Determinant Factors and Choice Intention for Chinese Restaurant Dining

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Determinant Factors and Choice Intention for Chinese Restaurant Dining: A Multivariate Approach

Hailin Qu

ABSTRACT. The purpose of this study is to identify important selection attributes for customers dining at Chinese restaurants in the state of Indiana, and the determinant and predicting factors in customers' intentions to return. A closed-ended questionnaire was used, and a systematic sampling approach was employed to survey a sample of customers in three Chinese restaurants in Indiana. The data were analyzed using factor and multiple regression analysis. A four-dimensional structure was established from 14 selection attributes. The results of the study indicated four dimensions that were significantly related to the likelihood of customers returning to the same restaurants, as follows: "Food and Environment," "Service and Courtesy," "Price and Value," and "Location, and Advertising and Promotion." *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: getinfo@haworth.com]*

INTRODUCTION

Since the 1980s, the Chinese restaurant segment in the U.S. has been growing at a faster rate than the overall restaurant industry. Total Chinese restaurant units were more than 23,000, or 6% of all U.S. restaurants, with segment sales reaching $7.5 billion in 1990 (Kochilas, 1991). In 1992, traffic in mid-scale Chinese restaurants (average check size between $3.00 to $5.00) increased by 5% over

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1991, compared with a 1% increase in traffic in Mexican and Italian restaurants (Iwamuro, 1993).

Chinese restaurants actively courted customers and performed quite well in the ethnic restaurant market segment. In 1992, a survey was conducted by Research Advantage Inc., to identify the favorite ethnic foods in the U.S. One thousand customers were polled at shopping malls across the country. The results showed that 84% of the people surveyed had dined on Italian food, followed by 82% for Chinese food, 75% for Mexican food, 43% for French food, and 42% for Japanese food (see Figure 1). Italian, Chinese, and Mexican foods maintained their popularity as the nation's favorite ethnic foods in the restaurant market ("Favorite ethnic," 1982).

According to The Market for Ethnic Foods Survey conducted by the National Restaurant Association in 1989, of the participants surveyed, 78% of adults had tried Chinese food in the past, which is a higher percentage of people than had tried any other type of ethnic food, such as Italian, Mexican, or Japanese. In the same year, another survey was carried out by the National Restaurant Association

FIGURE 1. Most Popular Ethnic Foods in the USA, 1992
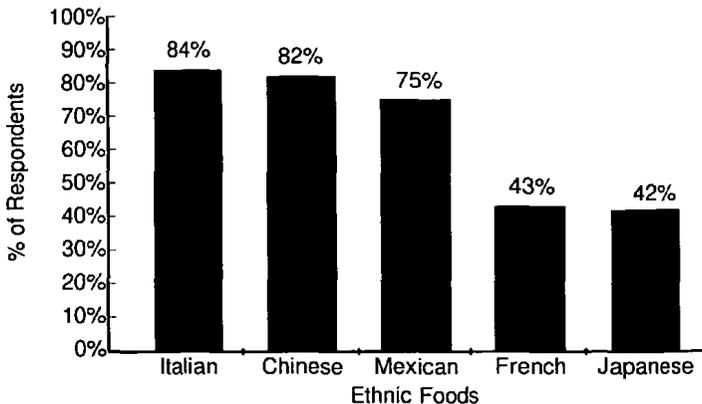
Source: The Research Advantage Inc., 1992

to identify the traffic in Chinese restaurants. It found that within the Chinese restaurant market segment, 64% were regular customers (had eaten Chinese food in the month prior to the survey, and planned to do so again in future), 31% were random customers (had eaten Chinese food in the past, but not in the past month, and planned to try it again in the future), and 5% were potential customers (had never tried Chinese food, but planned to try it at some future date) (Riehle, 1990).

The demographic profile of Chinese restaurant customers was: (a) a professional individual, (b) aged 25 to 54, (c) from households with an annual income exceeding $25,000, and (d) living in metropolitan areas (Riehle, 1990). Customers of Chinese restaurants liked the menu variety, portion size, friendly employees, quality of service, and value for the money (Gordon, 1992).

The broad appeal of Chinese food suggests that it has been fully assimilated into the U.S. culture and may be categorized as a "traditional" ethnic food by many Americans. In fact, Chinese restaurants are well-represented all over the U.S.

In the restaurant industry, the Chinese restaurant segment is still growing and attracting new players. However, the success of Chinese restaurants can no longer depend on the "novelty value" or the savory flavor of Chinese food. The next few years will not be an easy time for the restaurant industry. Many markets are overdeveloped. The relatively high unemployment rate, the slow recovery from the economic recession, and the increasing cost of housing, automobiles and other consumer goods, are consuming people's disposable income. The proportion of disposable income spent on food has declined recently, and real disposable income is expected to show a slow compound annual growth rate over the next few years. The Chinese restaurant segment will also find itself exposed to such economic pressures.

Chinese restaurants are facing increasingly sophisticated American customers, intense competition among themselves, and competition from other ethnic restaurants. A deeper understanding of this market segment and its customers' perceptions and choice intention will provide Chinese restaurants with valuable information.

The purpose of the study was to explore the dimension(s) of

attributes that customers perceived to be important in their selection of a Chinese restaurant, and to identify the determinant and predicting factor(s) on the basis of which customers would more likely return.

METHODOLOGY

Instrument

A self-administered, closed-ended questionnaire with ordered choices was used to survey a sample of customers. The questionnaire comprised 55 variables divided into three major areas: (1) general information about visiting, (2) rating on a five-point scale of 14 attributes believed to be important in a customer's selection of a Chinese restaurant, and (3) a customer demographic profile. The 14 determinant attributes selected were based on previous restaurant surveys (Dube, 1994; Gordon, 1992; June & Smith, 1987; National Restaurant Association, 1981) and were modified to match the uniqueness of Chinese restaurant operation, service, and environment. A pilot test was conducted with 15 Chinese restaurant customers in Lafayette, Indiana in order to provide valid information on the questionnaire design, wording and measurement scales.

A reliability analysis (Cronbach's alpha) was performed to test the reliability and internal consistency of each of 14 attributes measured. The results showed that the alpha coefficients for all 14 attributes were high, ranging from 0.89 to 0.91. They were well above the minimum value of 0.5, which is considered acceptable as an indication of reliability (Nunnally, 1967).

Sampling Plan

The population of interest in this study was customers who dined at three mid-scale Chinese restaurants in Indiana during the survey period. The survey was conducted both at the lunch and dinner periods on one weekday and one weekend day in the month of April. Three Chinese restaurants (one in Lafayette and two in Indianapolis) were selected by a convenient sampling approach. A systematic sampling approach was used in each Chinese restaurant

surveyed. Three field observations of customer flows were con-
ducted in each restaurant. Historical customer traffic information was
obtained from the restaurants' owners to find out the average lunch
and dinner traffic on weekends and weekdays in the month of April.
A sample size of 250 was set for the survey. The sampling interval
was 5 for lunch and 7 for dinner on weekdays, and 7 for both lunch
and dinner on the weekends in these three restaurants. The sample
consisted of every seventh customer who came for lunch or dinner
on the weekends, and every fifth and seventh customer who came for
lunch or dinner on weekdays. The random starting numbers for each
meal were selected from a random number table. One weekday
(Wednesday) and one weekend day (Saturday) were selected for the
survey. A total of 250 questionnaires were distributed, and more than
62% (155) returned within two weeks after the last day of the survey.
The number of usable questionnaires was 124. Thirty-one question-
naires (20% of total) had more than 10% incomplete questions, and
so were not included in this study.

Data Analysis

   Multivariate analysis (factor and regression analysis) was used in
the study. The purpose of using factor analysis in this study was to
(a) create correlated variable composites from the original attributes
ratings, and obtain a relatively small number of variables which
explain most of the variances among the attributes, and (b) apply
the derived factor scores in subsequent multiple regression analysis.
   The data for this analysis was 14 restaurant selection attributes
measured on a five-point scale ranging from "Very Low Impor-
tance (1)" to "Extremely Important (5)." The Principal Compo-
nents and Orthogonal (VARIMAX) rotation methods were used in
the factor analysis.
   The appropriateness of factor analysis was assessed by correla-
tion, measures of sampling adequacy (MSA), partial correlation
among variables, and reliability alpha to ensure that the factor anal-
ysis was appropriate to the data.
   The criteria for the number of factors to be extracted was based on
eigenvalue, percentage of variance, significance of factor loading,
and assessment of structure. Only the factors with eigenvalue equal
to or greater than one were considered significant; others were con-

sidered insignificant and were disregarded. The solution that accounted for at least 60% of the total variance was considered as a satisfactory solution. A variable was considered of practical significance and included in a factor when its factor loading was equal to or greater than 0.5. The variables were retained when they made sense, and disregarded when the factors became uninterpretable.

The purpose of regression analysis in this study was to explore how the selection dimensions derived from the factor analysis were related to the dependent variable of "Likelihood of Coming Back Again," which ranged from "Least Likely (1)" to "Most Likely (5)." The purpose of using "Likelihood of Coming Back Again" as a dependent variable in this study was to identify the relative importance of the dimensions derived from factor analysis in determining or predicting a customer's likelihood of returning to the restaurant. It was assumed that there was a positive relationship between customers' likelihood of returning and their ratings on the Chinese restaurant selection dimensions. The relative importance of the dimensions was based on their Beta weight.

A regression model of "Likelihood of Coming Back Again" was hypothesized relating to the latent dimensions as follows:

$$Y = {}_0 + {}_1X_1 + {}_2X_2 + \ldots + {}_IX_I +$$

where,

Y	- Dependent variable: Likelihood of coming back again
0	- Regression of coefficient of intercept
${}_{1-I}$	- Regression coefficients of latent independent variables
X_1-X_I	- Latent independent variables
	- Random error

Limitations

Two limitations of the study should be addressed. First, the sample was drawn only from Chinese restaurants in Indiana and represented a substantial sample within the state. The sampling approach for selecting three restaurants was not a probability sampling. The

findings should be limited to the population studied and the Chinese restaurants selected in Indiana, creating a limitation in the form of a lack of generality. Secondly, the sample was drawn exclusively from customers who dined at the restaurants. The results should therefore not be generalized to include "take-out" customers.

However, the methodology described and employed in this study was adequate and comprehensive to assess determinant factors and choice of intention of Chinese restaurant dining. The method and framework can also be applied in other restaurant segments to assess the important selection attributes and predicting factors for dining out.

RESULTS

Customer Demographic Profile

The following summary of frequency analysis of customer demographic information (see Table 1) indicates that the major attributes of Chinese restaurant customers include:

- age group of 35 - 54 (46%);
- female (60%);
- married (72%);
- household size of two to three (79%);
- annual household income in the range of US $35,000 or more (66%);
- white ethnic group (93%); and
- white-collar workers (self-employed, managers or administrators, professional or technical, or salesman/woman) (60%).

The results of a Chinese restaurant customer's demographic profile generally agree with the results obtained in a previous study that the majority of Chinese restaurant customers were: professionals, aged 25 to 54, and from households with an annual income exceeding $25,000 (Riehle, 1990).

The majority of customers dined at a Chinese restaurant with a party size of two (57.1%), followed by three (19.6%), four (16.3%) and one (7%). More than 57% of the customers visited a Chinese

TABLE 1. The Demographic Profile of Chinese Restaurant Customers

Age	%	Sex	%	Marriage	%	House hold Size	%
18–24	9	Male	40	Single	28	One	11
25–34	20	Female	60	Married	72	Two	42
35–54	46					Three	37
≥ 55	25					≥ Four	10

Household Income	%	Occupation	%
< $15,000	6	Farmer	3
$15,000 – $24,999	11	Self-employed	19
$25,000 – $34,000	17	Foreign Employee	1
≥ $35,000	66	Service Worker or Clerical	10
Ethnic Group	%	Management or Administration	17
Asian	5	Professional or Technical or Sales	24
Black	2	University Staff or Student	13
White	93	Not in Work Force	13

restaurant once or twice a week, 24.2% of customers visited once a week, 17.5% of customers visited once every 3 months, and only 1.3% of the customers were first-time visitors.

Four Selecting Dimensions

The principal component factor method was used to generate the initial solution. The eigenvalues suggested that a four-factor solution explained 71.6% of the overall variance before the rotation.

The result of one tailed significance test of the correlation matrix indicated that 94.5% of correlations were significant at the 0.01 level. The overall significance of the correlation matrix was 0.0000 with a Bartlett Test of Sphericity value of 1081.18. It showed that the data matrix had sufficient correlation to the factor analysis. The Kaiser-Meyer-Olkin overall measure of sampling adequacy (MSA) was 0.83, which was meritorious (Hair, 1995).

From the Orthogonal (VARIMAX) rotated factor matrix, four factors with 13 variables were defined by the original 14 variables that loaded most heavily (loading $\geq$ 0.5) on them (see Table 2). It could be seen that the analysis produced a clean factor structure with relatively higher loadings on the appropriate factors. Most variables loaded heavily on one factor, but did not load heavily on others. It reflected that there was minimal overlap among these factors and that all factors were independently structured. The higher loadings signaled the correlation of the variables with the factors on which they loaded. The communality of each variable was relatively high, ranging from 0.47 to 0.92. It indicated that the variance of the original values was captured fairly well by the four factors.

The four-factor structure resulted in a relatively more workable and meaningful number of composite dimensions, which could be more easily interpreted and used for the further regression analysis. A four-dimension solution resulted in the following factor labels: "Food and Environment," "Service and Courtesy," "Price and Value," and "Location, and Advertising and Promotion." A composite reliability of a construct was calculated to measure the internal consistency of each of the four factor indicators. The results showed that the coefficients for all four factors exceeded the recommended level of 0.50 (Hair, 1995), ranging from 0.70 to 0.85 (see Table 3).

The first factor, "Food and Environment," had six significant loadings. It was composed of original variables with the highest factor loading on that dimension: food quality consistency, menu variety, food quality, atmosphere, smorgasbord, and cleanliness. The factor addressed two issues, namely food and environment. The second factor, "Service and Courtesy," had three significant loadings. It was composed of three original variables: level of ser-

TABLE 2. Results of VARIMAX Rotated Component Analysis Factor Matrix

Variables	VARIMAX Rotated Loading				
	Factor 1	Factor 2	Factor 3	Factor 4	Communality
Food Quality Consistency	**0.7926**	0.2910	0.3012	0.0010	0.8035
Menu Variety	**0.7746**	0.2438	0.1615	−0.0036	0.6856
Food Quality	**0.7668**	0.3380	0.3528	−0.0058	0.8268
Atmosphere	**0.7052**	0.1537	0.0000	0.3510	0.6441
Smorgasbord	**0.5944**	−0.0788	0.3016	0.4044	0.6141
Cleanliness	**0.5636**	0.1345	0.1006	0.3976	0.5039
Level of Service	0.1486	**0.9002**	0.1309	0.2267	0.9010
Promptness of Service	0.2966	**0.8230**	0.1582	0.1809	0.8231
Friendliness	0.4981	**0.6215**	0.2734	0.0393	0.7107
Price	0.1782	0.2588	**0.8690**	0.1879	0.8893
Price and Value	0.3396	0.1475	**0.8588**	0.2048	0.9165
Location	−0.0344	0.3247	0.0039	**0.7625**	0.6881
Advertising and Promotion	0.1929	0.0148	0.3041	**0.7083**	0.6316
Reputation	0.4333	0.1769	0.2080	0.4529	0.4674
					Total
Eigenvalue	3.7158	2.4059	2.0877	1.8960	10.1054
% of Variance Explained	26.54	17.19	14.91	13.35	71.99

vice, prompt service, and friendliness. The factor reflected issues of service and courtesy of staff in the Chinese restaurant. The third factor, "Price and Value," had two significant loadings. It was composed of two original variables: price, and price and value. The factor indicated issues of price and value. The last factor, "Location, and Advertising and Promotion," was composed of two variables: location, and advertising and promotion. The factor explained whether the restaurant was conveniently located and

TABLE 3. Four Dimensions of Customer Choice Intention

Dimensions	Variables	Composite Reliability
Food and Environment	Food Quality Consistency	0.8538
	Food Quality	
	Menu Variety	
	Smorgasbord	
	Atmosphere	
Service and Courtesy	Level of Service	0.8300
	Promptness of Service	
	Friendliness	
Price and Value	Price	0.8548
	Price and Value	
Location, Advertising & Promotion	Location	0.7023
	Advertising & Promotion	

well-advertised and promoted. After rotation, the four factors explained 72% of variance.

It might be concluded that these four dimensions were perceived as important by customers dining at a Chinese restaurant, and that they were also the determinant factors that influenced customers' choices in selecting a Chinese restaurant. The findings generally agree with Gordon's (1992) findings that Chinese restaurant customers value the following benefits: menu variety, friendly staff, service quality, and value for the money.

Likelihood of Coming Back Again

The results of regression of the four selection dimensions against the dependent variable of "Likelihood of Coming Back Again" are listed in Table 4. In general, the model fitted the data quite well (see Table 4).

The regression equation characteristics of "Likelihood of Coming Back Again" indicated a good adjusted R^2 of 0.76. This indicated that 76% of the variation in "Likelihood of Coming Back Again" was explained by this equation. The F-ration of 88.52 was significant (Prob. < 0.0000).

TABLE 4. Results of Multiple Regression Analysis

Analysis of Variance					
Multiple R	0.8763				
Multiple R square	0.7679				
Adjusted R square	0.7593				
Standard error of estimate	0.5153				

Source	DF	Sum of Square	Mean Square	F Value	Prob. > F
Model	4	94.0168	23.5042	88.5177	0.0000
Error	107	28.4118	0.2655		
C Total	111	122.4286			

Variables in the Equation								
Variable	β	SE B	Beta	Beta^2	Tolerance	VIF	T	Sig. T
Food & Environment	0.7969	0.0485	0.7655	0.5859	0.9989	1.0010	16.428	0.0000
Service & Courtesy	0.3392	0.0487	0.3245	0.1053	0.9992	1.0010	6.965	0.0000
Price & Value	0.2460	0.0494	0.2320	0.0538	0.9990	1.0010	4.980	0.0000
Location	0.1404	0.0486	0.1345	0.0181	0.9994	1.0010	2.888	0.0047
Constant	2.6939	0.0487					55.266	0.0000

Durbin-Watson Test = 1.9803

The t-statistic test was used for testing whether the four independent variables contributed information to the predicator of the dependent variable "Likelihood of Coming Back Again." In this study, if the t-value of an independent variable was found to be significant at 0.05 level, that variable was considered in the model. All four dimensions emerged as significant (Sig. T < 0.05) independent variables in the regression model (see Table 4). The model was written as follows:

$$y^{\wedge} = 2.69 + 0.8x_1 + 0.34x_2 + 0.25x_3 + 0.14x_4$$

where,

$y^\wedge$ - Dependent variable 'Likelihood of Coming Back Again'
x_1 - Independent variable 'Food and Environment'
x_2 - Independent variable 'Service and Courtesy'
x_3 - Independent variable 'Price and Value'
x_4 Independent variable 'Location and Advertising and Promotion'

The results of the regression analysis showed that four coefficients carried positive signs, as expected. This indicated that there was a positive relationship between those variables and the dependent variable "Likelihood of Coming Back Again." It also suggested that the likelihood of a customer coming back again depended largely on these four variables. They were, therefore, the determinant factors or the best predictors of a customer's intention to return. They played an important role in customer's decision-making. It could be concluded that the likelihood of customers returning increases, when there was a higher satisfaction level in those four dimensions.

The partial correlation coefficient, β, was used to indicate the impact. The dimension with the greatest effect was "'Food and Environment" (β = 0.80, Prob. < 0.0000), followed by "Service and Courtesy" (β = 0.34, Prob. < 0.0000), "Price and Value" (β = 0.25, Prob. < 0.0000), and "Location, and Advertising and Promotion" (β = 0.14, Prob. < 0.0047). The results predicted that, on average, the probability of a customer's 'Likelihood of Coming Back Again' changes by 1.53 (0.80 + 0.34 + 0.25 + 0.14) for each unit change in the four variables. The units refer to one unit on the five point scale.

Checking the square of Beta (Beta^2) values, it was found that "Food and Environment" had more than 5 times the impact of the dependent variable "Service and Courtesy," more than 10 times that of "Price and Value," and more than 32 times that of "Location, and Advertising and Promotion."

The assumptions (linearity, constant variance, independence of the residuals, and normality) underlying regression, and the influential data points (outliers) were examined by the analysis of studentized residuals, standardized residuals, studentized partial regression, and Leverage and Cook's distance in the study. All the tests

were satisfied and there was no significant violation of the assumptions and outliers found in the model.

The values of variance of inflation (VIF) and tolerance for each variable, the tests of the extent of multicollinearity and collinearity, indicated that there was no multi-collinearity in the model. No VIF values exceeded 10.0, and the values of tolerance showed that in no case did co-linearity explain more than 10% of any predictor variable's variance. The Dubin-Watson d-statistic value was 1.98, indicating that there was no residual correlation in the model.

The results were validated by dividing the sample into two sub-samples to estimate the regression model for each sub-sample, and comparing the results. Comparing overall model fit demonstrated a high level of similarity of the results in terms of R^2 (overall: 0.88; split-sample 1: 0.75; split-sample 2: 0.83), adjusted R^2 (overall: 0.76; split-sample 1: 0.74; split-sample 2: 0.81), the standard error of the estimate (overall: 0.52; split-sample 1: 0.54; split-sample 2: 0.45), and the individual coefficients (Probs. < 0.05).

CONCLUSION

A four-dimension structure was established from 14 choice intention attributes for Chinese restaurant dining. The results of the study showed that four dimensions, "Food and Environment," "Service and Courtesy," "Price and Value," and "Location, and Advertising and Promotion" were significantly related to the customer's intention of coming back again. It showed that customers considered multiple dimensions in deciding whether or not to return to a particular Chinese restaurant. On average, the dimension of "Food and Environment" had the largest impact on customers' choice decisions, followed by "Service and Courtesy," "Price and Value," and "Location, and Advertising and Promotion." It was clear that a restaurant manager's emphasis on only one dimension to attract customers might not be as effective as applying a multi-dimensional strategy.

Overall, the Chinese restaurant segment is facing intense competition due to a saturated restaurant industry and a slow-growth economy. Chinese restaurants, therefore, need to further improve

their operations and marketing strategies to obtain or increase their fair market share. The study findings offered the new insights into the Chinese restaurant segment, affording operators the opportunity to improve their service quality and competitiveness.

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