# What Hotel Attributes Matter? Understanding the Price Determinants in the Lodging Industry 

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# What Hotel Attributes Matter? 

Understanding the Price Determinants in the Lodging Industry<br>Lan Jiang and Marcia H. Taylor<br>Lutgert College of Business, Florida Gulf Coast University, Fort Myers, FL


#### Abstract

The major purposes of the empirical study are to investigate the price determinants in the lodging industry (i.e., hotel class, hotel operation, location, size, age, and seasonality) and to examine how these price determinants affect financial performance of the hotel. A quantitative method was used in this study, with 6,732 valid observations collected and analyzed. The findings suggested that hotel class, hotel operation, location, size, and seasonality are significant factors determining hotels' average daily rate (ADR) and revenue per available room (RevPAR). The results have both theoretical and practical contributions. They not only broaden the existing lodging research but can also help hotel managers better understand pricing determinants.


Keywords: hotel industry, pricing, determinants

## Introduction

Pricing is certainly critical to the lodging industry and a well-designed hotel pricing strategy can do wonders by giving a strong push to the hotel revenues. How to derive the appropriate pricing and what kind of strategy should be chosen has become the number one question for revenue managers to think about. Creating a proper pricing strategy is essential to revenue optimization in the lodging industry, which confirms healthy profit margins. Hotel guests view prices not just as a plain number quoted by the hotel; their perceptions toward pricing strategies plays an important role when decisionmakers create those strategies.

Revenue management and pricing strategies are not new to hospitality researchers. They have been studied for decades since revenue management was adapted from the airline industry in the mid-1990s (McGill \& Van Ryzin, 1999; Anderson \& Xie, 2010; Erdem \& Jiang, 2016). The pricing of rooms has always been one of most challenging and important decisions revenue managers must make,
mainly due to its complexity and significance for the performance of the hotel. Hotel room pricing is determined by various factors. Key determinants of pricing identified by practitioners are location, rating, market/competitive rates, size, segment, weekday versus weekend, and seasonality. Pricing is also dependent on the market, competition, demand, inventory availability, and location.

The major purposes of this empirical study are to investigate the price determinants in the lodging industry (i.e., hotel class, hotel operation, location, size, age, and seasonality) and to examine how these price determinants affect hotel prices and financial performance. The following section reviews the studies on price determinants in the lodging industry and proposes the hypotheses.

## Literature Review

Research on pricing in the lodging industry is limited, despite the increase in interest in revenue management and hotel analytics; there is still a gap in many areas of studying price determinants. As
revenue management became popular in the hotel industry, researchers have tried to identify price determinants using different methods. For example, some studies investigated how competitors' pricing changes affect hotels' strategic pricing strategies (i.e., Kim, 2010); some studied the impact of hotel class or stars on hotel prices (i.e., Israeli, 2002; Espinet et al., 2003; Pawlicz \& Napierala, 2017; RodríguezDíaz et al., 2018); some examined the impact of location on hotel prices (Monty \& Skidmore, 2003; S. Lee \& Jang, 2013; Pawlicz \& Napierala, 2017). The following are the major price determinants that were studied by researchers, though some are still controversial.

A dataset of 215 hotels in 9 locations in Israel was analyzed in linear regression model in Israeli's (2002) study to analyze the impacts of star rating and corporate affiliation on average daily rates (ADRs). The results suggested that star rating is a determinant explaining hotel prices. However, the impact of corporate affiliation on the pricing of hotels is inconsistent depending on the location of hotels. Espinet et al. (2003) also used regression model to analyze the impact of different hotel attributes on ADRs. Their data was collected from hotels in the southern Costa Brava area of Spain with panel data models. They also found huge price differences among different hotel class. Pawlicz and Napierala (2017) measured the effect on ADR by differing characteristics and attributes of hotels. They found that hotel class has a significant impact on hotel prices as well. Therefore, the first hypothesis is proposed below:

H1a: Higher hotel class is associated with higher ADR.

Other than hotel prices, another purpose of this study is to investigate the impact of price determinants on hotels' financial performance. Revenue per available room is one of the most important financial indices for hotels, thus the hypothesis below is also proposed:

> H1b: Higher hotel class is associated with higher RevPAR.

Wu (1998) analyzed the price differential between independent motels and franchised motels, and the results showed that franchised motels tend to have
higher prices, which may due to their high franchise fees. Thrane's (2007) study supported Wu's (1998) findings; he used data extracted from an internet-based search engine for hotels in Norway and the results showed that hotel prices are significantly influenced by a hotel's operation (chain or not chain). However, Israeli's (2002) study does not generate conclusive results that corporate affiliation is a significant price determinant. Therefore, the second group of hypotheses is proposed below:

> H2a: Chain hotels have higher ADR than independent hotels.
> H2b: Chain hotels have higher RevPAR than independent hotels.

The study of Monty and Skidmore (2003) focused on the pricing of rooms in bed and breakfast accommodations in Walworth County, Wisconsin. The results in their study show that location characteristics are an important factor in determining hotel prices. S. Lee and Jang (2013) used a spatial lag model and quarterly data to analyze the impact of location and spatial competition on hotel's prices. Their results show significant impacts of location and spatial competition on the hotels' prices. Pawlicz and Napierala's (2017) study also found that location of the resort, distance to the city center, and distance to the international airport are significant factors of hotel prices. Given that there are many resorts in the sample, the research team estimated that resort hotels have higher ADR and RevPAR than other locations. Therefore, the third group of hypotheses is proposed below:

## H3a: Resort hotels have higher ADR than other locations. <br> H3b: Resort hotels have higher RevPAR than other locations.

Hung et al. (2010) applied quantile regression approach to investigate the major determinants of hotel room pricing strategies. Using data drawn from 58 international tourist hotels in Taiwan, the ordinary least square regression results reveal that number of rooms is one of the main attributes of hotel ADR. Pawlicz and Napierala (2017) also found the same: that number of hotel rooms have a significant impact on hotel prices. Kim et al. (2018)
explored spatial variations in modeling hotel room prices, and they identified spatial clustering patterns of relationships between room price and hotel attributes across market segments. They also found that large-sized chain hotels clustered with higher room rates. Therefore, the fourth group of hypotheses is proposed below:

> H4a: Larger hotel size is associated with higher ADR.
> H4b: Larger hotel size is associated with higher RevPAR.

According to Baum (1999), all aspects of the supply-side behavior, marketing, labor market, and stakeholder management and operations are impacted by seasonality. The seasonality of demand is shared by most hotels, despite the uniqueness of each, and the fluctuation of high to low season (Barsky \& Nash, 2006). In the hotel industry, seasonality provides the most challenge, mostly because of its fixed capacity. The seasonality of the industry has a profound effect on the hotel pricing, especially in areas where demand is high and supply is limited. However, within seasonality, other factors contribute to the determinant of pricing. Israeli's (2002) study also confirmed the significant impact of seasonality on hotel prices. Therefore, the fifth group of hypotheses is proposed below:

H5a: Hotels have higher ADR in high season.
H5b: Hotels have higher RevPAR in high season.
C. Lee (2011) used a modeling framework to identify factors that influence room rates in high frequency time series data. He tried to develop an optimal hotel room rate model using monthly data from 1985 to 2009 in Singapore. The variables he used include monthly total tourist arrivals, the index of industrial production, and the occurrences of terrorist attacks in Southeastern Asian countries. As expected, the number of visitor arrivals in Singapore affect the hotel room rates positively. Thus, the number of visitor arrivals is controlled in this study, which will be explained in the next section.

As mentioned above, many variables were studied by researchers as the determinants of hotel price. The next section discusses the research design, sample, and data analysis methods.

## Methodology

## Research Design

The purposes of the study are to investigate the price determinants of lodging industry in the United States and to explore how those determinants (i.e., hotel class, location, and seasonality) affect profitability. This study was designed and conducted in a two-stage process. In the first stage, the research team reviewed literature in the hospitality field on price determinants, summarized the determinants, and used them as the independent variables of the study. In the second stage, empirical data were gathered and used for analysis. Details of the sample and variables are explained in the following section.

## Sample and Data Collection

The quantitative anonymized property level data was provided by STR for hotels in Collier and Lee Counties of Southwest Florida (SWFL). The sample included 125 hotels that participated from 2008 to 2018. To effectively test the proposed hypotheses, monthly data regarding the following variables were analyzed for each hotel.

## Dependent Variables

In order to investigate the price determinants, average daily rate (ADR) and revenue per available room (RevPAR) were the dependent variables used.

## Independent Variables

Hotel class. Class is an industry categorization which includes chain-affiliated and independent hotels. A chain-affiliated hotel's class is the same as its chain scale; an independent hotel's class is based on its ADR. According to STR, the six hotel classes for U.S. hotels are: luxury, upper upscale, upscale, upper midscale, midscale, and economy. Hypothesis 1 predicts the estimated coefficients associated with higher classes should be positively correlated to hotel price and RevPAR.

Hotel operation. Hotel operation indicator was collected based on STR classification. It includes three types of hotel operation: chain-operated, franchised, and independent. Hypothesis 2 predicts a positive and significant coefficient for chain-operated hotels;
that is, chain-operated and franchised hotels have higher ADR and RevPAR than independent hotels.

Location. Location indicator was collected according to STR classification. A total of six location categories are used by STR, including urban, suburban, airport, interstate, resort, and town. Hypothesis 3 predicts resort hotels have higher ADR and RevPAR than other locations.

Size. The number of rooms for each hotel was collected. This variable measures hotel size, which has been found to be associated with hotel room rates (Öğüt \& Onur Taş, 2012). Hypothesis 4 predicts a positive and significant coefficient for size of hotel on ADR and RevPAR.

Seasonality. The low season was coded as " 0 " and the high season was coded as "1." Hypothesis 5 predicts hotels have higher ADR and RevPAR in high season compared to low season.

Moreover, the following control variables were included in the regression model:

Total passengers. The number of total passengers that arrived at SWFL airport each month in the past years was collected. Hypothesis 4 predicts a positive and significant coefficient for number of tourists.

Age. Years of hotel operations were collected. According to the revenue managers we interviewed, newer hotels tend to have higher prices.

Occupancy. The occupancy percentage is also included in the regression model.

## Assumptions Testing

Several assumptions were examined in order to run the multiple regression analysis properly. To be specify, heteroscedasticity was checked through a statistical diagnosis; linearity and multicollinearity of the relationship between the independent variables and the dependent variables were examined through residual plots; a Durbin-Watson test was conducted to test the model for autocorrelation. All assumptions were met so the data is appropriate for analysis.

## Results

## Descriptive Statistics

With a total of 14,766 valid observations collected in our sample, ADR has an average of $\$ 125.65$ with
a standard deviation of 56.63 , ranging from $\$ 30.31$ to $\$ 659.04$; RevPAR has an average of $\$ 85.91$ with a standard deviation of 59.06, ranging from $\$ 7.13$ to $\$ 605.8$. Table 1 presents the descriptive statistics of independent variables.

As shown in Table 1, the occupancy rate of hotels ranged from $10.5 \%$ to $100 \%$, with an average of $63.05 \%$, which is about the same as the nationally occupancy rate (66.1\%) in 2018 (Statista, 2019). Age of hotel ranged from 14 years to 71 years in our sample. Total passengers ranged from 328,278 (Sept. 2008) to $1,269,961$ (Mar. 2016), with an average of 649,234 people arriving at SWFL international airport (airport code: RSW).

About $10 \%$ of the hotels in the sample were luxury class ( $9.8 \%$ ), followed by upper upscale (19.6\%), upscale (23.5\%), upper midscale (19.6\%), midscale (19.6\%), and only about $8 \%$ of the hotels were economy hotels ( $7.8 \%$ ). Figure 1 shows the pie graph of hotel class in the sample. Over $60 \%$ of the hotels in the sample were franchised hotels ( $62.7 \%$ ), followed by independent hotels ( $25.5 \%$ ) and chain operated hotels ( $11.8 \%$ ). One-third of the hotels were resort hotels (33.3\%) while the second most popular location was suburban (29.4\%), followed by town (23.5\%), interstate (11.8\%), and urban (2\%). Most of the hotels in the sample have 75 to 149 rooms (66.7\%), and less than $10 \%$ of them have more than 300 rooms (7.8\%).

## Estimation Results

Table 2 presents the estimation results from regression analysis with ADR as the dependent variable. With adjusted $\mathrm{R}^{2}$ ranging from $69.2 \%$ to $71.1 \%$ between Model 1 and Model 5, the models fit the data well. From Model 1 to Model 5, independent variables of interests were introduced successively to the regression model. Model 1, which serves as a benchmark model, includes hotel class variables only in addition to control variables. The coefficients of five hotel classes (luxury, upper upscale, upscale, upper midscale, and midscale) were positive and statistically significant, and luxury class had the largest estimated coefficient and the midscale class had the smallest. The results showed that luxury hotels offer the highest ADR, followed by other levels of class, in consecutive order. Therefore, Hypothesis la is supported by our estimation results.

Table 1. Descriptive Statistics $(N=14766)$

| Dependent Variables | Mean (Std. Dev.) | Min.-Max. |
| :---: | :---: | :---: |
| ADR | 125.65 | 30.31-659.04 |
| RevPAR | 85.91 | 7.13-605.8 |
| Independent Variables (Continuous) | Mean (Std. Dev.) | Min-Max |
| Occupancy | 63.05 (19.42) | 10.5-100 |
| Age of Hotel | 26.59 (11.58) | 14-71 |
| Total Passengers | 649,234.56 $(207,005.37)$ | 328,278-1,269,961 |
| Independent Variables (Categorical) | Percent | Cum. Percent |
| Class = Luxury | 9.8 | 9.8 |
| Class = Upper Upscale | 19.6 | 29.4 |
| Class = Upscale | 23.5 | 52.9 |
| Class = Upper Midscale | 19.6 | 72.5 |
| Class = Midscale | 19.6 | 92.2 |
| Class = Economy | 7.8 | 100.0 |
| Operation $=$ Chain Operated | 11.8 | 11.8 |
| Operation $=$ Franchised | 62.7 | 74.5 |
| Operation = Independent | 25.5 | 100.0 |
| Location = Urban | 2.0 | 2.0 |
| Location = Suburban | 29.4 | 31.4 |
| Location = Interstate | 11.8 | 43.1 |
| Location $=$ Resort | 33.3 | 76.5 |
| Location = Town | 23.5 | 100.0 |
| Size $=$ Less than 75 Rooms | 11.8 | 11.8 |
| Size $=75-149$ Rooms | 66.7 | 78.4 |
| Size $=150-299$ Rooms | 13.7 | 92.2 |
| Size $=300-500$ Rooms | 7.8 | 100.0 |
| Season = Low Season | 50.0 | 50.0 |
| Season = High Season | 50.0 | 100.0 |



Figure 1. Sample by Hotel Class
In Model 2, hotel operation variables were added to Model 1 to test Hypothesis 2, and the coefficient of operation = independent was estimated to be significant and positive, while the coefficient of operation = chain-operated was estimated to be significant and negative. These results suggested that independent hotels tend to have higher ADR compared to chainoperated hotels, which is the opposite of Hypothesis 2a. Therefore, Hypothesis 2a is not supported. In Model 3, location was added to test Hypothesis 3a. The coefficient of location = resort was estimated to be significant and positive while other locations were
not significant, indicating that resort hotels tend to have higher ADR than hotels in other locations. Therefore, Hypothesis 3a is supported. In Model 4, size was added to test Hypothesis 4a. The coefficient of all different sizes (except more than 300 rooms, which was eliminated by the model) were estimated to be significant and positive; and size $=150-299$ rooms had the largest estimated coefficient, followed by size $=75-149$ rooms, then size $=$ less than 75 rooms. These results suggest that the larger the hotel, the higher ADR they have. Thus, Hypothesis 4a is supported. In the last model, seasonality was added to test Hypothesis 5a. It is not surprising that the coefficient of high season was estimated to be significant and positive, which suggested that hotels in high season have higher ADR than in the low season. Thus, Hypothesis 5 a is supported.

Table 3 presents the estimation results from regression analysis with RevPAR as the dependent variable. With adjusted $\mathrm{R}^{2}$ ranging from $72 \%$ to $73.6 \%$ between Model 1 and Model 5, the models fit the data well. From Model 1 to Model 5, independent variables of interests were introduced successively

Table 2. Estimation Results from Regression Analysis (Dependent Variable $=A D R$ )

|  | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Class = Luxury | $\begin{gathered} 210.036^{* * *} \\ (2.167) \end{gathered}$ | $\begin{gathered} 205.367^{* * *} \\ (2.563) \end{gathered}$ | $\begin{gathered} 198.454^{* * *} \\ (2.711) \end{gathered}$ | $\begin{gathered} 202.918^{* * *} \\ (3.062) \end{gathered}$ | $\begin{gathered} 203.546 * * * \\ (3.043) \end{gathered}$ |
| Class $=$ Upper Upscale | $\begin{gathered} 113.053^{* * *} \\ (1.918) \end{gathered}$ | $\begin{gathered} 108.354^{* * *} \\ (2.241) \end{gathered}$ | $\begin{gathered} 102.513^{* * *} \\ (2.437) \end{gathered}$ | $\begin{aligned} & 83.956^{* * *} \\ & (2.812) \end{aligned}$ | $\begin{aligned} & 84.570^{* * *} \\ & (2.795) \end{aligned}$ |
| Class $=$ Upscale | $\begin{aligned} & 54.630^{* * *} \\ & (1.861) \end{aligned}$ | $\begin{aligned} & 53.302^{* * *} \\ & (1.894) \end{aligned}$ | $\begin{gathered} 102.513^{* * *} \\ (2.437) \end{gathered}$ | $\begin{aligned} & 48.395^{* * *} \\ & (1.967) \end{aligned}$ | $\begin{aligned} & 48.831^{* * *} \\ & (1.955) \end{aligned}$ |
| Class $=$ Upper Midscale | $\begin{aligned} & 39.884^{* * *} \\ & (1.859) \end{aligned}$ | $\begin{aligned} & 39.489^{* * *} \\ & (1.852) \end{aligned}$ | $\begin{aligned} & 51.038^{* * *} \\ & (2.001) \end{aligned}$ | $\begin{aligned} & 36.293^{* * *} \\ & (1.923) \end{aligned}$ | $\begin{aligned} & 36.593^{* * *} \\ & (1.911) \end{aligned}$ |
| Class $=$ Midscale | $\begin{aligned} & 23.659^{* * *} \\ & (1.841) \end{aligned}$ | $\begin{aligned} & 25.717^{* * *} \\ & (1.889) \end{aligned}$ | $\begin{aligned} & \text { 19.952*** } \\ & (1.985) \end{aligned}$ | $\begin{aligned} & 25.349^{* * *} \\ & (1.936) \end{aligned}$ | $\begin{aligned} & 25.573^{* * *} \\ & (1.924) \end{aligned}$ |
| Operation $=$ Chain Operated |  | $\begin{gathered} -14.243^{* *} \\ (1.826) \end{gathered}$ | $\begin{gathered} -13.657^{* *} \\ (1.971) \end{gathered}$ | $\begin{gathered} -26.794^{* *} \\ (2.113) \end{gathered}$ | $\begin{gathered} -26.563^{* *} \\ (2.100) \end{gathered}$ |
| Operation $=$ Independent |  | $\begin{aligned} & 7.933^{* *} \\ & (1.631) \end{aligned}$ | $\begin{aligned} & 6.240^{* *} \\ & (1.622) \end{aligned}$ | $\begin{aligned} & 12.806^{* *} \\ & (1.839) \end{aligned}$ | $\begin{aligned} & 12.624^{* *} \\ & (1.828) \end{aligned}$ |
| Location $=$ Urban |  |  | $\begin{array}{r} -24.275 \\ (3.612) \end{array}$ | $\begin{array}{r} -12.756 \\ (3.512) \end{array}$ | $\begin{array}{r} -12.895 \\ (3.490) \end{array}$ |
| Location $=$ Suburban |  |  | $\begin{array}{r} -17.289 \\ (1.371) \end{array}$ | $\begin{array}{r} -12.893 \\ (1.346) \end{array}$ | $\begin{array}{r} -12.929 \\ (1.338) \end{array}$ |
| Location $=$ Interstate |  |  | $\begin{array}{r} -20.188 \\ (1.655) \end{array}$ | $\begin{array}{r} -14.779 \\ (1.603) \end{array}$ | $\begin{array}{r} -15.008 \\ (1.593) \end{array}$ |
| Location $=$ Resort |  |  | $\begin{aligned} & 13.652^{* * *} \\ & (1.256) \end{aligned}$ | $\begin{aligned} & \text { 7.754*** } \\ & (1.231) \end{aligned}$ | $\begin{aligned} & 7.662^{* * *} \\ & (1.223) \end{aligned}$ |
| Size $=$ Less than 75 Rooms |  |  |  | $\begin{aligned} & 30.030^{* * *} \\ & (2.542) \end{aligned}$ | $\begin{aligned} & 29.848^{* * *} \\ & (2.526) \end{aligned}$ |
| Size $=75-149$ Rooms |  |  |  | $\begin{aligned} & 39.039^{* * *} \\ & (2.255) \end{aligned}$ | $\begin{aligned} & 38.719^{* * *} \\ & (2.241) \end{aligned}$ |
| Size $=150-299$ Rooms |  |  |  | $\begin{aligned} & 53.856^{* * *} \\ & (2.349) \end{aligned}$ | $\begin{aligned} & 53.759^{* * *} \\ & (2.334) \end{aligned}$ |
| Season $=$ High Season |  |  |  |  | $\begin{aligned} & 13.592^{* *} \\ & (1.451) \end{aligned}$ |
| Occupancy | $\begin{gathered} 0.044 \\ (0.035) \end{gathered}$ | $\begin{gathered} 0.055 \\ (0.035) \end{gathered}$ | $\begin{gathered} 0.031 \\ (0.034) \end{gathered}$ | $\begin{gathered} 0.079 \\ (0.034) \end{gathered}$ | $\begin{gathered} 0.058 \\ (0.034) \end{gathered}$ |
| Age | $\begin{aligned} & 0.795^{* * *} \\ & (0.045) \end{aligned}$ | $\begin{aligned} & 0.693^{* * *} \\ & (0.047) \end{aligned}$ | $\begin{aligned} & 0.657^{* * *} \\ & (0.047) \end{aligned}$ | $\begin{aligned} & 0.484^{* * *} \\ & (0.048) \end{aligned}$ | $\begin{aligned} & 0.483^{* * *} \\ & (0.048) \end{aligned}$ |
| Total Passenger | $\begin{aligned} & 0.001^{* * *} \\ & (0.421) \end{aligned}$ | $\begin{aligned} & 0.001^{* * *} \\ & (0.001) \end{aligned}$ | $\begin{aligned} & 0.001^{* * *} \\ & (0.001) \end{aligned}$ | $\begin{aligned} & 0.001^{* * *} \\ & (0.001) \end{aligned}$ | $\begin{aligned} & 0.001^{* * *} \\ & (0.001) \end{aligned}$ |
| Constant | $\begin{gathered} 124.946^{* * *} \\ (2.930) \end{gathered}$ | $\begin{gathered} 107.552^{* * *} \\ (3.890) \end{gathered}$ | $\begin{aligned} & 83.39^{* * *} \\ & (4.213) \end{aligned}$ | $\begin{aligned} & 50.266^{* * *} \\ & (5.000) \end{aligned}$ | $\begin{aligned} & 40.192^{* * *} \\ & (5.147) \end{aligned}$ |
| N | 6372 | 6372 | 6372 | 6372 | 6372 |
| $\mathrm{R}^{2}$ | 0.692 | 0.694 | 0.703 | 0.709 | 0.712 |
| Adjusted $\mathrm{R}^{2}$ | 0.692 | 0.694 | 0.703 | 0.708 | 0.711 |

Note: ${ }^{* * *}$ p $<0.001$; ${ }^{* *} \mathrm{p}<0.05 ;{ }^{*} \mathrm{p}<0.1$.
to the regression model. In Model 1, hotel class was used as the only independent variable in addition to control variables. The coefficients of five hotel classes (luxury, upper upscale, upscale, upper midscale, and midscale) were positive and statistically significant; luxury class had the largest estimated coefficient and the midscale class had the smallest. The results showed that luxury hotels have the highest RevPAR, followed by other levels of class, in consecutive order. Therefore, Hypothesis 1 b is supported.

In Model 2, hotel operation variables were added to test Hypothesis 2b. The coefficient of operation =
independent was estimated to be significant and positive, while the coefficient of operation = chainoperated was estimated to be significant and negative. These results suggested that independent hotels have higher RevPAR compared to chainoperated hotels. Therefore, Hypothesis 2 b is not supported. Figure 2 shows the ADR and RevPAR by hotel operation. Clearly, independent hotels have higher ADR (\$197) and RevPAR (\$141), followed by chain hotels ( $\$ 124$ and $\$ 84$, respectively), and franchised hotels have the lowest ADR (\$95) and RevPAR (\$63).

Table 3. Estimation Results from Regression Analysis (Dependent Variable $=$ RevPAR)

|  | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Class = Luxury | $\begin{gathered} 141.663^{* * *} \\ (1.941) \end{gathered}$ | $\begin{gathered} 137.762 * * * \\ (2.291) \end{gathered}$ | $\begin{gathered} 132.681^{* * *} \\ (2.450) \end{gathered}$ | $\begin{gathered} 137.210^{* * *} \\ (2.830) \end{gathered}$ | $\begin{gathered} 138.043 * * * \\ (2.793) \end{gathered}$ |
| Class = Upper Upscale | $\begin{aligned} & 70.829^{* * *} \\ & (1.718) \end{aligned}$ | $\begin{aligned} & 66.693^{* * *} \\ & (2.003) \end{aligned}$ | $\begin{aligned} & \text { 62.091*** } \\ & (2.203) \end{aligned}$ | $\begin{aligned} & 51.900^{* * *} \\ & (2.600) \end{aligned}$ | $\begin{aligned} & 52.714^{* * *} \\ & (2.566) \end{aligned}$ |
| Class $=$ Upscale | $\begin{aligned} & 28.953^{* * *} \\ & (1.666) \end{aligned}$ | $\begin{aligned} & 27.843^{* * *} \\ & (1.693) \end{aligned}$ | $\begin{aligned} & 25.255^{* * *} \\ & (1.809) \end{aligned}$ | $\begin{aligned} & 24.050^{* * *} \\ & (1.818) \end{aligned}$ | $\begin{aligned} & 24.627^{* * *} \\ & (1.794) \end{aligned}$ |
| Class $=$ Upper Midscale | $\begin{aligned} & 20.824^{* * *} \\ & (1.665) \end{aligned}$ | $\begin{aligned} & 20.427^{* * *} \\ & (1.656) \end{aligned}$ | $\begin{aligned} & 18.039^{* * *} \\ & (1.811) \end{aligned}$ | $\begin{aligned} & 17.039^{* * *} \\ & (1.778) \end{aligned}$ | $\begin{aligned} & 17.436^{* * *} \\ & (1.754) \end{aligned}$ |
| Class $=$ Midscale | $\begin{aligned} & 10.840^{* * *} \\ & (1.648) \end{aligned}$ | $\begin{aligned} & 13.334^{* * *} \\ & (1.688) \end{aligned}$ | $\begin{aligned} & 9.139^{* * *} \\ & (1.794) \end{aligned}$ | $\begin{aligned} & 12.816^{* * *} \\ & (1.790) \end{aligned}$ | $\begin{aligned} & 13.112^{* * *} \\ & (1.766) \end{aligned}$ |
| Operation $=$ Chain Operated |  | $\begin{array}{r} -15.100^{*} \\ (1.632) \end{array}$ | $\begin{array}{r} -15.251^{*} \\ (1.781) \end{array}$ | $\begin{array}{r} -22.674^{*} \\ (1.954) \end{array}$ | $\begin{array}{r} -22.369^{*} \\ (1.928) \end{array}$ |
| Operation $=$ Independent |  | $\begin{aligned} & 7.337^{* *} \\ & (1.458) \end{aligned}$ | $\begin{aligned} & 6.006^{* *} \\ & (1.466) \end{aligned}$ | $\begin{aligned} & 9.135^{* *} \\ & (1.700) \end{aligned}$ | $\begin{aligned} & 8.895^{* *} \\ & (1.678) \end{aligned}$ |
| Location $=$ Urban |  |  | $\begin{array}{r} -11.246 \\ (3.265) \end{array}$ | $\begin{gathered} -4.364 \\ (3.247) \end{gathered}$ | $\begin{gathered} -4.549 \\ (3.204) \end{gathered}$ |
| Location $=$ Suburban |  |  | $\begin{array}{r} -11.254 \\ (1.239) \end{array}$ | $\begin{gathered} -8.618 \\ (1.244) \end{gathered}$ | $\begin{gathered} -8.666 \\ (1.228) \end{gathered}$ |
| Location $=$ Interstate |  |  | $\begin{array}{r} -10.116 \\ (1.495) \end{array}$ | $\begin{gathered} -6.661 \\ (1.482) \end{gathered}$ | $\begin{gathered} -6.964 \\ (1.463) \end{gathered}$ |
| Location $=$ Resort |  |  | $\begin{aligned} & \text { 7.639** } \\ & (1.136) \end{aligned}$ | $\begin{aligned} & 4.011^{* *} \\ & (1.138) \end{aligned}$ | $\begin{aligned} & 3.889^{* *} \\ & (1.123) \end{aligned}$ |
| Size $=$ Less than 75 Rooms |  |  |  | $\begin{aligned} & \text { 20.000** } \\ & (2.350) \end{aligned}$ | $\begin{aligned} & \text { 19.759** } \\ & (2.319) \end{aligned}$ |
| Size $=75-149$ Rooms |  |  |  | $\begin{aligned} & 23.019^{* *} \\ & (2.085) \end{aligned}$ | $\begin{aligned} & 22.596^{* *} \\ & (2.057) \end{aligned}$ |
| Size $=150-299$ Rooms |  |  |  | $\begin{aligned} & 33.895^{* *} \\ & (2.172) \end{aligned}$ | $\begin{aligned} & 33.766^{* *} \\ & (2.143) \end{aligned}$ |
| Season $=$ High Season |  |  |  |  | $\begin{aligned} & 18.007^{* * *} \\ & (1.333) \\ & \hline \end{aligned}$ |
| Occupancy | $\begin{aligned} & 1.042^{* *} \\ & (0.030) \end{aligned}$ | $\begin{aligned} & 1.054^{* *} \\ & (0.030) \end{aligned}$ | $\begin{aligned} & 1.039^{* *} \\ & (0.030) \end{aligned}$ | $\begin{aligned} & 1.069^{* *} \\ & (0.030) \end{aligned}$ | $\begin{aligned} & 1.041^{* *} \\ & (0.029) \end{aligned}$ |
| Age | $\begin{aligned} & 0.550^{* * *} \\ & (0.039) \end{aligned}$ | $\begin{aligned} & 0.437^{* * *} \\ & (0.041) \end{aligned}$ | $\begin{aligned} & 0.413^{* * *} \\ & (0.040) \end{aligned}$ | $\begin{aligned} & 0.303^{* * *} \\ & (0.042) \end{aligned}$ | $\begin{aligned} & 0.302^{* * *} \\ & (0.042) \end{aligned}$ |
| Total Passenger | $\begin{aligned} & 0.001^{* * *} \\ & (0.001) \end{aligned}$ | $\begin{aligned} & 0.001^{* * *} \\ & (0.001) \end{aligned}$ | $\begin{aligned} & 0.001^{* * *} \\ & (0.001) \end{aligned}$ | $\begin{aligned} & 0.001^{* * *} \\ & (0.001) \end{aligned}$ | $\begin{aligned} & 0.001^{* * *} \\ & (0.001) \end{aligned}$ |
| Constant | $\begin{aligned} & 9.077^{* * *} \\ & (2.521) \end{aligned}$ | $\begin{gathered} -10.300^{* * *} \\ (3.340) \end{gathered}$ | $\begin{gathered} -26.081^{* * *} \\ (3.639) \end{gathered}$ | $\begin{gathered} -47.268^{* * *} \\ (4.339) \end{gathered}$ | $\begin{gathered} -60.489^{* * *} \\ (4.441) \end{gathered}$ |
| N | 6372 | 6372 | 6372 | 6372 | 6372 |
| $\mathrm{R}^{2}$ | 0.720 | 0.723 | 0.728 | 0.731 | 0.736 |
| Adjusted $\mathrm{R}^{2}$ | 0.720 | 0.723 | 0.728 | 0.731 | 0.736 |

Note: ${ }^{* * *}$ p $<0.001$; **p 0.05; ${ }^{*}$ p $<0.1$.

In Model 3, location was added to test Hypothesis 3b. The coefficient of location = resort was estimated to be significant and positive while other locations were not significant, indicating that resort hotels have higher RevPAR than hotels in other locations. Therefore, Hypothesis 3b is supported. Figure 3 shows the ADR and RevPAR by hotel location.

In Model 4, size was added to test Hypothesis 4 b . The coefficient of all different sizes (except more than 300 rooms, which was eliminated by the model) were estimated to be significant and positive; size $=150-299$ rooms had the largest estimated
coefficient, followed by size $=75-149$ rooms, then size $=$ less than 75 rooms. These results suggested that the larger the size of the hotel, the higher the RevPAR they have. Therefore, Hypothesis 4b is supported. In Model 5, seasonality was added to test Hypothesis 5b. The coefficient of high season was estimated to be significant and positive, which suggested that hotels in high season have higher RevPAR than in the low season. Thus, Hypothesis 5 b is supported.

The estimation results for control variables show some interesting findings. The coefficient of


Figure 2. ADR and RevPAR by Hotel Operation


Figure 3. ADR and RevPar by Hotel Location
occupancy was not significant to ADR (see Table 2), which suggested that occupancy is not a price determinant. However, the coefficient of occupancy was significant to RevPAR (see Table 3), which showed it is an important indicator of RevPAR. The coefficient of age was estimated to be significant and positive to both ADR and RevPAR, suggesting that older hotels have higher ADR and RevPAR. The coefficient of total passengers was estimated to be significant and positive to both ADR and RevPAR, which suggested that the more passengers who arrive at the

SWFL airport, the higher ADR and RevPAR hotels will have.

## Discussion

The purposes of this study were to investigate the price determinants for hotels in the United States and to explore how those determinants (i.e., hotel class, hotel operation, location, size, and seasonality) affect profitability and the decision-making when hotel management creates pricing strategies.

Class is an industry categorization that includes chain-affiliated and independent hotels. The class for a chain-affiliated hotel is the same as its chain scale. An independent hotel is assigned a class based on its average daily rate (ADR), relative to that of chain-affiliated hotels in its geographic proximity. Six location categories are used in this study, including urban, suburban, airport, interstate, resort, and town. Three types of hotel operation (chain-operated, franchised, and independent) were included in this study. Size was measured by the number of rooms for each hotel.

The research highlighted how demand in a resort area can affect price determinants. Prior research, such as Hung et al. (2010), Kim (2010), Lee (2011) and Pawlicz and Napierala (2017), investigated other determinants of hotel pricing using other variables. Five group of hypotheses were tested in this study using regression analysis. Data from STR was used for the analysis.

The findings showed that all five factors (hotel class, hotel operation, location, size, and seasonality) are significant determinants of ADR and RevPAR. However, it is interesting that independent hotels have higher ADR and RevPAR than chain-operated or franchised hotels, which was an opposite result compared to Hypothesis 2. This result needs further investigation, but one possible reason is that the sample used in this study was in southwest Florida, which is known as a resort area where there are many upper level independent hotels. Overall, all the hypotheses but Hypothesis 2 were supported by the findings.

## Theoretical Implications

This present research contributes to the literature by testing the determinants of hotel prices and profitability. Specifically, the research extends the literature on revenue management and the importance of ADR and RevPAR. It also adds to the conversation by highlighting variables', such as hotel class's, influence on pricing strategies.

## Practical Implications

From a management perspective, this research emphasized the importance of revenue management principles when pricing rooms and the importance
of monitoring when demand has the potential to increase. It provides hoteliers with guidelines for price determinants and emphasizes the importance of the five factors (hotel class, hotel operation, location, size, and seasonality) tested, and their significance relationship to profitability. Specifically, the implications to hoteliers is the role of occupancy, which was not found to be significant for price determinants, instead was found significant for RevPAR.

A takeaway for hoteliers is the influence of independent hotels compared to chain hotels in the areas of ADR and RevPAR. Another takeaway is that price determinants in a report area can be influenced by demand. The importance of independent hotels in SWFL and their ability to influence pricing strategies should be significant to hoteliers. However, some other variables that were previously explored, like market conditions and number of housekeeping staff per room (Kim, 2010; Pawlicz \& Napierala, 2017), competitions (Kim, 2010; Hung et al., 2010), and attributes of hotels (Pawlicz \& Napierala, 2017), were not examined in this study. As a result, this research added new variables to the investigation.

## Conclusion

While the study findings provide some insights into price determinants, further research on price determinants is warranted. Overall, the results suggested that pricing determinants is important in revenue management and proposed some clear guidelines on determinants to consider when making pricing decisions in resort areas:

Independent hotels have higher ADR and RevPAR than chain hotels.
Franchised hotels have the lowest ADR and RevPAR compared to other types. Occupancy is not a price determinant. Older hotels have higher ADR and RevPAR. Increase in passenger arrivals will affect ADR and RevPAR.

The five hypotheses tested depicted the importance of price determinants in revenue management decisions but also emphasize more rigorous examinations of the perceived importance of the variables in revenue management in extending the study.

## Limitations and Future Study

Although this study provides important managerial and theoretical implications, the study used only Southwest Florida, a resort area, as the sample. Future research should address extending the study to non-resort areas, testing the same variables for comparison. It is possible that price determinants in other areas will be significantly different. However, more theoretical and practical aspects of price determinants in SWFL and other key areas would increase the knowledge of revenue management and profitability, and their influence on the variables tested.

## References

Anderson, C. K., \& Xie, X. (2010). Improving hospitality industry sales: Twenty-five years of revenue management. Cornell Hospitality Quarterly, 51(1), 53-67.
Barsky, J. \& Nash, L. (2006). Hotel seasonality impacts guest experience. Hotel \& Motel Management. http://www .advancedfeedback.com/content-files/HotelSeasonality.pdf
Baum, T. (1999). Seasonality in tourism: Understanding the challenges. Tourism Economics, 5(1), 5-8.
Erdem, M., \& Jiang, L. (2016). An overview of hotel revenue management research and emerging key patterns in the third millennium. Journal of Hospitality and Tourism Technology, 7(3), 300-312.
Espinet, J. M., Saez, M., Coenders, G., \& Fluvià, M. (2003). Effect on prices of the attributes of holiday hotels: A hedonic prices approach. Tourism Economics, 9(2), 165-177.
Hung, W. T., Shang, J. K., \& Wang, F. C. (2010). Pricing determinants in the hotel industry: Quantile regression analysis. International Journal of Hospitality Management, 29(3), 378-384.
Israeli, A. A. (2002). Star rating and corporate affiliation: their influence on room price and performance of hotels
in Israel. International Journal of Hospitality Management, 21(4), 405-424.
Kim, J.-W., Jang, S., Kang, S., \& Kim, S. (2018). Why are hotel room prices different? Exploring spatially varying relationships between room price and hotel attributes. Journal of Business Research. https://doi.org/10.1016/j. jbusres.2018.09.006
Kim, Y. (2010). Competitive dynamics and strategic pricing decisions: Observations from the lodging industry. [Doctoral dissertation, Pennsylvania State University].
Lee, C. (2011). The determinants of hotel room rates: Another visit with Singapore's data. International Journal of Hospitality Management, 30(3), 756-758.
Lee, S. \& Jang, S. (2013). Asymmetry of price competition in the lodging market. Journal of Travel Research, 52(1), 56-67.
McGill, J. I., \& Van Ryzin, G. J. (1999). Revenue management: Research overview and prospects. Transportation science, 33(2), 233-256.
Monty, B., \& Skidmore, M. (2003). Hedonic pricing and willingness to pay for bed and breakfast amenities in southeast Wisconsin. Journal of Travel Research, 42(2), 195-199.
Öğüt, H., \& Onur Taş, B. K. (2012). The influence of internet customer reviews on the online sales and prices in hotel industry. Service Industries Journal, 32(2), 197-214.
Pawlicz, A., \& Napierala, T. (2017). The determinants of hotel room rates: an analysis of the hotel industry in Warsaw, Poland. International Journal of Contemporary Hospitality Management, 29(1), 571-588.
Rodríguez-Díaz, M., Rodríguez-Díaz, R., Rodríguez-Voltes, A., \& Rodríguez-Voltes, C. (2018). Analysing the relationship between price and online reputation by lodging category. Sustainability, 10(12), 4474.
Statista. (2019). Hotel occupancy rate of the United States from 2001 to 2018. https://www.statista.com/statistics/200161/ us-annual-accomodation-and-lodging-occupancy-rate/
Thrane, C. (2007). Examining the determinants of room rates for hotels in capital cities: The Oslo experience. Journal of Revenue and Pricing Management, 5(4), 315-323.
Wu, L. (1998), The pricing of a brand name product: Franchising in the motel services industry, Journal of Business Venturing, 14, 87-102.

