Revenue management, hedonic pricing models and the effects of operational attributes

Donald R. Bacon

Department of Marketing,
Daniels College of Business,
University of Denver,
Room 495, 2101 S. University Blvd.,
Denver, CO 80208, USA
Fax: (303) 871-2323
Email: dbacon@du.edu

Ali Besharat

Department of Marketing,
Daniels College of Business,
University of Denver,
Room 489, 2101 S. University Blvd,
Denver, CO 80208, USA
Fax: (303) 871-2323
Email: ali.besharat@du.edu

H.G. Parsa*

Fritz Knoebel School of Hospitality,
Daniels College of Business,
University of Denver,
344 Joy Burns Center, 2044 E. Evans Ave.,
Denver, CO – 80208, USA
Fax: (303) 871-3096
Email: hparsa@du.edu
*Corresponding author

Scott J. Smith

School of Hotel, Restaurant & Tourism Management,
University of South Carolina,
701 Assembly St., Columbia, SC 29208, USA
Fax: (803) 777-8199
Email: ssmith1@mailbox.sc.edu

Abstract: Utilising secondary data, the present study investigated the effect of operational attributes and product type (cuisine) on the price that consumers paid in restaurants. Contrary to the commonly held belief, food quality generally had the lowest impact on price. High-end restaurants differed

significantly from low-end restaurants on the effect of food, service and ambiance quality on the price that consumers paid. Study results clearly indicated that high-end restaurants displayed a concave curve in all three operational attributes in relation to increasing price points. For low-end restaurants, the curves of operational attributes were either horizontal or convex in relation to increasing price points.

Keywords: pricing; hedonic pricing; operational attributes; small business; restaurants.

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Biographical notes: Donald R. Bacon's research interests include applying psychometric theory and multivariate statistics to such problems as customer satisfaction assessment and the evaluation of management education. He is the Editor of *Journal of Marketing Education*. Most recently, he is involved in several studies assessing the effect of various management education experiences, including group projects, case teaching, and other writing assignments, on learning outcomes. He teaches marketing metrics, consumer behaviour, marketing research, and new product development. He won several awards and recognitions for research excellence.

Ali Besharat's areas of research interest entail behavioural decision making, marketing communications, and branding. His work has been published in the *Journal of Consumer Psychology*, *Journal of Advertising*, *Journal of Public Policy & Marketing*, *Marketing Letters*, *Industrial Marketing Management*, *Journal of Business Research*, and *Psychology & Marketing*, among others. He has received numerous college-wide and university-wide fellowships, research and teaching awards. He has been frequently featured in popular media outlets. Prior to his academic career, he worked in the energy industry as a consultant and manager. He teaches courses in consumer behaviour, marketing research, introduction to marketing, marketing management and IMC.

H.G. Parsa holds Barron Hilton Chair in Lodging and a Professor. He is a recipient of *Fulbright Visiting Scholar Fellowship* in 2005. Currently, he serves as an Associate Editor, *Journal of Hospitality and Tourism Research (JHTR)*. His research interests include sustainability and green practices, behavioural pricing decisions, entrepreneurship, and business insolvency in hospitality. His teaching interests include revenue management and pricing decisions, cases in hospitality marketing, and entrepreneurship and concept development. He frequently consults in the hospitality industry. He has extensive hospitality industry experience prior to joining the academia.

Scott J. Smith is an Assistant Professor with the University of South Carolina, Columbia, SC. His areas of research interests include pricing and revenue management in the hospitality industry. He has presented his research nationally and internationally at various conferences. Prior to academia, he was with Marriott Hotels, Sheraton Hotels, Walt Disney World Resorts and Hilton Hotels in various middle management positions around the country in USA.

The first three authors have contributed equally to this paper.

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1 Introduction

Revenue management refers to selling perishable goods and services to the most profitable mix of customers that produces maximum revenues (Cross, 1997). Most small businesses that practice revenue management strategies focus on demand shifting techniques to maximise filling seats and turning tables as in the case of restaurants (Kimes et al., 1998). Revenue management best applies to businesses with perishable products or services and assumes that it is more profitable to provide a lower price to increase demand and accomplish a sales transaction than to let a product or service lapse into worthlessness after a given cut-off point. The airline industry is the pioneer of modern revenue management which evolved in conjunction with the advancements in computer technology during the 1980s (Avinal, 2004). Restaurants and airlines are well suited for revenue management strategies as both an unoccupied restaurant seat and an airplane seat have no value after the meal period has elapsed or the airliner has departed. Given that an unoccupied seat does not produce revenue, revenue management strategies seek to fill all restaurant and airline seats and realise revenue from maximising transactions.

Restaurants have been practicing various types of revenue management strategies for the past 15 years to increase profitability (Kimes and Beard, 2013). Restaurants effectively represent small businesses with nearly 1,000,000 operating units generating over $680 billion in annual revenues (National Restaurant Association, 2014), and a majority of them are family-owned businesses (Kotler et al., 2003). In their study of revenue management in restaurants, Karmarkar and Dutta (2011) found that when implemented properly, revenue management results in 33% higher revenues than do traditional methods practiced in restaurants. Utilising restaurant revenue management data from a restaurant in Atlanta, Georgia, Bertsimas and Shioda (2003) found that restaurants can increase revenues from 3.5% to 7.3% by adopting sophisticated revenue management models compared to the traditional first-come first-served models.

Nevertheless, while helpful, increasing profitability through demand shifting does not utilise all successful revenue management techniques employed by other industries. Specifically, the practice of hedonic pricing in revenue management has been underutilised in the context of small businesses such as restaurants. Typically restaurants have a relatively low fixed cost and high variable costs (Kimes et al., 1998) which allows for a dynamic pricing structure that can be adjusted based on the level of demand. While most restaurants employ a different pricing structure for different meal periods (i.e., breakfast, lunch, dinner), they typically do not implement dynamic pricing for the day of the week or high demand periods except for discounted prices on slow days such as Mondays and Tuesdays. Hedonic pricing is an economic concept that determines the contributions that a product or service's individual attributes make to the total price charged (Rosen, 1974). Essentially, hedonic pricing attempts to place a financial value on the intangible characteristics of a product or service (Cropper et al., 1988).

An example of hedonic pricing in the lodging industry is two identical hotels with similar physical characteristics that charge different room rates based on hedonic factors wherein Hotel A charges more because of its higher brand recognition, better service, and more luxurious amenities. Bull (1994) utilised a hedonic pricing model to help determine the value and price of a hotel or motel based on environmental factors (e.g., location, view from the room, distance to nearby destinations, and neighbourhood characteristics. Hedonic pricing has been studied in the context of a wide variety of business characteristics including ski lifts (Falk, 2008), hotel rooms (Chen and Rothschild, 2010; Espinet et al., 2003; Portolan, 2013), destinations (Rigall-I-Torrent and Fluvià, 2011), and holiday packages (Haroutunian et al., 2005).

In the present paper, we discuss the conceptual development and research leading to the study hypotheses and present the methodology and results of the tests of the hypotheses. We provide the theoretical and managerial implications of the findings and conclude with the study's research limitations and directions for further research.

2 Literature review and hypotheses

2.1 Operational attributes and hedonic pricing

The cue utilisation theory (Szybillo and Jacoby, 1974) suggests that a product emits a series of cues that signal quality to consumers. Cues can be categorised as extrinsic or intrinsic to the product (Richardson et al., 1994; Miyazaki et al., 2005). Intrinsic cues represent the physical attributes and the integral part of a product such as a restaurant's food quality or the location and the comfort of a hotel room. Extrinsic cues are related to the product, but are not part of the product itself (e.g., a restaurant's name and signage). Extrinsic cues are product-related attributes that can be altered while intrinsic cues are inherent to the product itself (e.g., an entrée's ingredients) and cannot be easily altered. Research suggests that intrinsic and extrinsic cues concurrently influence consumers' willingness to pay (WTP) and their evaluation of product quality (Miyazaki et al., 2005).

WTP can be defined as the amount of money that a consumer will sacrifice in order to receive a service. Although WTP usually applies to a maximum amount, a price that is set too low can negatively affect consumer perceptions of the product/service (Raab et al., 2009). A low price can lead to the perception that a product or service is cheaply made and of low quality which can dissuade a customer completely (Hu et al., 2006). Consumers are more likely to evaluate their post-purchase experiences at the attribute level rather than the product level (Mittal et al., 1998). Thus, operational attributes play a significant role in consumers' WTP and willingness to patronise in a restaurant (Han, 2013).

In the hospitality industry, consumers have specific expectations concerning the restaurant's location and its operational attributes such as food quality, service quality, ambiance, convenience, price and value (Kim et al., 2009; Stevens et al., 1995). Food, service and ambiance are the three most commonly agreed-upon attributes of restaurant quality (Bujisic et al., 2014; DiPietro et al., 2011). Restaurants must meet or exceed customer expectations for quality of food, quality of service, and ambiance to sustain and succeed in the restaurant business (Dutta et al., 2014; Perutkova and Parsa, 2010).

Food quality has been viewed as the most important indicator of restaurant quality and as a key predictor of customer loyalty (Ha and Jang, 2010; Mattila, 2001; Namkung and Jang, 2007; Parsa and Njite, 2004; Ryu and Han, 2010). Food quality is crucial to restaurant success (Ha and Jang, 2010; Ryu and Han, 2010), and it positively impacts a customer's overall dining experience (Namkung and Jang, 2007; Sulek and Hensley, 2004). Drawing upon cue utilisation theory (Miyazaki et al., 2005) and that food quality represents an intrinsic cue, it is likely that a consumer's payment decision is strongly influenced by the level of quality of the food offered. Therefore:

H1: The level of food quality positively influences the amount of price that consumers pay at a restaurant.

Service quality is defined as the consumer's judgement of the overall excellence or superiority of the service. It is perhaps the most studied restaurant quality attribute (Bujisic et al., 2014; Dabholkar et al., 2000; Ha and Jang, 2010; Mattila, 2001). Service quality is related to the restaurant experience, separate from the food itself. Thus according to the cue utilisation theory (Szybillo and Jacoby, 1974), service quality is an extrinsic cue in the consumer's restaurant evaluation and spending decisions (Lijander and Strandvik, 1993). Kara et al. (1995) report that service quality is one of the most important attributes in patronising restaurants. Service quality is an important attribute in improving customer satisfaction and building customer loyalty because research shows that customer satisfaction is directly proportional to consumers' intentions to return (Dutta et al., 2007; Oh, 2000).

Increased consumer satisfaction and consumer loyalty lead to greater revenues and larger profit margins (Barsky and Nash, 2003). Satisfied consumers engage in positive word-of-mouth which increases the restaurant's popularity and reduces marketing costs (Bowen and Chen, 2001; Dwyer et al., 1987; Zhang et al., 2010). More importantly, research provides compelling evidence that service quality has a strong and positive impact on consumer's WTP (Homburg et al., 2005). Therefore:

H2: The level of service quality positively influences the amount of price that consumers pay at a restaurant.

Ambiance is an important extrinsic cue that customers may consider when judging the overall quality of a restaurant. Ambiance comprises both 'hard' (e.g., safety, cleanliness, ergonomics, noise, space allocation) and 'soft' (e.g., image, style, comfort) dimensions (Katsigris and Thomas, 2008). Many investments are made in the restaurant industry to develop appealing ambiance in the pursuit of larger consumer market segments and improved consumer loyalty (Berry et al., 2002; Ha and Jang, 2010; Raajpoot, 2002; Reimer and Kuehn, 2005; Ryu and Han, 2010; Turley and Milliman, 2000; Wakefield and Blodgett, 1996; Wall and Berry, 2007). For example, the concept of servicescapes was introduced by Bitner (1992) to stress the importance of physical surroundings to employees and consumers within service industry locations. Wakefield and Blodgett (1996) proposed that restaurant servicescapes include layout, accessibility, aesthetics, electronic equipment, seat comfortability, and cleanliness. Kim et al. (2006) acknowledged that atmosphere, interior design, lighting, and dining area arrangements were central and tangible aspects of a restaurant's physical surroundings that influenced consumer behaviours and their interpretations of a restaurant.

Unlike tangible goods, ambiance plays an important role in services. Since services are intangible in nature, consumers often use ambiance as a cue in judging the quality

of the service they are about to receive (Berry and Clark, 1986; Zeithaml, 1988). Ambiance functions as a signal that indicates the quality and level of service that consumers expect (Bitner, 1992). Therefore:

H3: The level of ambiance quality positively influences the amount of price that consumers pay at a restaurant.

A positive customer experience is essential for financial success in the restaurant industry. Various segments of the industry consider types of service, cuisine and ambiance in an effort to meet distinctive expectations. Njite et al. (2015) found that the relationship between restaurant operational attributes (food quality, service, and ambiance) and consumers' WTP significantly differs between high and low-end restaurants. These results are consistent with earlier findings by Perutkova and Parsa (2010) and Bujisic et al. (2014). However, most of the earlier studies are based on experimental methods using scenarios. Empirical studies have not been conducted that utilise secondary data to explore the relationships between restaurant operational attributes and the consumers' actual payment.

We propose that the relationship between food quality and consumer payment is influenced by the type of restaurant (e.g., high end vs. low end). Food quality serves as a signal for anticipated dining experience and it stimulates consumers' WTP higher prices. As reported by Dutta et al. (2014), the relationship between food quality and consumers' WTP and their patronage for high-end restaurants is curvilinear in nature with a significant and positive relationship after the threshold point. For low-end restaurants, the relationship between food quality and consumers' WTP and their patronage is positive initially and becomes negative after the threshold point. Therefore:

H4a: The influence of food quality on the amount of price that consumers pay at a restaurant will differ across low-end and high-end restaurants.

Interestingly, the relationship between service quality and consumers' WTP is neither always positive nor proportional. In some instances, this relationship is positive as with high-end restaurants and becomes negative after the threshold point for low-end restaurants. Such is the case because the nature of service differs for high-end and low-end restaurants. Standardisation of services is the norm in low-end restaurants. Services focus on convenience, service speed, and order accuracy. For example, in case of quick service restaurants (QSRs), faster service, convenience, simplified ordering, limited menu, counter service, and good to-go packaging are essential for high customer satisfaction (Noone et al., 2007).

Order accuracy, convenience, speed, and service technology are more important for QSRs than simple food quality in building customer loyalty (DiPietro et al., 2011; Qin and Prybutok, 2008). In end services, consumer expectations involve employee interactions and customisation (Clark and Wood, 1998; DiPietro et al., 2011). Thus, a quick service pace at a fine dining restaurant lowers the satisfaction level (Noone et. al., 2007). In upscale restaurants, Dube et al. (1994) stated that food quality followed by service quality and atmosphere impacts the repeat business of a consumer. Mattila (1999) reported that customisation can demand a higher premium price, and it is offered increasingly at high-end services. Given the differing nature of service provided at high and low-end restaurants, one can conclude that consumers' WTP would differ depending on quality of service offered (Voss et al., 1998). Therefore:

H4b: The influence of service quality on the amount of price that consumers pay at a restaurant will differ across low-end and high-end restaurants.

In the context of retail stores, research findings demonstrate the significant influence of environmental cues such as ambiance and design on consumers' price acceptability (Grewal and Baker, 1994). For example, most high-end services such as hospitals, law offices, investment services, and banks tend to have high quality and emotional ambiance to assure consumers that they are going to receive high-quality service. In contrast, low-end services tend to have minimal and functional ambiance as in case of kiosks, book stalls, food vendors, toll booths, bill collection centres, and low-end restaurants (Kim et al., 2009; Wall and Berry, 2007. Therefore:

H4c: The influence of ambiance on the amount of price that consumers pay at a restaurant will differ across low-end and high-end restaurants.

3 Methodology

To test the proposed research hypotheses, data were collected in 2013 from the Zagat Restaurant Surveys, a secondary source and a highly respected international survey organisation. The original data source contained over 5000 restaurants in the New York City area. Every attempt was made to prevent duplications of the same restaurant concept (e.g., McDonalds, Burger King, and Wendy's). After duplications and incomplete data were removed, 2705 restaurants comprised the total sample for analysis. Using the restaurant review standards set by the Zagat organisation, restaurants were evaluated on three attributes: food quality, service and ambiance. Zagat's 1-to-30 scale was used where one represents the lowest value and 30 reflects the highest value for each attribute. This scale was standardised and used consistently for all restaurants in the database. The Zagat dataset provided price information in the form of the guest check average which is the price that a Zagat expert paid at the time of the visit. Each restaurant was visited multiple times to avoid a single-expert-opinion bias and to provide a fair assessment through repeated measures. The location and primary cuisine of each restaurant were also included in the data.

4 Results

Regression analysis was used to test the hypotheses, where the price paid at the restaurant was the dependent variable, and dummy variables for each of 11 cuisines were entered as control variables (the 'miscellaneous' code was not used). The three restaurant attributes (food, service and ambiance) were entered with a linear term and a nonlinear term (e.g., food score and food score squared). The use of regression in this application provides the estimation of what we call term 'attribute value curves' which are similar to Bacon's (2012) attribute utility curves although with one important difference. We examine the relationship between the price that a consumer pays and the level of each attribute. Bacon examined the relationship between overall service satisfaction and the level of each attribute.

A cursory examination of the price data revealed several extreme observations that might distort model estimates. For example, while the mean restaurant price was $36

in the sample, the maximum price was $585. To identify outliers, the full regression model (using all three attributes and 11 cuisines) was estimated and the residuals were examined. Eight standardised residuals with an absolute value in excess of 4.0 were identified and eliminated from further analyses (comprising 0.3% of the original sample). Outlier elimination resulted in a final sample size of 2697 restaurants. To examine differences in attribute value curves between high-end and low-end restaurants, the restaurants were divided into two groups based on a median split on price ($36). Descriptive statistics are shown in Table 1 for the price and service attributes for the total sample and for each split-half sample. Similar statistics are shown for the percentage of various cuisines in Table 2.

Table 1 Service attribute descriptive statistics by samples

	Total sample (*n =2697*)		*Low price* (*n = 1332*)		*High price* (*n = 1365*)	
Attribute	*M*	*SD*	*M*	*SD*	*M*	*SD*
Price	$38.27	$18.15	$24.58	$7.37	$51.63	$18.15
Food	22.09	2.43	21.65	2.41	22.53	2.43
Ambiance	17.94	3.78	16.08	3.60	19.76	3.78
Service	20.03	2.56	18.91	2.46	21.12	2.56

Table 2 Types of cuisine by samples

	Total sample (*n =2697*)		*Low price* (*n = 1332*)		*High price* (*n = 1365*)	
Cuisine	*Count*	*%*	*Count*	*%*	*Count*	*%*
Japanese	144	5	73	5	71	5
French	188	7	42	3	146	11
American	458	17	192	14	266	19
Steak/BBQ	57	2	4	0	53	4
Sandwich	139	5	129	10	10	1
Italian	417	15	99	7	318	23
Ethnic	295	11	180	14	115	8
Quick service	131	5	118	9	13	1
Seafood	53	2	7	1	46	3
Chinese	78	3	66	5	12	1
Miscellaneous	737	27	422	32	315	23

An omnibus test was conducted to determine whether the overall model predicting price differed for the high-priced and low-priced samples. All variables were entered in the model for the total sample and for each of the two split samples. Comparing the sum of the squared errors of the total sample model to the split samples (following Kmenta, 1971, p.373), a significant difference was found, supporting Hypotheses H4a, H4b, and H4c; the models that fit high and low-priced restaurants are significantly different ($F[17, 2663] = 178.56$, $p < 0.001$). The resulting coefficients are shown in Table 3.

As shown in the table and in support of Hypothesis 4a, H4b, and H4c, the coefficients for service attributes are substantially different across the two split halves, especially for ambiance squared, which is significant and negative for the low-priced restaurants and significant and positive for the high-priced restaurants. The *r*-squared is higher in the high-priced restaurant sample than in the low-priced sample (0.561 vs. 0.294, respectively). However, this result may be due to a larger variance in price in the high-priced sample (SD $18.15 vs. $7.37, respectively, from Table 1).

It is important to note that these models have substantial multicollinearity and for two reasons. First, the attribute scores were correlated, with an average attribute inter-correlation of 0.53. Second, the presence of higher order terms, such as the food score and the food score squared, also contributes to multicollinearity. Consequently, stepwise regression analysis was used to obtain a clearer sense of the mathematical form of each attribute's value curve and to eliminate cuisine control variables that are not significantly related to price for each subsample. The resulting models are shown in Table 4.

Table 3 Regression results by sample: forced entry

	Total sample	*Low priced*	*High priced*
R-squared	0.536	0.294	0.561***
Constant	162.07***	–13.57	353.48**
Japanese	5.01***	2.14**	4.81**
French	8.17***	2.63*	2.86
American	2.34**	1.71**	0.07***
Steak/BBQ	18.52***	4.49	11.37*
Sandwich	–11.82***	–6.87***	–7.73
Italian	5.83***	3.49***	0.41**
Ethnic	–1.63	0.01	–3.19
Quick service	–6.54***	–2.64***	–0.07
Seafood	9.13***	5.30*	2.79
Chinese	–3.90*	–1.47	5.20***
Food	–5.62***	1.17	–9.82***
Food^2	0.13***	–0.04	0.24***
Ambiance	–1.38**	1.51***	–5.17***
Ambiance^2	0.09***	–0.02*	0.17***
Service	–8.86***	1.64	–18.06***
Service^2	0.26***	–0.05*	0.47

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

As can be seen in Table 4, all higher order terms (e.g., food score squared) are significant in the models for each sample but they have opposite signs. All of these coefficients are negative for the low-priced restaurants, indicating convex (inverted U) value curves, and all coefficients are positive for the high-priced restaurants, indicating concave (U) value curves. In low-end restaurants, one would expect significant improvement in consumers'

WTP when food quality improved from a low to high level. Interestingly, the linear term for food score was not significant in the low-priced restaurant model.

Attribute value curves based on the results of analysis supporting the first three hypotheses are shown in Figure 1(a)–(c), with values presented in Table 4 showing levels of significance. The curves were generated by employing the coefficients from Table 4 and centering each figure on the mean price and mean attribute level for each restaurant price (high or low) and each restaurant attribute. The scaling of the price and attribute axes is the same for each figure to facilitate comparisons across figures. To avoid extending the curves beyond the bulk of the data in hand, the curves are truncated to show values within 1.645 standard deviations of the attribute mean. The values represent 90% of the restaurants in the sample. As can be seen in the figures, the hypothesised positive relationship between ambiance and price is supported (H3) for both high and low-priced restaurants (Figure 1(a)). However, the hypotheses regarding food quality (H1) and service quality (H2) are only supported among high-priced restaurants (Figures 1(b) and (c)). Thus, among low-priced restaurants, while ambiance has a positive impact on price, food quality and service have a small negative association with price.

Table 4 Regression results by sample: stepwise entry

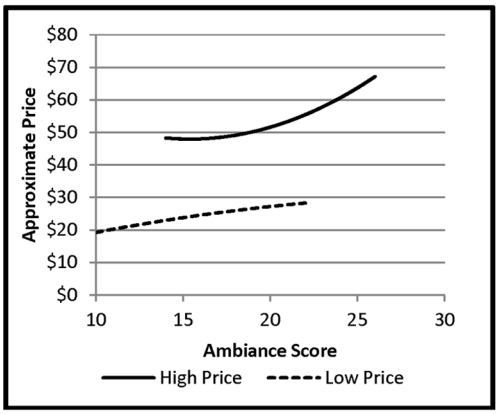
	Low priced	*High priced*
R-squared	0.291	0.559
Constant	–4.699	351.038***
American	1.594**	
Chinese		–3.557**
French	2.631**	2.529**
Italian	3.440***	
Japanese	2.096**	4.439**
Quick service	–2.672***	
Sandwich	–6.902***	–8.105*
Steak/BBQ		11.009***
Seafood	4.998*	
Ambiance	1.455***	–5.187***
Ambiance^2	–0.022*	0.169***
Food		–9.777***
Food^2	–0.009***	0.237***
Service	2.058*	–17.824***
Service^2	–0.062**	0.466***

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

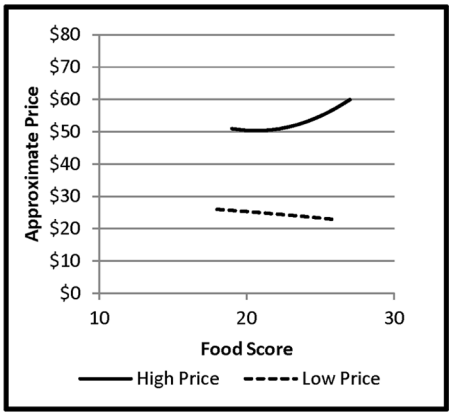
As can be seen in the figures, the attribute value curves for the high-priced restaurants are concave (U) and the curves for the low-priced restaurants are convex (inverted U). The longer, upward-sloping lines in Figure 1(a) suggest that ambiance has the most dramatic positive impact on price for high-priced restaurants but not so for low-priced restaurants. Service also has a dramatic effect on price for high-priced restaurants. These

strong effects are due in part because there appears to be greater variance (a wider range of scores) for the ambiance and service attributes. Note that in Figure 1(a), the price of a high-price restaurant meal varies from the high $40s to the high $60s with changes in ambiance. In Figure 1(c), the price of a high- priced restaurant meal varies from about $50 to just over $70 with changes in service. These changes, at approximately $20 per meal, are much larger than the changes in price related to food quality, at approximately $10 per meal in high-priced restaurants.

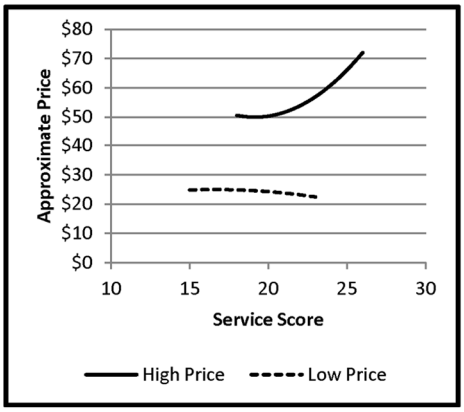
Figure 1 (a) Attribute value curve for ambiance by high and low-priced restaurants; (b) attribute value curve for food quality by high and low-priced restaurants and (c) attribute value curve for service by high and low-priced restaurants



(a)



(b)



(c)

Particularly for low-priced restaurants, the coefficients in Table 4 show a pattern that is often observed in regression models of service performance, that is, unexpectedly negative coefficients or downward sloping value curves (Gustafsson and Johnson, 2004; Van Ittersum et al., 2007). Such unexpected findings have long been attributed to multicollinearity (Grapentine, 1997; Griffin and Hauser, 1993), which may increase the variance of coefficient estimates and thus lead in extreme cases to point estimates that are negative where positive estimates were expected. However, Mason and Perreault Jr. (1991) found that such problems with multicollinearity – namely inflated errors on

parameter estimates may be overcome with large sample sizes. Their Monte Carlo simulation explored the effects of various levels of multicollinearity at various sample sizes and showed substantially diminished estimation errors with increases in the sample, even though the largest sample in their study was only 300. As our smallest sample is more than four times this size (over 1300), multicollinearity is not a strong threat to the validity of our findings.

Further, the downward sloping curves observed here are highly statistically significant, and thus cannot be disregarded as random variation. Instead, the curves should be interpreted as meaningful but perhaps not causal. Among the low-priced restaurants, the quality of the food and service may be higher in well-managed national franchises. At the same time, economies of scale may allow for lower prices. Unfortunately, national franchises may have uninteresting, 'cookie-cutter' interior decorations, leading to lower scores on ambiance. Thus, while higher quality food and service are associated with lower prices, the relationship is not causal, but the relationship between ambiance and price may be causal. In an experimental design, Wansink (2006) found that patrons stayed longer and spent more money in a QSR that was manipulated to have nicer décor. High-priced restaurants are less likely to operate as highly standardised, national franchises, and so the attribute value curves observed there may have more causal interpretations.

The changes in attribute impact can be clearly identified by plotting the slopes of the curves shown in Figures 1(a)–(c). The slopes can be identified by taking the first derivative of the attribute value curve. For example, for high-priced restaurants, the value curve for food is given by the formula

$$\text{Price} = \text{constant} - 9.777(\text{food score}) + 0.237(\text{food score})^2, \tag{1}$$

where the constant was selected for Figure 1(b) that centred the curve around the mean price and mean food score (151.18). To determine the slope of the value curve at any point, the first derivative yields

$$\text{Change in price per change in food score} = -9.777 + 0.474(\text{food score}). \tag{2}$$

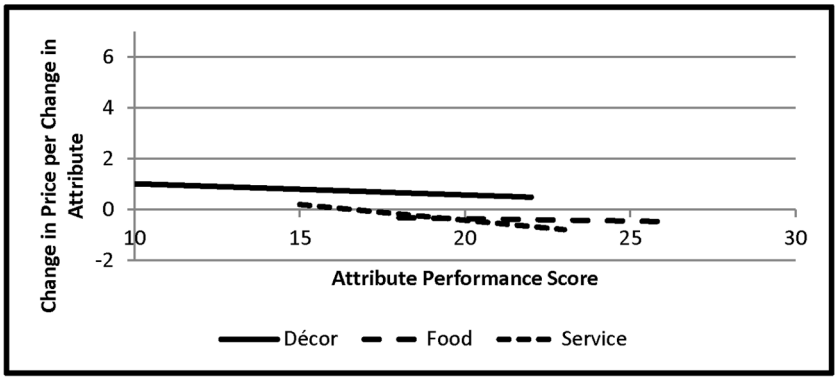
Slope curves for high and low-priced restaurants are shown in Figures 2(a) and (b), respectively. Because equation (2) is linear, the curves in the figures are all linear. Again for ease of comparison, the axes in the two figures are the same. As shown in Figure 2(a), the change in price per change in ambiance is always positive, but diminishing. Also, the change in price per change in service begins positive; however, at higher levels of performance, the change is negative. Thus, ambiance would appear to be the most important attribute to change to support higher prices for low-priced restaurants.

Attribute importance is more complex for high-priced restaurants. Up until a performance threshold level of about 21, ambiance has the highest value, indicating that the greatest changes in price occur with improvements in décor. After that threshold level, the change in price per change in service is higher, indicating that for the highest performance restaurants, changes in service are most important. Note that food quality, while important, never has as strong a relationship with price as either ambiance or service.

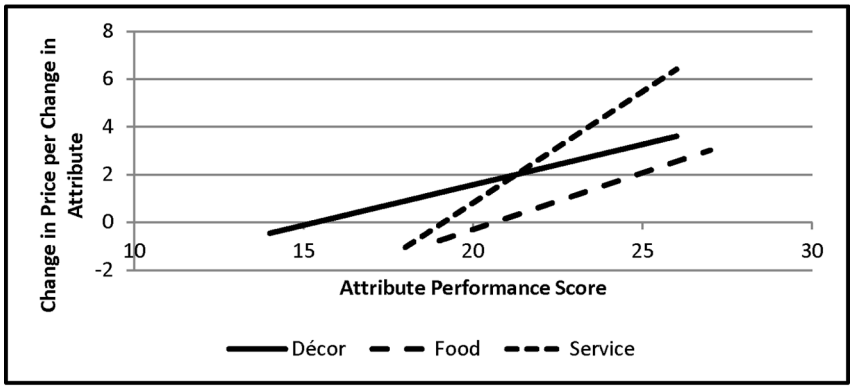
The question of which attribute has the greatest impact on price is complicated because the attribute value curves are nonlinear, and therefore the slope of the curves

changes with the performance level of the attribute (similar to Bacon, 2012). For example, as the ambiance of a high-priced restaurant improves, the price the restaurant is able to charge generally increases, and the 'bang for the buck', that is, the increase in price relative to the increase in performance on ambiance, increases as the ambiance improves. Thus, importantly, the determination of the attribute with the biggest impact on price will depend on the level of the attributes. At one level of performance, improving décor may provide the biggest impact on price, but at another level of performance, service may have the biggest impact on price.

Figure 2 (a) Slope of attribute value curves for low priced restaurants and (b) slope of attribute value curves for high priced restaurants



(a)



(b)

5 Conclusion

While hedonic pricing methods have received little research attention in the small business revenue management literature, the present study addresses this research gap by using secondary data from the Zagat survey to investigate the effects of operational attributes as well as some moderating variables such as cuisine and location on restaurant pricing decisions. The results indicate that prices in restaurants are primarily affected by restaurant attributes including food, service, and ambiance. Interestingly, type of cuisine

has a significant effect on how much consumers pay at the restaurants. For example, most consumers typically are willing to pay more at a French restaurant than at a Chinese or Mexican restaurant. This difference is based on the assumption that French cuisine is inherently more complex and labour intensive compared to Chinese or Mexican cuisines and thus demand higher prices.

While the profitability of a restaurant corresponds with the price it charges and its operating costs, this was not the focus of our research. This research is not positioned as a typical revenue management study where modelling techniques permit the identifying of factors that maximise/optimise revenues by manipulating price points. Instead, the present study allows us to understand the pricing strategies adopted by the restaurant industry and the influence of other attributes in making pricing decisions. In our study, the price is the actual amount paid by consumers while visiting the restaurant and thus, the amount paid is a more accurate measure than the WTP. Food is a low-involvement consumer product, and there is an abundant of choice in selecting a restaurant. Consumers had a choice in their WTP unlike industrial products where the number of suppliers is limited and consumers' WTP is a negotiated price. Further, this study recognises the important high-and-low dichotomy of the industry, based on price points and the influence of the operational attributes on price points for high and low-end restaurants.

By nature and tradition, certain cuisines, demand higher price point and others do not. Pricing models clearly indicate that restaurant attributes have significant interaction effects. Future studies should consider location effects on pricing decisions. Price elasticity could be measured by location, cuisine and each individual restaurant attribute. Some of the limitations of the study include the use of secondary data that limits the realism of the restaurant context. In addition, data includes only restaurants in the New York City area that may have location-specific limitations.

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