An Examination of Revenue Management in Relation to Hotels' Pricing Strategies

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Abstract
Most hotels in the United States use revenue management, regardless of their pricing strategy relative to their competitive set. However, revenue management is executed more closely on average by hotels that price above their competitive set than by those who price below their competitive set. A study of over 6,000 hotels in all market segments found that virtually all hotels adjusted their rates in association with changes in occupancy. Although revenue management was nearly universal, hotels in certain market segments were less likely to adjust rates with occupancy and some simply did not do so. Mid-market hotels were heavily involved in revenue management, for instance, while many economy-segment properties apparently did not use this strategy. When the sample was divided according to pricing strategy, revenue management remained a nearly universal strategy. With regard to pricing strategy, some properties maintain their rates at a premium to those of their immediate competitors, while other hotels set room rates slightly below those of competitors (and others, much lower). Hotels that priced below competitors demonstrated strong use of revenue management, as did hotels that set their room rates above those of their competitors. The chief exception to the use of revenue management was certain groups of economy hotels. At the other end of the scale, luxury properties that price well below their competition constitute another group that does not seem to be applying revenue-management strategies.

Keywords
hotels, revenue management, hotel pricing, pricing strategy, room rate

Disciplines
Business | Hospitality Administration and Management

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By Cathy A. Enz, Ph.D., and Linda Canina, Ph.D.

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Executive Summary

An Examination of Revenue Management in Relation to Hotels’ Pricing Strategies

By Cathy A. Enz and Linda Canina

Most hotels in the United States use revenue management, regardless of their pricing strategy relative to their competitive set. However, revenue management is executed more closely on average by hotels that price above their competitive set than by those who price below their competitive set.

A study of over 6,000 hotels in all market segments found that virtually all hotels adjusted their rates in association with changes in occupancy. Although revenue management was nearly universal, hotels in certain market segments were less likely to adjust rates with occupancy and some simply did not do so. Mid-market hotels were heavily involved in revenue management, for instance, while many economy-segment properties apparently did not use this strategy.

When the sample was divided according to pricing strategy, revenue management remained a nearly universal strategy. With regard to pricing strategy, some properties maintain their rates at a premium to those of their immediate competitors, while other hotels set room rates slightly below those of competitors (and others, much lower). Hotels that priced below competitors demonstrated strong use of revenue management, as did hotels that set their room rates above those of their competitors. The chief exception to the use of revenue management was certain groups of economy hotels. At the other end of the scale, luxury properties that price well below their competition constitute another group that does not seem to be applying revenue-management strategies.
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By Cathy A. Enz, Ph.D., and Linda Canina, Ph.D.

Maximizing revenue through the strategic use of pricing is a challenge for all hotel managers. Fundamental revenue-management principles suggest that care must be taken to decide what price to charge for specific market segments in various demand periods.¹

In conjunction with that determination, tracking competitors’ prices is an important practice, especially since many hotel operators engage in the practice of reference pricing (that is, pricing just slightly below most direct competitors).² During low-demand periods, such as those experienced in recent years, effective comparative pricing becomes even more challenging and effective revenue management more important.

Our objective in this study is to examine the degree of linkage between a hotel’s rate and its occupancy levels for hotels in different market segments under various competitive situations. We are primarily interested in the extent to which revenue management is deployed by hotels. For this determination, we divided the sample into groups in two different ways. First, we divided subjects by whether they set room rates higher or lower than those of their competitors. Notes:

competitors. Then we divided the sample into six groups, by whether the hotel in question sets prices slightly, moderately, or well above their competitors’ rates or whether that property undercut its competitors’ prices, again by a small amount, a moderate amount, or by several percentage points. In a previous study, we found that hotels that price slightly above their competitors perform relatively better in terms of revenue. A related question, then, is whether those high-rate hotels are more effective revenue managers than those who do not price as aggressively in relation to their competitors. Knowledge of these empirical relationships may be useful to both groups of managers, whether they attempt a premium-price strategy or a strategy of undercutting competitors.

In previous studies we found that, in relation to their competitors, hotels in direct competition make more money when they maintain comparatively higher prices and avoid discounting to fill rooms. Using data from 2001 through 2003, our previous studies reveal that hotels that drop their prices relative to their competitive set capture market share from the competition, but do not gain higher RevPARs than those same competitors. Those findings suggest that there is nothing wrong with holding relative rates constant even when demand drops. Those findings, in turn, seem to imply that hotels might alter their revenue-management policies under certain competitive conditions. The earlier work did find that raising prices above those of a hotel’s competitive set lead to a loss of occupancy, but that loss does not diminish RevPAR. On the other hand, by offering a lower relative price a hotel gains occupancy (as expected), but the discounting property’s RevPAR performance is lower than that of its competitive set. The findings that we just outlined seem to run counter to certain revenue-management practices. Consequently, we wondered whether there were particular circumstances under which revenue management might be considered ineffective.

In the study described in this report, we build on the earlier studies of relative competitive pricing and its impact on occupancy and RevPAR, by considering the revenue-management activity of hotels in local markets. In particular we are interested in whether there are strong positive relationships between a given hotel’s pricing activity and its occupancy levels. We tested this relationship for hotels for which the relative pricing strategy is to offer prices below those of competitors and for those that set rates above those of competitors. Thus, our question is, To what extent does a strong rate-to-demand relationship exist for hotels that position themselves either above or below their competitors?

Specifically, we compared the relationship between average daily rate and occupancy for hotels that were pricing above their competitive and for those that kept their rates below those of their direct competitors. In so doing, we seek to determine the degree to which hotels in various market segments and with contrasting competitive stances employ a revenue-management strategy. We can conclude that a hotel is using revenue management when it maintains an approach to pricing in which there is a strong positive association (statistically significant, positive correlation) between occupancy and ADR.

As a starting point to the discussion, a revenue-management strategy would be in effect if

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Whether hotels maintain a strategy of pricing above their competitors or below their competitors, overall they implement revenue management.

prices fluctuated in concert with demand levels. Under such an approach the hotel would adjust its rates downward during low-demand periods and move them upward in high-demand periods. Many factors shape the pricing decision, but at its core is the idea that good revenue management exists when hotel rates and occupancies are positively correlated. Conversely, if no relationship or a negative relationship exists between rate and occupancy, we can conclude that a hotel is not practicing revenue management.

In this study we explore the relationship between annual ADR and annual occupancies during 2003 for over 6,000 United States hotels in various price segments. The focus is on individual hotels and their direct competitors in local markets. The data were drawn from the Smith Travel Research database, which is effectively a census of brand-name hotels in the United States. This comprehensive sample is widely considered to be representative of all branded hotels in the U.S.

The Study
In this study we categorize hotels’ pricing strategies relative to those of their competitive set of hotels to determine whether revenue-management strategies differ for hotels that use one or the other of the two contrasting pricing strategies that we have outlined. The competitive-set data used in this study are drawn from the aggregate performance of each subject hotel’s direct competition. Typically, a competitive set consists of a group of six or more properties selected by a hotel’s managers or its parent company. The three key factors used by operators to select hotels in their competitive set are: (1) product offering, (2) proximity, and (3) price. Usually a hotel’s managers will select for inclusion in their competitive set hotels in reasonable proximity that offer comparable products and features and maintain rate parity. While proximity may vary by hotel segment, a three-mile distance is a reasonable standard, although a luxury hotel may have to extend that distance, because it will have fewer closely proximate competitors than does the typical budget hotel.

Determining the competitive set is a key element of this study, because revenue-management decisions often are driven by whether competing hotels boost or drop their prices. In exploring the relationship between ADR and occupancy, this study focuses on such local pricing dynamics. We believe that by analyzing each hotel’s pricing strategy relative to that of its individually selected competitive set, we can understand the price–occupancy relationship in a novel, insightful way.

We chose to analyze annual data rather than monthly data to avoid the influences of pricing irregularities that may have occurred in a particular month. Even though revenue-management programs adjust prices each day, the overall revenue-management program of adjusting prices according to demand conditions will become apparent in an analysis of annual data. Properties were eliminated from the sample if they had less than 12 months of data for 2003. Extended-stay hotels were excluded from this study because they have unusual demand characteristics, given that the typical traveler stays more than ten days at these complexes. We also excluded resorts because of their seasonality and their frequent inclusion of meals in room pricing.

Percentage differences in ADR. As explained below, in addition to the first analysis, where we divided hotels into “above” or “below” with regard to their rates, for a second analysis, we grouped hotels by percentage difference in ADR relative to their competitive set. Specifically, the pricing strategy of a given
We eliminated from the data sample all properties with significant differences in RevPAR performance from 2002 to 2003. We did this to ensure that the categories of difference in ADR relative to the competitive set were due in fact to differences in their relative pricing strategies. We used a parameter of one standard deviation from zero because of the importance of evaluating hotels that were able to achieve past RevPAR performance similar to that of their competitive set.

<table>
<thead>
<tr>
<th>Price segments</th>
<th>Pricing up to 15 percent below competitive set</th>
<th>Pricing up to 15 percent above competitive set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>0.23 (2,717)</td>
<td>0.28 (2,391)</td>
</tr>
<tr>
<td>Luxury and Upper Upscale</td>
<td>0.21 (231)</td>
<td>0.29 (294)</td>
</tr>
<tr>
<td>Upscale</td>
<td>0.27 (284)</td>
<td>0.28 (264)</td>
</tr>
<tr>
<td>Midscale with food &amp; beverage</td>
<td>0.29 (533)</td>
<td>0.32 (432)</td>
</tr>
<tr>
<td>Midscale without food &amp; beverage</td>
<td>0.21 (1,157)</td>
<td>0.21 (1,181)</td>
</tr>
<tr>
<td>Economy</td>
<td>0.09 (394)</td>
<td>0.25 (108)</td>
</tr>
</tbody>
</table>

Notes: Correlations are based on annual data from 2003. The number of observations for each group is given in parentheses. All correlations are significant at $p < .001$, except economy hotels that price above competitors, shown in red, which is significant at $p < .01$, and economy hotels that price below competitors, shown in italics, which is not significant.

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The initial analysis examined all hotels by price segment for 2003, divided by whether they maintained rates above or below those of their competitors (by any percentage). Exhibit 1 shows the Pearson correlation coefficients for those two sets of hotels overall and by market segment. In this correlation analysis the value of the coefficient measures the degree of association between a hotel’s ADR and its occupancy.

Overall analysis. The table shows that overall both sets of hotels showed positive, significant correlations between ADR and occupancy, indicating the use of revenue management. As a group, this positive, significant relationship held for hotels with low prices relative to their competitive set (coefficient = .23; $p < .001$). Moreover, with one price-segment
exception, this pattern of a positive relationship between price and occupancy was the case for hotels with low prices relative to their competition, regardless of price segment. The exception here was economy hotels that undercut their competitors, for which the relationship of ADR and occupancy was not significant. Thus, our findings suggest that most hotels that offered low rates relative to their competitors were actively engaged in altering their rates with shifts in demand. Overall, economy hotels that priced below their competitive set, on the other hand, did not shift rates according to demand fluctuations and thus were not actively engaged in revenue management.

Repeating this analysis for hotels that priced above their competition, the relationship between their own rate and occupancy was also positive and statistically significant (coefficient = .28; p < .001). This pattern of a positive relationship between price and occupancy was the case for all hotels that maintained high prices relative to their competition regardless of market segment. Even economy hotels that priced higher than their competitive set relied on revenue management. Two observations are noteworthy. First, a stronger relationship exists between rate and occupancy for hotels that priced above their competitive set than applies to those that priced below the

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**EXHIBIT 2**

Pearson correlation coefficients for specific pricing groups

<table>
<thead>
<tr>
<th>Price segments</th>
<th>Pricing below the competition</th>
<th>Pricing above the competition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>More than 5 and up to 10 percent below</td>
<td>More than 1 and up to 5 percent below</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Overall</td>
<td>0.22 (895)</td>
<td>0.29 (1,007)</td>
</tr>
<tr>
<td>Luxury and Upper Upscale</td>
<td>0.19 (60)</td>
<td>0.25 (105)</td>
</tr>
<tr>
<td>Upscale</td>
<td>0.24* (96)</td>
<td>0.31 (105)</td>
</tr>
<tr>
<td>Upscale</td>
<td>0.23 (192)</td>
<td>0.32 (200)</td>
</tr>
<tr>
<td>Midscale with food &amp; beverage</td>
<td>0.23 (378)</td>
<td>0.28 (478)</td>
</tr>
<tr>
<td>Midscale without food &amp; beverage</td>
<td>0.17* (130)</td>
<td>-0.002 (79)</td>
</tr>
</tbody>
</table>

**Notes:** Correlations are based on annual data from 2003. The number of observations for each group is given in parentheses. Correlation coefficients shown in red are significant at p < .001. The coefficient shown in italics is significant at p < .01. The two coefficients that are starred (*) are significant at p < .05. Remaining coefficients are not significant.
Subdividing the sample isolated a few certain hotel types that showed only a weak correlation between occupancy and rates and, thus, are apparently not actively using revenue management.

Subdivided Sample
Turning to the analysis that is based on the extent of underpricing or overpricing, hotels that price just below or just above their competitors’ rates (by less than 1 percent), the results (not presented in the tables) show strong positive correlations between ADR and occupancy. Pricing just below the competitive set is the best example of reference pricing. For all hotels that followed this practice we obtained the strongest correlations between a hotel’s own ADR and occupancy (coefficient = .30; $p < .001$). For all the hotels that price just above the competition the correlation between rate and occupancy was also statistically significant and positive (coefficient = .23; $p < .001$). The larger correlation between rate and occupancy for those that price just below their competitors suggests that this group of hotels is the most actively engaged in raising and lowering their rates with shifts in demand. The implication of this finding is that hotels that choose the strategy of pricing just under their competitors are the most active in managing revenue in response to fluctuations in demand.

Large Pricing Gaps Among Competitors
In Exhibit 2 we show the results for the other four groups that we analyzed according to the extent of their under- or overpricing. Looking at the group of hotels that priced substantially higher than their comparative sets in 2003, these properties showed positive relationships between their own hotel pricing and occupancy levels, indicating that overall the hotels in our subdivided groups were managing revenue. However, as the table also shows, differences in revenue management showed up when we analyzed the hotels in the various market segments. Luxury and upper upscale hotels, for example, carefully fit their rates to occupancy if they were in the group that priced between 1 and 5 percent above the competition. In contrast, luxury and upper upscale hotels that priced substantially below the competitive set (over 5 and up to 10 percent lower) were not found to have a significant rate–occupancy relationship.

For upscale hotels the strongest levels of revenue management were found among hotels that priced substantially above their competitors, that is, in the group that priced over 5 to 10 percent higher. Hotels in the midscale segments showed a positive relationship between rate and occupancy regardless of their competitive pricing strategy. Thus, we conclude that mid-market hotels were busy managing their revenue by adjusting rate to demand levels. In contrast, the economy segment’s hotel operators were the least likely to adjust their rates to occupancy. With the exception of the lowest-price economy hotels (relative to their competition), economy hotels as a group did not adjust their own hotel rates to occupancy, as revealed by the insignificant and negative correlation coefficients. Economy hotels generally appear to maintain relatively consistent prices rather than increase or decrease rates according to demand fluctuations.
Conclusion

Our study found that hotels that set rates just slightly below most of their competitors were likely to have strong and positive correlations between their ADRs and occupancies. In essence, they were practicing good revenue management and raising rates as demand increased. Weaker relationships were found between rate and occupancy when hotels priced substantially lower than their competitors. For example, the luxury-segment hotels that priced substantially below their competitors were not practicing revenue management at all, as indicated by the insignificant correlations between rate and occupancy for these operators (see Exhibit 2). This finding, in conjunction with our previous results that showed hotels that priced substantially below their competitors experienced much lower RevPARs, would suggest that a hotel manager who decides to price his or her hotel products substantially below those of the competition may enhance the property’s RevPAR performance by adjusting rates upward in relatively aggressive fashion when occupancy rises.

Economy hotels that price below their competitors do not appear to be using the revenue-management strategy of raising rates as demand increases; instead those hotels maintain rate stability. That may be the result of their being unable to offer still lower prices and also cover costs. In addition, given economy hotels’ stance of competing on the basis of price, they may be strategically unable to raise their rates much as demand increases. In short, this group of economy hotels appears to be a pure price play in which fixed pricing is part of the positioning strategy needed to attract guests. Interestingly, there is modest revenue management in those instances when an economy hotel is pricing substantially below the competition (with rates over 5-percent lower). This practice may reflect opportunistic pricing by operators with relatively low-quality products. In previous research we have found that low-end hotels obtain RevPAR spillover benefits from locating next to high-end hotels. In some markets it may be possible for economy hotels to raise their rates as demand for the entire market increases simply because most markets have the largest proportion of high-price hotels.

In contrast to the low-end economy properties, economy hotels that price above their competitors were, as a group, far more likely to engage in revenue-management strategies, particularly those hotels that price just above their competitors. Although the sample size was too small to draw meaningful inferences, we found a strong positive correlation between rate and occupancy (coefficient = .59; p < .05) for economy hotels that price less than 1 percent above their competitors (not shown in Exhibit 2). The strategy of these economy hotels with slightly higher rates seems to involve carefully monitoring demand and actively managing revenue.

Overall, hotels that price above their competitors were found to be more active in adjusting rate to fluctuations in demand. Put simply, high-price players are more aggressive revenue managers. In addition, luxury and upper upscale hotels and midscale hotels appear to be the strongest revenue managers when their strategy is to maintain rates at 1 to 5 percent above their competitors. As room-rate disparities increase, the relationship between rate and occupancy remains significant, but the correlations are not as strong. However, when con-

During the period of this study (2003 data), most hotels in the United States carefully set rates in relation to fluctuations in their occupancy.

pared to the hotels that price below competitors, revenue management is more likely to be found in all hotels in this sample that position themselves as pricing above their competitors. This result suggests that those hotels which are best able to extract high RevPARs are also most likely to engage in revenue-management practices.

This study clearly shows that in 2003 most hotels in the United States carefully set rates in relationship to fluctuations in occupancy. Generally speaking, hotels that priced above their competitors evidenced more revenue management than did those who priced below competitors. Economy hotels, perhaps because they position themselves on the basis of price, were the least likely to alter rate with demand, although some low-price hotels did take some advantage of revenue-management strategies. In contrast, midscale hotels consistently set rates in alignment with demand, regardless of whether they set rates above or below those of competitors.

While this study extends previous pricing studies by looking at the role of effective revenue management—as defined by the relationship between rate and occupancy—it has not addressed other important questions around revenue management, such as which hotel segments most particularly would benefit from revenue management. By examining the practice of revenue management (i.e., the rate–occupancy relationship) in the context of competitive pricing strategies, this study has revealed that the industry does set prices in relationship with demand shifts. We also found, though, that this practice is not pursued as strongly by economy hotels or by hotels that price below their competitive set. Future studies should continue to expand our understanding of this topic by investigating the profitability of hotels with strong rate-to-demand relationships.

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