How does hotel pricing influence guest satisfaction by the moderating influence of room occupancy?

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ARTICLE INFO

ABSTRACT

Whether the product price increases customer satisfaction or rather decreases it has been actively debated for some time. A non-linear correlation between the hotel price and guest satisfaction, explored empirically in this paper, implies that the two phenomena are actually not inconsistent with one another At the low price level, room price and food and beverage (F&B) price leads to an increase in guest satisfaction whereas the high price level could have just the opposite effect The results suggests an inverse U shaped relationship between price level and guest satisfaction On the other hand, the room price guest satisfaction link could be affected by the moderating influence of room occupancy to be a U shaped function This paper reports results from a study on the influence of hotel pricing on guest satisfaction in the context of room products and F&B products in Taiwanese international tourist satisfaction It is found that the hotel pricing has a quadratic effect on guest satisfaction

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1. Introduction

Customer satisfaction is one of key factors in measuring companies' competitiveness and firms' success (Bitner and Hubbert, 1994). From both the theoretical and empirical aspects, customer satisfaction has been considered as one of the most prominent factors of whether customer needs are fulfilled or not. The valuation of customer perception allows hotel manager to involve and determine their objectives for their pricing strategy. Despite the existence of several studies on tourist satisfaction, there remind some gaps in knowledge. The purpose of this study is to empirically investigate the impacts of hotel price on guest satisfaction with the purchase of room products and food and beverage (F&B) products.

Satisfaction has been identified as having an intricate relationship between expectations and experiences. Oh and Parks (1997) define that positive (negative) disconfirmation occurs when a product or service offers a better (worse) experience than expected – the so-called satisfaction (dissatisfaction). Hence, the quality and sacrifice perceived by the consumers can be treated as the main antecedent of satisfaction (Campo and Yagüe, 2008). Theoretically, price can be both an indicator of the amount of sacrifice needed to purchase a product and an indicator of product quality. Stiglitz (1987)'s empirical evidence in labor market and capital market support this paradox. Similar arguments have been found in the field of tourism and hospitality research. Campo and Yagüe (2008) find that the effect of tour package price on tourist satisfaction is insignificant. For the non-significant relationship, they explain that the positive price effect from quality is offset by the negative price effect from sacrifice. Furthermore, they investigate this relationship between perceived quality and price, and find the medium prices are those that obtain the highest levels of satisfaction (Campo and Yagüe, 2009). Parasuraman et al. (1991) and Bojanic (1996) show that perceived prices have a positive influence on lodging guests' perceived quality. A positive relationship between perceived quality and guest satisfaction is found in a restaurant context (Swan and Trawick, 1981). However, Cadotte et al. (1987)'s restaurant study does not suggest any casualty between perceived quality and customer satisfaction. Yet the role of hotel pricing influencing guest satisfaction with the purchase of room products and food and beverage (F&B) products remain unknown. Based on the above reasons, we construct the two testable hypotheses as follows:

H1. There is a non-linear relationship between room price and room satisfaction due to the two-sign price effect on satisfaction:

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Table 1
Definition and descriptive statistics of variables ($n = 103$).

Variables	Definition	Mean	S.E.
SAT_RM	Room satisfaction, ranging from 0 to 10	8.2893	0.8264
SAT_F&B	F&B satisfaction, ranging from 0 to 10	7.2641	0.8158
PRICE_RM	Price of room	3499.0179	2082.7864
PRICE_F&B	Price of food and beverage	32783.2870	37067.1660
SQ_RM	Room service quality	0.2968	0.1422
SQ_F&B	F&B service quality	0.0511	0.0736
HHI_RM	Measurement of room service market concentration	0.0982	0.0565
HHI_F&B	Measurement of F&B service market concentration	0.1057	0.0533
Chain	Type of operation (1 = Chain; 0 = independent)	0.3661	0.4839
Metro	Type of location (1 = metropolitan area; 0 = otherwise)	0.6071	0.4906
OC	Room occupancy rate	0.6559	0.1930

one positive (as an indicator of product quality) and the other negative (as an indicator of sacrifice).

H2. There is a non-linear relationship between F&B price and F&B satisfaction due to the two-sign price effect on satisfaction: one positive (as an indicator of product quality) and the other negative (as an indicator of sacrifice).

Chen and Chang (2012) point out that price discrimination has become an essential tool to reduce lodging demand uncertainty by setting different price based on customer type, time period and sales channels. Compared with that in an off-peak season, a guest in a peak season (high occupancy) is expected to be less satisfied due to the relatively high room rate and the business itself (Mattila and O'Neill, 2003). The above arguments provide the authors with incentives for identifying a moderator which could help to explain how the strength or direction of the relation between price and satisfaction could be affected by the moderating influence of a third independent variable. Specifically, this paper empirically studies the moderating influence of room occupancy on the room pricing-guest satisfaction link in the hotel industry. The third hypothesis is followed as:

H3. The strength or direction of the relation between room price and guest satisfaction depends on room occupancy.

2. Method

The dependent variables for hotel customer satisfaction, including room satisfaction (SAT_RM) and F&B satisfaction (SAT_F&B), are collected on the Agoda site. Due to the diversity of customers using the site, Agoda was also adopted in Zhou et al. (2014)'s customer satisfaction analysis. All independent variables related to hotel characteristics and market factors are from the monthly reports of international tourist hotel (ITH) operations published by the Taiwan Tourism Bureau in September 2014.

The definition and descriptive statistics of all variables used in our empirical analysis are listed in Table 1. Room satisfaction (SAT_RM) and F&B satisfaction (SAT_F&B) are calculated by average score from the customer review data in each ITH. According to Hu et al. (2010) study, price of room (PRICE_RM) is measured by average daily room rate while price of food and beverage (PRICE_F&B) is measured by dividing the total food and beverage expenditure by the area of equivalent food and beverage. To measure service quality, we employ the ratio of room staff per guest room and the ratio of F&B staff per floor area as a proxy of hotel room service quality (SQ_RM) and F&B service quality (SQ_F&B) base on Wang et al. (2006) and Chen and Lin (2012) approach. For the variable of market concentration, we use the Herfindahl-Hisrchman index (HHI) to sum up the squared market shares by all ITHs in room services (HHI_RM) and F&B service markets (HHI_F&B) in each geographic location suggested by Taiwan Tourism Bureau: northern area (Taipei City), southern area (Kaohsiung City), central area (Taichung City), west-

ern area (Tauyuan, Hsinchu and Miaoli countries), eastern area (Hualien County), scenic area and other regions.

In order to contrast the non-linear relationship between room (F&B) price and guest satisfaction, we formulate a quadratic regression analysis:

$$SAT\_RM = \beta_{10} + \beta_{11}PRICE\_RM + \beta_{22}PRICE\_RM^2 + \beta_1' X_1 + \epsilon_1 \quad (1)$$

$$SAT\_F\&B = \beta_{20} + \beta_{21}PRICE\_F\&B + \beta_{22}PRICE\_RM^2 + \beta_2' X_2 + \epsilon_2 \quad (2)$$

where X_1 consists of room service quality (SQ_RM), operation type (Chain), location (Metro) and market concentration (HHI_RM); X_2 consists of F&B service quality (SQ_F&B), operation type (Chain), location (Metro) and market concentration (HHI_F&B).

The aim of this paper is to investigate whether hotel pricing affects guest satisfaction via the moderate effect of room occupancy. The moderator effect can be examined by investigating the interaction term of room price and occupancy following Baron and Kenny (1986). To account for the moderating influence of room occupancy, the regression model for room satisfaction is formulated as follows:

$$SAT\_RM = \beta_{30} + \beta_{31}PRICE\_RM * OC + \beta_{22}PRICE\_RM^2 * OC$$
$$+ \beta_3' X_1 + \epsilon_3 \quad (3)$$

3. Results

Table 2 gives the results of estimating Eq. (1–3) using ordinary least squares (OLS). Columns 1 and 2 report the estimated results of room satisfaction, while the estimated results of F&B satisfaction is shown in Column 3. In Column 1, our main findings indicate that room price has a quadratic effect on room satisfaction, as illustrated by the coefficients on PRICE_RM (which is positive and significant) and PRICE_RM^2 (which is negative and significant). In other words, as the price paid by the guest increases, the guest is more likely to uses price as an indicator of product quality. However, at some price level, the negative price effect from sacrifice will start to outweigh the positive price effect from product quality. Thus, guest satisfaction becomes negatively associated with room price. Column 3 reports the similar pattern regarding the F&B price effect on F&B satisfaction. On the other hand, Column 2 suggests a U shaped relationship between room price level and guest satisfaction while the moderating influence of occupancy is taken into account, as illustrated by the coefficients of PRICE_RM *OC(which is negative and significant) and PRICE_RM^2 *OC (which is positive and significant). The results seem to imply that room price in the high room occupancy rate (a peak season) is treated as an indicator of sacrifice as the room price increases initially. As the maximum price threshold acceptable to the guests increases, the guest in a peak season increases uses room price as an indicator of product quality.

Table 2
Estimations of room satisfaction and F&B satisfaction.

	SAT_RM				SAT_F&B	
	(1) Coefficient	*t* statistics	(2) Coefficient	*t* statistics	(3) Coefficient	*t* statistics
PRICE_RM	0.0005	3.68[c]	0.0015	3.26[c]	–	–
PRICE_RM²	−3.26E-08	−2.77[c]	−1.25E-07	−2.98[c]	–	–
SQ_RM	1.2162	1.86[a]	1.1474	1.78[a]	–	–
HHI_RM	3.3730	2.54[b]	3.7164	2.81[c]	–	–
PRICE_F&B	–	–	–	–	1.04E-05	1.68[a]
PRICE_F&B²	–	–	–	–	−7.3E-11	−1.73[a]
SQ_F&B	–	–	–	–	3.667625	0.77
HHI_F&B	–	–	–	–	−0.36369	−0.22
OC	–	–	3.4380	2.34[b]	–	–
OC*PRICE_RM	–	–	−0.0015	−2.21[b]	–	–
OC*PRICE_RM²	–	–	1.37E-07	2.28[b]	–	–
Chain	0.0536	0.35	0.0410	0.28	0.2445	1.35
Metro	0.2738	1.69[a]	0.2005	1.2	−0.2634	−1.37
Constant	6.1083	15.99[c]	3.8317	3.74[c]	7.1364	19.21[c]
R-squared	0.3684		0.4138		0.1561	

[a] Significance at 10% confidence level.
[b] Significance at 5% confidence level.
[c] Significance at 1% confidence level.

For the service quality, the empirical results indicate that room service quality increases guest satisfaction, while the effect of F&B service quality on guest satisfaction is not significant. We also find that market concentration in the room market (*HHI_RM*) is positively associated with guest satisfaction while the effect of market concentration in the F&B market (*HHI_F&B*) on guest satisfaction is not significant.

4. Conclusions & limitations

This study analyses the nature of the relationship between hotel pricing and guest satisfaction. The literature on price as signals of product quality is abundant but relatively little attention is paid to price as indicators of sacrifice. Our empirical evidence shows that a non-linear correlation between the hotel price and guest satisfaction seems to lend some support for the two-sign effect that price exercises on satisfaction, positive (quality) and negative (sacrifice). Furthermore, we find that the relationship between room price and guest satisfaction can be affected by the moderating influence of room occupancy. The results may shed light on some managerial implications for pricing strategy in the hotel industry. Although hotel pricing might directly affect guest satisfaction, its effect will be depleted in a peak season (high occupancy), and vice versa. Therefore, hotel yield management may not just controls room inventory but also affects guest satisfaction.

Finally, this study has the limitations. To measure service quality, we employ the ratio of room staff per guest room as a proxy of hotel room service quality (SQ_RM). In hotel context, this variable is not related to quality.

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