped in a cluster that is characterized as a higher product tier than that of the hotel, then the ADR of that hotel is higher than the ADR of other, same-tier properties in lower clusters. We can make the following inferences:

- Quality perceived by consumers exceeds target market and product type;
- The strategies and management of the property are quite effective;
- The other properties in the cluster or product tier may be old and in need of maintenance or renovation; and
- If it outperforms the cluster as well as the product tier then it is in great shape, although it might be difficult to sustain such a position in the long run.

—If cluster analysis places a property in a competitive group that is characterized as a lower market segment than the hotel's product tier, we can conclude that the hotel's ADR is lower than that of other properties in the same product tier that compete in higher clusters. For this hotel, we can infer the following:

- Consumers' quality perceptions fall short of the target market;
- The strategies and management of the property require analysis;
- The property may be old and in need of maintenance or renovation;
- It would be useful to evaluate the property's physical condition, renovation and maintenance schedules, service quality, pricing strategy, and marketing policy; and
- While the property probably falls within the upper tier of the price range within the cluster, if it underperforms relative to the cluster this implies that the lower price fails to signal value to the consumers.

Noting again the limitation that this analysis covered just one tract of one MSA, we believe that it would be useful to extend this analysis to include a more extensive data sample. Since our analysis is essentially rate based, we recommend a more thorough consideration of the complexities involved in identifying competitors, for example through interviews with general managers, corporate managers, and consumers. Other useful studies might include a comparison of methods used by hotel managers (or others) to determine their competitive set, and a listing of the best methods given the objective of the analysis. Despite its limitations, we believe that this paper is a start to an area of research that will be useful to the industry. ■

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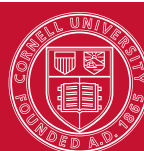
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