

## ANALYSIS OF TURKISH TRADITIONAL FOOD REGARDING E-BUSINESS AND E-MARKETING

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### Abstract

Turkish traditional food producers are mainly subsistence and semi-subsistence farmers who have a limited marketing knowledge. They thus encounter a significant number of problems during the supply chain due to the lack of capital, awareness and equipment, as well as underutilized resources and insufficient rural infrastructure. They are also not actively encouraged by the policies implemented at the regional level. The majority of the food reaches consumers either directly (the less common purchases from the farmer) or via a number of intermediaries. If the current volume of traditional food is compared with the past production volume, it can be clearly seen that there is a sharp decrease in the production in contrast to the rapidly increasing population. This study aims to find willingness of Turkish consumers to pay for a MarketMaker website – an electronic trading platform of traditional products in Turkey. The estimations rely on data collected from 157 persons covering all regions in Turkey through an online survey in August, 2015. The average willingness to pay (WTP) annually was found to be about 32 Turkish Liras (TRY) for all observations including zero bids and TRY 164 excluding zero bids. The results of the probit model show that age, marital status and shopping in traditional food markets were identified by the model to have a significant impact on the probability of WTP.

**Key words:** E-marketing, e-trading, traditional food, WTP, MarketMaker.

### Introduction

As of 2004, E-business becomes ‘just business’ since the positive cash flow and plateau of profitability move positively (Roveredo, 2015; Strauss, El-Ansary, & Frost, 2006). However, online shopping for food or groceries is not as common as for electronics and clothing. According to TÜBİSAD (2014), the rate of people using online shopping is 87% in England, with Germany and Japan following with 79% and 77%, respectively. Turkey is lagging behind with 24%. The average rate of online retail is 5.5% for the developed countries while 3.5% for the developing ones. Online retail in Turkey is only 1.3% (TÜBİSAD, 2014).

The CVM (Contingent Valuation Method) is called ‘contingent’ valuation as the information is used on how people think they would be willing to pay in certain hypothetical situations that are contingent on being in the actual situation (Whitehead & Blomquist, 2001). Cummings, Brookshire & Schulze (1986) considered that the CVM has some advantages. First, it has a relatively more information with respect to data on the characteristics of respondents and second, it uses primary data rather than secondary data which are created for different purposes. Lastly, the CV methodology may have the highest validity when the hypothetical scenario is similar to a familiar market choice situation as in a model that we will build. Thus, our research is basically based on the CVM. There are not too many studies in literature to measure WTP on traditional food marketing through e-trade. However, many studies are focusing on e-commerce applications and payment models in agriculture. Kuboye and Ogunjobi (2013) and Thielepean and Soundararajan

(2014) studied the marketing of agricultural products by developing a secured web application in Nigerian market and Indian market, respectively. Concerning e-marketing of producers, Carpio *et al.* (2013) measured the willingness to pay for MarketMaker agricultural products of U.S. producers. Zapata *et al.* (2013) employed contingent valuation method in order to find producers’ willingness to pay for the services provided by MarketMaker respondents. From the consumers’ perspective, Schneider and Ceritoglu (2010) analysed the relationship between WTP and images of food products in Turkey. Jekanowski, Williams and Schiek (2000) researched if the quality perceptions play an essential role for food purchase decisions.

This study estimates Turkish citizens’ willingness to pay (WTP) for establishing a MarketMaker website – an electronic trading platform of traditional products in Turkey. These estimates rely on data collected from 157 persons covering all regions in Turkey through an online survey in August, 2015. 32.4% (32) of respondents indicate that they are willing to pay for an electronic platform to be established. The average WTP annually was found to be about TRY 32<sup>1</sup> for all observations including zero bids and TRY 164 excluding zero bids. The results of the probit model show that age, marital status and shopping from traditional food markets were identified by the model to have a significant impact on the probability of WTP.

The paper is divided into five sections. Following the introduction, methodology is covered in section 2. The third section basically explains the development

<sup>1</sup> TRY 1 equals roughly € 0.3

of traditional food in Turkey. Results and discussions appear in section four and the final section ends with a short conclusion.

**Materials and Methods**

*Determining Sample Size*

The sample size is defined by considering the current Turkish population and calculated according to the formula provided by Fink (2003);

$$n = \frac{N}{(1 + N * p^2)} \tag{1}$$

Where n is the sample size determined, N is the population size, p is the level of precision. Although the sample size is estimated as 96 at 90% confidence level and a 5% margin of error, 162 samples were collected during the August 2015. The estimations finally were made with 157 samples after five samples were trimmed due to the implausible extreme values regarding payment provided by respondents.

*Survey and Data Generation*

Before the survey was shared with respondents via online survey, preliminary feedback was obtained from five Turkish consumers by using the face-to-face interview method in order to see the likely challenges that the respondents might have. Upon completing the pre-tests with the Turkish consumers, the link to the online survey was widely distributed through the social networks such as Facebook, LinkedIn and consumer forums in between 1-31 August, 2015. The survey mainly comprised three parts. The first part covered the questions to elicit perceptions which are related to Internet and E-trade. WTP questions were included in the second part and in the last part; they focussed on the personal profile questions. The scenario is built around the consumers that are provided with a detailed information about Food MarketMaker created in the

United States and asked them whether or not they would be willing to pay for the creation of a similar platform in Turkey. The dependent and independent variables can be seen in Table 1. As clearly seen in the table, the dependent variable is willingness to pay for an electronic platform to be established while some of the independent variables are income, education, age, trust in products and shopping in the traditional product markets. A question, referring to the consumer willingness to pay for a virtual marketplace where they can purchase traditional products was asked and the subsequent question comes with how much they would be willing to pay for it.

*Regression Models of the CVM*

Probit and logit which are known as non-linear functions of unknown coefficients in literature are widely applied in binary choice models. Though both models may give similar results, there are slight differences because of the tail of observations. Amemiya (1981) expressed the opinion that the samples with heavier tails are more appropriate for logit models. A similar stance was made by Cakmakyapan and Goktas (2013). They observed that logit model is generally preferred for large sample sizes (500 and 1000) and probit model is usually for smaller sample sizes. So, probit model will ultimately be employed for estimations because of the sample size. Alternatively, tobit model will be applied to measure WTP amounts that are obtained through single bounded dichotomous questions since the endogenous variable includes zero values.

*Probit Model*

The Probit model is defined by Wooldridge (2006) as  $Z_n = X_n\beta + u$ . Where  $\beta$  is a vector of parameters including the intercept term;  $x_n$  is a vector of covariates;  $u$  is the error term which either has the standard logistic distribution or the standard normal distribution. In either case,  $u$  is symmetrically

Table 1

**Variables and Definitions**

Variables	Definition
Willingness to pay	1=willing to pay for electronic trade platform; 0=unwilling to pay
Income	monthly
Age	individual
Trust	1=People find traditional products reliable; 0=People find traditional products unreliable
Marital Status	1=Married people; 0=Single
Shopping from traditional product markets	1=Visiting/Shopping markets; 0=Never visiting/shopping

distributed around zero.  $Z_n$  is the unobservable amount that respondents are willing to pay for the establishment of a MarketMaker platform.

$WTP_i$  is the observed dichotomous variable stating whether the individual pays or not. It can be defined as follow:

$$WTP_n = 0 \text{ if } WTP_n^* \leq 0; \tag{2}$$

$$WTP_n = 1 \text{ if } WTP_n^* > 0 \tag{3}$$

As it is indicated by Wooldridge (2006), the main goal in binary responses is to explain the effects of  $x$  on the response that follows the probability  $P(y=1|x)$ .

$$P(WTP=1|x) = P(WTP_n^* > 0|x) = P[e^{-(\beta_0 + x\beta)}] = 1 - G[-(\beta_0 + x\beta)] = G(\beta_0 + x\beta). \tag{4}$$

The direction of the effect of  $x_j$  on  $E(WTP^*|x) = \beta_0 + x\beta$  and  $E(WTP|x) = P(y=1|x) = G(\beta_0 + x\beta)$  is similar to each other.  $\tag{6}$

It is not possible to apply OLS due to the non-linear nature of  $E(y|x)$ . Maximum likelihood methods thus must be used in order to estimate the limited dependent variable models. The maximum likelihood can be written as follows (Wooldridge, 2006):

$$f(WTP|xi;\beta) = [G(xi\beta)]^y [1-G(xi\beta)]^{1-y}, \text{ WTP}=0,1 \tag{7}$$

It can be seen that when  $y=1$  results in  $G(x, \beta)$  and when  $y=0$ , we get  $1 - G(xi\beta)$ . The function of log likelihood for observation is a function of the parameters and the data  $(xi, yi)$

$$li(\beta) = WTP_i \log[G(xi\beta)] + (1-WTP_i) \log[1-G(xi\beta)]. \tag{8}$$

*Tobit Model*

The general formulation of the Tobit model can be expressed in the following way (Greene, 2000; Wooldridge, 2006):

$$WTP_n^* = X_i\beta + u_i; \tag{9}$$

$$WTP = 0 \text{ if } WTP_n^* \leq 0; \tag{10}$$

$$WTP = WTP^* \text{ if } WTP_n^* > 0. \tag{11}$$

$$E[WTP_n^*|x_n\beta] \text{ is } x_n\beta. \tag{12}$$

Where the  $n$ th individual,  $X_n$  is a vector of explanatory variables,  $u_i$  is a random disturbance term, and  $\beta$  is a parameter vector common for each

individual. By assuming that the random error is independent and normally distributed among respondents, the expected WTP for an observation drawn at random from the population is

$$E[WTP|x_n] = \phi(X_n\beta/\sigma) + x_n\beta + \sigma\lambda_n \tag{13}$$

$$\text{Where } \phi(X_n\beta/\sigma)/\Phi(X_n\beta/\sigma); \tag{14}$$

Where  $\phi$  represents the normal distribution function and  $\sigma$  represents the standard deviation. Moreover, the expected value of WTP for observations above zero, which will be called  $E(WTP^*)$ , is simply  $X\beta$  plus the expected value of the truncated normal error terms. The expected WTP can be expressed as

$$E(WTP) = \phi(X\beta/\sigma)E(WTP^*). \tag{15}$$

Wooldridge (2006) points out that the function of the tobit model which is based on maximum likelihood estimation can be shown as;

$$\ln L(\beta, \sigma) = \sum_{i=1}^N WTP_n(WTP_n=0) \ln [1-G(x_n\beta/\sigma)] + (WTP_n>0) \ln \{ (1/\sigma) g[(WTP_n - x_n\beta)/\sigma] \}. \tag{16}$$

Where  $G(\cdot)$  is the standard normal cumulative distribution function;  $g(\cdot)$  is the standard normal density function; and  $\sigma$  refers to the standard deviation of the error term. By maximising the log-likelihood function, the Tobit estimator  $\hat{\beta}$  is obtained.

*The Development of Traditional Food in Turkey*

Grabum (1997) describes the tradition as ‘it was the name given to those cultural features which, in situations of change, were to be continued to be handed on, thought about, preserved and not lost’. EU defines traditional food products as a result of agricultural practices that preserve and enhance rural environments. Another definition made by Vanhonacker *et al.* (2008) is that ‘A traditional food product is a product frequently consumed or associated to specific celebrations and/or seasons, normally transmitted from one generation to another, made with care in a specific way according to the gastronomic heritage, with little or no processing/manipulation, that is distinguished and known because of its sensory properties and associated to a certain local area, region or country’. Although there is not a consensus for definition of traditional foods in the world, it can be defined that traditional foods are based on the historic methods of preparing and preserving foods varied from generation to generation, culture to culture, and climate to climate. Industrialization is mainly seen as a serious threat which affects traditional food negatively.

The main regulatory body in Turkey is the Ministry of Food, Agriculture and Livestock which encourages the traditional foods. The rich spectrum of artisanal products as well as traditional food is a great opportunity for Turkey which reflects different cultures, each with their own, often distinctive, dietary traditions. The main weakness is considered to be the low level of education of labour force. Pesticide use and reaching to raw material are seen as a threat to the development of traditional foods (Kalkınma Bakanlığı, 2014). A specific report on Food products and Security prepared by the Ministry of Development put some targets for the development of local/traditional foods. Target 9.1. refers to production and marketing of local/traditional foods, by protecting product diversification, under an appropriate branch according to the food safety standards. Another target 9.2. points out incentives on the market research for foreign demand, which might be given by the public institutions and NGOs such as chambers of industry and trade (Kalkınma Bakanlığı, 2014).

In Turkey, the traditional foods are more and more attracting the interest of consumers and manufacturers who have concerns about their health with industrial food, the organic structure of which is believed to expose people to changes through external factors, such as some chemical ingredients. But the markets of local/traditional food leave much to be desired. Moreover, there is a growing gap between the local producers and consumers in Turkey since they cannot market what they produce due to the lack of niche markets and financial problems while there is always a great demand for it from consumers. Sayılı & Büyükköroğlu (2013) stated that 62.6% of Turkish consumers do not prefer to use e-marketing for food products since they mainly find food products distrustful. So, having a GI of a product makes it considerably easier to sell a local product through e-marketing in local or international markets where people feel mistrustful. Similarly, Tsekouropoulos *et al.* (2011) found that e-marketing of food and drink accelerates the increase of their sales as they attract

customers not only locally to shops but also in the e-shops on the internet.

### Results and Discussion

The estimations hinge on data collected from 157 persons covering all regions in Turkey through an online survey in August, 2015. 32.4% (32) of respondents indicate that they are willing to pay for an electronic platform to be established while 68% (125) are unwilling to pay. When the question of ‘why you are unwilling to pay for an electronic platform’ was asked, the respondents stated that this type of investment should be established by the Government rather than citizens. Another important fact about shopping of traditional products on internet is the factor of trust. Only 1% of the respondents state that the traditional products being marketed over internet are genuine while the rest find it distrustful or they have a neutral attitude.

Descriptive statistics for the sample are reported in Table 2. Concerning gender and age, 59.24% (93) of the 157 respondents, which were considered in the study, are males, and 40.76% (64) are females, which represents all of Turkey. It is also shown that 52.23% (82) of the surveyed respondents are 18 – 30 years old, followed by individuals aged 31 – 45 and 46 – 64, representing 43.95% (69) and 3.82% (6) of the sample, respectively. The educational attainment of the respondents is in favour of the higher level of education, 58.60% (92) acquired a bachelor degree followed by 30.57% (48) of post graduate degree. When comparing the above figures with the data of TURKSTAT as in Table 4, our sample has higher income and education levels, and a higher percentage of males.

Regarding the working status, more than half of the respondents (52.87%) are employed in the public sector, while 21.02% and 4.46% of the respondents work in the private sector and are self-employed, respectively. The income level of respondents shows that the sample consists of people with middle and higher income. Respondents from low, medium and

Table 2

### Comparison of sample

Sociodemographics	Sample	Turkey's Population*
Female (%)	41	49.8
Household Size	3.3	3.6
Graduates (%)	58.6	12
Median Income	3.4	1838
Median Age	30.4	31

\*Elaborated from data extracted from TURKSTAT.

Table 3

## Probit model

Variable	Coefficient	Standard error	Marginal effect	Standard error
Constant	<b>-0.721568</b>	<b>0.7301442</b>		
Age	*-0.4632444	0.2604197	*-0.1163926	0.0636254
Working condition	-0.033488	0.0530874	-0.008414	0.0133228
Education level	-0.260484	0.2539027	-0.065448	0.063388
Marital status	0.4643098**	0.2214218	0.1166603**	0.053348
Purchasing traditional food from Internet	0.3111675	0.3751962	0.0781824	0.0937737
Shopping from traditional food markets	0.8044376***	0.2748356	0.2021191***	0.064848
Income	-0.2448574	0.2617282	-0.0615217	0.06532
***Indicates significance at 1% level, **at 5% level, *at 10%				

high income level consisted of roughly 15.29%, 19.11% and 41.40%, respectively. The average size of the household of sample was found 3.3, whereas the average household of Turkish population is 3.6 as shown in Table 2.

With regard to the basic preferences stated by Turkish consumers for e-commerce of traditional food, the survey results showed that approximately 61% of respondents disagree about the reliability of traditional food selling in the market or website. A similar stance comes from Sayılı and Büyükköroğlu (2013) who found that 62.6% of Turkish consumers do not prefer to use e-marketing for food products since they mainly find food products distrustful. A question of 'the most important three factors for consumers' purchasing of traditional products' was asked to those shopping for traditional food, approximately 55% of the respondents indicate healthier choice while 48% go for it since they find traditional food more natural.

The respondents overwhelmingly say Yes to the question asking if the consumers take into account the brand of the product they purchase. More than 82% of respondents state that they do shopping on Internet and 52.5% of them bought/ordered electronic equipment and clothes and sports goods on the Internet while only 7.4% bought/ordered food or groceries.

The relationship of independent variables with dependent variable 'willingness to pay for a MarketMaker' was analysed. According to the results, the respondents who found traditional products in the market unreliable are willing to pay more than those who found it reliable. Shopping via internet plays an essential role for willingness to pay. The respondents actively shopping on Internet are more willing to pay than those who do not shop there. Another interesting result comes from shopping in traditional product markets. The respondents visiting traditional markets are less willing to pay than those usually visiting traditional product markets. Younger respondents are more willing to pay than older respondents. Higher

income groups are more willing to pay than lower income groups.

Variance Inflation Factor (VIF) should not ideally exceed rule of 4, rule of 10 in literature. If it exceeds the rule of thumb, it is regarded as casting doubts on the estimations of regression analysis. As attentively viewed from the results, the VIF values among independent variables change between 1.02 and 1.38 and mean VIF value is 1.17 which has a sufficiently concrete evidence that there is no serious multicollinearity in the model.

The average WTP annually was found to be about TRY 32 for all observations including zero bids and TRY 164 excluding zero bids. Zapata *et al.* (2013) found the estimated aggregate annual economic value as \$ 361,960. Table 3 exhibits the estimation results provided from the ordered probit model. As is illustrated, marital status and shopping for traditional food on Internet were identified by the model to have a significant impact on the probability to WTP while the age of respondents was found to negatively impact the probability to WTP. However, income and education were not found to have a significant impact, positive or negative, on the probability to WTP.

Being married increases the probability of WTP by 11%. This can easily be explained with a bigger tendency to e-trade of traditional foods than singles. Shopping for traditional food on internet increases the probability of WTP by 20%. Contrariwise, the age of the consumers were found to have a negative effect on the WTP. Older respondents decrease the probability of WTP by 11%.

Table 4 summarizes the results of the Tobit model concerning their marginal effects. Individuals who are married and do shop over Internet have higher WTP. To put it in context, married people raise the WTP amount by TRY 128, and similarly, shopping for traditional food on Internet raises the WTP amount by TRY 193 respectively, *ceteris paribus*. A survey conducted by Carpio, *et al.* (2013) shows that producers

Table 4

## Tobit model

Variable	Coefficient	Standard error	Marginal effect	Standard error
Constant	-94.92328	209.2325		
Age	-114.675	76.54291	-23.44676	15.391
Working condition	-5.067288	14.83697	-1.036072	3.03179
Education level	-52.94824	72.08346	-10.93059	14.996
Marital status	128.3928*	66.00492	26.25156**	13.089
Purchasing traditional food from Internet	97.35431	102.7739	21.55273	24.559
Shopping from traditional food markets	193.1561**	81.93771	38.85785**	15.576
Income	-50.47709	73.51922	-10.48939	15.479
***Indicates significance at 1% level, **at 5% level, *at 10%				

are, on average, willing to pay \$47.02 annually for the services they receive from MarketMaker.

### Conclusions

This study aims to analyse the traditional food market in Turkey from the perspective of Turkish consumers and introduce the concept of MarketMaker in order to measure the WTP of Turkish consumers. The study is based on the online survey. So, stated preferences are merely observed. E-marketing of Turkish traditional products is not developed well in spite of the fact that there is a rich variety of traditional products representing different geographical regions. Although there is a growing demand for traditional products, marketing of these products is not satisfactorily demanded by the consumers

due to the lack of trust and maybe the ability to use internet applications. For instance, the education level and income level surprisingly are found to have no important impact on WTP.

A direct connection has been found between the ages of respondents and WTP. The older people, who are not familiar with e-trade applications, are not willing to pay for an e-trading platform since they do not trust it. The only caveat of this study is that the consumers' perspectives are merely reflected, on the basis of stated preferences. So, one more study focusing on covering revealed preferences should be carried out. Also, the producers and producer unions are not considered in the analyses. So, what producers and producer unions think about this kind of platform need to be searched for healthy policy implications.

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