The Effect of Chinese Consumer Characteristics on the Dining Out Behavior

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1.Introduction

Over the last few decades, the world's food culture has undergone significant changes. In the global trend, there is a significant increase in the demand for food consumed outside of the house from 2000 to 2020 (Stewart, et al., 2004) with more people dining out (Seguin et al., 2016; Bezerra et al., 2012). An ongoing overview in the United States indicated that over half of adults detailed eating out at least three times each week (Kant et al., 2015).

China is experiencing rapid economic growth and urbanization. Its gross domestic product (GDP) is expected to give an account of 19% of the world's economy by 2020 compared with 9% in 2010 (Atsmon et al., 2012). The driving force for China's future growth is expected to be consumption rather than investment. In China, in 2012, the percentage of residents over 6 years old in China dining out was 35.5%, that of urban residents dining out was 42.2%, and that of rural residents eating out was 28.5% (NHFPC, 2015). This phenomenon mirrors the requests or needs for dining out of Chinese. Projections based upon Zhang et. al. (2015) suggest that expected FAFH expenditures will continue to increase through 2050 in urban China. Considering these socioeconomic changes in China, particular interests are given to expenditure projected as an average cost for dinner in a restaurant in this study.

This change is because of factors like an increase in family income, smaller family size, and both adults are working and there is less time for household work (Zhang, 2011). People

allocate a higher percentage of income to eating out. Using the data collected in the household survey in Beijing, Bai et al. (2010) found that income is the primary factor affecting households 'participation and spending decisions. Multigenerational families in China are vanishing with the average size of the urban household declining from 4.0 in 1995 to 3.1 people in 2010 (UN, 2013). With the change of household size in China, it might be helpful to predict the dining out behavior by analyzing the data according to the household size.

In addition to the global trend, the number of people dining out is increasing in China for cultural reasons. Especially in China, many people dine out together, but sometimes the purpose could be changed by the situation. The reason for dining out could be represented as celebrating, maintaining the relationship with others, establishing new relationships. Also, reasons could change by the people who you eat with. So, by dividing the restaurant's dinner type in accordance with the purpose of dining, this study intended to investigate the factors affecting the dinner type.

In 2011, according to the National Statistics Bureau of China, for the first time, about half of population in China lives in urban areas than in rural areas (NBSC, 2012), yet urbanization is projected to continue at a rapid rate by 2050, with more than 75 percent of urban population (United Nations, 2014). With the rapid development of China's urbanization, it will be meaningful to compare the differences in dining out behavior between rural and urban residents. As more urbanized, there would be more eat out places making it easier to approach. Therefore, the dining out behavior of rural residents would be different from that of urban ones.

There have been many studies on food away from home (FAFH) in China, (Ma et al., 2006; Min et al. ,2004; Gould and Villareal, 2006; Bai et al., 2015; Zang et al., 2018). However, research conducted by the city size and population, directly in restaurants is rarely found. Therefore, this study attempted to report the effect of consumer characteristics on dining out behavior by visiting restaurants directly from three cities in Beijing, Hangzhou, and Qinhuangdao

2. Methodology

We will conduct empirical studies to address the issues identified. Three different topics on consumer dining out behaviors are investigated, dining out frequency, dinner type, and dinner expenditure. We investigate what type of consumer characteristics like, family income, city size, the purpose of dinner, age, and other factors may affect the dining out behaviors. The reason why these variables were particularly interesting is because as mentioned above through the introduction part, China is experiencing these days with the change of statistics of demographic and socioeconomic factors, so it would be meaningful to identify the association of these variables. The first topic was the impact of consumer characteristics on the frequency of dining out; Effect of customer features on the dinner type was the second topic such as business dinner type, family dinner type, or friends dinner type; The third subject concerned the impact of consumer characteristics on the average cost of the dinner.

2.1 methods

The Multinomial Logit Equation is defined as:

Y = 0 (Business Dinner), 1 (Friends Dinner), 2 (Family Dinner), 3 (Other Dinner)

$$P(y=0|x) = \frac{\exp(\beta_{00} + \beta_{01}x)}{1 + \exp(\beta_{00} + \beta_{01}x) + \exp(\beta_{10} + \beta_{11}x) + \exp(\beta_{20} + \beta_{21}x)}$$

$$P(y=1|x) = \frac{\exp(\beta_{10} + \beta_{11}x)}{1 + \exp(\beta_{00} + \beta_{01}x) + \exp(\beta_{10} + \beta_{11}x) + \exp(\beta_{20} + \beta_{21}x)}$$

$$P(y=2|x) = \frac{\exp(\beta_{20} + \beta_{21}x)}{1 + \exp(\beta_{00} + \beta_{01}x) + \exp(\beta_{10} + \beta_{11}x) + \exp(\beta_{20} + \beta_{21}x)}$$

$$P(y=3|x) = \frac{1}{1 + \exp(\beta_{00} + \beta_{01}x) + \exp(\beta_{10} + \beta_{11}x) + \exp(\beta_{20} + \beta_{21}x)}$$

Where y refers to the type of dinner, when y = 0, 1, 2, 3; the number demonstrates the business type of dinner, friends type of dinner, family type of dinner, and other types of dinner respectively. P() denotes the probability operator with each y and x value. x is a vector including all independent values in the multinomial logit. x could be represented as $X_1, X_2, X_3, X_4, \ldots$ which contains all the explanatory variables. Coefficient vector β points out the set of the value which have a close similarity and exp() is the exponential functional operator.

Multiple linear regression is also used which contains more than one explanatory variable by extending simple linear regression. In any case, the response variable is directly associated with a linear combination of the explanatory variables. The following is the equation for multiple linear regression.

$$y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_p X_{pi} + e_i$$

Where y is the dependent variable which includes the average cost per dish of the dinner and frequency of dining out, e is the error term. $\beta_0, \beta_1, \beta_2, \ldots$ are illustrating the parameters to be estimated and the list of $X_1, X_2, X_3, X_4, \ldots$ are the independent variables. The independent variables are explained specifically in the following Data section. The number of data observation was represented as i.

Simply, when all explanatory variables are 0, β0 is the constant which would be the predicted value of y. Each explanatory variable has its own β coefficient in a model with p explanatory variables. It allows us to investigate how explanatory variables are associated with a response variable of interest (Tranmer et. al.,2020).

2.2. Data

The data were collected through a survey in 2015 in three cities in China, Beijing, Hangzhou, and Qinhuangdao, respectively. Each data was collected while the surveyor was taking dinner at the restaurant. For more details about the survey and data collection procedure, see Hao et al (2017). Each of the cities was an example of the super large city (national capital), a large city (provincial capital) and med size city (prefecture city). The total data were obtained from 418 diners in restaurants but some of the surveys missed certain question answers, so the final observation numbers were 408, 414, 360 for each of the three equations respectively excluding the missing results.

The survey questions were primarily asked about the dining behavior which is dinner type, dining out frequency, and frequency of dining out with the particular major guest, and the demographic information of the survey responses like gender, age, parents' education, family income, city, and childhood residence were asked for the accurate analysis.

The dinner type was defined as a total of four types which were Business Dinner, Friends Dinner, Family Dinner, and Other Types of Dinner. Due to the survey was taken in the restaurant, we needed to add the location where the survey was taken, and we divided the location by the popularity of the cities. For the cost of dinner or the frequency of dining out were measured as quantitative numbers and especially for the income, it was both estimated objectively and subjectively. The dining out frequency was measuring how many times per year do the people go out and eat. Besides, family size, the residence of childhood, and parent education also gathered information to verify background correlations.

The qualitative data variable namely City, Dinner Type, Female, and Childhood Residence were analyzed by the percentage of frequency and the quantitative variables such as Cost of Dinner, Dining out Frequency, Major Guest Frequency, Age, Parents education, Family Income, and Family Size were determined by mean, Standard deviation, minimum, and maximum. To analyze and establish the relationship between the dependent variables which are dining out the frequency and cost with the independent variables, a linear regression was used for the first and third topics, and to identify the linkage between the dependent variables which are dinner type and the independent variables a multi logit regression was used for the second topic.

Table 1 shows descriptive statistics of the variables. The respondents included more males than females, consisting of 52% males and 48% females. The average age was 35 years and the average cost of dinner was 51.6 Chinese yuan per dish. Their parents of respondents showed a poor level of education: The highest level of education received appeared respectively as 31% of elementary school and 39% of high school. This is consistent with the fact that older Chinese ages 60+ today did not have good education half a century ago. The average family annual

income was 182,500 Chinese yuan and the average family size was 3.2 people per family. In terms of the city, Hangzhou accounted for 37% of survey participants, followed by Qinhuangdao 36%, and Beijing 27%. The survey shows that the survey respondents lived in rural areas (35%), small-town (21%), a small city (30%), and a large city (15%) in their childhood, although they are now in good size cities.

Table 1. Descriptive Statistics of Variables

Variable name	Description	Mean	Std Dev.	Min	Max
Cost	Cost level of meals (Yuan/Dish)	51.64	18.42	15	106
Frequency	Dining out frequency in a year	66.52	73.14	1	200
Major Guest Frequency	Dinning frequency with today's major guest	65.38	78.1	1	200
Age	Years	34.53	9.23	21	66
Parents education	The higher education level of a parent in years of schooling	9.92	4.67	0	20
Income	Family Income for one year (1000 Yuan)	18.25	14.57	3	60
Family Size	Number of people in family	3.21	1.41	0	8
Qinhuangdao	=1 if the respondent is living in Qinhuangdao, otherwise = 0;	0.36	0.48	0	1
Beijing	=1 if the respondent is living in Beijing, otherwise = 0;	0.27	N/A	0	1
Hangzhou	=1 if the respondent is living in Hangzhou, otherwise = 0;	0.37	N/A	0	1

Business Dinner	=1 if the dinner was Business purpose, otherwise = 0;	0.05	N/A	0	1
Friends Dinner	=1 if the dinner was friends purpose, otherwise = 0;	0.66	N/A	0	1
Family Dinner	=1 if the dinner was family purpose, otherwise = 0;	0.27	N/A	0	1
Other Dinner	=1 if the dinner was other purpose, otherwise = 0;	0.02	N/A	0	1
Female	=1 if the respondent is a female, otherwise = 0.	0.48	0.5	0	1
Income compare with others are above average	=1 if income compare with others with others,	0.19	0.59	0	1
Same with others	=1 if income compare with others are same with others	0.65	N/A	0	1
below average	=1 if income compare with others are below average	0.16	N/A	0	1
Rural Area	=1 if residency of the childhood was in rural area	0.35	N/A	0	1
Small Town	=1 if residency of the childhood was in small town	0.21	N/A	0	1
Small City	=1 if residency of the childhood was in small city	0.30	N/A	0	1
Large City	=1 if residency of the childhood was in large city	0.15	N/A	0	1

The dining behavior of the survey questionnaire included the dinner type, dining out frequency, and major guest frequency. Regarding the dinner type, a large proportion was friends dinner type (66%), followed by family dinner (27%), business dinner (5%), and other dinners (2%). As for dining frequency, the average was 66.5 times per year and the average major guest frequency was 65.4 times per year.

3.Results

For this study, Stata SE 16 was used for analyzing the data. The results of the linear regression model and a multi logit regression model for are shown in Table 2. In the linear model part, both Dining out frequency and cost have a significant coefficient value which represents the relation of the independent variables and dependent variable. In the Multinomial logit part, a similar concept is applied as linear regression model but since the coefficient in multinomial logit does not give the marginal effect directly, we needed to find marginal effect additionally to check the exact relationship between dependent variables and independent variables.

Table 2 Regression results of consumer behavior

	Frequency	Dinner Type						Cost
		Business		Friends		Family		
Variable	coefficient	coefficient	marginal effect	coefficient	marginal effect	coefficient	marginal effect	coefficient
Female	-2.524 (7.698)	0.332 (1.036)	-0.0440** (0.0198)	1.386 (0.893)	-0.0147 (0.0449)	1.803** (0.907)	0.087** (0.0412)	1.281 (1.662)
Family Income	0.7670** (0.3000)	0.0731* (0.0380)	0.0008 (0.0008)	0.0466 (0.0333)	-0.0060*** (0.0016)	0.0847** (0.0338)	0.0064*** (0.0013)	-0.0711 (0.0670)
Income Average	-4.571 (10.64)	2.613** (1.061)	0.0277 (0.0226)	1.874** (0.823)	-0.0209 (0.605)	2.124** (0.857)	0.0488 (0.0528)	-2.632 (2.213)
Income Below Average	1.243 (14.518)	1.351 (1.362)	0.0107 (0.0309)	1.043 (1.014)	0.0144 (0.0821)	1.093 (1.073)	0.0154 (0.0741)	-1.786 (2.964)
Small Town	-2.180 (11.402)	-1.895 (1.485)	-0.0191 (0.0335)	-1.573 (1.311)	-0.0379 (0.6442)	-1.344 (1.333)	0.0385 (0.0577)	2.480 (2.356)
Small City	22.446** (10.988)	-3.649** (1.439)	-0.0564*** (0.0214)	-1.814 (1.197)	0.0490 (0.0559)	-1.966 (1.222)	-0.0203 (0.0518)	2.249 (2.319)

Large City	7.712 (13.510)	-2.498 (1.443)	0.0170 (0.0403)	-2.884** (1.318)	-0.1003 (0.0750)	-2.651** (1.342)	0.0178 (0.0631)	1.886 (3.019)
Dining out Frequency	N/A	0.005 (0.006)	0.0004*** (0.0001)	-0.004 (0.005)	0.0005 (0.0003)	-0.010** (0.005)	-0.0011*** (0.0001)	-0.005 (0.0121)
Major Guest Frequency	N/A	-0.059*** (0.019)	-0.0022*** (0.0008)	-0.008** (0.004)	0.0036 (0.0007)	-0.0002 (0.004)	0.0017*** (0.0003)	-0.016 (0.0119)
Friends Dinner	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-7.247** (3.593)
Family Dinner	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-8.343** (4.000)
Other Dinner	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-12.788** (6.182)
Beijing	4.048 (10.804)	N/A	N/A	N/A	N/A	N/A	N/A	28.967*** (2.498)
Hangzhou	9.072 (9.471)	N/A	N/A	N/A	N/A	N/A	N/A	8.796*** (1.933)
Entrée Price	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.097*** (0.0249)
Age	-0.5264 (0.4837)	N/A	N/A	N/A	N/A	N/A	N/A	0.175* (0.1060)
Parent Education	1.400 (1.011)	N/A	N/A	N/A	N/A	N/A	N/A	0.287 (0.2182)
Childhood Average	-4.571 (10.640)	N/A	N/A	N/A	N/A	N/A	N/A	-2.632 (2.213)
Childhood Poor	1.244 (14.518)	N/A	N/A	N/A	N/A	N/A	N/A	-1.786 (2.964)
Family Size	-4.539* (2.705)	N/A	N/A	N/A	N/A	N/A	N/A	0.462 (0.571)

*, **, and *** denote statistical significance at the 10%, 5% and 1%, respectively. Standard errors are reported in parenthesis.

3.1. Influence of consumer characteristics on dining out frequency

On the linear regression results, when dining out frequency was the dependent variable, there were three significant independent variables which were family income, residency at childhood, and family size. One unit of family income increase was meaning the increase of one thousand Chinese yuan. The result observed when family income increases by ten thousand yuan per year, people go out 0.77 times more for dinner. In Zang et al. (2018)'s study, adults with a higher socioeconomic status, as measured by higher household income, residence higher income were more likely to eat out (all $p < 0.0001$). Their study is consistent with the results of our study. The variable named Small City was showing the survey participant's childhood residence was in a small city. It was analyzed as a dummy variable, in this case, rural area was a base outcome. People who spent their childhood from small cities tend to dine out 22.4 times more frequently per year than the one living in a rural area. The other big city also tends to have a higher frequency of dining out compared to the rural area, but it was not a significant value in 10%. The last significant independent variable is family size. As the family size increases by 1 individual, people tend to dine out 4.5 times less per one year. It seems like as family size increases, people are not inclined to dine out.

3.2. Influence of consumer characteristics on dinner type

The dinner type was the dependent variable and female, and family income was the independent variable. For the dependent variable, there were a total of four different categories which were the business dinner, friend's dinner, family dinner, and other types of dinner. However, due to the equation of multinomial logic, other types of dinner were redundant because if you add up four values it would be always 1 so other types of dinner

became a dummy variable because it is no longer needed. The unit of the Dinner type was the probability to measure how much percent does the people dine out more often with specific dinner types. The results are as shown in table 2. The gender had both effects on business type of dinner and family type of dinner. We were able to observe that woman tends to have 4.4% less business dinner but 8.7% more for the family dinner than man. Both are at a 5% significance level. Family income was the other dependent variable that influenced the dinner type. The income increases of one thousand Chinese yuan have resulted to have 0.60% fewer friend's dinner and 0.64% more family dinner. This result could be interpreted as the higher the income, the family could dine out more often together and this will increase the chances of the family becoming harmonized. The place where survey respondents lived when they were young was also one of the independent variables. People who lived in a small city in their childhood tend to have 5.64% less business dinner than the people who were from rural areas when they were young. Since this variable is positively significant at a 1% significant level, we could realize that the residence for childhood has a large impact on the purpose of the dinner. Dining out frequency is one of the variables that was used as an independent variable, but it is also used as a dependent variable for the dinner type. As one time of dining out frequency increases, people tend to have 0.4% more business dinner and 0.11% less family dinner. This shows as for the people who dine out more often, tend to have more business purpose of dinner and have less family purpose of dinner. The marginal effect shows as the frequency of dining out with major guest per year increases, people tend to have 0.22% less business dinner and 0.17% more family dinner.

3.3. Influence of consumer characteristics on the cost of dinner

The cost was the other dependent variable which was based on the linear regression. The exact meaning of the cost is the average cost of how much per dinner do people spend and the unit was Chinese currency, yuan. In this analysis, there were lots of significant independent variables under 10% significant level, which were three types of dinner type, places where the survey was conducted, entree price, and the age of people. The cost was closely related to the four independent variables. First, the dinner type was closely related to the cost. Except for the business dinner type which became a base outcome, friends' dinner, family dinner, and other types of dinner were all negative coefficients which were -7.25, -8.34, and -12.79 respectively. Since the unit was Chinese yuan, each explains people who have friends dinner tend to use 7.25 yuan less per dish than business dinner, people who have family dinner tend to use 8.34 yuan less per dish than business dinner, and people who have other types of dinner tend to use 12.79 yuan less per dish than business dinner. As every type of value was negatively coefficient, we could predict that people tend to spend more on business dinner. The place where the survey was conducted was also one of the factors which affected people spending money on dinner. People from the large city such as Beijing tends to spend 28.97 yuan more and people from the small city such as Hangzhou tend to spend 8.80 yuan more than the small town which was the base outcome. This supports the connection between city size and meal spending. People living in a bigger size of the city tends to pay more expensive food price. As the size of the city decreases, the average cost of the eating out price decreases as well. Age is the last dependent variable. 0.18 yuan was spent more when the people get one year older. Byrne et al. (1996) found that US per capita FAFH spending on younger people is lower than that on adults, but youth spending is on the increase over time.

4.Conclusion

This study attempted to report the effect of consumer characteristics on dining out behavior by conducting a survey in restaurants directly from three cities in Beijing, Hangzhou, and Qinhuangdao. The information was dissected by three distinct subjects.

From the first topic, we could discover the linkage between consumer characteristics and the frequency of dining out. Employing the linear regression model, results indicate family income, residency at childhood, and family size are associated with the frequency of dining out. When income increases, there is a surplus budget to eat out, resulting in an increase in the number of eating out. In a rural area, eating out culture is relatively less developed than that of the city. The closer people are to the city center, the more they tend to eat outside, possibly due to the rapid growth of the catering industry and the intensive distribution of restaurants in urban centers, and people have easy access to food prepared away from home. In addition, it seems that if the number of family members increases, the cost of eating out will be more burdensome, so it may be possible to eat less.

The second topic was the impact of consumer characteristics on the dinner type which was represented as a business dinner type, family dinner type, or friend dinner type. From the multi logit model, the linkages between consumer characteristics like gender, family income, the residence of childhood, dining out frequency, and major guest frequency and dinner type were discovered. The rate of Business dinner for women tend to have less than that of men because women have a lower percentage of participating in social activity than man (Ziman, 2013). The income increase has resulted to have fewer friend’s dinner and more family dinner. As the income becomes higher, the family could dine out more often together with

more budget. People who lived in a small city in their childhood tend to have less business dinner than the people who were from rural areas when they were young. People who dine out more often tend to have more business purposes for dinner and have less family purpose for dinner. People who dine out frequently would have been more dining chances with business purposes.

The third topic was the impact of consumer characteristics on the average cost of the dinner. We could find the connection between dinner type, where the survey was conducted, and age and the average cost of dinner. People tend to spend more on business dinner compared to friend's dinner, family dinner, or other dinners. It could be explained that the meal for a business meeting has a special purpose for business, so respect for the other party needs to be expressed by ordering more expensive food and make the table abundant. The reason why people living in big cities cost more for their meals could be the result of food price difference by the level of urbanization.

Some of these results could be explained by the cultural differences with other countries and China. China is the country where has a special culture for dining out compared to other countries. When dining out in China, the main guest always exists, which is a unique culture of China. Other countries may have a main guest in a business dinner, but it is not easy to refer to a special main guest for other friends or family meals. The results should be applied with caution to the entire Chinese population, considering that there are variations between the general population and the current population studied. Through this study, it was possible to find out the dining out behavior of china, and if the same study was conducted and compared among people from other countries, it would be possible to find out whether the

research results reflect Chinese people's unique food culture or universal dining behavior. A cross-cultural study is proposed as a follow-up study.

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