Determining guests' willingness to pay for hotel room attributes with a discrete choice model

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ABSTRACT

Hotel managers need to understand the marginal utility customers associate with a specific attribute of a hotel in order to effectively set up rate fences and to price their rooms accordingly. This study adopted a stated choice experiment and discrete choice modeling method to obtain hotel guests' willingness to pay (WTP) for a specific set of room attributes within a single hotel property. The attributes include room views, hotel floor, club access, free mini-bar items, smartphone service, and cancellation policy. The study discovered that leisure travelers versus business travelers, and first-time visitors versus repeat visitors, perceive different WTP values for various attributes. These findings provide valuable information for hotel managers to segment their market and conduct revenue management practices in order to maximize revenue and profit. The results also demonstrate the value of discrete choice modeling in obtaining WTP for hotel room attributes.

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1. Introduction

On a daily basis, hotel managers and revenue managers face these questions: how much are our guests willing to pay for a higher floor room? How much should we charge for a room with an ocean view? The answers to these questions can help the managers set up appropriate rate fences and hopefully maximize the hotel's revenue and profit. Many times, hotel managers rely on personal experience, trial-and-error, benchmarking with competitors, or rule-of-thumb to determine the degree of variations in price (Coltman, 1992). As a result, their decisions may not be theoretically sound nor generalizable.

Picking a hotel room is usually an intrinsically complex and idiosyncratic task (Pan et al., 2013): one guest may prefer a soft bed while the other may like a hard one. However, certain attributes are almost universally desirable by all guests – larger room space, free services, a quieter room, etc. Knowing customers' perceived utility of these attributes, hoteliers can up-sell rooms, cross-sell other products, offer product bundling, or add free service to attract more guests.

A technique to obtain marginal values of hotel and room attributes adopts hedonic regression models on room rates (Monty and Skidmore, 2003; Chen and Rothschild, 2010). Although abundant studies have been conducted on pricing issues in the hospitality literature, only relatively limited studies focused on the relationship between hotel attributes and hotel room pricing from a customer's perspective. Other past studies in the hospitality field mostly focus on the selection of hotels among a number of alternatives (Chan 1998; Chu and Choi 2000; Law and Hsu 2005; Lewis 1985; Zins 1998). To the best of our knowledge, no published studies have addressed the choice of a hotel room within a specific property.

In this study, we used stated choice experiment and discrete choice modeling to investigate the marginal utilities of several hotel room attributes applicable to a specific hotel in Hong Kong. By manipulating attributes associated with hotel rooms' floor level, room view, club access, free mini-bar items, smartphone service, and cancellation policy, and presenting different attribute combinations to the guests, we modeled the utility contribution of each attribute. In addition, we combined the choice of hotel rooms with trip characteristics to analyze and reveal different utility values between leisure versus business travelers, and first-time versus repeat visitors. The study is the first of its kind in investigating hotel room attributes with a discrete choice modeling technique. Individual hotel managers can also use the method to determine appropriate levels of prices and rate fences for their services and products.

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2. Literature review

2.1. Hotel attributes and pricing

The factors affecting guests' choice of a hotel are complicated (Lockyer, 2005), but recognizing the hotel attributes that influence hotel choice and the features that are perceived as being important by guests helps hoteliers to make optimal decisions for hotel development and pricing strategy. Many studies in the tourism and hospitality literature have investigated the key attributes which affect guests' hotel selection. For example, a study by Atkinson (1988) showed that the most important attribute for guests in hotel selection was cleanliness, followed by security, pricing, and services offered. Wilensky and Buttle (1988) found that hotel guests evaluate these significant components: personal service, physical attractiveness, opportunities for relaxation, standard of services, appealing image, and value for money. By comparing 26 attributes across several market segments in Singapore, Mehta and Vera (1990) found that the key attributes used in selecting a hotel differed by market segment. A study by Ananth et al. (1992) revealed that price and quality were rated as the most important attributes, followed by security and convenience of location. Using the Choquet Integral method, Li et al. (2013) discovered travelers' preferences that affect their hotel selections.

In addition, a few scholars have focused on a business traveler's perspective. McCleary et al. (1994) found that the top five attributes valued by business travelers include business facilities, basic facilities, personal services, free extras, and convenient eating facilities. Cobanoglu et al. (2003) identified twelve major attributes which affect a business traveler's hotel selection decision. These include service, price and value, security, extra amenities, technology, room comfort, food and beverage, complimentary goods, parking, location, health sensitivity, and single sensitivity.

Other scholars have tried to connect key hotel attributes to pricing. For example, by comparing the internet room rates for 10 US cities, Collins and Parsa (2006) identified numerous factors affecting pricing decisions: star rating, management type, location, size and amenities. While a variety of analytical approaches have been employed, such as conjoint analysis (Goldberg et al., 1984) and latent growth curves (Coenders et al., 2003), the hedonic pricing model is the most widely applied for hotel room pricing studies (Chen and Rothschild, 2010). Developed by Rosen (1974), the hedonic pricing model is based on the consumer theory of Lancaster (1966) and posits that a product or service is sold as the bundle of inherent attributes. This model attempts to analyze the relationship between attributes of a product or service and its price. This approach has been applied in the estimation of the economic value of various goods and services in the tourism and hospitality industry, such as tour prices, hotel room rates, airfare prices, and restaurant prices (Thrane, 2005). Numerous studies have applied the hedonic pricing approach to examine the relationship between hotel attributes and prices. For example, using data obtained for 73 hotels from an Internet travel agent, Chen and Rothschild (2010) examined the impact of a variety of attributes on hotel room rates in Taipei. Their study found that hotel location, the availability of LED TV, and the presence of conference facilities have significant effects on both weekday and weekend room rates. Espinet et al. (2003) explored different hedonic price effects on holiday hotels and found that there are significant effects on price between four-star hotels and hotels of other star ratings. Monty and Skidmore (2003), using data on price and amenities collected from bed and breakfast accommodations in Southeast Wisconsin, found that location, day of week, and time of year are important determinants of hotel price, but fireplaces, themes, scenic views, and room service were not sig-

nificant determinants. Hamilton (2007) also examined the effects of coastal and other landscape features on the attractiveness of tourist destinations using the hedonic price technique.

While the hedonic pricing method is useful to understand the relationship between hotel attributes and hotel room rates, research using this method often analyzes hotel room rates collected from published resource such as Internet travel agents (e.g., Monty and Skidmore, 2003; Chen and Rothschild, 2010). However, such room rates are decided by hoteliers, and they may not reflect guests' genuine perceived value of hotel attributes. Customers assign a certain value to goods and services based on their own unique needs and desires and not necessarily on the cost of the products or services (Cross, 1997). Customers choose the price they are willing to pay based on the value they receive from a product or service (Mohammed, 2005). Only when the value perceived by the customer matches or exceeds the price do customers execute a purchase (Cross, 1997).

2.2. Consumers' willingness to pay (WTP) for hotels

A few scholars have explained customer's willingness to pay (WTP) in the context of the theory of planned behavior (TPB). The theory was intended to explain all behaviors over which people have the ability to exert self-control. According to TPB proposed by Ajzen (1985), behavior depends on both motivation (intention) and ability (behavioral control) and this theory has been applied in contingent valuation research assessing WTP for different types of products and services. Various research topics include abatement of forest regeneration cuttings (Pouta and Rekola, 2001), drugs indicated for the treatment of Alzheimer's disease (Werner et al., 2002), and online music (Lin et al., 2013). Contingent valuation has been provided a psychological explanation that argues WTP bids represent psychological attitudes rather than personal economic valuations (Ryan and Spash, 2011). In the context of contingent valuation, WTP is interpreted as behavioral intention and thus most studies adopting TPB focused on finding drivers of WTP for various activities. However, in current study, WTP refers to the maximum amount a customer is willing to spend for a product or service (Monroe, 2003), and it is an estimation of the value that an individual assigns to a consumption or usage experience in monetary units (Homburg et al., 2005). It is important for hoteliers to know guests' WTP in estimating demand and designing optimal pricing (Wertenbroch and Skiera, 2002).

A few studies focused on guests' WTP for various hotel attributes. Kuminoff et al. (2010) focused on the impact of a hotel's green amenities on hotel room rates and found that hotel customers can expect to pay premiums for a standard room in a green hotel. Similarly, Kang et al. (2012) found that hotel guests are willing to pay a premium for environmentally friendly and sustainable practices of the U.S. hotel industry. This study discovered that hotel guests with higher degrees of environmental concerns are willing to pay higher premiums for hotels' green initiatives. Wong and Kim, 2012 explored the differences in hotel guests' WTP for different views from hotel rooms by applying the contingent valuation method. Heo and Hyun (2015) found that the inclusion of luxury amenities in the room has the effect of increasing both customers' estimation of the room rate and their WTP for it.

In general, most studies adopted a supply-side approach by using data obtained from actual published rates or applied direct methods to estimate guests' WTP. For example, Wong and Kim (2012) directly asked the guests about the amount of money they were willing to pay for two hotel room attributes: view from the room and the room's floor level. However, indirect methods, such as stated choice experiments, are generally a more accurate approach