แบบจำลองการทำนายราคาห้องพักเฉลี่ยต่อคืนของรีสอร์ทริมทะเล ระดับ 5 ดาวในประเทศไทย[1]

Average Daily Rate (ADR) Prediction Model for 5-Star Beachfront Resorts in Thailand

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บทคัดย่อ

วัตถุประสงค์หลักของงานวิจัยนี้คือการนำเสนอแบบจำลองการพยากรณ์ราคาห้องพักเฉลี่ยต่อคืนสำหรับรีสอร์ทริมทะเลระดับ 5 ดาวในประเทศไทยด้วยวิธีการวิเคราะห์ราคาแบบเฮดอนิค ซึ่งกำหนดให้ราคาห้องพักเฉลี่ยต่อคืนเป็นตัวแปรตามและกำหนดให้ระดับของโรงแรม สิ่งอำนวยความสะดวกและทำเลที่ตั้งซึ่งเป็นตัวแปรที่ได้จากการทบทวนวรรณกรรมและข้อแนะนำจากผู้เชี่ยวชาญในธุรกิจรีสอร์ทเป็นตัวแปรอิสระในการวิเคราะห์ และใช้วิธีการวิเคราะห์ปัจจัยเพื่อรวมตัวแปรอิสระที่มีความสัมพันธ์กันเพื่อป้องกันปัญหาตัวแปรอิสระมีความสัมพันธ์กัน แบบจำลองถูกสร้างขึ้นจากข้อมูลของรีสอร์ทริมทะเลระดับ 5 ดาวจำนวน 101 รีสอร์ท ซึ่งสมการแบบ log-linear เป็นรูปแบบสมการที่มีความเหมาะสมที่สุด มีค่า Adjusted R^2 เท่ากับ 0.728 และได้ผ่านการตรวจสอบความแม่นยำในการพยากรณ์ด้วยค่าสถิติ Theil's U และ Pair-sample t-test ผลการวิจัยพบว่ามี 7 ตัวแปรที่มีผลต่อ ADR เรียงตามลำดับความสำคัญได้ดังนี้ 1) คะแนนประสิทธิภาพของพนักงาน 2) คะแนนมาตรฐานของห้องพัก 3) คะแนนเรื่องทำเลที่ตั้ง 4) รีสอร์ทตั้งอยู่ที่เกาะสมุยหรือไม่ 5) รีสอร์ทตั้งอยู่ที่จังหวัดภูเก็ตหรือไม่ 6) ขนาดห้องพักเฉลี่ย และ 7) ความกว้างชายหาดหน้าโรงแรม แบบจำลองที่ได้สามารถนำไปใช้ประกอบการวิเคราะห์ของนักลงทุน นักพัฒนารีสอร์ท ผู้ประเมินมูลค่ารีสอร์ท และการกำหนดราคาขายห้องพักได้

คำสำคัญ: ราคาห้องพักเฉลี่ยต่อคืน, รีสอร์ทริมทะเล, การวิเคราะห์ราคาแบบเฮดอนิค, การวิเคราะห์การถดถอยพหุ

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[1]บทความนี้เป็นส่วนหนึ่งของโครงการวิจัย ดร.วรากร ลิขิตอนุภาค **เรื่องแบบจำลองการพยากรณ์ราคาห้องพักเฉลี่ยต่อคืนของโรงแรมในเมือง และ รีสอร์ท ระดับ 3-5 ดาว ในประเทศไทย สำหรับลูกค้าที่จองห้องพักผ่านตัวแทนขายแบบออนไลน์.**ซึ่งเป็นส่วนหนึ่งของดุษฎีนิพนธ์หลักสูตรปรัชญาดุษฎีบัณฑิต, สาขาวิชาสหวิทยาการสภาพแวดล้อมสรรค์สร้าง, คณะสถาปัตยกรรมศาสตร์และการผังเมือง,มหาวิทยาลัยธรรมศาสตร์.

Abstract

The main objective of this research was to propose an ADR (Average Daily Rate) prediction model for 5 star beachfront resorts in Thailand using the Hedonic Price Model. The dependent variable was the ADR and the independent variables were classified into three groups: 1) resort's rating, 2) resort's facilities, and 3) resort's location, which were derived from the literature review and suggestions from experts. Factor analysis was then adopted to merge the high correlation independent variables to prevent a multicollinearity problem. The data from 101 resorts were collected. The results showed that there were seven variables affecting the ADR, when sorted by their effects on the ADR: 1) score of staff performance, 2) room standard score, 3) location overview score, 4) resort located in KohSamui or not, 5) resort located in Phuket or not, 6) resort's average room size, and 7) beach width. After testing for the best fit model, the log-linear model was selected with the highest Adjusted R^2 value of 0.728. The model verification was conducted using a pair-sample t-test, and Theil's U statistic met the statistical requirements. This showed that the proposed model could be used to provide useful information for investors or developers regarding resort value appraisal or for the setting of the resort's room rates.

Keyword: Average Daily Rate (ADR), beachfront resort, Hedonic Price Model, Multiple Regression Analysis

1. Introduction

According to the World Tourism Organization [UNWTO] (2015), Thailand had the ninth position in the top ten list of international tourist countries, and the revenues from tourism in 2013 and 2014 were about 41.8 billion USD and 38.4 billions USD, respectively. Moreover, several beach destinations were selected as top ranking destinations by two well-known travel advice websites: journey.symphonyoflove.net (2016) and Tripadvisor.com (2016) suggested Phuket, PhangNga, Samui, Pattaya, HuaHin and Krabi. Therefore, Thai beachfront resort is one of the most important sectors in the world's hospitality business.

In addition, information from Thailand's Annual Registration Statement (56-1 Form) from 2012 to 2014 for three Thai listed hospitality companies on the Stock Exchange of Thailand, i.e. Central Plaza Hotel Public Company Limited (CENTEL, 2015), DusitThani Public Company Limited (DTC, 2015), and Grande Asset Hotels and Property Public Company Limited (GRAND, 2015), showed that room revenue contributed more than 50% of their total revenues. According to a survey by Thailand's National Statistical Office (2013), room revenues for hotels in all regions of Thailand were about 67.20% of the total hotel revenues. From Raleigh and Roginsky (1999: 151-152), it was found that room revenue directly affects a hotel's value when it is appraised by the income approach, which is widely adopted in hotel value appraisal because the value is related to its future net cash flow. Therefore, an important indicator for evaluating hotel revenue is the room revenue, which directly varies with the Average Daily Rate (ADR) as in the following formula (Raleigh and Roginsky, 1999: 198). The ADR is calculated for a specific time period, such as daily, monthly, quarterly, or yearly, in Baht (Thailand's currency) per room per night.

$$ADR = \frac{\text{Room Revenue}}{\text{Number of Room Sold}} \quad (1)$$

Due to the importance of room revenue, the ADR is very important for decision making in hotel investment. The widely accepted method to estimate the ADR is a market approach, which uses limited information about the hotels' physical attributes (Gray and Liguori, 2003: 47). Furthermore, the result of this method does not incorporate the effects of each independent factor on the hotel's ADR. There has been a lot of research work studying ADR prediction models from the hotel's physical attributes and environmental surroundings in several regions around the world, for which the results of a study in one

region appear to differ from those in another region. Therefore, prediction models from previous research work cannot be directly applied to predict the ADR of Thai beachfront resorts. In addition, the outstanding benefit of this research is that beachfront resort investors and developers can use the acquired determinants and their correlation coefficients, as well as the ADR prediction models, as supporting data when making decisions for several key business operations, such as project feasibility studies, setting of room rates, resort value appraisal, and resort renovation for higher room rates. Finally, academia will also benefit from the acquired determinants and ADR prediction model applicable to beachfront resorts in Thailand as another source of information for further research.

2. Research Objectives

1. Analyze the determinants that affect the ADR of Thai 5-star beachfront resorts.
2. Create an ADR prediction model for Thai 5-star beachfront resorts.

3. Literature Review

The Hedonic Price Model is adapted to determine the significant determinants that affect the price. It is a goods' implicit price model derived using Multiple Regression Analysis (Rosen, 1974). Several researchers have adopted this method to analyze hotels' ADRs (room price). For example, White and Mulligan (2002) studied 584 hotels in four states in the United States of America (Arizona, Colorado, New Mexico, and Utah) and proposed linear-form regression models with 0.570 - 0.583 Adjusted R^2 values. There were four significant determinants in the models: 1) hotel's brand, 2) average room size, 3) CBD location, and 4) location in travel destination. In Israel, Israeli (2002) found three significant determinants from 215 hotels and linear-form regression models were proposed with 0.620-0.820 Adjusted R^2 values. Moreover, Monty and Skidmore (2003) studied 15 bed-and-breakfasts in Wisconsin, USA, and the best fit models were proposed with natural log-linear regression models with 0.605 – 0.714 Adjusted R^2 values and three significant determinants: 1) location attributes, 2) increasing weekend price from week day price, and 3) increasing price during travel-season. In the next four years, Thrane (2007) collected data from 74 hotels in Oslo, Norway, and reported the best fit models were log-linear regression models with 0.703 - 0.705 Adjusted R^2 values. Moreover, it was found that the room rates were affected by some physical attributes: the availability of a minibar, hair dryer, room service, and free parking. However,

hotel brand and distance from the city center were also significant. In other research in Italy, Abrate, Capriello and Fraquelli (2011) studied 140 hotels in Turin and found that the best fit model was a natural log-linear regression model with a 0.780 Adjusted R^2 value and two significant determinants: 1) star rating and 2) hotel's facilities. In the same year, Rigall-I-Torrent and Fluvia (2011) studied 197 hotels in Costa Brava, Spain, and proposed a linear-form regression model with a 0.808 adjusted R^2 value. They reported four significant determinants: star rating, hotel facilities, private beach availability (presence or absence), and usable beach availability (presence or absence).

In Asia, Chen and Rothschild (2010) collected data from 73 hotels in Taipei and proposed log-linear regression models with 0.681 - 0.703 Adjusted R^2 values. There were four significant determinants in this research: 1) hotel's brand, 2) average room size, 3) hotel's facilities, and 4) CBD location. Andersson (2010) collected data from 69 hotels in Singapore and a natural log-linear regression model with a 0.892 Adjusted R^2 value was proposed. In Thailand, Likitanupak and Tochaiwat (2016a) collected data from 461 hotels in Bangkok and 335 hotels in provincial cities. They proposed log-linear regression models for both the hotels in Bangkok and those in provincial cities with 0.843 and 0.749 Adjusted R^2 values, respectively. The most significant determinant in both models was the star rating. In the same year, Likitanupak and Tochaiwat (2016b) also studied 233 three star hotels in Bangkok and proposed a log-linear regression model with a 0.548 Adjusted R^2 value. They reported that the hotel's location was the most significant determinant followed by the hotel's facilities.

From the previous research works considered above, the significant determinants could be classified into three groups: 1) rating, 2) physical attributes, and 3) location attributes, which consist of seven determinants as presented in Table 1.

Group	Determinants
Rating	1. Star Rating
	2. Resort's Brand
Physical Attributes	3. Amount of Rooms
	4. Average Room Size
	5. Resort's Facilities
Location Attributes	6. Beach Attributes
	7. Travel Destination (famous beach, street, temple, cape, etc.)

Table 1: Summary of Significant Determinants from Previous Research in Literature

4. Methodology

This research analyzed the beachfront resorts' price determinants, which affect the resorts' ADRs, using the Hedonic Price Model. The resorts' room price data were collected from www.agoda.com and their ADRs were analyzed by the researchers and input as the dependent variable. Moreover, the resort's attributes, such as location, facilities, and physical characteristics, were collected from public information or the resorts' staff, and these data were input as the independent variables. In addition, the accuracy of the acquired regression model was tested using a pair-sample t-test and Theil's U Test.

According to Halvorsen and Pollakowski (1981), there is no general model form for the Hedonic Price Model. However, the regression forms most commonly proposed in previous research work are listed below:

1. linear-linear form,
2. log-linear form, transforming dependent variable by taking logarithm,
3. linear-log form, transforming independent variables by taking logarithm,
4. log-log form, transforming both variables by taking logarithm.

For Multiple Regression Analysis, a multicollinearity problem can occur when any pair of independent variables has a correlation greater than 0.75 (Prasith-rathsint and Sukkasem, 1993: 45). In addition, the Variance Inflation Factor (VIF) is one of the effective multicollinearity investigating indicators. The VIF for each selected independent variable should not be more than 10 (Panichwong, 2002: 166). In summary, there are four statistical criteria to determine the best fit model, as presented in Table 2.

Statistical Criteria	Condition	Statistical Meaning
Sig. Values of Independent Variables	All variables have t-test significance values not less than 0.05.	All variables in the model are significant.
Adjusted R^2	As much as possible.	The higher the value, the closer the data are to the expectations of the regression model.
VIF	Not more than 10.	No multicollinearity of the independent variables.
Residual	1. Residuals are normally distributed. 2. Residuals' mean is equal to zero. 3. There is no heteroscedasticity problem. 4. No relationship between each residual. (Durbin-Watson Statistic is between 1.50 to 2.50.)	All conditions of the residuals from Multiple Regression Analysis are satisfied.

Table 2: Statistical Criteria for Best Fit Model.

Furthermore, the Stepwise Regression Method was applied to select the independent variables to use with the models. It analyzes the previously inserted variables and the last inserted variable together when a new variable is inserted into the model.

Finally, the adopted models were tested using pair-sample t-test and Theil's U test with the data from 30 beachfront resorts, which had not been used in the Multiple Regression Analysis process. The pair-sample t-test compared the means of the observed ADRs and the means of the ADRs calculated from the models at the 0.05 significance level to verify the accuracy of the models, while Theil's U test gives values between 0 and 1 when the examined model is accurate or, on the other hand, values of more than 1 indicate that the examined model is inaccurate. The lower the value the test shows, the more accurately the model can predict its dependent variable (Makridakis, Wheelright and McGee, 1983: 50-52).

5. Hypothesis

The research framework presented in Figure 1 establishes the hypotheses that either one or more independent variables (rating variables, physical attribute variables, and location attribute variables) have an effect on the dependent variable, or the ADR of the Thai beachfront resorts.

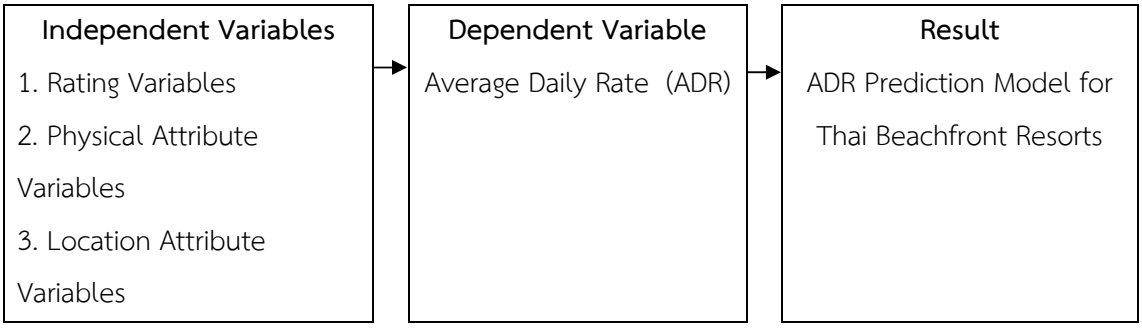

Figure 1: Research's Variable Framework.

6. Data

As mentioned above, there were three groups of independent variables: 1) rating, for which the authors put a "R" in front of the variables' names, 2) physical attributes, with a "P" in front of the variables' names, and 3) location attributes, with a "L" in front of the variables' names. Before the researchers began to collect the required data, all variables were verified by thirteen experts who were in high-level management in the hotel business with more than five-years' experience. The experts' details are presented in Table 3.

No.	Role	Organization	Number of Hotels Responsible For
1	Management in Sales and Marketing	Listed Company in Hotel Business	5
2	Management in Finance	Listed Company in Hotel Business	26
3	Management in Business Development	Listed Company in Hotel Business	16

4	President	Sales and Marketing Consultant	4
5	Management in Finance	Listed Company in Hotel Business	5
6	Management in Operations	Company in Hotel Business	5
7	Management in Finance	Listed Company in Hotel Business	11
8	Management in Marketing	Listed Company in Hotel Business	4
9	Hotel Owner	Stand Alone Hotels	2
10	Hotel Owner	Stand Alone Hotel	1
11	Hotel Owner	Stand Alone Hotel	1
12	General Manager	Stand Alone Hotel	1
13	Hotel Owner	Stand Alone Hotel	1

Table 3: Experts' Details

After the variable list was verified by the experts, 20 independent variables were retained for the analysis process, as the "amount of rooms" variable was removed due to the experts' opinions. These variables were classified into dummy variables and scale variables. Dummy variables were used for the variables in which the answers are "yes" or "no". They would be "0" if the hotel does not have the attribute and be "1" if hotel does have the attribute. Furthermore, all the dummy variables had to be standardized before performing the Multiple Regression Analysis. The details of the independent variables for the prediction models are presented in Table 4.

Group	No.	Variable	Definition	Measure
Rating	1	R_Brand	Managed or Franchised by International Brand (Yes or No)	Dummy
Physical Attributes	2	P_Rmsize	Average Room Size (sq.m.)	Scale
	3	P_Staff	Agoda's Staff Performance Score	Scale
	4	P_Room	Agoda's Room Standard Score	Scale
	5	P_Outlet	Number of Outlets in Hotel	Scale
	6	P_Recrea	Other Recreation Facilities (Tennis, Squash, etc.) Availability (Yes or No)	Dummy
	7	P_Internet	Free Internet in Room Availability (Yes or No)	Dummy
	8	P_Pool	Swimming Pool Availability (Yes or No)	Dummy
	9	P_Fitness	Fitness Availability (Yes or No)	Dummy
	10	P_Spa	Spa Availability (Yes or No)	Dummy
	11	P_Rs	Room Service Availability (Yes or No)	Dummy
Location Attributes	12	L_Pkt	Resort Located in Phuket Province (Yes or No)	Dummy
	13	L_Smu	Resort Located in KohSamui, Suratthani Province (Yes or No)	Dummy
	14	L_Hh	Resort Located in HuaHin, Prachuabkirikan Province or Located in Cha-Am, Petchburi Province (Yes or No)	Dummy
	15	L_ChR	Resort Located in Chonburi or Rayong Province (Yes or No)	Dummy
	16	L_KPng	Resort Located in Krabi or PhangNga Province (Yes or No)	Dummy
	17	L_Oth	Resort Located in Other Location (Yes or No)	Dummy
	18	L_Ovw	Agoda's Location Score	Scale
	19	L_Bhw	Beach Width (Meters)	Scale
	20	L_Bha	Beach Activities Available (Yes or No)	Dummy

Table 4: Summary of Independent Variables

However, four variables needed to be removed from the analysis after the data collection process, as below:

1) P_Pool (swimming pool availability) because 99.24% of the sample resorts had a swimming pool for their guests.

2) P_Fitness (fitness availability) because 93.89% of the sample resorts had fitness facilities for their guests.

3) P_Spa (spa availability) because 93.89% of the sample resorts had a spa for their guests.

4) P_Rs (room service availability) because all of the sample resorts had room service for their guests.

There were 16 remaining independent variables for analyzing the prediction model. Moreover, to prevent a multicollinearity problem, the correlation values of all the independent variables were tested. It was found that a pair of variables, P_Staff (Agoda's staff performance score) and P_Room (Agoda's room standard score), had a correlation value of 0.890, which was more than the value of 0.750 suggested by Prasith-rathsint and Sukkasem (1993). These two variables were merged into one variable by Factor Analysis. The component score of P_Staff and P_Room was 0.513 with a 0.500 Kaiser-Meyer-Olkin (KMO) value. The merged variable's name was P_StfRm. After merging the correlated variables, the final number of independent variables was 15.

It should also be noted that the Agoda score variables, i.e., P_Staff, P_Room, and L_Ovw, were scored by the customers who booked each hotel via www.agoda.com.

7. Source of Data:

In 2012, the Thai Hotel Association rated 115 resorts, of which 37 were 5-star beachfront resorts. The number of resorts from this source was too small to perform a Multiple Regression Analysis, which requires at least five samples for each independent variable, as suggested by Bartlett, Kotrlik, and Higgins (2001). Further data were collected from Agoda.com (www.agoda.com), the most popular hotel reservation website in Thailand (www.alexa.com, 2014). From this source, there were 131 5-star beachfront resorts, from which 101 5-star beach front resorts were collected for the regression analysis that were added to the 37 resorts collect initially. From the authors' exploratory survey of a comparison between hotel and resort ratings from the Thai Hotel Association (2012) and Agoda.com, it was found that 94.38% (84 from 89 hotels and resorts) of the hotels and

resorts were rated at the same level, which shows that the data from Agoda.com has appropriate validity for use in this research. As to the amount of data collected in this research, the actual sample size was more than the minimum sample size of 75 resorts, which is the number of independent variables multiplied by five (number of samples per each variable). The actual ratio of the acquired sample size and the number of independent variables became 6.73, which is 101 divided by 15.

The physical and location attribute data of the sample resorts were collected from their public information, such as resort websites, online travel agent websites, and resort staff. In addition, an ADR foreach resort was calculated from its average twelve monthly room rate for all room types available in Agoda.com. To control for the effect of the data collection period on the hotels' ADRs, all data were collected during a period as short as possible to prevent fluctuations in room prices. Therefore, the collection period was limited to September to December 2014.

8. Results:

From the analysis, the log-linear regression model gained a 0.728 Adjusted R^2 value, which was the highest value among all the model forms and all statistical criteria mentioned in Table 2. The Adjusted R^2 values of all the models are presented in Table 5. According to the Stepwise Regression Method, the variable with the highest correlation coefficient was first inserted into the models and then the variable with the next highest coefficient was the next to be inserted. The process was repeated until all variables were inserted into the models.The regression results showed that there were six independent variables with significance at the 95% confidence level, of which their Descriptive Statistic results are shown in Table 6. Other independent variables, which were not significant at the 95% confidence level or, in other words, cannot improve the Adjusted R^2 value when added to the models, were deleted from the models.

Adjusted R^2			
Log-linear Model	Log–log Model	Linear–linear Mosel	Linear–log Model
0.728	0.712	0.690	0.659

Table 5: Adjusted R^2 of All Models.

Variable	Coefficient	Std. Error	t-Statistic	Sig.	Collinearity Statistic: VIF
Constant	1.6990	0.259	6.557	0.000	
P_Rmsize	0.0016	0.000	8.642	0.000	1.297
P_StfRm	0.1696	0.029	5.756	0.000	1.301
L_Bhw	0.0003	0.000	3.537	0.001	1.105
L_Ovw	0.0601	0.019	3.205	0.002	1.241
L_Smu	0.0543	0.012	4.523	0.000	1.235
L_Pkt	0.0537	0.012	4.345	0.000	1.308

Table 6: Descriptive Statistic of Significant Variables in Best Model (log-linear).

As to the other statistical values for the Multiple Regression Analysis, the acquired model complies with the mentioned criteria, as the results show in Table 7. The scatter plot between the residuals and the predicted ADRs from the models was freely dispersed, which shows that the predicted ADRs do not depend on the residuals and the models do not have a heteroscedasticity problem.

Statistical Test	Value
Model form	Log-linear
Adjusted R^2	0.728
VIF of all variables (less than 10)	Yes
Residual Analysis 1. Normally distributed. 2. Mean is equal to zero. 3. Does not have heteroscedasticity problem. 4. No relationship between each residual. (Durbin-Watson statistic is between 1.50 to 2.50.)	 Yes Yes Yes Yes 1.738
Number of independent variables	6

Table 7: Statistical Test Results of Best Model.

Finally, the acquired model for the Thai 5-star beachfront resorts is shown in Equations 2 and 3.

$$\log(ADR) = -0.1696(P\_StfRm) + 0.0601(L\_Ovw) + 0.0543(L\_Smu) + 0.0537(L\_Pkt) + 0.016(P\_Rmsize) + 0.0003(L\_Bhw) + 1.6690 \quad [2]$$

Where $$P\_StfRm = 0.513(P\_Staff) + 0.513(P\_Room) \quad [3]$$

After replacing P_StfRm from Equation 3 into Equation 2, the acquired model with seven independent variables is shown in Equation 4.

$$\log(ADR) = -0.0871(P\_Staff) - 0.0871(P\_Room) + 0.0601(L\_Ovw) + 0.0543(L\_Smu) + 0.0537(L\_Pkt) + 0.016(P\_Rmsize) + 0.0003(L\_Bhw) + 1.6690 \quad [4]$$

According to the model above, all dummy variables have to be replaced by the standardized values, as presented in Table 8, while the scale variables can be replaced with the real values for each resort.

No.	Variable	Definition	Value for Yes	Value for No
1	L_Smu	Resort Located in KohSamui, Suratthani Province (Yes or No)	2.002	-0.494
2	L_Pkt	Resort Located in Phuket Province (Yes or No)	1.204	-0.823

Table 8: Replacement Values for Dummy Variables.

The pair-sample t-test between the predicted ADRs and observed ADRs of 30 random beachfront resorts, which had not been used in the Multiple Regression Anlysis process, gained a 0.206 p-value at the 0.05 significance level. The results showed that the observed ADRs and the predicted ADRs from the proposed model were not significantly different, conforming to the Theil's U statistic value of 0.353, which is less than 1.00. The results showed that the proposed model is acceptably accurate.

9. Conclusion and Discussion

The best fit model for the ADR prediction from this research is the log-linear model with a 0.728 Adjusted R^2 Value that perfectly conforms to the residual analysis criteria. The model is acceptably accurate after being tested with the pair-sample t-test and Theil's U test, which give a p-value of 0.206 at the 0.05 significance levels and 0.353 Theil's U statistic value.

There are six significant variables at the 95% confidence level from the regression model, in which P_StfRm was formed from P_Staff (staff performance score) and P_Room (room standard score). Therefore, there are seven variables to be input as independent variables. The five variables that have the highest coefficient are: 1) staff performance score, 2) room standard score, 3) location score, 4) resort located in Koh Samui (yes or no), and 5) resort located in Phuket (yes or no). This finding indicates the five most important success factors for Thai 5-star beachfront resorts, which resort developers and investors should consider in resort appraisal or setting of resort room rates.

The acquired Thai 5-star beachfront resorts' room rate prediction model is shown in equation 4. In addition, the researchers illustrate how to apply the model in the form of a calculation table, which seems to be more convenient to use, with example input values in Table 9.

Variables	Resort Attributes				Regression Coefficient [B]	Result [A] x [B]
	Input Value	For Dummy Variables		Value for Model [A]		
		If Yes	If No			
P_Staff	9.200	NA	NA	9.200	0.0871	0.801
P_Room	9.100	NA	NA	9.100	0.0871	0.792
L_Ovw	7.700	NA	NA	7.700	0.0601	0.463
L_Smu	0.000	2.002	-0.494	-0.494	0.0543	-0.027
L_Pkt	1.000	1.204	-0.823	1.204	0.0537	0.065
P_Rmsize	81.622	NA	NA	81.622	0.0016	0.129
L_Bhw	245.000	NA	NA	245.00	0.0003	0.080

Constant						1.699
log(ADR)						4.002
ADR(Baht/night)						10,036

Table 9: Example of Calculation Table.

To verify the results, they were presented to experts to access their validity and to give comments. Moreover, some interesting topics were found from the comparison between the research findings and the results of former research work, as discussed below.

1) The experts agreed that the resorts located in KohSamui and Phuket should have ADRs higher than the other locations, which conforms to their land prices.

2) The experts agreed that the "beach activities availability" and "beach width" variables have no effect and low effect on the ADR, respectively. They gave more opinions that most of the beachfront resort customers would appreciate the beach atmosphere (sea view) only and would not like any beach activities. The results and the experts' opinions are different from previous research in Costa Brava, Spain, by Rigall-I-Torrent and Fluvia (2011).

3) The resort's international brand (R_Brand) does not have an effect on the ADR for Thai 5-star beachfront resorts, which differs from the previous research results of Israeli (2002), White and Mulligan (2002), and Chen and Rothschild (2010). The experts' opinion for this issue is that the customers who book resorts via an online travel agency (OTA) tend to give priority to location and facilities more than the resort's brand. This means that the majority of OTA customers prefer hotels with more facilities but without an international brand more than a resort with an international brand but less facility, if it is necessary to select.

4) The three variables with the highest coefficients from this research are staff performance score, room standard score, and location score, which conformed with research about city hotels in Thailand by Likitanupak and Tochaiwat (2016a).

5) The best fit model is the log-linear form, which conforms with several former research works. However, this form of the model is difficult to analyze as the change in the ADR when any independent variables are changed will be in a non-linear pattern. Therefore, the sensitivity analysis table is helpful in analyzing the effect of the independent variable change, as shown in Table 10, which was derived from the assumptions in Table 9. The predicted ADR for a beachfront resort, in which the room standard score from the Agoda review is 9.20, the staff performance score from the Agoda review is 9.10, the location score

from the Agoda review is 7.70, the resort is located in Phuket, the average room size is about 81.62 square meters, and the beach width is about 245 meters, is in the range between 9,963 and 10,257 Baht/night/room, depending on the average room size within the range between 79.62 and 87.62 square meters.

Average Room Size (square meters)	Predicted ADR (Baht)
79.62	9,963
*81.62	*10,036
83.62	10,109
85.62	10,183
87.62	10,257

Note: * is the base case.

Table 10: Sensitivity Analysis.

Finally, it should be noted that this research focused mainly on the revenue perspective. However, several variables that cause ADR changes can also lead to changes in the investment cost. Therefore, research users should also consider the increase in the investment cost, so they can acquire a comprehensive perspective.

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