

Is the Willingness to Pay Affected by Beach-Related Attributes? Hedonic Pricing Approach for Valuing Environmental Amenities

Jayasekara, K. D. De. S.*¹ and Gunaratne, L. H. P.²

¹ *Postgraduate Institute of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka*

² *Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka*

**Corresponding Author:
Email: deshidesilva@yahoo.com*

ABSTRACT

Hotel room pricing in the tourism sector is a major application of the hedonic pricing method. This study predominantly focused on investigating whether room rates of hotels and guest houses in Hikkaduwa show the value of environmental amenities of the beach. Developing the hedonic pricing model used data from 72 hotels and guest houses, using a multiple linear regression. The explanatory power of the model was strong with an adjusted R^2 value of 0.803. The results lent support to the view that both non-environmental and environmental characteristics of hotels and guest houses, including the environmental amenities in the Hikkaduwa beach, influence the room rates. The significant non-environmental characteristic variables were having a swimming pool, a minibar, the internet access to the room, air conditioning in the room and the size of the room. The presence of a swimming pool increases the room rates by 73.7 %. The significant variables related to the environmental amenities in the Hikkaduwa beach were having sea view to the rooms and the hotel or the guest house being close to the beach. The room rates of hotels and guest houses with sea view to their rooms were 42% higher than the room rates of hotels and guest houses without that opportunity. Similarly, the room rates were 41.5% higher when the hotels and the guest houses are within 25 m from the beach. Moreover, having a garden with flowering plants was significant. The Marginal Willingness to Pay values for having sea view to the rooms and for being close to the beach were Rs. 2496 and Rs. 2466 respectively. These research outcomes will be useful in the decisions on managing hotels and guest houses in Hikkaduwa.

KEYWORDS: Hedonic pricing method, Hikkaduwa, Room rates

Introduction

Hotel room pricing in the hospitality or the tourism sector is a major application of the hedonic pricing method. The basic concept of the hedonic pricing method is that the price of a market good is related to its characteristics or the services provided by it. In this approach, it is assumed that the presence or absence of certain hotel attributes affects the room rates faced by consumers when they make their decisions regarding hotel accommodation. Both environmental and non-environmental attributes have an influence on those room rates. Therefore, the determinants of the room rate a consumer must pay for a hotel stay is a function of various hotel attributes (Thrane, 2006).

Generally, the value of attributes and characteristics are unobserved, as they are not separately traded in any market. Only the overall prices of hotel rooms, including particular combinations of attributes are observed.

The current research has focused on whether the environmental amenities in the Hikkaduwa beach were properly valued and reflected by the room rates of the hotels and the guest houses in Hikkaduwa. Accordingly, the overall objective was to investigate whether the value of the environmental amenities in the Hikkaduwa beach is reflected by the room rates of the hotels and the guest houses in Hikkaduwa. The specific objectives were to investigate whether the room rates have been influenced by both non-environmental characteristics and environmental characteristics of the hotels and the guest houses, including the characteristics related to the environmental amenities in the Hikkaduwa beach. Ascertaining the Marginal Willingness to Pay (MWTP) for the environmental amenities in the Hikkaduwa beach was another specific objective.

The sea and the sandy beaches with sunshine have a great potential to attract tourists towards the South-west coast of Sri Lanka. Hikkaduwa has been recognized as an early tourist destination in Ceylon. The recreational value of the Hikkaduwa beach depends on the environmental amenities of that beach. Therefore, the environmental amenities in the Hikkaduwa beach are of great importance for the tourism in that area. If the tourists truly value the environmental amenities of the Hikkaduwa beach, the future of the tourism in Hikkaduwa will be based on the survival of this beach ecosystem. Therefore, more attention should be paid to protect the Hikkaduwa beach. The objective of this research study was to discover the influence of the non-environmental and the environmental characteristics of the hotels and the guest houses, including the characteristics related to the environmental amenities in the Hikkaduwa beach on the room rates. Identifying those influential characteristics is useful to owners and managers of hotels and guest houses, and other investors to arrive at correct decisions regarding the management and the investment respectively. This study was also important to get it confirmed whether the tourism in Hikkaduwa depends on the Hikkaduwa beach. In Hikkaduwa, there is a comparatively higher concentration of tourist hotels and guest houses with a huge variation with respect to their non-environmental and environmental characteristics. The hedonic price functions have frequently been used to estimate attribute prices in the housing market. The number of hedonic studies applied to markets for hotel rooms are limited in Sri Lanka, despite the availability of reliable information on hotel rates and attributes. Accordingly, conducting this research study was considered important.

Literature Review

The hedonic analysis was reported as early as Waugh's analysis of quality factors influencing vegetable prices in 1928. In 1952, Houthakker indicated that consumers do not only consider the quantity of products in their purchase. Rather, they took into account whether the quality characteristics of product meet their needs. Becker (1965) proposed household production to infer how to satisfy consumers' maximum utilities. Lancaster (1966) developed the consumer behavior analysis by the hedonic price theory.

This theory was also applied, considering the characteristics of purchased consumer goods (Ladd and Suvannunt, 1976).

Coenders et al. (2003) examined the effect on the price of different characteristics of holiday hotels using a latent growth curve model applied to seasonality. The characteristics of the hotels were used as predictors of both latent variables in the models fitted for each major tourist region in the Spanish continental Mediterranean coast separately. The hotel category, the region, the distance to the beach, the availability of parking place and the room equipment had an effect on the peak price and on the seasonality. Espinet et al. (2003) estimated the effect on the price using random effect models. Prices were gathered from tour operator catalogues. Statistically significant effects on the price between the four-star hotels and the hotels with other star ratings were observed. In addition, the town, the hotel size, the distance to the beach and the availability of parking place had a significant effect on the price.

Hamilton (2006) investigated the effects of the landscape and other characteristics of coastal districts of Schleswig-Holstein, Germany on the hedonic price of holiday hotels. Three different ways of representing the coastal features and two different ways of representing the landscape were examined in six specifications. This study supported the claim that an increase in the length of open beaches enhances the average accommodation prices. Thrane (2006) examined the effect of hotel attributes on the room rates of the hotels in and around the Norwegian capital of Norway, using Seemingly Unrelated Regression (SUR) models incorporating nine hotel attributes. He found that the minibar, the hairdryer, free parking, and the distance to the downtown were the important attributes for determining the room rates of hotels in and around the Norwegian capital of Norway.

Tung et al. (2009) analysed the effect on the prices of international hotels in the list published by Taiwan Tourism Bureau, from the facilities of those hotels using a hedonic pricing model. He put forward the argument that the number of guest rooms, leisure facilities, the ratio of employees, special tourist sites and the distance to train stations had significantly influenced the market prices of the hotels in Taiwan. The accommodation prices were higher, when there were many guest rooms. In addition, the popularity of the international hotels and the price consumers were willing to pay were high, when the hotel had a wide variety of leisure facilities.

Andersson (2010) estimated the implicit prices for hotel room attributes in Singapore, using the hedonic price function. Real transaction prices were regressed against objective attributes and consumer perceptions. Accordingly, the data that reflect the consumer feedback information were used in addition to the data related to the objective information such as the location, hotel facilities, and the star rating. Four different models were used in the estimation of the hedonic price function. The results showed that most objective hotel characteristics, like being a 5-star hotel and having a fitness centre had significant effects on the hotel rates. Chen and Rothschild (2010) scrutinized the impact of a variety of attributes on the rates charged for the hotel rooms in Taipei. Three regression models considering the entire sample, the weekday sample and the weekend sample were estimated separately.

The hotel location, the availability of LED television and the presence of conference facilities had significant effects on both weekday and weekend room rates. The internet access and the presence of a fitness centre had significant effects on the weekday rates only, whereas the room size had a significant effect on the weekend rates only.

The study carried out by Otegbulu and Tenigbade (2011) employed a hedonic pricing model reorganizing the hotel attributes as independent variables under four components, namely basic, physical, environmental, and complementary attributes. It was found that the regular power and water supply, closeness to the city centre and the good room service were some of the attributes that the lodgers find most important in a hotel accommodation. Rigall-I-Torrent et al. (2011) estimated the effect caused by beaches on the prices of hotels using the data on prices, the location, and characteristics. Two types of variables considered in the analysis were beach characteristics and control variables. The beach characteristics referred to a wide variety of beach attributes like the distance to the beach, the beach width, and the beach with security services. The control variables referred to the quality characteristics of hotels, the period of the year, and the public characteristics of the jurisdictions where the hotels were located. He found that when the hotel was situated in front of a beach, the price of a room in coastal hotels of Catalonia was increased by a figure between 13% and 17%, and a Blue Flag increased the price by around 11.5%. Fleischer (2012) valued the sea view in ten major Mediterranean regions using the hedonic price method. The fixed effects regression was used to estimate the model coefficients. According to the results, the hotels situated along the Mediterranean sea charge higher prices for a room with the sea view than for a room without the sea view. Hotel room prices were found to be higher by about 10% for a room with the sea view than for one with no view specification. Andersson (2013) carried out a detailed study on the way in which room rates are determined in Sweden, which identified ten significant room rate determinants in the Swedish capital city of Stockholm. Two separate models for double rooms, one for the business week, and one for the weekend were estimated.

Castro et al. (2016) found the significant influence of the star rating, the consumer rating and the room size on the consumer willingness to pay for a stay in a hotel in Porto and Lisbon. The ordinary least square regression analysis was applied to the hedonic price model. Bilbao-Terol et al. (2017) analysed the impacts of environmental amenities associated with the agricultural and silvicultural land use on the price of rural tourism accommodation in Asturias (Spain). A hedonic price model relating the price of rural accommodation to environmental amenities, equipment, services offered, and the locational characteristics of the accommodation was estimated. Accordingly, the agricultural land use had an important impact on the price of accommodation in self-catering cottages. Latinopoulos (2018) laid emphasis on examining the effect of the sea view on the room rates alongside other structural and locational attributes. A semi-parametric geographically weighted regression model was used to assess the local effects and to investigate the spatial variability of the selected attributes. It resulted in a significant spatial variability considering the effect of the sea view on room rates.

Yalcin and Mert (2018) identified the characteristics of accommodation facilities that affect the room rates in Antalya (Turkey) area. The explanatory spatial data analysis was applied to variables by the stepwise regression, and the hedonic price model was established using the spatial lag model. According to the results of the spatial lag model, the type of the facility, the change of the prices in the neighboring facilities, being affiliated to a hotel chain, having an outdoor pool, having a snack bar, having a private beach, the laundry service, the number of rooms, the newspaper service, the facility concept, the massage, and the number of stars had a significant influence on the room rates.

The research studies carried out by Herath Banda et al. (1999) were among the earliest studies using the hedonic pricing method in Sri Lanka. In that study, the consumer preference for physical quality characteristics of rice was assessed, estimating three regression models. Van den Berg and Nauges (2012) investigated the willingness to pay for the access to piped water using a hedonic analysis of house prices. Accordingly, the average value of the willingness to pay for a piped water connection was about 5 - 7% of the monthly household expenditure. The willingness to pay for rice traits in Kurunegala and Hambantota districts was estimated using the spatial hedonic pricing model by Mendis and Edirisinghe (2013). The estimated function confirmed the presence of a spatial relationship in paddy prices. Studies using the hedonic pricing method on hotels and guest houses to value environmental amenities of beaches are rare in developing countries, especially in Sri Lanka. The recreational value of the Hikkaduwa beach and the reef was estimated using the contingent valuation method in 1997 (Samonte-Tan and Armedilla, 2004). No studies have been conducted on valuation of the Hikkaduwa beach using the hedonic pricing method.

Methodology

The present study has focused on Hikkaduwa coastal area including Hikkaduwa town to Patuwatha area, Kuruduwatta, Wawulagoda, KudaWewala, and Pannamgoda. Data were collected from 102 hotels and guest houses, although the model construction was restricted to a sample of 72. Stratified random sampling was used for the sampling process, and the two strata used were the Sri Lanka Tourism Development Authority approved hotels and the guest houses, and the hotels and the guest houses without that approval. Based on the original population of the hotels and the guest houses in Hikkaduwa, the ratio among the individual units of the two strata was 1:6 approximately. The sample was selected in such a way that maintains the same ratio as much as possible, while covering most of the areas of Hikkaduwa. Moreover, the sample was selected representing the wide spread distribution of the hotels and the guest houses along the Hikkaduwa coastal line.

The owner or the manger of those hotels and the guest houses were interviewed using a pre-tested schedule. That schedule consisted of questions categorized into five sections. Data related to background information, characteristics of the rooms and the hotel or the guest house, environmental characteristics, room charges and general information were gathered.

Details about the owner or the manager, the star rating, having the approval of the Sri Lanka Tourism Development Authority and the association with a local chain were gathered as background information.

The general facilities in the hotel or the guest house, the facilities available in an average room and the average size of a room were recorded as the characteristics of the rooms and the hotel or the guest house. The information on environmental characteristics included the size and the characteristics of the garden, the distance to the beach, having a direct entrance to the beach and having the sea view. The room charges and the basis of determining those charges were recorded. Moreover, the room rates in both high season and low season were obtained. The general information consisted of the occupancy rate, the revisit rate, and the environmental concern of visitors.

A number of attributes, which had a possibility to influence the room rates in previous studies, were selected from the gathered data (Espinete et al., 2003; Tung et al., 2009; Chen and Rothschild, 2010; Otegbulu and Tenigbade, 2011). The attributes, which were present in almost all the hotels and the guest houses, were eliminated. Moreover, according to the data obtained through the interviews, there were some characteristics that the tourists enquire about, when selecting their accommodation. Those characteristics were also considered when selecting the attributes. The variables were constructed using those attributes. The analysis of the data was carried out with the use of a hedonic price model (Espinete et al., 2003; Tung et al., 2009; Chen and Rothschild, 2010; Andersson, 2013).

Hedonic Price Model

Most previous researches have avoided the use of linear models (Rosen, 1974; Thrane, 2006), whereas semi-log models and log-linear models have mostly been used. The semi-log model has been used to correct heteroskedasticity (Espinete et al., 2003; Maddala and Lahiri, 2009). Moreover, it has been used by lots of previous studies (Tung et al., 2009; Andersson, 2010).

$$\ln(P) = \alpha_0 + \sum_{j=1}^n \beta_j N_j + \sum_{k=1}^l \beta_k L_k + \varepsilon \quad [1]$$

Where,

P : Average accommodation price of the hotel or the guest house (average room rate per night)

α_0 : Intercept

β_j : Regression coefficient of the individual hotels and/or the guest houses with respect to the non-environmental characteristic variables

β_k : Regression coefficient of the individual hotels and/or the guest houses with respect to the environmental characteristic variables

N_j : Non-environmental characteristic variable of the hotel or the guest house

L_k : Environmental characteristic variable of the hotel or the guest house

ε : Error term

The empirical model for the hotels and the guest houses is,

$$\begin{aligned} \text{Ln (RATE)}_i = & \alpha_0 + \beta_1 (\text{STAR})_i + \beta_2 (\text{VPARK})_i + \beta_3 (\text{POOL})_i + \beta_4 (\text{BAR})_i + \beta_5 (\text{SECURITY})_i + \beta_6 (\text{RESTURNI})_i + \beta_7 (\text{ROOMSZ})_i + \beta_8 (\text{AC})_i + \beta_9 (\text{PHONE})_i + \beta_{10} (\text{INTERNET})_i + \beta_{11} (\text{TEACOFFE})_i + \beta_{12} (\text{MINIBAR})_i + \beta_{13} (\text{GARDEN})_i + \beta_{14} (\text{TREE})_i + \beta_{15} (\text{FLOWER})_i + \beta_{16} (\text{POND})_i + \beta_{17} (\text{SUMMRHUT})_i + \beta_{18} (\text{BDISTANC})_i + \beta_{19} (\text{DIRECT})_i + \beta_{20} (\text{SEAVIEW})_i + \varepsilon_i \end{aligned} \quad [2]$$

Where, i subscript identifies the hotel or the guest house, RATE is the price vector of different types of hotels and guest houses, β_i is the coefficients of individual variables, α_0 is a constant and ε_i is a random error term which is independent and identically distributed with an expectation value of zero and constant variance (Espinet et al., 2003).

Table 1: The description of the variables used in the analysis

Variable	Description of the variable
Dependent Variable	
RATE	Log-transformed average room rate per night
Independent Variables	
<i>Non-environmental characteristic variables</i>	
STAR	Having a star rating, Dummy coded (have=1, have not=0)
VPARK	Having a vehicle park for more than ten vehicles, Dummy coded (have=1, have not=0)
POOL	Having a swimming pool, Dummy coded (have=1, have not=0)
BAR	Having a bar, Dummy coded (have=1, have not=0)
SECURITY	Having security, Dummy coded (have=1, have not=0)
RESTURNI	Having a restaurant, Dummy coded (have=1, have not=0)
ROOMSZ	Size of the room in square feet
AC	Having air conditioning in the room, Dummy coded (air-conditioned=1, not air-conditioned=0)
PHONE	Having a telephone in the room, Dummy coded (have=1, have not=0)
INTERNET	Having the internet facilities (via Wi-Fi) in the room, Dummy coded (have=1, have not=0)
TEACOFFE	Having tea and coffee making facilities in the room, Dummy coded (have=1, have not=0)
MINIBAR	Having a minibar, Dummy coded (have=1, have not=0)
<i>Environmental characteristic variables</i>	
GARDEN	Having a larger garden (more than 1/4 acre), Dummy coded (have=1, have not=0)
TREE	Having 15 or more trees in the garden, Dummy coded (have=1, have not=0)
FLOWER	Having 25 or more flowering plants in the garden, Dummy coded (have=1, have not=0)

POND	Having a pond in the garden, Dummy coded (have=1, have not=0)
SUMMRHUT	Having 5 or more summer huts in the garden, Dummy coded (have=1, have not=0)
BDISTANC	Distance to the beach from the hotel or the guest house (whether situated close to the beach with a distance of less than 25m from the hotel or the guest house), Dummy coded (close=1, not close=0)
DIRECT	Having the direct entrance to the sea, Dummy coded (have=1, have not=0)
SEAVIEW	Having the sea view to half or more than half of the rooms, Dummy coded (have=1, have not=0)

Data Analysis

An important aspect of hedonic price modelling is that the data should be homogenous enough to make relevant comparisons (Thrane, 2006). Therefore, the hotels and the guest houses that could be classified either as very influential cases or as outliers were eliminated from the sample. The sample was restricted to a total of 72 hotels and guest houses.

The sample was analysed, summarizing the data related to the attributes. The star rating, the approval of the Sri Lanka Tourism Development Authority, some of the non-environmental and environmental characteristics, the room charges, the occupancy rate, and the revisit rate were considered in that analysis.

The complexity of the hotel room pricing in Hikkaduwa was very high. The categorization of the room rates was based on a variety of factors including the season, the size, and the facilities of the room, the sea view, the meal plan, and the duration of the stay. There was no uniformity in using those factors by different hotels and guest houses. According to the data collected through the interviews with the owner or the manager of the hotels and the guest houses, the room rate per night of a hotel or a guest house was not restricted to a single value. Therefore, the average value of all those room rates was calculated discretely for each hotel and guest house. Accordingly, the average room rate per night was used as the dependent variable as used in many previous research studies (Espinet et al., 2003; Tung et al., 2009).

The environmental and non-environmental variables of the hotels and the guest houses were used as the independent variables. Some of the variables, which were present in almost all the hotels, and the guest houses of the sample were eliminated from the analysis. Variable multicollinearity sometimes causes problems in hedonic studies, leading to insignificant parameter estimates (Andersson, 2010). Therefore, some of the variables were combined or entirely removed to avoid the multicollinearity problem. Eventually, 20 independent variables were used in the analysis (Table 1). The linear multiple regression analysis was carried out using the SPSS (Statistical Package for the Social Sciences) statistics software package. Furthermore, the model was tested for multicollinearity by performing the Variance Inflation Factor tests (VIFs) and all the VIF values of the independent variables were less than five, suggesting that multicollinearity was not a serious problem in this analysis.

According to the resulted histogram of the standardized residual values and the Normal P-P Plot of Regression Standardized Residual values, the assumption of normality was not violated. The scatter plot indicated that the heteroskedasticity was not an issue for the hedonic pricing model in this study. It has also indicated that there were no outliers in the data as there were no extreme values in the scatter plot.

In the Analysis of Variance (ANOVA), a joint hypothesis was tested as the null hypothesis. According to the null hypothesis, none of the independent variables was significant predictors of the dependent variable, where the partial slope coefficients were jointly equal to zero.

$$H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = \beta_9 = \beta_{10} = \beta_{11} = \beta_{12} = \beta_{13} = \beta_{14} = \beta_{15} = \beta_{16} = \beta_{17} = \beta_{18} = \beta_{19} = \beta_{20} = 0 \quad [3]$$

The alternative hypothesis was that at least one independent variable was a significant predictor of the dependent variable, where at least one of the partial slope coefficients was not equal to zero.

$$H_a: \text{At least one } \beta_i \neq 0 \quad [4]$$

In the linear multiple regression giving rise to unstandardized coefficients, hypothesis testing was carried out separately considering each independent variable.

The null hypothesis was that holding all the other independent variables constant, the particular independent variable (X_i) was not a significant predictor of the dependent variable. Therefore, the partial slope coefficient of that particular independent variable (β_i) was equal to zero.

$$H_0: \beta_i = 0 \quad [5]$$

The alternative hypothesis was that holding all the other independent variables constant, the particular independent variable (X_i) was a significant predictor of the dependent variable. Therefore, the partial slope coefficient of that particular independent variable (β_i) was not equal to zero.

$$H_a: \beta_i \neq 0 \quad [6]$$

It was expected that all the explanatory variables used would be positively associated with the room rates.

Assuming the hedonic equilibrium condition where the individuals maximize their utility, the Marginal Willingness To Pay (MWTP) for a particular characteristic is equal to the marginal implicit price of that characteristic. The results of the regression analysis were also used to determine the values for the MWTP with respect to the relevant variables. These values regarding the MWTP indicate the willingness to pay for small changes in the relevant variables.

When using a semi-log model, the resulting value of the regression coefficient does not directly provide the value for the Marginal Willingness to Pay. Therefore, the value for the MWTP had to be calculated as the multiplication of the regression coefficient and the mean property value (Gunatilake, 2003; Taylor, 2003). The mean value of the average room rates per night was considered as the mean property value. All the significant explanatory variables with the expected impact were selected to calculate the Marginal Willingness to Pay.

$$\text{MWTP} = \text{Regression coefficient} * \text{Mean value of the average room rates per night (7)}$$

Results and Discussion

According to the summarized data, 18.06% of the hotels and the guest houses had star ratings, while only 19.44% of them had the approval of the Sri Lanka Tourism Development Authority.

Considering the non-environmental characteristics of the rooms, a majority of the hotels and the guest houses (61.11%) had the internet access to their rooms, whereas the facilities for making tea and coffee were available only in 9.72% of them (Figure 1).

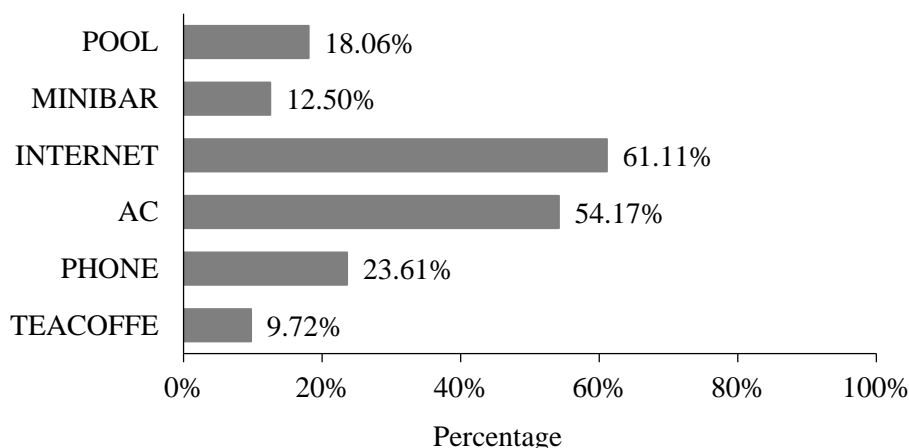


Figure 1: The non-environmental characteristics of the rooms in the hotels and the guest houses in Hikkaduwa

Considering the environmental characteristics, most of the hotels and the guest houses had a garden and only six hotels and guest houses out of the total sample of 72 did not have a garden. 71.21% of those gardens had an area less than 1/4 acre. On the other hand, only few of the gardens (3.03%) were one or more than one acre (Figure 2).

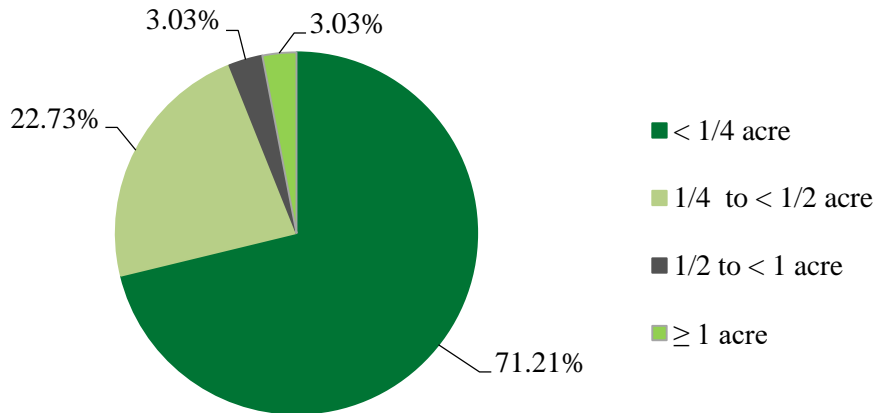


Figure 2: The size of the gardens of the hotels and the guest houses in Hikkaduwa

A number of 53 gardens had 15 or more trees, and 74.24% of them had 25 or more flowering plants. Many hotels and guest houses (41.67%) were situated adjacent to the beach. 22.22% of them were situated within a distance of less than 25m from the beach, although they were not situated adjacent to the beach. Only 9.72% of them had a distance of 100m or more than 100m from the beach (Figure 3). Direct entrance to the beach was available at 79.17% of the hotels and the guest houses.

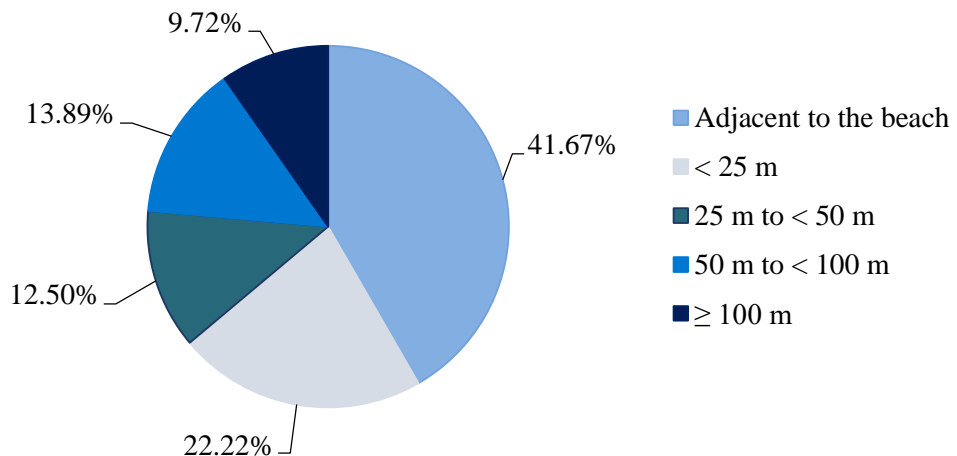


Figure 3: The distance to the beach from the hotels and the guest houses in Hikkaduwa

There was not a huge difference between the average room rates per night in the high season and the low season, where the average room rates per night in the high season and the low season were Rs. 6188.49 and Rs. 5694.63 respectively.

The occupancy rate in the high season varied within a range starting from 50% to 100%. In contrast, the range for the occupancy rate in the low season was 0% to 100%. More than 75% of the hotels and the guest houses (76.39%) had visitors who frequently stay in their hotel or the guest house. The owners and the managers of 65.28% of the hotels and the guest houses stated that the tourists who stay in the hotels and the guest houses are highly concerned about the environment.

According to the results of the linear regression analysis (Table 2), the explanatory power of the model was strong with an adjusted R^2 value of 0.803, showing acceptable model fit. It has indicated that 80.3% of the variation in the dependent variable can be explained by the explanatory variables used. The F-value resulted from the test; Analysis of Variance (ANOVA) was 15.482, which was statistically significant. Therefore, the null hypothesis that had been tested was rejected and at least one independent variable has become a significant predictor of the dependent variable. It has indicated that the environmental and the non-environmental attributes or variables of the hotels and the guest houses in Hikkaduwa collectively have had a significant influence on the average room rates.

Nine coefficients among the resulted unstandardized coefficients became statistically significant (Table 2), rejecting the null hypothesis tested under the linear multiple regression analysis. There were both non-environmental and environmental characteristic variables among the explanatory variables related to those significant coefficients. The significant non-environmental characteristic variables were; having a swimming pool (POOL), the size of the room (ROOMSZ), having air conditioning in the room (AC), having the internet access to the room (INTERNET), having tea and coffee making facilities inside the room (TEACOFFE) and having a minibar (MINIBAR). Meanwhile, having flowering plants in the garden (FLOWER), the hotel, or the guest house being close to the beach (BDISTANC) and having the sea view to the rooms (SEAVIEW) were the significant environmental characteristic variables.

In general, it is assumed that room rates of a hotel or a guest house are determined by the presence of various non-environmental and environmental attributes in that hotel or guest house. The priority status gained by a particular attribute is strictly based on choices of the customers or the level of importance they give to a particular attribute. Therefore, the determination of room rates is mainly based on the choice of tourists. However, pricing decisions are complex and are influenced by internal factors like short-term marketing objectives, long-term marketing strategies and the cost, and external factors like market demand and supply conditions, the competition and other environmental factors (Chen and Rothschild, 2010).

The Influence on the Room Rates from the Non-Environmental Characteristics of the Hotels and the Guest Houses

The present study has revealed that there was an influence on the room rates from the non-environmental characteristics of the hotels and the guest houses. As expected, the general facilities of the hotels and the guest houses and their rooms have been considered by the tourists when choosing their accommodation.

Accordingly, the room rates of the hotels and the guest houses with a swimming pool were 73.7% higher than the room rates of the hotels and the guest houses without a swimming pool, *ceteris paribus*. In the present study, the greatest influence was observed regarding the availability of a swimming pool. A similar trend has been observed in previous studies (Mendoza-González et al., 2018; Yalcin and Mert, 2018). However, the presence of a swimming pool has not influenced the room rates in some of the previous studies (Thrane, 2006; Chen and Rothschild, 2010; Andersson, 2013). The Hikkaduwa beach is the key factor in the emergence of tourism in Hikkaduwa. Almost all the tourists spend the entire daytime at the beach. They are engaged in water sports, swim, or relax basking in the warm sunshine. After being at the sea or the beach for a long time, they are used to having a bath in the swimming pool. In most of the hotels and the guest houses, the swimming pools were situated towards the seaside. In addition, the entrance to the beach from the hotel or the guest house was through the swimming pool. As a result, the presence of a swimming pool may have become an attractive characteristic for tourists. The increase of the size of the room by one more square foot resulted in an increase of the room rate by 0.1%. Some of the previous studies (Akaegbu, 2013; Castro et al., 2016) have offered supporting evidence. Although it was significant, the influence from the room size was comparatively low. The room rates of the hotels and the guest houses with air-conditioned rooms were 29.3% higher than the room rates of the hotels and the guest houses without air-conditioned rooms, *ceteris paribus*. The presence of air-conditioned rooms has rarely been used by early researchers in hedonic pricing models (Espinete et al., 2003). Although the tourists visit Hikkaduwa especially for the sunshine, they may prefer to have a comfortable life with facilities like air conditioning. Similarly, the room rates of the hotels and the guest houses with the internet access to the rooms via Wi-Fi were 36.7% higher than the room rates of the hotels and the guest houses without that facility, *ceteris paribus*. Even though it has not been a significant influencing factor in most of the previous studies (Andersson, 2013; Castro et al., 2016), Chen and Rothschild (2010) have found such a significant influence on room rates from having the internet access in the hotel rooms in Taipei. Tourists mostly come to Hikkaduwa from developed countries, where all the day-to-day activities are carried out through the internet. Therefore, having the internet facilities has been highly valued by tourists as a useful attribute. The room rates of the hotels and the guest houses with a minibar inside the rooms were 69.2% higher than the room rates of the hotels and the guest houses without that facility, *ceteris paribus*. Convenience might have played a role behind that result. Surprisingly, the room rates of the hotels and the guest houses with tea and coffee making facilities inside the rooms were 58.1% lower than the room rates of the hotels and the guest houses that do not provide that facility, *ceteris paribus*. Existence of numerous outside options in the Hikkaduwa area may have diminished the importance of this in-house amenity.

The influence on room rates from having a star rating, a bar, a restaurant, a vehicle park for more than ten vehicles, the security, and a telephone in the room was insignificant. Considering the star rating, similar results have been observed in previous research studies (Chen and Rothschild, 2010; Andersson, 2013).

Table 2: Results of the linear regression analysis based on the hedonic pricing model

	Coefficient	Standard Error	t-value
STAR	-0.089	0.226	-0.394
VPARK	0.102	0.133	0.763
POOL	0.737 *	0.213	3.468
BAR	-0.159	0.142	-1.115
SECURITY	0.173	0.129	1.341
RESTURNT	- 0.056	0.118	-0.479
ROOMSZ	0.001 *	0.000	2.163
AC	0.293 *	0.141	2.069
PHONE	0.272	0.169	1.604
INTERNET	0.367 *	0.126	2.922
TEACOFFE	-0.581 *	0.270	-2.153
MINIBAR	0.692 *	0.227	3.047
GARDEN	-0.031	0.164	-0.190
TREE	-0.245	0.133	-1.844
FLOWER	0.299 *	0.121	2.467
POND	0.131	0.197	0.663
SUMMERHUT	0.028	0.110	0.251
BDISTANC	0.415 *	0.169	2.457
DIRECT	-0.040	0.221	-0.183
SEAVIEW	0.420 *	0.187	2.244
(Constant)	6.868	0.192	35.831
Adjusted R ²	0.803		
F- value	15.482 *		

*Note: Statistically significant results ($p < 0.05$) were indicated with **

The Influence on the Room Rates from the Environmental Characteristics of the Hotels and the Guest houses

According to the coefficients related to the environmental characteristic variables (Table 2), the room rates of the hotels and the guest houses with 25 or more flowering plants in the garden were 29.9% higher than the room rates that have few flowering plants in their garden or a garden without flowering plants, *ceteris paribus*. Sri Lanka has become popular for tourism because of its natural environment.

Tourists who visit Sri Lanka appreciate that natural environment and they like spending most of their time outside the hotels and the guest houses. Therefore, they may prefer to select hotels and guest houses with characteristics like flowering plants. This has in turn led the room rates of the hotels and the guest houses with the flowering plants in their gardens to increase.

The room rates of the hotels and the guest houses, which were situated close to the beach with a distance of less than 25m from the hotel or the guest house were 41.5% higher than the room rates of the hotels and the guest houses situated beyond that distance limit, *ceteris paribus*. The study carried out by Espinet et al. (2003) has provided supporting evidence as the hotels situated in front of the beach appeared to be 19.4% more expensive. A similar trend has been observed by Mendoza-González et al. (2018). The beach plays a central role behind the tourist visitations to Hikkaduwa. Accommodation enterprises have expressed that the distance between the facility and the beach has an impact on room pricing (Yalcin and Mert, 2018). Most of the tourists spend the entire daytime at the sea, while swimming, surfing, diving, snorkeling, or relaxing at the beach. Such recreational activities bring utmost satisfaction and pleasure to them. They usually come back to the hotel or the guest house only for the meals. Most of the hotels and the guest houses that are within the distance of 25m are situated in the seaside. If they are situated in the landside, they are adjacent to the main road. Therefore, having the hotel or the guest house close to the beach is convenient for them; otherwise, they have to spend a considerable time for travelling. They may also have an opportunity to enjoy the sea breeze. Most of these tourists come from developed countries, and they value and enjoy being with the natural environment. Therefore, they may have valued those opportunities. The room rates of the hotels and the guest houses, which were situated close to the beach, may have become significantly higher due to those reasons.

Similarly, the room rates of the hotels and the guest houses which have the sea view to half or more than half of their rooms were 42% higher than the room rates of the hotels and the guest houses without that opportunity, *ceteris paribus*. Fleischer (2012) has reported a similar trend based on a study of valuing the Mediterranean Sea view, where the price of a room with the sea view was higher by 11% in the high season and by 10% in the low season than that of a room without the sea view. Nature-based recreation is an integral part of the Western society. People in developed countries are interested in protecting the nature and they enjoy the nature (Bell et al., 2007; Shrestha et al., 2007). They highly value the mental satisfaction obtained from viewing the natural environment. Therefore, the natural beauty of the Hikkaduwa sea and the beach has a very high potential to attract tourists, and the tourists admire the sea view. Therefore, the rooms, which have the opportunity to observe the sea from inside of the room, may have been attracted by the tourists. This may have in turn caused the rates of the rooms with the sea view to increase. Accordingly, having the sea view to the rooms may have become a significant influencing factor.

According to the results, the levels of influence on the room rates from these two characteristic variables related to the environmental amenities in the Hikkaduwa beach were very much close to each other.

Considering the difference between the rates of the hotels and the guest houses with the sea view to their rooms and the rates of the hotels and the guest houses without that opportunity, it has recorded the greatest rate difference among the significant environmental characteristic variables. Considering all the significant characteristic variables that have confirmed the expected positive associations with the room rates, the rate differences regarding these two variables were only lower than those of having a swimming pool and a minibar.

Considering the environmental characteristics, having a larger garden, 15 or more trees in the garden, having a pond, five or more summer huts in the garden and the direct entrance to the sea, the results were statistically insignificant. Having a garden has also become insignificant in some of the previous studies (Espinete et al., 2003).

Having a direct entrance to the beach has become significant in some of the previous studies (Mendoza-González et al., 2018). Surprisingly, it has become insignificant in the present study. Even though they do not have a direct entrance to the beach, most of the hotels and the guest houses are situated in the seaside. In addition, visitors to the Hikkaduwa beach are not limited to the tourists who stay in the hotels and the guest houses. Therefore, there are many entering points to the beach, which can be found outside the hotel and the guest house premises. The time taken to access the beach through those outside entrances is not considerable, as those entrances are situated adjacent to the hotel and the guest house premises. As a result, having a direct entrance may not have been valued as an essential feature by the tourists, which in turn does not significantly influence the room rates.

Accordingly, in the present study I was able to confirm that there was an influence on the room rates from the environmental characteristics of the hotels and the guest houses including the characteristics related to the environmental amenities in the Hikkaduwa beach. The tourists have considered about certain environmental characteristics, when choosing a hotel or a guest house to stay. Consequently, this has influenced the determination of the room rates of those hotels and guest houses.

Marginal Willingness To Pay (MWTP) for the Environmental Amenities in the Hikkaduwa Beach

According to the results of the data analysis, the MWTP for the environmental amenities in the Hikkaduwa beach could be considered using two environmental characteristic variables that had a significant influence on the room rates. Those explanatory variables were the hotel or the guest house being close to the beach (BDISTANC) and having the sea view to the rooms (SEAVIEW). The mean value of the average room rates per night was Rs. 5941.56. The values for the MWTP as revealed by the marginal implicit prices were calculated for all the significant explanatory variables with the expected impact (Table 3). So the variable of having tea and coffee making facilities was excluded from the MWTP calculation, although it has become significant.

Table 3: The Marginal Willingness to Pay (MWTP) for the significant characteristics

Variable	MWTP (Rs.)
POOL	4379
ROOMSZ	6
AC	1741
INTERNET	2181
MINIBAR	4112
FLOWER	1777
BDISTANC	2466
SEAVIEW	2496

Accordingly, having sea view to the rooms resulted in the highest MWTP value among all the environmental characteristic variables, and it was Rs. 2496. Meanwhile, the MWTP for being close to the beach was Rs. 2466.

As been revealed by the results, the tourists have valued having the sea view to the rooms more than being close to the beach. The difference between those two MWTP values was very low. However, they may have given more importance to the mental satisfaction gained from having the sea view.

When comparing with the MWTP values for other significant characteristics, the MWTP values for both being close to the beach and having the sea view to the rooms were lower than the MWTP values for having a swimming pool and a minibar. On the other hand, the MWTP values for both of them were higher than those for other four significant variables (Table 3). Although MWTP values for some of the hotel attributes were higher than those of being close to the beach and having the sea view, it has revealed that the tourists have considered about environmental amenities in the Hikkaduwa beach to a considerable extent.

Multicollinearity has been detected by performing the Variance Inflation Factor tests (VIFs). In the present analysis, all the VIF values of the independent variables were less than 5, suggesting that multicollinearity was not a serious problem in the analysis. According to the resulted histogram of the standardized residual values and the Normal P-P Plot of Regression Standardized Residual values, the assumption of normality has not been violated. The scatter plot has indicated that the heteroskedasticity was not an issue for the hedonic pricing model in the present study. Moreover, it has indicated that there were no outliers in the data, as there were no extreme values in the scatter plot.

The influence on the room rates from having the approval of the Sri Lanka Tourism Development Authority was not considered in this study as such attributes were rarely used in the previous studies. There may be an impact on the room rates from this attribute, because the tourists may consider this approval as an indicator of the higher quality of the hotel or the guest house. On the other hand, the tourists may disregard it, if the other characteristics are at a satisfactory level.

Conclusions

This research study has employed a hedonic pricing model in order to investigate the influence on the room rates from the attributes of the hotels and the guest houses in Hikkaduwa, and the Marginal Willingness to Pay for the environmental amenities in the Hikkaduwa beach. Accordingly, it has revealed that there was an influence on the price paid by tourists from the attributes of the hotels and the guest houses. It has identified the significance of selected hotel attributes in the determination of the room rates. Accordingly, some of the non-environmental characteristics and the environmental characteristics of the hotels and the guest houses, including the characteristics related to the environmental amenities in the Hikkaduwa beach have significantly influenced the room rates. Most of the variables were associated with the rates as predicted, while some of them were related in a counter-intuitive way. Considering the Marginal Willingness to pay for the environmental amenities in the Hikkaduwa beach, it has been evident that the Marginal Willingness to Pay value for having the sea view to the rooms was the highest among all the significant environmental characteristic variables. The Marginal Willingness to Pay value for being close to the beach was also considerable.

This study has identified the characteristic variables that have significantly influenced the room rates and their level of influence. These characteristics should be considered as the essential needs of the hotels and the guest houses. The owners of the hotels and the guest houses should focus more on the environmental and non-environmental characteristics that have become significant from the analysis, if those features are not found in their hotel or the guest house. It has revealed about what should be taken into consideration at the inception of the project to avoid unnecessary spending on modification projects in the later stages of the investment. They can be used as a tool for cost effectiveness and investment sustainability (Otegbulu and Tenigbade, 2011). Decisions regarding some of the significant variables like distance to the beach are made only once, when the hotel is built. On the other hand, some of the non-environmental characteristics can be altered at a later stage, although it should be done without incurring considerable costs. Accordingly, the owners are encouraged to replace and upgrade the facilities with the non-environmental characteristics like swimming pool, the internet access, minibar, and air conditioning. If a new hotel or a guest house is going to be built, increasing the room size should be taken into consideration.

Building new hotels and the guest houses close to the beach will enhance the profitability. A huge number of hotels and guest houses have already been situated in the areas close to the Hikkaduwa beach. Therefore, new hotels should be built in these areas with extreme care.

The density of hotels and guest houses in these areas should be taken into consideration, while properly spacing them. If they are spaced too close, the sea view may be hindered and it may increase the environmental pollution in these areas. It will be beneficial, if the number of rooms with the sea view can be increased. Considering the investors in the hotel industry, the resulted association between the room rates and the sea view provides information required in the business plan stage about the hotel design. Building the hotels and the guest houses as multi-story buildings will be able to create that opportunity to most of the rooms.

As tourists have become increasingly more active in the decisions of selecting their accommodation, the hotels with many bad reviews may be rejected in advance. Therefore, it is suggested that the hotels and the guest houses without the characteristics that could significantly influence the rates should not charge the same price as a hotel, which offers all of those facilities, if everything else is the same.

As this study has revealed, the environmental amenities in the Hikkaduwa beach have been valued by tourists. It lays emphasis on the importance and the value of the Hikkaduwa beach in terms of tourism. In addition, the environmental value of the Hikkaduwa beach consists of lots of uses other than the uses for the tourism. Therefore, the environmental value of this ecosystem should be protected to ensure the sustainability of all of those aspects. At present, some kind of attention has already been paid to the Hikkaduwa beach due to the presence of Hikkaduwa marine National Park. However, the number of visitors to Hikkaduwa has been increased, with the development of the tourism sector in Sri Lanka. This may gradually enhance the pollution and the degradation of the Hikkaduwa beach ecosystem. Therefore, more attention should be paid to protect and maintain the environmental amenities in the Hikkaduwa beach. Although the beach related tourism is a profitable activity, it may result in environmental degradation with careless management. Therefore, tourist activities should be limited within the Hikkaduwa beach area and the tourism industry should be developed sustainably. The regular observation of the environmental condition is also imperative. Tourists, local community, and the employees of the tourism industry should be made aware about the importance of protecting the environment. Furthermore, the coastal conservation should be promoted and enhanced.

Moreover, investors should use the information about the significant variables to make economic estimates of the impact of decisions concerning these variables. Hotel managers who are uncertain whether their pricing is in line with the market's expectations should make use of these outcomes. The results of this study draw attention to the attributes that should be advertised and highlighted. The providers of hospitality and tourism products should use such results as a means for strategic pricing (Thrane, 2006). In addition, hotel managers should use these results to assess the potential desirability of rate adjustments and the expected profitability in certain types of hotel related investments (Andersson, 2010).

The results are also useful to hotel chains facing new investment decisions. The information about the influence of different attributes on the determination of room rates could provide an indication of the nature and intensity of price competition in the industry (Chen and Rothschild, 2010). Investors and managers should take into consideration the attributes of hotels and guest houses in line with customers' value hierarchy, when taking investment decisions to realize optimum return on their investment. They must also be sensitive to changes in customer tastes to enhance investment sustainability (Otegbulu and Tenigbade, 2011).

Considering the expansion of the present study, future research studies could consider about the impact from the cost as it has not been considered separately in the present study. However, a comparatively higher cost is involved in establishing almost all the non-environmental features of the hotels and the guest houses. In the case of the environmental characteristics, cost factor may not have played an important role in the determination of the room rates. In the data analysis of the present study, the room rates in the high season and the low season have not been considered separately as the difference between those two categories of room rates was very low. The variation of room rates with respect to the seasonality has been taken into consideration in some of the previous studies (Fleischer, 2012). However, this could be addressed using a multilevel model. Therefore, the room rates in the high season and the low season should be considered separately when designing future research.

However, hotel pricing is a complex phenomenon. Therefore, when performing a hedonic pricing analysis on hotel pricing, it is important to understand that the variables determining the room rates cannot be captured entirely (Andersson, 2013). In the present study, it was assumed that the determination of the room rates in the hotels and the guest houses in Hikkaduwa is based on the selected variables. However, there may be other variables, which have a significant influence on the room rates. The variables that determine the room rates may be different, when conducting the same research in different areas. Therefore, future researchers are encouraged to conduct similar studies considering different variables that might have an influence on the room rates. It is also suggested that the scope of this kind of research studies could be expanded, incorporating the welfare measures. The present study has focused on a limited region in the coastal area of Sri Lanka. It can be expanded to cover the entire coastal area of the country, which will result in valuable comparisons and arriving at decisions considering the entire country.

Overall, this study draws the conclusion that the environmental amenities in the Hikkaduwa beach have been valued to a considerable extent. The tourists have considered these environmental amenities in their decisions regarding the accommodation, which may have then influenced the room rates of the hotels and the guest houses in Hikkaduwa. This has emphasized the value of the environmental amenities in the Hikkaduwa beach for the survival of the tourism in Hikkaduwa. The information provided by the outcomes of this study will be useful in the decisions regarding the management of the hotels and the guest houses in Hikkaduwa.

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