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Consumer characteristics influencing fast food consumption in Turkey

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Abstract

The Turkish fast food industry has grown rapidly since the 1980s. There are now more than 700 fast food restaurants in Turkey. Using the data from a consumer survey, this study investigates the relationship between consumers' fast food consumption frequency and their socio-economic/demographic characteristics and attitudes. Using Chi-square test of independence, the study compares consumers' fast food consumption frequencies of never, low, moderate and high. We developed an empirical model identifying consumer characteristics that influence the consumption frequency of fast food products using the random utility framework. The empirical model was estimated using an ordered probit approach to obtain the coefficients applied to the calculation of marginal effects and probabilities. The sign and significance of coefficients and marginal effects were used to ascertain consumer characteristics which are important to the frequency of fast food consumption. The results indicate that age, income, education, household size, presence of children and other factors, such as consumer attitude towards the price of fast food, health concerns and child preference, significantly influence the frequency of fast food consumption. The findings will help fast food managers to understand the critical factors that influence consumers' fast food consumption behavior and help them to make improvements accordingly.

Keywords: Fast food consumption; Turkey; Attitude; Socio-economic and demographic attributes

1. Introduction

Fast foods have been defined by Bender and Bender (1993) as a "general term used for a limited menu of foods that lend themselves to production-line techniques; suppliers tend to specialize in products such as hamburgers, pizzas, chicken, or sandwiches" (Davies & Smith, 2004). The fast food restaurant is one typical form of global business (Emerson, 1990; Park, 2004). What distinguishes fast food from other types of food away from home is that it is indeed fast-near immediate service, providing a consistent and popular product. Because of the standardized menu and consistent quality, only minimal time need to be spent obtaining product information (Jekanowski, Binkley, & Eales, 2001). Consumers can combine meal-time with time engaged in other activities such as shopping, work, or traveling (Jekanowski, Binkley, & Eales, 1997). Maybe also more eating moments per day are part of the modern lifestyle which fits to the increasing consumption of fast food. Moreover, a new and faster pace of life in big cities has also led people to find quicker meal solutions for their shortened lunch hours (Hanson, 2002). This has led the rapid development of fast food industries. Eating out gives consumers to satisfy their hunger, and need for convenience, pleasure, entertainment, time saving, social interaction and the mood transformation (Park, 2004). Moreover, consumers derive benefits from food and restaurants, so people experience excitement, pleasure and a sense of personal well-being (Finkelstein, 1989; Park, 2004).

Historically, fast food is a significant and increasingly important part of Turkish household food consumption expenditures. The major changes in the lifestyles,

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education, income, and consumption patterns of Turkish consumers in the last two decades encouraged consumers to eat out. The growing number of fast food chains and restaurants in newly established shopping centers and hypermarket complexes are evidence of this newly emerging demand. For example, McDonald's and Burger King currently have outlets inside most of the supermarket and hypermarket stores such as Carefour-SA, Real and a few service stations across Turkey. However, expenditure for fast food has still represented a small percentage (less than 10%) in total food expenditures in Turkey (SIS, 2003).

Fast food chains are a relatively new concept in Turkey, with only a 20-year history. American and European companies have played the central role in the development of fast food restaurants in Turkey. American food franchises are dominant and are estimated to have about 50% of the domestic market in Turkey. Turkish chains have about one-third of the market and the rest belongs to a European chain, namely Burger King. Traditional Turkish restaurants serve traditional chicken, beef and lamb donner, kebabs and other Turkish dishes with mostly western style of service (USDA, 2002). Although the price of fast food is not cheap, many young Turkish people consider fast food restaurants as social and proper places of meeting and eating out.

Several factors can explain the changes in consumers' fast food consumption in Turkey: increasing participation of women in the labor force, longer workdays, growing number of households living on at least two-income sources, decreasing household sizes, urbanization, growth in tourism, longer life expectation, increasing education level of consumers, increasing per capita income, and increasing number of fast food restaurants, such as McDonald's, Burger King, Pizza Hut and the others. In addition, the younger generation, who are influenced by western lifestyles portrayed through television and advertisements, exhibit a preference for fast food restaurants. Many Turkish adolescents are becoming increasingly more westernized and have greater convenience when they eat out. On the other hand, preference of older generation is different than younger generation in Turkey. Older generation especially employed household head mostly prefers Turkish type of fast food (e.g., compacted sliced meat, shish kebab, pancake with spicy meat filling), but younger generation who are mostly college students from wealthy families prefer western type of fast food such as McDonald and Burger King. Moreover, similar to many other countries, for Turkish consumers, fast food restaurants are not only an efficient and economic eating environment but also as an exotic place for social interaction and entertainment (Park, 2004). Given the challenges facing the fast food industry, increasing market share of fast food companies could be induced by increasing demand for fast food and by opening new market segments.

Despite its growing importance, fast food chains have received little detailed attention in the academic literature, being considered in but a few of the food away from home studies (Brown, 1990; Byrne, Capps, & Saha, 1996, 1998; Ekelund & Watson, 1991; Fanning, Marsh, & Stiegert, 2002; Hiemstra & Kim, 1995; Jekanowski et al., 2001; McCracken & Brandt, 1987; Nayga & Capps, 1994; Park, 2004; Stewart, Blisard, Bhuyan, & Nayga, 2004). According to these literatures, food away from home consumers are more educated, younger, and have higher-paying jobs and household incomes. While this view is generally sufficient for food away from home as a whole, it is somewhat limited in the specific case of fast food. McCracken and Brandt (1987) and Byrne et al. (1998) identified household income, household size and composition as important determinants of total household expenditures on restaurants, fast food facilities, and other food away from home facilities. Ekelund and Watson (1991) also found that fast food consumption was empirically related to opportunity costs of the household. Nayga and Capps (1994) studied the relationship between household characteristics and the frequencies of dining at full service and fast food restaurants. Hiemstra and Kim (1995) analyzed the impact of household characteristics on expenditure by eating occasion and market segment. Jekanowski et al. (2001) examined the effect of price, income and demographic characteristics on fast food consumption. Fanning et al. (2002) investigated socio-economic determinants of the likelihood of consuming fast food using the logit model.

Although all these studies overlooked the impact of socio-economic characteristics of households on fast food expenditures, little is known about the characteristics of consumers who prefer to consume food at fast food restaurants, their attitudes towards price and health, and the effects of child preference on fast food consumption. For example, Nayga and Capps (1994) analyzed the impact of socio-economic and demographic factors on individual intake of saturated fat and cholesterol from fast food and food at home markets. Park (2004) investigated the relationship between consumer values of eating-out and the importance of fast food restaurant attributes in Korea and showed that consumers choose fast food restaurants more for hedonic reason, not utilitarian, values of eating-out. Law, Hui, and Zhao (2004) showed that staff attitude, food quality and variety and environment significantly effect customer satisfaction in fast food outlets. Pettijohn, Pettijohn, and Luke (1997) found that quality, cleanliness and value to be three most important attributes in fast food restaurants, while atmosphere and menu variety were relatively unimportant. When consumer considered the convenience and price of an eating-place, the utilitarian value of eating out plays an important role in restaurant evaluation and selection (Johns & Pine, 2002; Park, 2004). These researches, however, do not specifically consider the attributes of consumers who show preference for fast food products such as importance of price of fast food, consumers concerns on health and diseases (e.g., mad cow diseases) and child's preference on fast food meals and outlets. This research, therefore, builds on previous work and attempts to identify and compare Turkish

consumers' frequency of fast food consumption with regard to selected socio-economic/demographic attributes and consumers' attitudes.

The goal of this article is to provide a better understanding of consumers' consumption behavior with regard to fast food. The specific objectives are (1) to determine the share of consumers who consume fast food, (2) to explain consumers' fast food consumption decisions by investigating the impact of factors such as an individual's socioeconomic/demographic attributes, (3) to analyze the impact of consumers' attitudes, knowledge and preferences on the consumption of fast food products, and (4) to identify the profile of consumers most likely to consume fast food.

It is hypothesized that household with higher incomes and education tend to spend more on fast food than those of lower-income and less educated (Angulo, Gill, & Mur, 2002; Mihalpoulos & Demoussis, 2001; Nayga & Capps, 1994). In addition, we assume that the number of people and children living in a household also may influence their consumption of fast food. In particular, as a household adds more members, food prepared at home may become more economical (Byrne et al., 1996; Fanning et al., 2002; McCracken & Brandt, 1987; Mihalpoulos & Demoussis, 2001). We expect that households with younger members tend to consume more fast food, while households with older people tend to consume less (Jekanowski et al., 1997; Love, 1972; Mihalpoulos & Demoussis, 2001; Nayga, 1996; Nayga & Capps, 1994). Previous research further suggested that as more married women experience higher opportunity cost of time from participating in labor force, then more food will be consumed at fast food as opposite to eating at home (McCracken & Brandt, 1987; Nayga, 1996; Shin, 1998; Yen, 1993). Moreover, we also assume that consumers' attitudes and knowledge such as price, health concern, child preferences and environment are significant factors on consumers' fast food consumption preferences (Davies & Smith, 2004; Gilbert, Veloutsou, Goode, & Mountinho, 2004; Law et al., 2004; Park, 2004; Schroder & McEachern, 2005).

The remainder of the paper is organized into four sections. Section 2 describes data and method of analysis which is followed by sections contain empirical results and discussion. Section 4 contains concluding remarks that discuss several implication of this study.

2. Data and method

To test the hypothesis about how a consumer's fast food consumption is affected by characteristics such as socioeconomic/demographic characteristics and attitudes, we need a data set with information on households' characteristics and fast food consumption frequencies. The data applied in this study were collected by the research team from households residing in urban area of Adana, Turkey by a face-to-face survey in 2001. The sample size was determined by ungrouped one stage random likelihood sampling method based on households (Collins, 1986):

$$n = t^2[1 + (0.02)(b-1)] * pq/E^2 \quad (1)$$

where n is the sample size, t is the significance level (assumed to be 95%), b is the stage of sampling and p is the probability of the situation being searched (for this study, it is assumed to be 50%), q is the probability of the situation not being searched $(1-p)$, and E is the accepted error (assumed to be 5%). If b is equal to 1, the Eq. 1 is transformed to the following equation:

$$n = (t^2 * pq)/E^2 \quad (2)$$

$$n = \frac{1.96^2 * (0.5 * 0.5)}{(0.05)^2} = 384 \quad (3)$$

An interviewer collected the data in a home visit in order to encourage a high level of cooperation and complete reporting. In the survey, the interviewers asked each head of household if he/she consumed fast food during the last 1-month period and if he/she consumed, a question asked participants how often he/she consumed. Responses to these questions were of particular interest to this study. In the empirical analysis, the levels of consumption habits (frequencies) were classified as never, low (once or twice a month), moderate (once a week) and high (at least once a day).

The questionnaire used in the interviews was structured in two sections and contained straightforward questions. In the first section, the interviewers collected data on respondents' socio-economic/demographic characteristics (e.g., age, education, family size, composition of household, gross annual household income and employment status).

In general, fast food consumption is also related to consumer perception about some attributes. Thus, the second section contained the consumers' attitudes about fast food consumption. Participants were asked to rank the importance of the following statements on their fast food consumption decision: ''Prices of fast food products are important in my decision to consume'', ''I'm very concerned about fast food products because of health hazards such as mad cow and brucellosis'', '' I eat fast food because of my children's preferences'', ''atmosphere in fast food facilities is important in my decision to go to a fast food restaurant''. Consumers were asked to record their responses on a likert scale as follows: strongly disagree (1), somewhat disagree (2), neutral (3), somewhat agree (4) and strongly agree (5). The definitions of socio-economic/demographic variables and consumer attitudes and descriptive statistics of the sample are presented in Table 1. A total of 384 observations, all with complete information on the variables included in the empirical model, were analyzed.

Descriptive statistics was used to identify socio-economic/demographic characteristics and attitudes of consumers (Table 1). We performed two analyses to achieve the objectives of this study; Chi-square contingency test and ordered probit model. In the first analysis, Chi-square contingency test was used to determine if fast

Table 1
Definition of variables and descriptive statistics of the sample

Variable definitions	Variable name	Mean	Standard deviation
Explanatory variables			
Number of members in the household	HSIZE	4.45	4.97
Household with children less than 14 years of age	CHILD	0.59	0.49
Age of household head			
$< 35 = 1$; 0 otherwise	AGE1[a]	0.50	0.47
35–49 = 1; 0 otherwise	AGE2	0.33	0.47
$> 49 = 1$; 0 otherwise	AGE3	0.18	0.38
Education level of household head			
Elementary school or less = 1; otherwise = 0	EDU1[a]	0.43	0.50
Secondary or high school = 1; otherwise = 0	EDU2	0.35	0.48
University degree = 1; otherwise= 0	EDU3	0.22	0.41
Employment status of household head			
Employed = 1; otherwise = 0	EMPLOY	0.97	0.17
Household with working wife			
Yes = 1; otherwise = 0	WEMPLOY	0.20	0.40
Household monthly income level			
Lower income = 1; otherwise = 0	INC1[a]	0.21	0.40
Lower to middle income = 1; otherwise = 0	INC2	0.21	0.41
Middle income = 1; otherwise = 0	INC3	0.25	0.43
Middle to higher income = 1; otherwise = 0	INC4	0.17	0.37
Higher income = 1; otherwise = 0	INC5	0.17	0.37
Price of fast food			
1 if price of fast food product is important for the consumer 0 if otherwise	PRICE	0.80	0.40
Conscious about health concern			
1 if consumer conscious about health concern 0 if otherwise	HEALTH	0.72	0.45
Child preferences			
1 if child preference is important on fast food consumption 0 if otherwise	PREFERENCE	0.33	0.47
Environment			
1 if atmosphere in fast food restaurant is important 0 if otherwise	ENVIRONMENT	0.78	0.27
Dependent variable[b]			
0 = never, 1 = low, 2 = moderate and 3 = high		1.01	1.08

[a] Indicate base variables omitted from models to avoid multicollinearity.
[b] "0" represents the lowest frequency (never), "1" represent low (once or twice a month), "2" represent moderate (once a week) and "3" represent the highest frequency (at least once a day).

food consumption frequencies are independent of the respondents' socio-economic characteristics and attitudes. The statistical program, Statistical package for Social Science (SPSS for Windows, version 11.5, 2004, SPSS Inc., Chicago, Illinois) was used to transform where necessary, tabulate and analyze the data.

In the second analysis, the ordered probit procedure was used to determine the extent to which selected socio-economic/demographic characteristics and attitudes influenced the respondents' fast food frequencies. The theoretical framework of this procedure is standard normal random utility maximization (McFadden, 1973). In this study, a consumer's utility function associated with the consumption of fast food is postulated in terms of relative consumption frequency rankings and it is hypothesized that these are determined by a vector of consumers' socio-economic/demographic attributes and consumers' attitude and knowledge such as price and health. The utility function is not observable, but it is assumed to underlie the observed vector of responses expressed as ordinal rankings. Dependent variable takes values of $(0,1,2,\ldots,j)$. These values are not interval in nature, but reflect categories of arbitrary width. Since the dependent variable is expressed as an ordinal ranking, following Maddala (1983), an ordered probit estimation technique was applied to assess the impacts of selected factors on the frequency of fast food consumption (Chen, Ali, Veeman, Unterschultz, & Le, 2002; Greene, 1998; McKelvey & Zavoina, 1975; McLean-Meyinsse, 1998). The ordered probit estimator is specified around a latent variable whose level is influenced by explanatory variables such that:

$$y^* = \beta' X + \varepsilon, \varepsilon \sim N[0,1] \quad (4)$$

where x is a vector of independent variable. y^* is unobserved perception held by individual independent variable, β is a vector of parameters and ε is the vector of stochastic error term. Unlike the standard regression, the variance of the error components is assumed to be one. However, a closely related variable y is observable. The relationship between y and y^* is assumed to be a function of cut-off points (μ_j) which are estimated along with the regression coefficients and vary with individuals. Assume a consumer's choice is one of the four alternatives ($y = 0, 1, 2, 3$) corresponding to the likert scale discussed above such that (Chen et al., 2002; Greene, 1998):

$$\begin{aligned} y &= 0 \quad \text{if } y^* \leqslant 0 \\ y &= 1 \quad \text{if } 0 < y^* \leqslant \mu_1 \\ y &= 2 \quad \text{if } \mu_1 < y^* \leqslant \mu_2 \\ y &= 3 \quad \text{if } y^* \leqslant \mu_2 \end{aligned} \quad (5)$$

where μ_1, and μ_2 ($0 < \mu_1 < \mu_2$) are unknown threshold parameters of y^* to be estimated with β. Since the stochastic error term, ε, is assumed to be distributed standard normal, the following probabilities enter the log-likelihood function (Chen et al., 2002; Greene, 1998; Maddala, 1983):

$$\begin{aligned} \text{Prob } (y = 0) &= \Phi(-\beta' X) \\ \text{Prob } (y - 1) &= \Phi(\mu_1 - \beta' X) - \Phi(-\beta' X) \\ \text{Prob } (y = 2) &= \Phi(\mu_2 - \beta' X) - \Phi(\mu_1 - \beta' X) \\ \text{Prob } (y = 3) &= 1 - \Phi(\mu_2 - \beta' X) \end{aligned} \quad (6)$$

where $\Phi(\cdot)$ is the cumulative probability function of a normal distribution for the range of consumer's utility. Using this structure and a sample of n observations, the log likelihood function is developed and maximized with respect to β, μ_1, μ_2 in order to obtain the ordered probit MLEs $\hat{\beta}$, $\hat{\mu}_1$, $\hat{\mu}_2$, respectively.

The interpretation of the estimated coefficients of the ordered probit is a little tricky. The signs of parameter estimates and their statistical significance indicate the direction of the response associated with the presence or level of a particular variable. The changes in the probabilities associated to the intermediate categories (1 to $j - 1$) cannot be signed a priori. Thus, category-specific marginal effects are often reported. For the ordered probit model, the marginal effects of variable on the probability of a consumer making each of four possible choices can be computed from estimated coefficients by following expression (Greene, 1998):

$$\frac{\partial P(y = j)}{\partial x_k} = \left\{ \Phi\left(\mu_{j-1} - \sum_{k=1}^{k} \beta_k x_k \right) - \Phi\left(\mu_j - \sum_{k=1}^{k} \beta_k x_k \right) \right\} \beta_k \quad (7)$$

where $\partial P(\cdot)/\partial x_k$ is the derivative of probability with respect to x_k, β is the ordered Probit MLE of x_k's parameters. All variables are held at their mean levels except for the variable being interpreted. The marginal effects should sum to zero by canceling one another out across the response categories. The positive marginal effect of x_k indicates that the probability of a consumer choosing that particular ranking increases with x_k while a negative marginal effect indicates the opposite. The interpretation of the marginal effects is reasonably self-evident. Rank "3" represents the highest relative importance rankings and "0" is the lowest (Chen et al., 2002; Folts, Dasgupta, & Devadoss, 1999). Therefore, in general terms, a negative (positive) marginal effect on the probability of choosing a certain category (never consume) implies a shift from (into) that category to (from) other categories (low, moderate, and high). The ordered probit modeling procedure in LIMDEP 7.0 is used to estimate the model and to generate the maximum likelihood estimates (Greene, 1998). The estimated values β, μ_j and marginal effects can then be used to draw conclusions and implications.

3. Results and discussion

At the purely descriptive level, approximately 55% of consumers in this study claimed to consume fast food as a way of diversified their diets. In the total sample, 45.3% indicated that they never consumed fast food in last 1-month period, 21.4% ate fast food once or twice a month, 20.5% consumed once a week and a surprisingly only 12.8% consumed fast food on a daily basis.

The relationship between the frequency of fast food consumption and the selected socio-economic/demographic characteristics and several attitudes of consumers are shown in Table 2. Results suggest that there are statistically significant relationships between fast food consumption and household characteristics. Specifically, the frequency of fast food consumption is significantly associated with household size, number of children in the households, education, household income, and employment status of household wife. Households with a high-educated head are more likely to consume fast food than less educated ones. Households with children are more likely to consume fast food than those of households without children. Higher income households are more likely to consume fast food than those of lower income. The results suggest that consumers who live in small size household with children consume fast food with high frequency. Households that never consumed fast food are more likely to be aged 50 years or older, are more likely to be from households with more than four people, have at most elementary school of education and have lower level of household income.

The results also support the hypothesis that consumer's fast food consumption is not related with only socio-economic/demographic characteristics of consumers but also consumers' attitudes about price, health, child preference and atmosphere in fast food facilities. Table 2 also shows that the cross tabulations of fast food consumption frequencies and consumers attitudes. From the Table, the frequencies of fast food consumption are significantly

Table 2
Socio-economic/demographic characteristics and several attitudes of the sample and fast food consumption frequencies

Variable definitions	Never	Low	Moderate	High	X^2	p-value
Household size	Percentages					
⩽4	40.3	23.0	21.5	15.2	10.16	0.017**
>4	51.6	19.3	19.3	9.8		
Presence of children						
Households who have no child	47.2	19.0	23.2	10.6	21.63	0.001**
Households who have one child	36.1	21.6	25.8	16.5		
More than one child	51.4	24.3	11.9	12.4		
Age of the household head						
Less than 35 years old	41.6	22.7	18.8	16.9	21.04	0.012***
Between 35 and 49	45.0	28.0	12.0	15.0		
Older than 49 years old	51.5	16.7	21.7	10.1		
Education of household head						
Elementary school or less	59.7	20.8	14.8	4.7	99.74	0.012***
Secondary or high school	45.0	21.0	21.0	12.6		
University degree	17.0	23.0	30.9	28.9		
Employment status of father						
Not employed	63.6	18.2	13.6	4.6	6.52	0.089
Employed	44.7	21.5	20.7	13.1		
Household with working wife						
Yes	50.7	21.2	18.7	9.4	47.22	0.000***
No	23.5	22.1	27.9	26.5		
Household income groups						
Lower-income	74.7	15.5	8.5	1.4	91.3	0.000***
Lower to middle-income	54.2	25.7	10.4	9.7		
Middle-income	41.9	22.7	29.7	5.8		
Middle to higher-income	33.3	28.1	22.8	15.8		
Higher-income	15.5	14.7	31.9	37.9		
Price of fast food						
Important or very important	50.7	21.0	17.8	10.5	39.57	0.000***
Others	23.5	22.8	31.6	22.1		
Health concern						
Somewhat or strongly agree	61.8	14.1	15.3	8.8	199.49	0.000***
Others	2.1	40.5	34.2	23.2		
Child preference						
Important or very important	36.3	21.2	23.9	18.6	16.83	0.001***
Others	49.8	21.4	18.8	10.0		
Atmospheres of restaurant						
Important or very important	47.3	14.5	16.4	21.8	6.28	0.099**
Others	45.2	22.0	20.8	12.0		

** and *** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

affected by price of fast food, consumers health concern, child preference, and restaurant atmosphere.

Ordered probit model was estimated under Newton's maximum likelihood procedure. Estimated parameters and their statistical significance levels were presented in Table 3. The dummy variables AGE1, INC1 and EDU1 were dropped to avoid singularity problems in the respondent's age-, income-, and education-related variables. Estimated ordered probit model was statistically significant with a Likelihood Ratio Test Probability of <0.0001, indicates joint significance of all coefficient estimates. In addition, the model predicted 70% of the observed ratings correctly. Estimated coefficients are tested by using standard errors, t-ratios and p-values. A positive sign on the statistically significant parameter estimates of one variable indicates the likelihood of the response increasing, holding other variables constant, and *vice versa*. All statistically significant coefficients, based on a two-tailed test at the $\alpha = 0.1$, 0.05 or 0.01 levels, are marked.

Table 3 also presents the estimates of the threshold variables. These are interpreted as the numerical linkages between the utility function of each respondent and their fast food consumption frequencies. According to Maddala (1983), the threshold coefficients must be positive and should exhibit the relationship $\mu_1 < \mu_2$. The estimated threshold parameters were all positive and statistically significant at the 1% confidence level, suggesting that response categories are indeed ordered properly. Thus,

Table 3
Estimates ordered probit model's for fast food consumption frequencies

Variables[a]	Estimated coefficients	Standard errors	*t*-ratios	*p*-values
Constant	−0.736*	0.442	−1.666	0.096
HSIZE	−0.180*	0.104	−1.736	0.083
CHILD	0.350***	0.127	2.762	0.006
INC2	0.383***	0.162	2.367	0.018
INC3	0.434***	0.163	2.667	0.008
INC4	0.581***	0.181	3.216	0.001
INC5	1.269***	0.190	6.668	0.000
EDU2	0.135	0.122	1.107	0.268
EDU3	0.497***	0.152	3.266	0.001
AGE2	0.231**	0.118	1.961	0.050
AGE3	0.352**	0.174	2.021	0.043
EMPLOY	0.270	0.286	0.944	0.345
WEMPLOY	0.038	0.139	0.276	0.783
PRICE	−0.308***	0.119	−2.598	0.009
HEALTH	−1.004***	0.122	−8.202	0.000
CPREFER	0.303***	0.110	2.751	0.006
ENVIRONMENT	0.203	0.164	1.241	0.215
NEWSPAPER	0.624**	0.308	2.025	0.043
μ_1[b]	0.773***	0.063	12.342	0.000
μ_2[b]	1.691***	0.088	19.221	0.000
Goodness of fit test	Chi-square		$P >$ Chi-square	
Likelihood ratio test	328.09		<0.0001	

*** Statistically significant at the 0.01-level, ** at the 0.05 level, and * at the 0.10 level.

[a] Dummy variables AGE1, EDU1 and INC1 were dropped. All age, education and income variables were measured relative to the dropped categories.

the socio-economic/demographic factors and consumers' attitudes variables in the ordered model equation are relevant in explaining Turkish consumers' fast food consumption behaviors. Ten of the fourteen socio-economic/demographic variables and four of the five consumers' attitudes variables are statistically significant at the 10% level of probability or better.

Based on the statistically significant coefficients, household size is an important determinant for fast food consumption likelihood, but the effect is negative (Table 3). This finding indicates a decreasing affinity to eat fast food as household size increases. According to results, smaller households are more frequently consume fast food products than larger households. Larger households would be more likely to eat at home while smaller household would be more likely to eat at fast food facilities. It is expected that it would be more expensive to take the household to a fast food place then eating at home. Table 4 displays the marginal effects for variables used in ordered probit model. The marginal effects of increasing the household size "HSIZE" indicate a decrease in the likelihood of "never" consume fast food and an increase in the likelihood of "low", "moderate" and "high" frequently consume fast food. McCracken and Brandt (1987) found that larger households tend to consume fast food less frequently. However, Byrne et al. (1996), Fanning et al. (2002) and Mihalpoulos and Demoussis (2001) indicated that household size positively influences the probability of consuming fast food, increasing up to a household size of 7 and decreasing thereafter.

Young people and households with children are major customers of fast food restaurants. Many fast food systems direct their marketing and promotion programs at these groups (Love, 1972). As an expectation, it is hypothesized that households with children under age 14 are more likely to consume fast food than those of households without children. Households with children are 13.7% less likely than household without children to rate fast food consumption as never and are 4.4% more likely than households without children to rate fast food consumption as high frequency.

Household income, the primary economic factor, has a statistically significant positive effect on consumers' fast

Table 4
The marginal effects of factors on the probability of relative frequencies for fast food consumption

Variables	Prob[a] (FREQ = 0)	Prob (FREQ = 1)	Prob (FREQ = 2)	Prob (FREQ = 3)
HSIZE	0.071	−0.011	−0.037	−0.023
CHILD	−0.137	0.021	0.072	0.044
INC2	−0.151	0.023	0.079	0.048
INC3	−0.171	0.026	0.090	0.055
INC4	−0.228	0.035	0.120	0.073
INC5	−0.499	0.077	0.263	0.160
EDU2	−0.053	0.008	0.028	0.017
EDU3	−0.195	0.030	0.103	0.063
AGE2	−0.091	0.014	0.048	0.029
AGE3	−0.138	0.021	0.073	0.044
EMPLOY	−0.106	0.016	0.056	0.034
WEMPLOY	−0.015	0.002	0.008	0.005
PRICE	0.121	−0.019	−0.064	−0.039
HEALTH	0.395	−0.061	−0.208	−0.126
CPREFER	−0.119	0.018	0.063	0.038
ENVIRONMENT	−0.080	0.012	0.042	0.026

[a] "0" represents the lowest frequency (never), "1" represent low (once or twice a month), "2" represent moderate (once a week) and "3" represent the highest frequency (at least once a day).

food consumption. As household income increases probability of consuming fast food consumption is also increasing. Estimated coefficients of INC2 (0.38) increase as income increased through the highest income category of INC5 (1.27). For example, the marginal effect for INC5 on the frequency of fast food consumption shows that if the respondent is in the higher income categories, there is an increase of 16.0% in the probability of choosing 'high' frequency, an increase of 26.3% in the probability of choosing 'moderate' frequency and a decrease of 49.9% in the probability of choosing 'never' consumption of fast food products. The probabilities increase by 4.8% and 16.0%, respectively, as household income category changes from low (INC2) to the highest income (INC5) category. Interestingly, for all income categories, slightly higher marginal effects are observed in the moderate fast food consumption frequency than high fast food consumption frequency. This finding may be related to the results of previous studies which revealed that consumers of higher socio-economic status tend to consume more fast food products than consumers of low socio-economic status (Angulo et al., 2002; Mihalpoulos & Demoussis, 2001; Nayga & Capps, 1992).

Education is only significant for the university-educated respondents (EDU3) variable. Estimated coefficient for EDU3 is positive and significant at the 99% level of confidence. One aspect should be stressed that the role is played by educational level of household head, given that a high positive effect happens as educational level increases. Similar to the income effects, as education advances through university degree, the likelihood of higher frequency has a positive relationship. Results show that the more frequently consumption of fast food is indicated by the shift away from the category representing "never" consume to categories representing "once a week" and "at least once a day" consumption. Respondents with at least university degree are 6.3% more likely to consume fast food with high frequency than the base group of elementary school diploma or less.

The impact of aging has also significant implication for the frequencies of household fast food consumption. Results of ordered logit model indicate a positive relationship between the frequency of fast food consumption and age of household head. Estimated coefficients for household heads who are 50 or above (AGE3) and who are between 35 and 49 (AGE2) are positive and statistically significant at 95% level of confidence. Consumers who are 34 years or less in age consume fast food less frequently than those of older consumers. Older respondents seem to be more frequent fast food consumers than younger consumers. One of the reasons of the positive relationship between age of the household head and the frequency of fast food consumption is that older employed household mostly prefer Turkish type of fast food (compacted sliced meat, shish kebab, pancake with spicy meat filling), but younger generation who are mostly college students from wealthy families prefer western type of fast food (e.g., McDonald and Burger King). On the other hand, results from Chi-square analysis in Table 2 indicated that households with older head of households dine at fast food establishments less frequently than younger head of households. Households that never consumed fast food are more likely to be aged 50 years or older, but households that consumed fast food with high frequency are more likely to be aged less than 35 years old. Moreover, age has also been included in previous studies and again different studies often give different results (Byrne, Capps, & Saha, 1998; Jekanowski et al., 1997; Mihalpoulos & Demoussis, 2001; Nayga, 1996; Nayga & Capps, 1994). For example, Mihalpoulos and Demoussis (2001) found that households with older meal planners and young children appear to display reduced levels of food eating out.

Several studies included an employment status in their analyses as a measure of the opportunity cost of time (Horton & Campbell, 1991; Montini, 2001; Yen, 1993). However, according to results of ordered Probit model, household head and wife labor participation do not statistically affect the frequency of fast food consumption in Turkey. The most important reasons of this insignificance effect may be higher labor participation rate of household head and lower participation rate of household wives who are mostly working in a factory with lower wage. The sign of coefficients, however, suggests that the frequency of fast food consumption increased with employment levels.

In addition to socio-economic and demographic characteristics of household heads, there are also several specific finding attributes that are of interest to the fast food industry. The effects will not only allow for more effective marketing activities but also indicate that the attributes are perceived somewhat differently compare to early studies (Gilbert et al., 2004; Law et al., 2004; Park, 2004). Consistent with prior hypothesis, price is an important consideration in households' frequency of fast food consumption. Results indicate that respondents who perceive price as an important factor when eating out are less likely to consume fast food. In fact, estimated coefficient on price variable was negative and statistically significant at the 99% level of confidence. For example, in the "never" category, probability of never consumption fast food products increase by 12.1% as the importance ranking of fast food prices changes from unimportant to being important. This result is consistent with the previous studies of Johns and Pine (2002) and Park (2004). These studies also found that price of an eating-place and the utilitarian value of eating out plays an important role in restaurant evaluation and fast food consumption.

Health issues, through changing tastes and preferences, are also considered important determiners of the changing trends in food consumption. For example, news about brucellosis and mad cow disease are affecting the sale of meat and fast food products both domestically and internationally. According to our results, health concerns had the most significant explanatory variable among the attribute specific variables. Those concerning about food safety

issues were less likely to consume fast food products. Marginal effects for 'HEALTH' indicate that consumers with less concern with their health had a lower likelihood of "never" consuming fast food, but a higher likelihood of "low", "moderate", and "high" consuming fast food. This finding is not surprising considering the amount of publicity regarding the fast food consumption and individual health concern related to the fast food products. Thus, gaining trust and market share should be a high priority in industry.

Child preference has also statistically significant coefficient estimate at 1% significant level. Similar to impact of the "CHILD" variable, there is a strong and positive association between child preferences and the frequencies of fast food consumption. This illustrates the success that fast food outlets have had at marketing to families, especially those with kids. It is likely that McDonald's and Burger Kings play an important role here.

4. Conclusions and recommendations

The Turkish fast food industry has grown rapidly since the 1980s. The major changes in the lifestyles, education, income, and consumption patterns of Turkish consumers in the last two decades encouraged consumers to eat out. The objectives of this study were to assess consumers' socio-economic/demographic characteristics, attitudes and perceptions on the frequencies of fast food consumption. For estimation technique, Chi-square and ordered probit model were specified and analyzed using cross sectional survey data in urban area of Adana, Turkey.

This study showed that about 33% of consumers in our sample consumed fast food at least weekly basis. In general, various socio-economic and demographic factors significantly influenced the likelihood of consuming fast food. As it hypothesized, the findings of this study indicated that household income, education and age of consumers, household size and presence of children are significantly determinants of the consumers' probability of fast food consumption. In particular, smaller households are more frequently consume fast food products than larger households. Not surprisingly, households who have children are more likely to consume fast food products than household without children. Better-educated consumers consume fast food more frequently than do less-educated consumers. Surprisingly, having working wife in the household does not statistically affect fast food consumption in Turkey. The most important reasons of this insignificance effect may be higher labor participation rate of household head and lower participation rate of household wives who are mostly working in a factory with lower wage.

Overall, the results of the ordered model suggests that being in large household is the characteristics with the highest negative effect on the frequency of fast food consumption, while being in the household with children, with higher education and income levels are the characteristics with the highest positive effect on the probability of consumption.

In regard to the consumers' attitudes, price, health concern and child preferences are highly impact on consumers' frequency of fast food consumption. Health issues such as news about brucellosis and mad cow disease are also considered important determiners of the changing trends in food consumption. According to the results of this study, health concerns had the most significant explanatory variable among the attribute specific variables. Those concerning about food safety issues were less likely to consume fast food products. Moreover, results indicate that respondents who perceive price as an important factor when eating out are less likely to consume fast food. Child preference has also important positive impact on consumers' frequency of fast food consumption.

These factors should be given emphasis by fast food outlets and restaurant in the formulation of marketing strategies designed to promote consumption. The major contribution of this study is to provide insights into factors that may allow fast food outlets and chains to anticipate trends and future changes in the markets, improve planning of marketing program strategies, and make available better service to consumers. Marketing strategies in Turkey should focus on not only socio-economic and demographic characteristics of household but also facilities, restaurant environment, presence of children, health and price.

Admittedly, this study is subject to data availability. It is well recognized that lifestyles have strong influences on individual fast food consumption patterns. Future research needs to be done addressing all of socio-economic/demographic attributes, consumers' attitudes, knowledge and lifestyle variations. Also the lack of knowledge about household composition with respect to knowing the demographics of each member of the household may limit the ability to estimate households' fast food consumption behavior.

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