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ONLINE MEAL ORDERING SERVICE QUALITY AND DELIVERY SPEED: OPPORTUNITIES FOR RESTAURANT OPERATORS?¹

Key words: China, online meal order, service quality, delivery speed, survey data

ABSTRACT. This study examines the importance customers attach to online meal service quality and delivery speed using data collected in 2017. The structured questionnaire probed for views on meal delivery services and socio-demographic information. The respondents participating in the survey were located in cities across 29 provinces in China. Ordered logit technique estimated equations for modeling service quality and delivery speed importance. Average meal price and food safety expectations were important to consumer perception of service quality, while payment convenience, ordered meal type, and delivery courier logo mattered to perception of delivery speed. Online order business managers should pay attention to orders with above average value, those with multiple, varied dishes, and deliveries to college dormitories. Customers ordering traditional Chinese dishes attach importance to delivery speed in contrast to those ordering barbecue. Courier appearance and display of health badges are also associated with importance attached to delivery speed.

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INTRODUCTION

China is experiencing a rapid growth in online meal purchases [IResearch 2015, 2016, IIMediaResearch 2017, Wang et al. 2016, Xue et al. 2017]. Online meal ordering is facilitated by the rapid development of the internet-based economy and e-commerce has produced a new food marketing concept [Wu 2012, Ghajargar et al. 2016]. The advantage of such services is the opportunity to purchase a meal selected from a web-posted menu by placing an order and having it delivered promptly to the customer's location [He et al. 2016, Cherrett et al. 2017]. Online meal delivery appears to have its origins in the concept of home delivery [Kämäräinen et al. 2001]. Consumers prefer direct delivery to their door [Lowe, Rigby 2014] and an increasing number of consumers requires fast, reliable, customized, and cost-effective logistic processes and services [Persson, Virum 2001]. Therefore, both the quality of service and speed of delivery are important to customers ordering meals from restaurants located at some distance from outside the work place or the campus [He et al. 2016]. Online ordering allows a large number of restaurants of various size to expand their sales.

A survey of online order restaurants that offer meal delivery in the area of Shanghai indicated that nearly 70% of the restaurants employed at most four people and 90% employed no more than seven [Liu 2020]. Firms employing at most ten workers dominate the food sector in China [Lam et al. 2013]. The number of restaurants has increased from 3,508 in 2000 to 24,258 in 2018 [CNSO 2019] and revenues from sales of meals more than doubled between 2010 and 2018. The possibility of online ordering offers entrepreneurs operating small restaurants to expand sales by adding customers who choose to order a meal online to their dine-in customers.

The goal of the study is to empirically establish what factors influence customer perceptions and in what way the importance of service quality of online meal order delivery to customer location (e.g., office, dormitory, home) and speed of delivery. The perception of service quality is important for repeated purchases and as a multidimensional concept, and this study tested empirically online meal order service providers. The delivery of a meal is vital in a satisfying online purchasing experience [Xiao et al. 2017, Lowe, Rigby 2014] and its speed is a key differentiating feature in satisfying customer orders. Managers need to measure and improve the service quality of their meal order restaurant continuously. An empirical assessment of service quality in restaurant operations supports the link between service quality and customer satisfaction, and service quality and repeat patronage [Hau-siu Chow et al. 2007, Sumaedi, Yarmen 2015]. A major contribution of this study is closing the gap in critical knowledge of factors pertaining to service quality and delivery speed from the perspective of the service customers in an extremely competitive meal delivery environment. Generated knowledge is applicable to daily management of online meal ordering restaurants and allows focus on attributes affecting service quality

that are within manager's control. For establishments that employ own couriers delivering meals, this study identifies factors that are important from the standpoint of their customer, while the establishments relaying on outside courier deliveries learn what criteria to apply in hiring such service. With the onset of COVID-19, meal ordering services have become even more critical. The aspects of food safety and hygiene of the delivered meal have become paramount, while the speed may have been affected by increased online ordering, stressing the unique contribution of this study.

LITERATURE DEVELOPMENT AND HYPOTHESES DEVELOPMENT

Understand customers is the most important step in defining and delivering high-quality service [Zeithaml et al. 1990] and customers should be considered in the process of designing the service [Pakdil, Aydın 2007]. Service quality a major criterion in choosing and evaluating service providers is [Mentzer et al. 1989] and a major means of differentiation and a source of competitive advantage [Berry et al. 1988]. Higher-perceived service quality results in higher profitability [Chang, Chen 1998, Cronin Jr, Taylor 1992, Silvestro, Cross 2000] and significantly influences customer intention to return to a particular restaurant [Ribeiro Soriano 2002, Ng 2005]. Qingqing Tan et al. [2014] verified the positive influence of service quality variables on customer perception of Chinese fast food restaurant service quality. Service quality attributes include, among others, appearance of employees, staff attentiveness, level of service, food item knowledge, and friendly treatment in a fast-food restaurant [Pettijohn et al. 1997].

Convenience attracts online meal ordering service customers [Wu 2012, Yeo et al. 2017]. Efficient and reliable logistics are important for the economic success of online businesses since customer time has become increasingly scarce. Online buying behavior is affected by education, gender, and income [Li et al. 1999]. Among those ordering meals online are university students [He et al. 2016, Cherrett et al. 2017, El-Said, Fathy 2015]. Many students prefer online meal ordering when they consider eating [He et al. 2016, Cherrett et al. 2017, El-Said, Fathy 2015, Liu, Sun 2016].

Online meal ordering offers a variety of dishes influencing customer choice. Most Chinese foods are prepared as mixed dishes of meat and vegetables, and many follow a fairly standard recipe [Hankin et al. 2001], for example *gai jiao fan* (Chinese rice bowl, or vegetables and meat served over rice). Barbecue consumption has been growing rapidly in China [Zhang et al. 2017] and the average value of a Chinese barbecue online transaction was highest among several meal types [Liu, Sun 2016].

Online meal ordering involves delivery and the person delivering an order comes in direct contact with the customer. That single contact is an opportunity for the company to make an impression on the customer, stressing the importance of courier conduct and

appearance. There is a lack of studies that considered the delivery person's appearance and the perception of service quality in the online meal order sector. Since an urban Chinese customer can choose from a wide variety of restaurants, a logo may serve as a differentiating tool or a reminder for repeat customers. The company logo on the delivery box signals company commitment and pride in providing the service.

The importance a customer attaches to service quality and delivery speed when ordering meals online are two constructs based on elicited responses using a scale in the current study. It is hypothesized that the importance of service quality and speed of delivery is influenced by three categories of traits. A category of traits pertains to restaurant features discernable from the portal accessible by the mobile device, e.g., meal type and variety, price, and form of payment are specific to a particular restaurant. Another set of traits is associated with the delivery service that is an integral part of a purchase and includes an easily identifiable logo of the restaurant or the courier and the courier appearance. Customer traits relevant to ordering online shown in earlier studies are socio-demographic characteristics such as gender and age.

The three categories of traits, i.e., customer, restaurant, and delivery service, guide the selection of variables for two empirical relationships: the importance of service quality and the importance of delivery speed. A trait from any of the three categories is hypothesized to affect in a measurable way the perceived importance of service quality or delivery speed. However, the nature of online meal ordering implies that traits relevant to service quality are not necessarily the same as those pertinent to delivery speed.

Service quality importance, measured by the change in probability of attaching importance to this feature, is hypothesized to increase in response to the following: from the group of customer traits – female students care more than male students; older customers attach more importance to service quality than younger customers; but the difference between male and female managers is to be tested empirically; from among restaurant traits – if payment convenience matters to customers, service quality is important; higher average price per order is associated with importance of service quality; number of ordered dishes increases the attached importance to service quality; satisfaction with the last delivered order increases the importance of service quality; from the traits characterizing the delivery stage – the appearance of the courier; a visibly displayed logo of the restaurant or delivery service; display of health certificate badge by the courier, all are consistent with the perception that service quality is important.

In the case of attaching importance to speed of delivery, the traits describing the customer are similar, with one addition. Customers who admitted they like to cook may understand what it takes to prepare a meal and attach relatively less importance to the speed of delivery than customers who do not like to cook. Therefore, the expected effect of fondness for cooking is to lower the probability of viewing delivery speed as important. However, other traits are hypothesized to have the following influence: from among restaurant traits – the higher the average value per order, the higher the importance of

fast delivery, reflecting an “I pay, I demand” attitude; similarly, the more frequent the use of online meal ordering services, the higher the probability of attaching importance to speedy delivery; those ordering the *gai jiao fan*, a typical mid-day meal, attach importance to the speed of delivery; those ordering barbecue are less likely to view delivery speed as important because barbecue is typically ordered late in the day when time pressure is less; from among the traits associated with the delivery stage – a displayed logo is likely to increase delivery speed by allowing to distinguish the courier at places such as industrial facilities or campuses; having a badge indicating a health certificate is an explicit display impression of caring and consistently fast delivery for customers.

The hypothesized relationships between service quality and delivery speed focus on directional effects. The sign of statistically significant coefficients indicates the directional effect, positive (an increase) or negative (a decrease). The specification of the dependent variable associated with several degrees of importance for either of the two measures implies that the hypothesized relationships measures probability changes associated with each levels of perception. Such dependent variables where the order is associated with meaning call for ordered regression as the estimation technique. The effect of each statistically significant ordered regression coefficient is empirically established once converted into the probability change. The probability change may increase or decrease the perception of the dependent variable; for example, the probability may decrease the perception of service quality as “important” in response to a customer’s increasing age, but an increasing age increases the perception that it is “very important”.

ESTIMATION APPROACH

The perceptions of service quality and speed of meal delivery are measured using a multi-step scale (Likert type-scale). The ordered logit is a suitable estimation technique [Greene 2003, 2008, Hanushek, Jackson 2013]. In the regression model, Y^* is the latent variable behind the reason’s importance, X denotes the selected explanatory variable vector, B is the coefficient vector, and e is the error term:

$$Y^* = XB + e \quad (1)$$

The relation between the latent variable Y^* and the dependent variable Y is defined in Equation 2. When the latent variable is between particular cut points, the dependent variable is equal to a certain ordinal level, where $Cuts$ are parameters needing to be estimated assuming $Cut_{i-1} < Cut_i$. The probability of a reason’s importance, equal to a certain number i , for example 3, can be expressed as the difference between two Cumulative Distribution Functions (CDFs) of normal distribution (Equation 3):

$$Y = i \text{ if } Cut_{i-1} < Y^* < Cut_i \quad (2)$$

where:

$i = 1, 2, 3$ and

$$\begin{aligned} Prob(Y = i) &= Prob(Cut_{i-1} < Y^* < Cut_i) = Prob(Cut_{i-1} - XB < e < Cut_i - XB) \\ &= F(Cut_i - XB) - F(Cut_{i-1} - XB) \end{aligned} \quad (3)$$

In each equation, the likelihood function of the empirical model (Equation 4) is the product of all possible probabilities with the indicator variable d as corresponding power, and N is the total sample size:

$$Likelihood = \prod_j \prod_i Prob(Y = i) (Y = i)^{d(Y-i)} \quad (4)$$

where:

$j = 1, 2, \dots, N, d = 1$, if $Y = I$, $d = 0$ otherwise.

The regression model is estimated by the maximum likelihood method using STATA software. The obtained regression coefficients are converted into the probability change in the dependent variable in response to a change in the independent variable. Those probability changes provide knowledge that can be applied for management purposes.

DATA

The lack of data about service quality and delivery speed in online meal ordering required the collection of original data. The developed, structured questionnaire contained two main parts. One part involved questions probing for respondent views and opinions on specific aspects of meal delivery services. The other part of the questionnaire collected socio-demographic information. The part probing for traits of restaurants and transactions asked respondents to indicate the number of online meal orders, average price per order, and own ability to cook. Information was obtained about meal delivery service, meal variety, and the average price of an order and payment convenience. Multiple-choice options were presented to survey participants regarding meal type. A scale was applied in this study to solicit responses regarding the importance of online meal delivery service quality and the speed of meal delivery.

Following a pilot test held at a major university in Shanghai, the online survey website was commissioned to a private company. The data collection techniques used by the company ensured efficient data collection by providing strict quality control, which included sample quality control, selection of respondents, and tracking of the completion process. The online survey was administered between June 5, 2017 and July 30, 2017. A total of 554 respondents participated in the survey.

RESULTS

SURVEY RESULTS AND DESCRIPTIVE STATISTICS

The respondents participating in the survey were located in cities across 29 provinces in China. About 45% of respondents were males (Table 1). The majority of respondents were not older than 35 years. The largest number was between 26 and 35 years old (57.0%), followed by respondents whose age ranged from 36 years to 45 years (18.6%). There is a clear preference for meal order services among younger consumers. In terms of occupation, white-collar workers dominated among respondents (30.1%). Professionals and government employees represented the next largest group (24.7%). Blue-collar workers (19.0%) and the self-employed or others (7.4%) accounted for about a quarter of respondents, while 18.8% were college students.

When asked about their willingness to cook, more respondents (29.2%) who liked to cook than those who disliked to (17.7%). The frequency of online meal ordering indicated that 43.5% of respondents ordered meals online 3-4 times per week. Another 29.8% of respondents ordered twice a week and 15.7% of respondents did so no more than once a week. The category reflecting the most frequent online meal ordering, over five times per week, was posted by 11.0% of respondents. The average price paid per order shows that the largest number of respondents (45.5%) paid 21-25 yuan per meal. The highest price per ordered meal listed among options presented to respondents was over 25 yuan, and was selected by 16.1%. As many as 8.5% of respondents selected the price range 10-15 yuan per meal, and 1.6% admitted to paying less than 10 yuan, on average.

The questionnaire probed respondents about the kind of meal they usually ordered. Nine options were presented and included Chinese traditional breakfast, gai jiao fan (rice served with meat and vegetables on top), noodles or dumplings, different local snacks, barbecue, American fast food (KFC, McDonalds, etc.), Japanese or Korean cuisine, dessert-drink-fruit, and "other". Gai jiao fan was most popular (72.4%), which shows that a complete main dish was commonly selected online for delivery. There were 54.3% of respondents who purchased American fast food proving that was an important and popular option. Anecdotal evidence suggests that McDonald's has created a new trend in beef consumption, while Kentucky Fried Chicken has increased the consumption of poultry in China [Liu et al. 2009]. The reason for the American fast food orders may be the nature of online ordering, which seems to favor a fast-paced lifestyle characterizing younger people.

Different local snacks were also commonly ordered (50.2%), which shows much interest in some regional delicacies. Noodles or dumplings are a convenient and traditional meal in China and ordered by 49.3% of respondents. Chinese breakfast accounted for 38.3% of orders, and usually includes a stuffed bun, porridge, fried dough sticks, or steamed

Table 1. Descriptive statistics of variables included in the empirical model (N = 554)

Variable name	Variable description/units of measurement	Mean	Std. deviation	Min.	Max.
Dependent variable					
Service quality importance	1 = not important; 2 = important; 3 = very important	2.283394	0.5930691	1	3
Speed importance	1 = not important; 2 = important; 3 = very important	2.355596	0.6682514	1	3
Independent variables					
Demographic factors					
Gender	1 = male; 2 = female	1.550542	0.4978886	1	2
Age	1 = below 25; 2 = 26-35; 3 = above 36	2.090253	0.6497842	1	3
Age category	2 = below 25; 3 = 26-35; 4 = 36-45; 5 = above 46	3.16426	0.791058	2	5
Student male	1 = student male; 0 = otherwise	0.0920578	0.2893688	0	1
Student	1 = yes; 2 = otherwise	1.812274	0.3908458	1	2
Manager male	1 = manager male; 0 = otherwise	0.1389892	0.3462479	0	1
Socio-economic factors					
Meal ordering frequency	1 = once a week; 2 = twice a week; 3 = 3-4 times a week; 4 = at least 5 times a week	2.545624	0.8585959	1	4
Average order value	1 = at least 20 yuan per order; 0 = otherwise	0.6155235	0.486911	0	1
Payment convenience	1 = very important; 0 = otherwise	0.4765343	0.4999004	0	1
Satisfaction with last delivery	1 = not satisfied; 2 = satisfied; 3 = very satisfied	1.998195	0.5528133	1	3
Dish variety	1 = if order 5 or more types of dishes; 0 = otherwise	0.1805054	0.3849555	0	1
High standards of appearance	1 = very important; 0 = otherwise	0.0920578	0.2893688	0	1
Health certificate badge	1 = not important; 2 = important; 3 = very important	2.075812	0.6626375	1	3
Customer likes to cook	1 = do not like at all; 2 = do not like; 3 = neither like nor dislike; 4 = like; 5 = like very much	3.122744	0.7928859	1	5
Logo displayed	2 = not important and not important at all; 3 = neither important nor important; 4 = important; 5 = very important	4.081227	0.7740651	2	5
Gai jiao fan	1 = typical order is gai jiao fan; 0 = otherwise	0.7238267	0.4475076	0	1
Barbecue	1 = typical order is barbecue; 0 = otherwise	0.2635379	0.4409497	0	1

Source: own study

roll. Recently, Chinese breakfast has been eaten not only in the morning, but ordered for lunch or dinner. Dessert, drink, or fruit was ordered by 27.3% of respondents and usually would be ordered in combination with another meal. Barbecue is popular and Chinese consumers prefer barbecue late at night, and 26.4% of respondents indicated ordering it online. Japanese or Korean cuisine was enjoyed by 16.4% respondents. Overall, results show traditional Chinese food was the main type of meal ordered online, but Chinese consumers also accepted some foods from other countries (United States, Japan, and Korea). A respondent could indicate all types of meals he ordered online when answering that question. Given the offered options, 33.8% of respondents purchased three kinds of meals, 24.0% selected four categories, and as many as 12.6% of respondents ordered five different meal types online. The mean number of online ordered meal types was 3.35.

The question about the importance of delivery service quality and speed offered a respondent a choice along a 5-step scale, where “5” implied “very important” and “1” meant “not important at all”. The largest share of respondents (56.9%) selected “important”, followed by “very important” (35.7%). Very few selected other options “neither important nor unimportant” (6.0%), or “not important” (1.4%), and none of the respondents perceived quality of service or speed as “not important at all”. With regard to meal delivery speed, 46.4% of respondents indicated speed was “very important”, while 42.8% perceived it “important”. The mean scores of two online meal ordering service attributes, i.e., quality and speed, were respectively 4.27 and 4.34. Meal quality and speed of meal delivery perceptions were examined in terms of possible association. The correlation coefficient of importance of delivery service and speed is 0.201, at $p = 0.000$.

The distribution of responses regarding the importance of service quality and delivery speed indicates how important both features are in the online meal ordering business and that restaurants offering online service function in a very competitive environment. The observed response frequencies led to the specification of the empirical relationship distinguishing between three response categories. The categories distinguished among respondents for whom the service quality and delivery speed were “important”, “very important”, or who were indifferent and did not attach importance to the two features. The latter category has served as the benchmark category for comparing the probability changes in attaching importance to service quality and the meal delivery speed.

IMPORTANCE OF DELIVERY SERVICE QUALITY

Table 2 shows the results of the estimated equation modeling perceptions of importance of service quality to online meal order customers using the ordered logit technique. The older the customer, the more importance was attached to the service quality as hypothesized. This result is not surprising as older customers have accumulated substantial life experience shaping their expectations. Moreover, since age plays an important role in

Table 2. The ordered logit estimation results of the equation modeling the importance of service quality perceptions

Variable name	Coefficient	Standard error	<i>z</i>	<i>P</i> > <i>z</i>
Gender	-0.4104	0.2280	-0.18	0.86
Student male	0.8167	0.3676	2.22**	0.03
Manager male	0.3462	0.3051	1.13	0.26
Age	0.2976	0.1498	1.99**	0.05
Average order value	0.3376	0.1897	1.78*	0.08
Payment convenience	1.0320	0.1867	5.53***	0.00
Satisfaction with last delivery	0.3004	0.1684	1.78*	0.08
Dish variety	0.4070	0.2358	1.73*	0.08
High standards of appearance	0.8518	0.3263	2.61***	0.01
<i>Cut</i> ₁	0.2777	0.6621	-	-
<i>Cut</i> ₂	3.803	0.6858	-	-

Note: Brent test value of 6.48 significant at $p > \chi^2$ of 0.77 and confirms the null

Significant: * at 0.1, ** at 0.05, *** at 0.01

Source: own study

interpersonal relationships in China, the effect of age needs to be recognized by the online meal order sector. Male students also attached importance to service quality suggesting that it is not only life experience that may shape expectations of quality service, and that they differ from female customers.

Other variables that significantly and positively affect the importance of service quality include the average price per ordered meal. That a higher meal price leads to attaching more importance to service quality is hypothesized because it is a common expectation among consumers. In the case of this study, another feature influencing the perceived importance of service quality is payment convenience. This form of convenience increases the importance of service quality. Using a mobile phone for payment transactions is popular in urban China.

Two variables associated with ordered meals also result in increasing the importance of service quality to customers. Namely, those who order a greater variety of dishes believe that service quality matters. A variety of dishes, like variety of food in general, is associated with consumers whose preferences have been shaped by a combination of factors, including culture, informal knowledge, and experience [Moon et al. 2001]. Additionally, customers who expressed satisfaction with the most recently delivered meal attached importance to service quality. It is plausible that a positive experience could lead to a repeated order, therefore indicating the quality service embodied in the meal and its delivery is in the interest of a meal provider. The relevance of a recent experience

coincides with the external appearance of the delivery courier. His appearance signals the reputation of the service to customers and bystanders alike and positively influences the perception of service quality as “very important”.

IMPORTANCE OF MEAL DELIVERY SPEED

Factors influencing the perceived importance of meal delivery speed differ from those associated with perception of service quality importance (Table 3). Among the meal types ordered online, gao jiao fan and barbecue significantly influence the importance of speed delivery. Ordering gao jiao fan increases the importance of delivery speed, likely because it is a large meal that is typically eaten at mid-day. Customers ordering online expect the speedy delivery if order is placed mid-day when they likely take only a short break from their daily work. In contrast, customers ordering barbecue attached less importance to speed delivery (Table 3) because barbecue is commonly eaten late in the day, probably for special occasions during leisure time. Customers most likely add barbecue to other foods they may already be enjoying while waiting for delivery. The attached importance to delivery speed increases if the frequency of online meal ordering increases (Table 3). Those frequently placing online orders are plausibly replacing a meal they would prepare, but prefer to allocate time to other activities.

IMPORTANCE OF MEAL DELIVERY SPEED

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Among other variables that suggest a customer attaches less importance to delivery speed is ability to cook; if a respondent liked to cook, the delivery speed was less important (Table 3). It is possible that liking to cook implies knowing how to cook, and such customers realize what it takes to prepare and deliver a meal. Another variable implicitly

Table 3. The ordered logit estimation results of the equation modeling the importance of speed of delivery perceptions

Variable name	Coefficient	Standard error	<i>z</i>	<i>Pr</i> > <i>z</i>
Gender	0.0159	0.1994	0.08	0.94
Manager male	-0.2211	0.2894	-0.76	0.45
Age category	0.1128	0.1245	0.91	0.37
Meal ordering frequency	0.1984	0.1035	1.92*	0.06
Payment convenience	0.8381	0.1788	4.69***	0.00
Gai jiao fan	0.3715	0.1953	1.90*	-0.11
Barbecue	-0.5842	0.1969	-2.97**	0.00
Student	0.2504	0.2515	1.00	0.32
Customer likes to cook	-0.2268	0.1120	-2.03**	0.04
Logo displayed	0.6762	0.1202	5.62***	0.00
<i>Cut</i> ₁	1.4700	0.8491	-	-
<i>Cut</i> ₂	4.0439	0.8675	-	-

Significant: * at 0.1, ** at 0.05, *** at 0.01

Source: own study

suggests that delivery speed is important. Having a logo on the uniform worn by the delivery service courier facilitates identifying him and accelerates receiving a meal. The logo on a uniform may be particularly important when the delivery point may be crowded with other couriers, for example, during the lunch break at a factory.

DISCUSSION

The estimated coefficients have been converted into probability changes to provide information about the effects of the independent variables on the importance attached to service quality and delivery speed. Tables 4 and 5 show probability changes in response to the change in the respective explanatory variables.

In the case of service quality importance, all probability changes that are statistically significant show that the explanatory variable lowers the probability that the service quality is in any way not important, and increases the probability of perceiving the service quality as important or very important. Among socio-demographic variables, being a male student as compared to a female student lowers the probability of viewing service quality as “not important” or “important” by about 5% and 11%, respectively. In contrast, male students have a 16% higher probability to view service quality as “very important”. The effect of age measures the change in the probability to every year added to the respondent’s

average age. The results suggest that the probability of perceiving service quality as “not important” decreases with each added year by 2%, and almost doubles in viewing service quality as “important”. More importantly, the probability of viewing service quality as “very important” increases by nearly 6% with each added year to a respondent’s age.

Among the group of traits associated with the ordered meal and restaurant, the size of the order and the paid price increases by almost 7% if the average order value is at least 20 yuan (Table 4). However, the probability of viewing service quality as “unimportant” or “important” decreases by 2% and 4% for orders of 20 yuan or larger, respectively. The variety of ordered dishes increases the probability of having the perception that service quality is “very important” by 8%, and it lowers viewing the service quality as “unimportant” by about 3% and treating it as “important” by 5%. Clearly, customers that order multiple dishes care about the quality of service.

The expectation of payment convenience increases the probability of the perception of service quality as “very important” by 20%. This is the largest identified change suggesting that failure to assure customer ability to pay using a mobile device is potentially detrimental to business. The satisfaction with the last meal delivery increases the probability of perceiving service quality as “very important” by nearly 6%. This relatively minor effect should not be ignored because the unsatisfied customer has been known to be reluctant to continue using the service.

Two factors associated with the impression made by a courier are among those having the largest effect on probability change that the service quality is important. The probability increases by about 17% among respondents viewing service quality as “very important”. The expectation that the delivery courier carries a health certification badge increases the probability of perceiving service quality as “very important” by 9%. Since many restaurants are small, the couriers delivering meals are seldom their employees. Restaurateurs commonly outsource delivery and can assess a potential courier’s appearance before using the delivery service. The flexibility of hiring a courier is offset to some extent by the availability of drivers in the area where the restaurant is located and the competition among couriers can be beneficial.

The probability of attaching importance to delivery speed is affected by several traits (Table 5). The customers valuing payment convenience had an 18% higher probability of viewing delivery speed as “very important” than those who thought otherwise. Moreover, customers who thought payment convenience is “very important” had a 7% lower probability of viewing delivery speed as not important and an 11% lower probability of perceiving payment convenience as “important”. Interestingly, the more the customer liked to cook, the lower the probability of viewing the speed of delivery as “very important”; those who like to cook have a 5% lower probability of perceiving delivery speed as “very important”, 3% higher probability to view the delivery speed as important, and 2% higher probability that the delivery speed is in any way not important.

Table 4. Probability changes in respondent perception of service quality in response to a change in the explanatory variables

Variable name	Service quality not important	Service quality important	Service quality very important
Gender	0.0027 (0.0149)	0.0053 (0.0296)	-0.0080 (0.0445)
Student male	-0.0534** (0.0249)	-0.1060** (0.0478)	0.1590** (0.0710)
Manager male	-0.0226 (0.0201)	-0.0449 (0.0396)	0.0676 (0.0594)
Age	-0.0195* (0.0101)	-0.0386** (0.0195)	0.0581** (0.0290)
Average price paid	-0.0221* (0.0127)	-0.0438* (0.0247)	0.0659* (0.0368)
Payment convenience	-0.0675*** (0.0149)	-0.1340*** (0.0233)	0.2010*** (0.0333)
Satisfaction with last delivery	-0.0196* (0.0113)	-0.0390* (0.0218)	0.0586* (0.0326)
Dish variety	-0.0266* (0.0158)	-0.0528* (0.0305)	0.0794* (0.0456)
High standards of appearance	-0.0557** (0.0225)	-0.1110*** (0.0417)	0.1660*** (0.0623)
Health certificate badge	-0.0309*** (0.0100)	-0.0613*** (0.0183)	0.0922*** (0.0270)

Significant: * at 0.1, ** at 0.05, *** at 0.01

Source: own study

The type of typically ordered dish is important with regard to the perceived importance of delivery speed. Customers who commonly order gai jiao fan, a traditional mid-day dish, have an 8% higher probability of attaching importance to delivery speed than customers ordering other types of meals (Table 5). Those waiting for gai jiao fan have a 3% lower probability of viewing delivery speed as unimportant, and a nearly 5% lower probability of seeing the delivery speed as only “important”, but 8% higher probability perceiving the delivery speed as “very important”. In contrast, customers typically ordering barbecue seem to be willing to wait as indicated by the 12% lower probability of attaching the highest level of importance to delivery speed (Table 5), 5% higher probability of viewing delivery speed as “unimportant”, and more than 7% higher probability of treating it as “important”. Barbecue preparation takes considerably more time than a typical dish.

Table 5. Probability changes in respondent perception of speed delivery in response to a change in the explanatory variables

Variable name	Delivery speed not important	Delivery speed important	Delivery speed very important
Gender	-0.0014 (0.0173)	-0.0020 (0.0255)	0.0034 (0.0428)
Manager male	0.0192 (0.0251)	0.0283 (0.0370)	-0.0474 (0.0620)
Age category	-0.00978 (0.0108)	-0.0144 (0.0159)	0.0242 (0.0266)
Meal ordering frequency	-0.0172* (0.00910)	-0.0254* (0.0132)	0.0426* (0.0220)
Payment convenience	-0.0727*** (0.0169)	-0.1070*** (0.0219)	0.1800*** (0.0358)
Gai jiao fan	-0.0322* (0.0171)	-0.0475* (0.0249)	0.0797*
			(0.0415)
Barbecue	0.0507*** (0.0175)	0.0747*** (0.0252)	-0.1250*** (0.0414)
Student	-0.0217 (0.0219)	-0.0320 (0.0321)	0.0537 (0.0538)
Customer likes to cook	0.0197** (0.00988)	0.0290** (0.0142)	-0.0486** (0.0237)
Logo displayed	-0.0586*** (0.0115)	-0.0864*** (0.0151)	0.1450*** (0.0237)

Significant: * at 0.1, ** at 0.05, *** at 0.01

Source: own study

The importance customers attached to the logo of the company increased the probability of perceived importance to delivery speed by 15% as compared to those who did not view the logo as “very important”. Given the urban environment and the frequency of ordering meals online, knowing the logo of the company makes identification of the courier easier, accelerating the receipt of the order. The importance of the logo lowered the probability of viewing speed of delivery as unimportant by nearly 6% and by almost 9% the choice of the option “important” with regard to delivery speed.

CONCLUSIONS

Online meal order services grew from the expansion of fast food restaurants that helped shape customer expectations of short waits before receiving their meal as well as the technological innovation of cell phones as a medium of placing and paying for an order almost instantly. Online delivery offers access through online platforms to a new customer base for many small restaurants while potential customers are offered a wide selection of meal choices. The apparent win-win situation suggests that the sector will continue its expansion as discretionary incomes grow. Repeated use of online services is encouraged if the service meets quality expectations and the integral feature of the online meal order, namely the speed of delivery to the customer location, enhances the purchase experience. It was hypothesized that knowing what customer, restaurant, and delivery traits affect the probability of viewing either service quality or delivery speed as very important is essential for managing businesses in this sector.

Payment convenience is a key feature and restaurants engaged in this service must assure uninterrupted service for potential customers within a reasonable radius. The results are not surprising given that the online meal order sector evolved from the desire to eat a full meal on demand. Paying instantly through a mobile device is common in China. A great effect on the probability of viewing the service quality as “very important” is the appearance of the courier. The customer never interacts with the restaurant personnel and the delivery courier projects the image of the service quality.

Not surprisingly, managers of online order businesses ought to pay special attention to orders with higher than average value or those orders that involve multiple and varied dishes. Paying a high price often accompanies expectations of receiving service of high quality as well, while the number of various dishes also signals to the business that the order may be destined to a larger group of customers and offers a chance to demonstrate the quality of service of the establishment. Assigning additional personnel to handle high value orders and orders consisting of many varied dishes may pay off in the long-run by generating repeated business from returning, satisfied customers. Among other factors that need attention is the age of customers, because each added year to a customer’s age increases the probability of perceiving the service quality as “very important” by nearly 6%. That means that there is a huge difference between customers in their early 20s and those 10 years older.

The perception of delivery speed as “very important” reflects convenience as a major factor behind the use of online meal ordering and the large probability change associated with the importance of payment convenience. It appears that speedy payment using a mobile phone is also influencing the attached importance to the speed of delivery. The probability of delivery speed importance also increases substantially with the importance attached to the display of a logo by the courier. Logos allow quick identification of the delivery service, especially if a number of couriers arrive at a single destination within the

same time, for example, a factory, or dormitory. The speed of delivery matters to customers ordering *gai jiao fan*, a typical mid-day meal. That type of meal is likely consumed by customers at work and the speed of delivery is “very important” because of the limited length of the lunch break. An unforeseen delay in delivery could affect worker productivity. However, if the ordered meal is barbecue, the delivery speed becomes less essential and the probability of viewing speed as “very important” substantially decreases.

Courier appearance and the display of a health badge matter and can be addressed by the business manager. Both items project the service quality associated with the specific restaurant regardless of whether the restaurant outsources the delivery or uses its own service. In the case of a delivery courier, the uniform must combine the desire to demonstrate quality of service and the practical requirements for using a motorcycle or a scooter as the means of transportation.

The speed of delivery poses a challenge because it depends to some extent on the unpredictable traffic patterns that change in urban areas throughout the day. By implication, monitoring traffic and identifying alternative routes is a possibility that can supplement the proactive approach of managing customer expectations regarding the amount of time it could take to deliver the meal. Furthermore, tracking the courier in real time and, if needed, informing the customer about the progress of delivery is likely to ease any customer anxiety. Results confirmed the importance of meal ordering frequency as increasing the probability of viewing delivery speed as “very important,” signaling that the two are related and those who order meals often appreciate speedy delivery. The sensitivity of customers frequently using online ordering to delivery speed can be handled by identifying such customers at the time the order is placed and informing them about the progress of preparing and delivering the order, which can be easily arranged given internet capabilities.

Future studies may involve a larger sample of urban residents who are the primary customers of restaurants offering online orders. In particular, given China’s multi-tier classification of cities, future study may distinguish between customers from various sized urban centers. Additionally, by focusing on the general public, there may be opportunity to collect information about income, household characteristics, and job types, which could be relevant to ordering meals online. Also, more information about reasons for ordering a meal will help to discern motives behind the use of the service, while more details about the delivery service will allow examining the performance of such services across cities and at various times of the day to account for the relevance of traffic intensity.

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JAKOŚĆ USŁUGI I SZYBKOŚĆ DOSTAWY POSIŁKÓW ZAMAWIANYCH ONLINE: OKAZJA DLA PROWADZĄCYCH RESTAURACJE?

Słowa kluczowe: Chiny, zamawianie posiłków online, jakość usługi, szybkość dostawy,
badania ankietowe

ABSTRAKT

W artykule podjęto próbę oceny wagi przywiązywanej przez klientów do jakości usługi i szybkości dostawy posiłku zamówionego online, na podstawie danych ankietowych zebranych w 2017 roku. W ankiecie zawarto pytania dotyczące opinii na temat usługi dostaw posiłku i cech socjodemograficznych. Respondenci biorący udział w ankiecie pochodzili z miast w 29 prowincjach Chin. Do obliczeń równań modelujących wagę przywiązywaną do jakości usługi i szybkości dostawy użyto uporządkowanej techniki logitowej. Stwierdzono, że na percepcję wagi przywiązywanej przez klienta w odniesieniu do jakości usługi, dotyczącej bezpieczeństwa żywności wpływała głównie przeciętna cena zamówienia i czas oczekiwania. Natomiast na percepcję ważności szybkości dostawy miały wpływ wygoda w dokonaniu płatności, rodzaj zamówionego posiłku oraz logo kuriera. Menadżerowie firm prowadzących dostawę posiłków w systemie online powinni zwracać uwagę przede wszystkim na zamówienia o ponadprzeciętnej wartości, zamówienia dotyczące wielu urozmaiconych posiłków i dostawy do domów studenckich. Klienci zamawiający tradycyjne dania kuchni chińskiej przywiązywali wagę do szybkości dostawy, co kontrastowało z klientami zamawiającymi dania grylowane (BBQ). Wygląd kuriera i wyeksponowany certyfikat zdrowotny były także uważane za czynniki wpływające na percepcję wagi przywiązywanej do szybkości dostawy.

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