



Restaurant attributes and consumer choice

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Abstract:

Purpose: The purpose of this study is to develop a regression model which allows insight into the way restaurant attributes influence the willingness of prospective patrons to travel to dine at restaurants.

Methods: Data was obtained from 194 U.S.-based consumers using an online questionnaire which measured the impact of 11 literature-based restaurant attributes on the time patrons are willing to travel to a restaurant. A linear-log ordinary least-squares regression model with travel time as the dependent variable and the restaurant attributes as independent variables was used to isolate significant predictors of acceptable travel time.

Results: Perceived authenticity and food quality are the only two predictor variables that significantly increase the maximum acceptable travel time to a restaurant. Uniqueness of the restaurant in the geographic area reduces acceptable travel time.

Implications: Restaurant owners and managers who aim to increase their establishment's geographic market size should focus on instilling high levels of perceived authenticity and food quality. New restaurants with unique offerings in their geographic realm may face barriers to attracting patrons.

Keywords: restaurants; consumer behavior; restaurant quality; authenticity; patronage decision

JEL Classification: L84, D19, E2

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1 INTRODUCTION

The impact of restaurant attributes on patron satisfaction, restaurant revenue, and repeat patronage has been a relatively common research topic since at least the early 1990s (e.g., Auty, 1992; Weiss et al., 2004; Longart et al., 2018). One common shortcoming of these studies is that they have generally measured attitudes of patrons in the existing markets of a restaurant, rather than investigating the ability of an attribute to actively expand a restaurant's geographic market. Using results of a survey of consumers living in the United States ($n = 194$), our study aims to fill this gap by building a linear-log ordinary least-squares regression model that measures the impact of various restaurant attributes discussed in the extant literature, with maximum acceptable travel time (TIME) as the dependent variable. In terms of the independent variables, we focus on restaurant attributes for which the locus of control lies with restaurant management and ownership. The result is a model that allows not only for scientific discussion of consumer behavior, but that also allows restaurant owners and managers seeking to expand

their geographic reach by giving them actionable attributes to focus on as they improve their offerings.

Our overarching research question is how various controllable restaurant attributes influence potential patrons' willingness to travel for a dining experience at a restaurant. The results of our analysis show that perceived authenticity of the restaurant's ambience and cuisine and food quality in terms of taste and presentation both have the ability to expand the restaurant's geographic market. Surprisingly, the uniqueness of a restaurant in the geographic vicinity actually shortens acceptable travel time. Acceptable travel time as the dependent variable is subject to moderation by the patron's most commonly-used mode of transportation.

As a result of our findings, we recommend that restaurant managers and owners should focus their efforts on providing a dining experience that is most likely to be perceived as authentic by a plurality of potential patrons in the geographic target market, regardless of whether the overall offering is legitimately an authentic representation of the restaurant's associated native culture and cuisine (e.g., genuine Mexican culture and cuisine for a Mexican restaurant). High standards of food quality should be maintained, both in terms of taste



and presentation of the food. In terms of geographic market expansion, these two factors outweigh other commonly-cited satisfaction drivers (e.g., service quality, cleanliness, various speciality menu options) significantly. An empirical justification for restaurant clustering (Omholt, 2015), especially that of ethnic restaurants with lower levels of diffusion in the United States restaurant market, is also given by our study’s finding in terms of uniqueness of a restaurant being negatively associated with willingness to travel. Those looking to open a speciality or ethnic restaurant that is highly differentiated from other offerings in the local market should therefore consider whether opening nearby a similar restaurant may be more beneficial.

2 LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Several studies have been conducted on restaurant quality attributes and their impact on patronage behavior. Such studies have investigated the impact of restaurant attributes using multivariate models and investigation of individual parameters. Two significant studies which have tested the impact of multiple attributes on restaurant patronage intention are Auty (1992) and Bujisic et al. (2014). Auty found that once restaurants had reached the evoked set of a potential customer, patronage decisions were mostly based on restaurant style. This means that patronage decisions are made primarily based on qualitative attributes, such as the type of cuisine and the alignment of the restaurant type (e.g., fast food, casual, fine dining) with current affective customer desires. Bujisic et al., in contrast, found that the primary determinant of patronage intention was food quality, with restaurant type as a significant moderator of the impact of food quality on patronage intention. Service and ambience-related factors were also significant but secondary to food quality factors. While significant heterogeneity is present between both studies and resulting gaps exist in terms of the specific relationship between quality dimensions and attributes of restaurants, the common denominator is that higher scores on positively-coined attributes generally improve the likelihood of patronage.

H1: Overall restaurant quality perception is positively related to willingness to travel for patronage.

In addition to studies which have aimed to build overarching models across a number of quality dimensions and attributes, numerous studies exist which focus more closely on individual attributes. For this study, we focus on attributes for which the locus of control is centered on the restaurant owner or manager, such that the attribute rating can be influenced by managerial or quality control means. Attributes recurring in the literature include perceived authenticity, service quality, food quality, cleanliness of restrooms, uniqueness of cuisine, portion size, organic food, perception of food as healthy, perceived environmental and social sustainability, and perception of the restaurant as luxurious. The role of authenticity in determining quality perception of a restaurant is still rather understudied, and distinctions between authenticity in the food dimension and in the overall dining experience (which also includes servicescape and

ambience dimensions) have not been thoroughly addressed in the extant literature. Typically, authenticity ratings have been focused on the food dimension, and our study aims to address the gap by measuring an overall authenticity score for the whole dining experience. Kovacs et al. (2013) found in their empirical review of online restaurant reviews that reviews mentioning that the food had been perceived as authentic received higher overall ratings than reviews lacking such a mention of authenticity. Family-owned, single-unit, single-cuisine restaurants were perceived as more authentic than establishments with other characteristics. The importance of ownership on authenticity perception has also been confirmed by other studies, such as by Kim et al. (2020) and Song et al. (2019). Both of these studies found that local, native-to-cuisine ownership increased the value perception of the food offering, which in turn positively impacted overall quality perception, patronage intention, and patronage. Finally, evidence of ethnic restaurant clustering (Chang & Zolin, 2014; Omholt, 2015) suggests that restaurants of similar cuisines which display a particularly high degree of authenticity tend to be located in relative vicinity to each other. As a larger number of patrons is required to make the operation of such ethnic restaurants economically feasible in close proximity to each other, we hypothesize that authenticity is a relevant value driver for restaurants.

H2: Higher levels of perceived authenticity of the dining experience are positively related to willingness to travel for patronage.

Service quality is a heavily-studied dimension of restaurant quality, with some studies finding that service quality is the most important attribute in predicting customer satisfaction and patronage intention (e.g., Gregory & Kim, 2004; Nguyen et al., 2018; Kristiawan et al., 2021). Despite different effect sizes, studies have generally pointed towards a positive perception of service quality leading to greater customer satisfaction and patronage (Madanoglu, 2006).

H3: Higher levels of perceived service quality are positively related to willingness to travel for patronage.

Food quality is the other major determinant of patronage intention at restaurants which has been studied extensively. Although it is likely the most commonly-cited key driver in quality perception, patronage, and especially repeated patronage (e.g., Auty, 1992; Ryu et al., 2012; Yi et al., 2018), isolated studies have found that food quality does not significantly predict patronage levels, especially in fast food establishments (Kristiawan et al., 2021). It is therefore conceivable that restaurant type significantly moderates the impact size of food quality on patronage (Cha & Borchgrevink, 2018), although Arora’s (2012) findings point towards similar impacts of food quality on delight and behavioral intentions to return to the restaurant regardless of restaurant type. At a more specific level, Namkung & Yang (2007) found that taste and presentation of food are the two primary contributors to the food quality dimension.

H4: Higher levels of perceived food quality are positively related to willingness to travel for patronage.

Restroom cleanliness of restaurants is generally understudied, but Kim & Bachman (2019) found that restroom cleanliness is perceived by many patrons as an overall indicator of adherence to hygiene standards and higher levels of food safety. The study noted a significant moderating effect of patron age, such that younger patrons' overall perception of hygiene adherence was less strongly associated with restroom cleanliness than that of older patrons. The inference of restroom cleanliness on the perceived food safety at the establishment was also supported in earlier studies (Macaskill et al., 2000; Barber & Scarcelli, 2009).

H5: Perceived cleanliness of restrooms is positively related to willingness to travel for patronage.

The customer's need for uniqueness is a relatively well-established concept in consumer behavior research (Knight & Kim, 2007; Franke & Schreier, 2008; Wu et al., 2011). As such, it is not surprising that several studies have established that restaurant patrons may derive additional utility from a dining experience being unique, or at least unique in their geographic realm (Hyun & Park, 2016; Leong et al., 2020). Researchers have generally held that added value is derived directly from the uniqueness factor of the restaurant and its cuisine, and not the entire added value can be attributed to other qualities (e.g., exceptionally high food quality, service quality, or authenticity). However, it is worth noting that in contrast to uniqueness, familiarity may also be considered a value driver, especially if the previous exposure has been positive (Dursun et al., 2011). In spite of this, we expect that the need for uniqueness will outweigh the need for familiarity, and uniqueness will effectively increase restaurant market size.

H6: Higher levels of perceived uniqueness of the restaurant are positively related to willingness to travel for patronage.

Portion sizes as a measure of restaurant quality perception are still understudied, and the implications of the main study on the topic are inconclusive with regard to the direction of the effect (Ge et al., 2018). In particular, Ge et al. found that the impact of smaller portion sizes on value perception (a predictor of patronage; see Ashton et al., 2010) was moderated by food quality, such that only food with some degree of weakness led to a decrease in perceived value as portion size was reduced. For high-quality food, especially that of upscale restaurants, this relationship was not significant. However, in the population of all restaurants, we propose that the increased value from larger portion sizes (such as the ability to take home leftovers) is sufficient to turn the effect of portion size on overall quality perception positive and significant.

H7: Larger food portion sizes are positively related to willingness to travel for patronage.

Early studies on the intention to purchase organic foods both in a grocery store and restaurant setting commonly revealed a discrepancy between overall positive attitudes towards organic food and a low-to-moderate intention of buying organic food. As such, the evidence pointed towards a disconnect between attitudes and behavior (Wee et al., 2014).

Wee et al. also noted a significant positive association between education level and intention of buying organic food. Lu & Gursoy (2017) further illustrated that the competitive advantage of offering menu items labeled as organic is greatest for fast food restaurants and diminishes for casual and upscale dining establishments. This is likely because as the expected food quality of a restaurant increases, the magnitude of an organic ingredient differentiator decreases. However, there does not appear to be a type of restaurant where organic food offering significantly decreases perceived value.

H8: The presence of organic menu options at a restaurant is positively related to willingness to travel for patronage.

The positive hedonic value impact of choosing healthy dining options over less healthy ones in a restaurant setting is relatively well established in the literature (Hwang & Lorenzen, 2008; Kang et al., 2015). Hwang & Lorenzen note a positive association between voluntary nutritional information disclosure and willingness to pay for a higher-priced menu item. In contrast, a study of casual dining restaurant menus by Turnwald et al. (2017) found that healthy menu sections generally used less vocabulary that is likely to appeal to patrons than the restaurants' main menus, resulting in a shortfall in promoting healthy menu items.

H9: The presence of healthy menu options at a restaurant is positively related to willingness to travel for patronage.

Sustainability in the hospitality industry is a relatively active field of research, and in general, studies have found a positive association between perceived and advertised environmental and social sustainability initiatives and the hedonic value of the dining experience for patrons (e.g., DiPietro et al., 2013; Chu et al., 2018; Yang & Zheng, 2019). DiPietro et al. note that this relationship is strongest among highly-educated and female patrons, and that restaurant type moderates the impact of sustainability initiatives on dining intention such that upscale restaurants likely benefit more than restaurants in the casual and fast food categories. We were unable to locate any studies which showed a significant negative effect of sustainability initiatives on value perception, dining intention, or patronage behavior.

H10: The presence of advertised environmental sustainability initiatives of a restaurant is positively related to willingness to travel for patronage.

H11: The presence of advertised social sustainability initiatives of a restaurant is positively related to willingness to travel for patronage.

We have previously established the moderating effect of restaurant type on several quality dimensions relevant to this study, but we are also aiming at isolating the impact of a restaurant being perceived as luxurious on patronage intention and willingness to travel. Chen et al. (2015) found that while the appearance of a restaurant being luxurious generally increased willingness to pay, patronage intention increases were unevenly distributed across demographic segments. Yang & Mattila (2016) found that patronage

decisions in the luxury restaurant context are driven primarily by the extracted hedonic value of the experience. It is hence reasonable to assume that luxury dining is a special occurrence for most patrons, which would likely increase their willingness to travel.

H12: The perception of a restaurant as luxurious is positively related to willingness to travel for patronage.

3 METHODOLOGY

3.1 Sample profile

We initially sampled a total of 200 persons using Centiment, an online survey panel. The inclusion criteria were fairly straightforward, such that we included adults living in the United States in our sampling pool. As such, the population for our study consists of U.S. adults, of which there were nearly 260 million in 2020 (U.S. Census Bureau, 2021). Centiment then distributed the survey to randomly selected participants in its panel, until 200 completed questionnaires were collected. Data was actively collected from August 21 to August 23, 2022

Table 1: Sample Characteristics (n = 194)

Variable	Response	Number of Respondents	Proportion of Sample
Age	18 - 24	7	3.6%
	25 - 40	111	57.2%
	41 - 60	63	32.5%
	61 and Older	13	6.7%
Gender	Male	95	49.0%
	Female	99	51.0%
	Other	0	0.0%
Location	Urban	125	64.4%
	Suburban	42	21.6%
	Rural	27	13.9%
Education	No HS Diploma	3	1.5%
	High School	18	9.3%
	Some College	13	6.7%
	Bachelor's Degree	144	74.2%
	Graduate Degree	16	8.2%
Transportation	Car	99	51.0%
	Public Transit	36	18.6%
	Walking	37	19.1%
	Bicycle	22	11.3%
Class	Working	90	46.4%
	Lower Middle	33	17.0%
	Upper Middle	71	36.6%
	Upper	0	0.0%
Restaurant Patronage	Multiple Times per Week	75	38.7%
	Multiple Times per Month	111	57.2%
	Multiple Times per Year	5	2.6%
	Once a Year or Less	3	1.5%

After 200 questionnaires were returned, they were reviewed for input quality in accordance with the process laid out by Biemer and Lyberg (2003), which resulted in the exclusion of six outlier questionnaires. As such, the final number of questionnaires included in the analysis for this study was 194. We excluded only questionnaires which violated the data type parameters (four questionnaires) by, for example,

entering unrelated letter string characters instead of the required integers, and questionnaires which did not include answers to all questions (two questionnaires). The following table illustrates the demographic make-up of individuals who returned completed questionnaires that were included in the data analysis:

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3.2 Study design

Our aim was to create a relatively intuitive but robust model that can be interpreted by hospitality researchers and students, as well as managers of both standalone and chain restaurants. Multiple regression models, while bearing some complexity, have the advantage over other research outputs that typically, they directly yield actionable insights in easily digestible units. We therefore aimed to build a regression model which would predict the influence of various restaurant characteristics on patrons' willingness to travel for the dining experience. Not only is one-way travel time a dependent variable that fulfills the continuity requirement of ordinary least-squares regression (OLS), but it also internally controls for differences in transportation, mobility, and geography (Gkiotsalitis & Stathopoulos, 2015).

Based on the review of literature, we suggested that our regression model would include the following variables: the dependent variable travel time (TIME), and the predictor variables Authenticity (AUTH), service quality (SERV), food quality (FOOD), restroom cleanliness (REST), uniqueness (UNIQ), portion size (PORT), organic menu options (ORGA), healthy menu options (HEAL), social sustainability (SOSU), environmental sustainability (ENSU), and luxury (LUXU). This yields the following theoretical regression model:

$$\begin{aligned} \text{TIME} = & X_0 + \beta(\text{AUTH}) + \beta(\text{SERV}) + \beta(\text{FOOD}) + \beta(\text{REST}) \\ & + \beta(\text{UNIQ}) + \beta(\text{PORT}) + \beta(\text{ORGA}) + \beta(\text{HEAL}) + \beta(\text{SOSU}) \\ & + \beta(\text{ENSU}) + \beta(\text{LUXU}) + \varepsilon \end{aligned}$$

We further utilized the following control variables: age (AGE), gender (GEND), location (LOCA), education level (EDUC), primary mode of transportation (TRAN), social class (CLAS), and the frequency of restaurant patronage (FREQ).

3.3 Data analysis

Minor data combination was necessary to derive some of our predictor variables from our raw data. In particular, we computed the arithmetic mean of the individual responses to questions about authenticity, portion size, environmental

sustainability, and social sustainability, in order to reduce dimensions of these attributes and yield a single input for the AUTH, PORT, ENSU, and SOSU variables from each questionnaire. In order to normalize our independent variable distributions and minimize the disruptive impact of outliers on our model's validity, we also log-transformed our independent variables. In terms of interpretation, this meant that a 0.01 change in a coefficient would roughly translate to a 1% change in the dependent variable (TIME). For example, a coefficient of 0.2 would indicate that the presence of that attribute would increase acceptable travel time on average by roughly 20% (Benoit, 2011). Finally, we also standardized responses around the respective variable means, so that each variable had both negative and positive inputs.

After cleaning our raw data as explained above, we reviewed whether the assumptions of ordinary least-squares regression were met (homoskedasticity and lack of severe multicollinearity), using a Breusch-Pagan test ($p = 0.452$) and variance inflation factors (see Table 3 and Table 4), respectively. We further tested whether any of our predictor variables should be excluded due to excessive correlation to another predictor variable, using Pearson correlation, with the table displayed below (see Table 2). Finally, we tested for common method bias by employing a Harman Single Factor test (Percentage of Variance: 40.65).

Upon clearing these hurdles of OLS regression models, we were able to run the initial regression model in SPSS. In reviewing the data, we stepwise-excluded insignificant predictor variables in order to optimize our model for predictive reliability, using a significance level of $\alpha = 0.1$. Finally, we reviewed the impact of our control variables on the willingness to travel for dining experiences using ANOVA, in order to appropriately account for differences between demographic and behavioral groups in the sample. For control variables displaying significant between-groups differences, Tukey LSD post-hoc tests were used to establish the nature and direction of these differences.

4 FINDINGS

Pearson correlations between our independent variables were generally weak to moderate and exclusively positive, which could be expected given their conceptual collinearity and potential latent interaction effects. Particularly strong positive correlations of $r > 0.7$ between independent variables were identified as follows: food quality and restroom cleanliness ($r = 0.807$), food quality and the uniqueness of the establishment ($r = 0.744$), portion size and environmental sustainability ($r = 0.746$), portion size and social sustainability ($r = 0.73$), organic cuisine and environmental sustainability ($r = 0.706$), organic cuisine and luxury perception ($r = 0.711$), healthy cuisine and social sustainability ($r = 0.709$), and environmental and social sustainability ($r = 0.742$). In contrast, the correlations between travel time as the dependent variable and our model's independent variables are significantly weaker. At a 90% significance level, acceptable travel time is positively correlated to authenticity ($r = 0.277$), portion size ($r = 0.1$), organic cuisine ($r = 0.107$), environmental sustainability ($r = 0.137$), social sustainability ($r = 0.168$), and luxury perception ($r = 0.111$). It is worth noting that per conventional

standards for estimating correlation strength, all these correlations between the dependent variable and the independent variables would be considered significant but weak (Akoglu, 2018). There are no statistically significant negative correlations between travel time and any independent variable in our model.

Table 2: Correlation matrix

	AUTH	SERV	FOOD	REST	UNIQ	PORT	ORGA	HEAL	ENSU	SOSU	LUXU	TIME
AUTH	1											
SERV	0.48	1										
FOOD	0.374	0.473	1									
REST	0.28	0.296	0.807	1								
UNIQ	0.332	0.451	0.744	0.686	1							
PORT	0.518	0.634	0.661	0.584	0.588	1						
ORGA	0.419	0.592	0.608	0.442	0.438	0.681	1					
HEAL	0.458	0.591	0.589	0.473	0.431	0.641	0.663	1				
ENSU	0.535	0.681	0.667	0.54	0.557	0.746	0.706	0.684	1			
SOSU	0.579	0.604	0.567	0.398	0.427	0.73	0.668	0.709	0.742	1		
LUXU	0.459	0.519	0.512	0.306	0.395	0.62	0.711	0.532	0.635	0.67	1	
TIME	0.277	0.044	0.097	0.063	-0.022	0.1	0.107	0.08	0.137	0.168	0.111	1

Our initial raw regression revealed that the bulk of our dependent variables (except AUTH) were not significant predictors of acceptable travel time. However, per guidance from Heinze & Dunkler (2016), this alone was not sufficient reason to discard the model altogether. Instead, we applied stepwise backward elimination to reduce the number of variables in the model until all remaining variables were significant at a level of 90%, progressively eliminating the least significant independent variable..

Table 3: Raw regression model

Variable	Coefficient	t-value	Standard Error	Significance	VIF
Constant	22.69	20.38	1.11	<0.001	
AUTH	0.34	3.51	0.10	<0.001	1.62
SERV	-0.12	-1.09	0.12	0.279	2.33
FOOD	0.13	1.08	0.12	0.282	4.75
REST	0.02	0.16	0.10	0.875	3.61
UNIQ	-0.23	-2.05	0.11	0.042	2.57
PORT	-0.06	-0.34	0.17	0.733	3.5
ORGA	0.03	0.3	0.11	0.768	3.08
HEAL	-0.11	-0.96	0.12	0.339	2.61
ENSU	0.11	0.64	0.17	0.525	3.75
SOSU	0.12	0.73	0.16	0.464	3.56
LUXU	-0.03	-0.28	0.09	0.776	2.53
R ²	0.118				
Alpha	0.1				

The transformation from the initial raw regression model to the final version of our model is evident in Tables 3 and 4.

Table 4: Stepwise backward elimination regression model

Variable	Coefficient	t-value	Standard Error	Significance	VIF
Constant	22.67	20.63	1.1	<0.001	
AUTH	0.32	3.97	0.08	<0.001	1.17
FOOD	0.14	1.61	0.09	0.109	2.33
UNIQ	-0.24	-2.38	0.1	0.018	2.25
R ²	0.103				
Alpha	0.1				

We found that the overall model, both in the raw and in the backward-eliminated version, was significant ($p < 0.001$). As discussed earlier, due to the log-transformation of the independent variables, coefficients should be interpreted as approximately percentage changes in the dependent variable. We would expect the constant of 22.67 minutes to be a general baseline of acceptable travel time to a generic restaurant across the entire population. The perception of the dining experience as authentic alone would be expected to increase this predicted acceptable travel time by approximately 32% to 29.92 minutes. Using the same approach, an improvement in food quality of one unit would yield a 14% increase in predicted acceptable travel time to 25.84 minutes. The uniqueness of the establishment in the area is expected to decrease acceptable travel time by 24%, to 17.23 minutes. Combinations of various significant predictive attributes are also conceivable. For example, a restaurant that is perceived as authentic and unique in the area, while also providing satisfactory food quality, would have a predicted acceptable travel time of 25.93 minutes for the average patron. It is worth noting that, as indicated by the relatively small R-squared values for both models, there is a significant variation between the respective attribute-induced changes in travel intention for individual patrons.

To gauge how our control variables affect acceptable travel time, we compared how acceptable travel times varied across demographic and behavioral groups. Significant differences between groups exist only for the TRAN variable, which measures the patron's primary mode of transport. Acceptable travel times increased for patrons walking and using public transportation, compared to those using bicycles or their own cars. None of the other control variables, including age, gender, location, education level, social class, and frequency of dining out, revealed significant between-groups variation in terms of acceptable travel time.

Table 5: Control variables

Variable	F	Significance
Age	0.74	0.533
Gender	0.73	0.393
Location	0.72	0.489
Education	0.16	0.957
Transport	1.96	0.122
Class	0.1	0.909
Frequency	0.19	0.903

As a result of the analyses, we find that sufficient evidence exists to accept hypotheses H1, H2, and H4. Specifically, we find that overall restaurant quality perception as a composite score positively affects willingness to travel for patronage (H1). This finding is rather intuitive and should be interpreted as a quality indicator of the overall model, rather than as a unique central finding to our study. We were also able to confirm our hypothesis that perceived authenticity increased the acceptable travel time (H2). Under the assumption of a more lenient, model-specification focus, we were also able to confirm our hypothesis that food quality positively affected acceptable travel time (H4). We were unable to confirm the impact of service quality (H3), restroom cleanliness (H5),

portion size (H7), organic menu options (H8), healthy menu options (H9), environmental sustainability (H10), social sustainability (H11), and luxury (H12). The positively hypothesized impact of relative uniqueness of the establishment on acceptable travel time was negative (H6). A review of both confirmed and rejected hypotheses and the respective decisions concerning them are found in Table 6 below.

Table 6: Hypotheses

	Hypothesis	Result
H1	Overall restaurant quality perception is positively related to willingness to travel for patronage.	Accepted
H2	Higher levels of perceived authenticity of the dining experience are positively related to willingness to travel for patronage.	Accepted
H3	Higher levels of perceived service quality are positively related to willingness to travel for patronage.	Rejected
H4	Higher levels of perceived food quality are positively related to willingness to travel for patronage.	Accepted*
H5	Perceived cleanliness of restrooms is positively related to willingness to travel for patronage.	Rejected
H6	Higher levels of perceived uniqueness of the restaurant are positively related to willingness to travel for patronage.	Rejected
H7	Larger food portion sizes are positively related to willingness to travel for patronage.	Rejected
H8	The presence of organic menu options at a restaurant is positively related to willingness to travel for patronage.	Rejected
H9	The presence of healthy menu options at a restaurant is positively related to willingness to travel for patronage.	Rejected
H10	The presence of advertised environmental sustainability initiatives of a restaurant is positively related to willingness to travel for patronage.	Rejected
H11	The presence of advertised social sustainability initiatives of a restaurant is positively related to willingness to travel for patronage.	Rejected
H12	The perception of a restaurant as luxurious is positively related to willingness to travel for patronage.	Rejected

Given that we employed one-tailed hypothesis tests, a rejection of the hypothesis is equivalent with an inability to reject the null hypothesis, but not generally with the notion that the opposite of the hypothesized relationship is true. In this case, all rejected hypotheses except H6 were inconclusive.

5 DISCUSSION

An overarching takeaway of our study is that although prior literature indicates that a variety of restaurant attributes impact generic measures such as patron satisfaction, restaurant performance, or patron retention, travel time seems to be a much more restrictive variable to measure dining intention. Since travel time most effectively measures geographic market size for businesses, the main implication of our study is that of the variables we have considered, authenticity and food quality are the only two attributes which are capable of geographically enlarging a restaurant's market. While the other present variables we measured would, based on the extant literature, most likely improve patron satisfaction to some degree, these restaurant characteristics would not on their own be able to significantly enlarge the restaurant's geographic market.

Authenticity as the most significant ($p < 0.001$) restaurant attribute in our model was defined in our questionnaire as a composite variable with two distinct parts: firstly, we asked about the degree to which patrons believed the restaurant's ambience was representing the native culture associated with

the reference country. Secondly, we asked about the degree of native culture representation the restaurant managed to uphold with regard to the food offered. For example, in the case of a Mexican restaurant, the participant would have been expected to think of how closely the Mexican restaurant in the United States would resemble a restaurant offering in Mexico. This common measure of authenticity has the limitation that it does not account for the participant's degree of knowledge about the native culture and cuisine associated with the restaurant, at least not in the general population sample that we used. As such, authenticity ratings are likely a highly individual and subjective result of the presence or absence of preconceived signals, such as background music, wall paintings, foreign vs. domestic ownership and wait staff, or food spiciness levels, which may be mentally associated with but in reality disjoint from a genuine authentic dining experience. For a patron with limited or superficial knowledge of a restaurant's native culture and cuisine, utility in regards to authenticity is likely not maximized by using maximum genuine authenticity, but by the presence of the aforementioned and other authenticity signals.

On the other hand, our study also found that uniqueness of the establishment, as the only such predictive variable we observed, decreased the expected acceptable travel time. This finding is not immediately intuitive, given the relatively well-established idea that customers have an inherent need for uniqueness and differentiated products (Wu et al., 2011; Knight & Kim, 2007). However, it can possibly be explained by referring to the secondary implications of a restaurant being unique. Particularly, unique restaurants are likely to expose patrons to less widespread and less familiar cuisines, which may result in some customer segments becoming less willing to explore and experience them. Conversely however, familiarity has also been found to increase purchase intention in a retail context, and similar cognitive processes such as those explored by Dursun et al. (2011) may be responsible. Firstly, familiarity enables consumers to better anchor their quality perceptions, which allows them to more easily determine their own expectations and preferences. Secondly, consumers are more likely to develop and recognize a desire to repeat an experience they have previously had than one they have never engaged in before. This familiarity heuristic likely induces a decision bias in favor of restaurants with a high level of community diffusion. This adversely affects restaurants which provide uncommon, unfamiliar, and often ethnic cuisines.

Another key takeaway of our study is that, surprisingly, we were not able to fully replicate the findings of past studies which focused on outcome variables such as patron satisfaction when utilizing our market size-focused approach. This suggests that economically relevant restaurant quality attributes are significantly less multidimensional than the extant literature might imply. For instance, we find no predictive value of service quality on a restaurant's potential market size, suggesting that patrons are ultimately driven to visit a restaurant by factors other than the servicescape. In reconciliation with the extant literature, we suggest that the impact of service quality on restaurant market size may not be significant in cases where perceived service quality is not extremely poor, but may become a significant deterrent to market size expansion if serious service failure occurs. Our proposed impact of restroom cleanliness on market size

mirrors this pattern. Other insignificant predictors may be attributed to their attractiveness to specific population subsets (e.g., health-conscious, environmentally-conscious, luxury-prone individuals). This shows that, while these restaurant features may be attractive value-drivers to parts of the population, they may not significantly predict market size expansion at the population level.

5.1 Managerial implications

There are at least two noteworthy managerial implications of our results. Firstly, restaurant operators will benefit from instilling a sense of authenticity (either objective or subjective) and from maintaining high food quality standards (including taste, appearance, freshness, etc.). These are the key restaurant attributes for which a broad base of potential customers is willing to travel significantly above-baseline distances, thus improvements in these categories are able to significantly increase the potential customer base. Other attributes, while useful in improving various other performance and satisfaction indicators based on the findings of extant literature, are not likely to meaningfully increase the potential customer base. This does not mean that they should be neglected in planning and quality management, but that they are not adequate levers to increase market size.

Secondly, prospective restaurant operators may decide to open their restaurant within geographic proximity of close substitutes, rather than pursuing a blue ocean placement strategy. While this may be accompanied by the known challenges associated with late market entry, higher levels of local familiarity with the respective cuisine and existing quality perception benchmarks among the local consumer base likely outweigh those disadvantages. This can be noted outside the realm of statistical modeling, namely among ethnic restaurants which tend to cluster either formally or informally in specific neighborhoods (Chang & Zolin, 2014; Omholt, 2015).

5.2 Limitations and future research

Despite our best efforts to provide a model free of limitations, there are still several shortcomings worth noting. Firstly, as is often the case in studies which are based on questionnaire responses, self-reporting bias must be considered. Additionally, as we have asked about the power of restaurant attributes to change willingness to travel, we are working with a model of intention rather than behavior. A solution for both of these limitations would be to conduct a follow-up study that tests our model's validity by tracking how restaurants possessing the indicated attributes attract customers from farther away than those restaurants which do not have these attributes. Anonymous cell phone tracking data may provide the most adequate option for validating our model, as geofencing technology would likely be able to track travel time from a person's home (or other place of origin) to the restaurant. An alternative setup would be to ask participants in a follow-up survey to name restaurants they often visit, and estimate travel times there using traffic data distributed through Google Maps or similar software. The latter setup is likely more employable in parts of the world that have highly regulated the sharing of tracking data, such as countries of the European Union.

An additional limitation is that the model was generated using a relatively small sample of only individuals living in

the United States of America. Preferences concerning restaurant attributes are likely subject to noteworthy cultural differences, and the model should therefore not be inferred to other countries without first testing whether it is holding valid locally. An obvious solution would be to repeat the study using the same variables in international locations. Increasing the sample size overall is also possible, albeit large increases would likely result in false positives for significant variables, as is common in regression models created from large data sets. Therefore, improving the sample size in a meaningful way comes with significant accuracy tradeoffs that the creators of future studies should be aware of.

Finally, we have left unaddressed the moderating role of restaurant type (e.g., fast food, casual, fine dining) that is cited in the extant literature related to several of our independent variables. Our aim was to build a model that considers the aggregate of all types of restaurants. Since we measured travel time against a generic baseline, controlling for restaurant type would have meant that we would need to conduct individual studies for each restaurant type to see how attribute impact varied across them. While this is not something we wanted to pursue in this rather exploratory study, additional research is necessary to test whether restaurant type significantly impacts our model. We recommend that research be conducted by repeating our study with minor adjustments, but measuring changes in travel time relative to a baseline consisting of only one restaurant type at a time, rather than a generic and cumulated baseline of all restaurant types.

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Appendix I

How many minutes are you willing to travel to a restaurant you would describe as average or mediocre?

How much farther are you willing to travel if you find the restaurant's atmosphere and cuisine authentic?

How much farther would you travel if the restaurant does a good job at representing the culture its meals come from, such as China for a Chinese restaurant?

How much farther would you travel if the service at the restaurant is friendly and up to my standards?

How much farther would you travel if the food tastes good?

How much farther would you travel if the food appears to be fresh and looks appetizing?

How much farther would you travel if the restrooms at the restaurant are so clean that you would not hesitate to use them?

How much farther would you travel if the restaurant and its cuisine are unique in your area and you can't think of another restaurant nearby that offers the same kind of food?

How much farther would you travel if the portion size is just right for you?

How much farther would you travel if at this restaurant, portion sizes are big enough so you can take home leftovers if you want to?

How much farther would you travel if the restaurant advertises its ingredients as "organic"?

How much farther would you travel if the restaurant's meals appear healthy?

How much farther are you willing to travel if the restaurant owners seem to care a lot about the environment?

How much farther are you willing to travel if the restaurant makes an effort to use local ingredients and limit food waste?

How much farther are you willing to travel if the restaurant treats and pays its workers fairly?

How much farther are you willing to travel if the restaurant makes an active effort to give back to the local community?

How much farther are you willing to travel if the restaurant appears to be upscale and luxurious?

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