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Consumers' willingness to pay for traditional products with geographical indication: a case study on pestil from Gümüşhane, Turkey

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Abstract

The main purpose of this study is to analyze the willingness to pay (WTP) geographical indications (GI)-labelled pestil as a traditional product. Considering the data obtained from a survey conducted with 166 households in Gümüşhane, Turkey were used. Contingent valuation method was taken to determine WTP for GI-labelled pestil (dried fruit pulp). In order to find WTP price amounts Tobit model was used. Tobit model showed that individuals who were in the upper age group, have a high frequency of purchasing pestil, have a high level of knowledge about GI-labelled products, and consume GI-labelled products want to consume more. The average amount that consumers will be willing to pay for 1 kg of price bids ranging from 60-100 TRY has been determined as 68.74 TRY. While establishing a target market, those who are in the upper age group, have a high frequency of purchasing pestil, have a high level of knowledge and consume GI-labelled products should be taken into consideration. Since individuals with a high level of knowledge regarding GI-labelled products are willing to pay a higher amount of extra payment, it is recommended that marketers carry out promotional activities that will increase communute awareness for GI-labelled products.

Keywords: traditional products; geographical indications (GIs); willingness-to-pay (WTP); pestil; Gümüşhane.

Practical Application: Consumers with a higher GI product knowledge are willing to pay more.

1 Introduction

The importance of traditional products which can be produced without high technology and using natural methods is increasing day by day in the world. To clearly identify the link with their place of origin, these products generally bear the name of the location (country, region or even locality) where the good is produced (e.g., Bordeaux wines), and use regulated GI labels (Panzone et al., 2016). Many studies at the supply and demand point for these products (Adanacioglu & Albayram, 2012; Mugera et al., 2017; Sanjuan-Lopez & Resano-Ezcaray, 2020; Saito & Saito, 2013; Fan et al., 2019; Durand & Fournier, 2017; Maina & Mburu, 2016; Tambo et al., 2020; Teuber, 2011) reveal the importance of traditional production. Traditional products with regional characteristics have become a feature that consumers consider in their food purchasing decisions (Fan et al., 2019). Nowadays, consumers choose food products that satisfy their hunger as well as prevent diet-related diseases (Guzek et al., 2020) and also they generally perceive foods produced by traditional methods with superior qualities such as freshness and taste. On the other hand consumers not only seek nutritious and functional products, but they are also concerned about processing steps and food production methods (Delorme et al., 2021). Along with the production in accordance with traditional methods, the product is taken under protection with the formalization that the product features originate from a region, knowledge and skill. This also illustrates that the geographical location of products contain specific local factors which have a direct impact on the product's quality (Seetisarn & Chiaravutthi, 2011). Due to the importance of traditional foods, for various reasons, and the unique associations they have, it is important to study them, paying special attention to their promotion and protection (Silvestri et al., 2020). In this case, GI products are produced in order to protect from fake and imitated geographical names. These labels demonstrate various reliability features, trying to make information more transparent to consumers and potentially improve the market share of the product (Bonroy & Constantatos, 2014). Both relevant public institutions and NGOs produce many projects in this sense. The purpose of these developments in the world is to encourage diversity in agricultural production, to protect local products with the local culture, and to keep the local population in the region by creating employment in rural areas. There are more than 10 thousand geographical indications in the world and the size of the GI market is estimated to be 200 billion dollars and 10% of these products are in developing countries. The GI product market of the European Union is over 55 billion Euros in total (Turkish Patent and Trademark Office, 2020a). In Turkey, agricultural and food products as well as handicrafts and mining products was registered with the geographical indication. According to the Turkish Patent Institute (Turkish Patent and Trademark Office, 2020b) data; in Turkey there are about 2 thousand 500 traditional products that can potentially use the geographical indication and the number of registered

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products is 440. More than 75% of these products are agricultural and food products.

Traditional products protected by geographical indications for Turkey provide an important potential for the country's economy when considering the local product richness (Kantaroğlu & Demirbaş, 2018). In consumer terms; due to the importance of good agricultural practices and healthy nutrition, the demand for registered traditional products gets attention (Bernard et al., 2019).

Although Turkey has vital advantages regarding quantity and variety of traditional and local products, Turkey has only about 200 products with the GI. Only three of them were registered by the EU (Antep Baklavas, Aydın fig and Malatya apricot). In order to provide economic and social contributions from the products with the GI, it is necessary to increase the number of labelled products with the GI internationally.

This research was conducted in the region of north east of Turkey, namely Gümüşhane province. Agricultural activities are among the main sources of livelihood in the province of Gümüşhane. Although the time-honoured tradition of animal production offers potential, it does not currently reach the desired level due to recent problems experienced in the sector. The geographical and climatic conditions of the province also suffer various difficulties, especially logistical, in non-agricultural investments. In the face of these problems, the production of traditional food specialties in Gümüşhane is seen as an advantageous alternative for mobilizing the local economy. The local product included in the scope of this research is called "pestil" (dried fruit pulp). The local description of pestil is a mixture of mulberry, honey, milk, and flour spread on cloth, and after drying, a high-nutrient fruit pulp is obtained (Gümüşhane Governorship Publications, 2010). In the past, pestil was consumed as a snack only by the local people in Gümüşhane province but today the use of pestil by consumers in Gümüşhane is mostly used for gift giving. Gümüşhane produces 90% of the pestil in Turkey, and 90% of the enterprises in the industrial sector of Gümüşhane province are pestil producers, with annual production of approximately 5 000 tons. At present pestil is produced in Gümüşhane with a standard label not with a GI label. The GI registration certificate obtained by the Gümüşhane Governorship in 2004 was not being used.

Considering the scope of trade and competition it can be said that GI labelling has a strong incentive for product differentiation (Bonroy & Constantatos, 2014). With a growing competitive and global market, producers find it profitable to adopt specific labelling strategies to differentiate their products (Soley et al., 2019). The most effective way to do this is to estimate the demand or view of the relevance of understanding consumer acceptance in relation to innovative foods like traditional foods with GI, it is necessary to evaluate the perceptions in relation to new product (Goulart et al., 2020). Alternatively, a consumer can be reached through the labelled product (Byrd et al., 2018). Because the tendency of consumers to know that the products have local characteristics and that they are produced without using high technology are an increasing expectation in the world. Nowadays, consumer demand for food that is healhy, environmentally friendly and produced in a way that bears more social responsibility has significantly changed agriculture and the food industry (Gao et al., 2020). In this paper, we use willingness to pay (WTP) analysis to investigate how consumers value credence attributes that can be associated with GI labelling. The outline of the remaining paper is as follows. First is a short literature review of consumer studies on labelled products and willingness to pay. Second is the description of the experimental design and methods. Third is the description of the data. Forth is the description of the econometric model used to analyse the data. Fifth comes the results, and last we conclude. The ultimate goal is to create a set of guidelines, independent of any particular study, give an outline of the factors that are influential for a GI-based product differentiation design to capture a price premium and useful for producers and policy makers alike. The results of this study can help policymakers and marketers to make more informed decisions about consumer response to labelling and promotion of pestil with GI. For pestil producers, the information contained in this research may help select most profitable marketing strategies. To the best of our knowledge, no previous study has attempted to compare GI price premiums across the pestil.

2 Materials and methods

2.1 Data collection

Primary data has been obtained from the households who live in Gümüşhane province in Turkey. This cross-section data was conducted between June and September 2020 via online survey. The reason we chose this province associates two approaches. 1-Pestil that is produced in Gümüşhane was registered as Protected Geographical Indication (PGI) in 2004. 2- Gümüşhane produces 90% of the pestil in Turkey, and 90% of the enterprises in the industrial sector of Gümüşhane province are pestil producers, with annual production of approximately 5,000 tons.

The sample according to the known or predicted ratio (p) of the population size N is given below (Equation 1; Newbold, 1995).

$$n = \frac{Np(1-p)}{(N-1)\sigma_{\hat{p}_{x}}^{2} + p(1-p)}$$
(1)

where; n, sample size; N, the number of households (56398 households); p, the percentage of households consuming pestil (0.50 for maximum sample volume); σ_{px}^2 variance.

According to the proportional sampling method, with a 99% confidence interval and 10% error margin, the sample size was found as 166. The target population comprised consumers older than 18 years old and responsible for food shopping. We screen out individuals that never purchase pestil. The study design and the practicability of the experiment were tested in a preliminary survey with 20 households. These results led to some changes in the form of the survey. Participant anonymity was maintained by ensuring that individual contact information was not linked to the resulting data. In the introduction instructions to the survey, respondents were informed that participation was completely voluntary that the information they shared would not be linked to them and that the data would be concluded in aggregate form

only. It was also stated that the participants had the option of resignation at any time. After these explanations on the phone, the survey was sent by mail. This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of University Gümüşhane (No. 2021/6).

The choice of urban location aimed at excluding consumers with direct connection with the production of nonmarket good which is pestil with GI. Because of the pandemic, interviews were carried out by goggle survey form to collect qualitative and quantitative primary data. Surveys were conducted with the selected household heads in 2020 summer season.

In this study, the contingent valuation method (CV) was used to calculate the willingness to pay (WTP) for the geographic indication (GI) labeled pestil. Contingent valuation (CV) is a method that provides the willingness of the consumers to pay for a good or service (Lopez-Feldman, 2012). CV has been traditionally used to evaluate consumer preferences nonmarket goods (Carpio & Isengildina-Massa, 2009). According to Lopez-Feldman (2012), with the CV method there are three different ways for determining WTP. One of them is dichotomous choice questions which is the most common approach. In this approach, hypothetical scenarios are explained to the individuals. Various price offers are then offered to individuals. Participants indicate whether they are willing to pay by answering "yes" or "no" to these price offers. Our study uses dichotomous choice questions. For this purpose firstly price bids have been determined. To determine the price bids, interviews were conducted with the pestil producers in Gümüşhane. In addition, interviews were held with senior agricultural engineers in the Gümüşhane Provincial Directorate of the Ministry of Agriculture and Forestry. It was discussed in what price premiums a geographic labeled pestil could be put on the market considering the cost and profit margin. According to the interviews, the market price range for pestil with geographical indication may be between 60-100 Turkish Liras (TRY) per kg. In the survey study, first of all, consumers were asked directly about their willingness to pay a price premium for rising prices of pestil with GI labelled. Experimental auctions have been used to elicit consumers' WTP for pestil with GI. If the participant accepts the price bid, then he/she was asked the quantity.

2.2 Empirical model and description of variables

In this study, the Tobit model that was developed by Nobel award-winning economist James Tobin (1958) was used to determine the price premiums that consumers are willing to pay for the geographic indication labeled pestil. A sample where information on the dependent variable only for some observations is known as a censored sample. It is a common view to use the Tobit model in case of censored sampling. In Tobit, also known as the censored regression model, while there is no dependent variable value for some observations, there are explanatory variable values for all observations. Such models are generally estimated using the maksimum likelihood methods (Gujarati, 2001). Noor et al. (2010) stated that to elicit WTP, Tobit models are prefered. According to the authors, the reason for using Tobit models is that these models are designed to reveal the full effect of the variable. Therefore, the coefficients that are inconsistent and biased in the Least Squares Method are consistent in Tobit regression.

The Tobit model equation is expressed mathematically as follows (Equations 2 and 3; Maddala, 1992; Mezgebo, 2012):

$$y_i^* = \beta_{xi} + \varepsilon_i \tag{2}$$

$$y_i = \begin{cases} y_i^* = \beta_{xi} + \varepsilon_i & ify_i^* > 0\\ 0 & ify_i^* \le 0 \end{cases}$$
(3)

where: y_i^* is latent or unobserved willingness to pay for pestil; y_i is a household's actual maximum willingness to pay for pestil; x_i is vector of explanatory variables; β is a parameter vector common to all households; α is the intercept; and assuming the random error ε_i is independent and normally distributed across respondents, $\varepsilon_i \sim NID(0, \sigma^2)$.

Variables included in the Tobit regression model is presented in Table 1. Dependent variable in the model is quantity of pestil with GI that is demanded per household. Explanatory variables in the model are gender, age, education, maritial status, household size, monthly income, purchase frequency, place of purchase, knowledge level about geographically labeled products, consumption status of geographically labeled products and price bid. Consumer attitudes towards pestil with the GI labelled were measured on a five-point Likert scale ranging from "totally disagree" to totally agree". The proposals to the participants are as follows: "geographical indication means that the product is produced in the relevant geography", "geographical indication shows that an independent control has been made for the product", "geographical indication indicates that a sustainable quality is ensured in the product", "geographical indication shows that the product is healthy", "geographical indication means that the product is produced with more natural and traditional methods.", "geographical indication means that the product is handmade and produced with great effort". While measuring the level of knowledge about the products labeled with geographical indication, the Likert scale average was taken. Those whose participation degree is below 3, their knowledge level is low, the knowledge level between 3-3.99 is medium, those who were 4 and above were considered to have high level of knowledge.

Garanti (2019) agreed that GIs act as a brand image, bringing the message of products origin and other attributes to the customer. Hassan & Dimassi (2017) report that the knowledge of Lebanese consumers on food labels need to be searched. Evidence from a carp purchases in Bavaria (Chilla et al., 2020), points out that the aim of introducing Protected Geographical Indication (PGI) carp was to promote the image and reputation of local carp and to raise awareness of the regional product among consumers. In the study by Didier & Lucie (2008), consumers' motivations and profiles have been searched for the willingness to pay. Therefore, we used some variables to measure the demanded geographic indication labeled pestil quantity as stated above. Carpenter & Larceneux (2008) emphasized that these individual characteristics should be controlled in the survey group. Moreover, Panzone et al. (2016) in their study demonstrated that the questionnaire should inquire about the

Variables	Description and Massurement	Catagory	Expected Sign
Dependent variable	Description and Measurement	Category	Expected Sign
demand	Quantity of GI-labelled pestil demanded per household-in kilograms (kg)	continuous	
Explanatory variables			
gender	1=if respondent is male; 0=female	dummy	+/-
age1*	1=if age of respondents is 34 years of age or less; 0=otherwise	dummy	-
age2	1=if age of respondents is 35-44 years; 0=otherwise	dummy	+
age3	1=if age of respondents is 45 years of age or older; 0=otherwise	dummy	+
edu	Years of education of respondents	continuous	+
marital	1=if respondent married; 0= otherwise	dummy	+
hsize	Number of members in the family	continuous	+
inc1*	1=if monthly household income is 5,000TRY or less; 0=otherwise	dummy	-
inc2	1=if monthly household income is between 5,001-8,000TRY; 0=otherwise	dummy	+
inc3	1=if monthly household income more than 8,000TRY; 0=otherwise	dummy	+
pf	1=if purchase frequency of respondents is once in a month; 0=otherwise (2-6 times per year)	dummy	+
рр	1=if consumers buy directly from local producers' outlets, 0=otherwise	dummy	+
ck1*	1=if respondents have low level of knowledge about GI-labelled products, 0=otherwise	dummy	-
ck2	1=if respondents have moderate level of knowledge about GI-labelled products, 0=otherwise	dummy	+
ck3	1=if respondents have high level of knowledge about GI-labelled products, 0=otherwise	dummy	+
GIcons	1=if respondents consume GI-labelled products, 0=otherwise	dummy	+
price	Bidding price (BP)- TRY BP1:60;BP2:70;BP3:80;BP4:90;BP5:100	continuous	-

Table 1. Description of Variables Included in the Tobit Mod

*Indicates the reference category (the omitted category).

economic barriers and drivers to consumption, as well as the socio-economic characteristics of the respondent.

While forming our hypotheses in this study, both the findings obtained from previous studies and the consumer profile in the region were taken into consideration. The "expected signs" shown in Table 1 reveal our hypotheses about all variables used in the Tobit model.

3 Results and discussion

3.1 Descriptive statistics

Table 2 shows variables' descriptive statistics that were used in Tobit model. Demanded pestil with GI is average 2.40 kg per household. This demanded amount varies to different price bid. The effect of the change in price on pestil with GI is shown in model estimates. The results presented in Table 2 indicate that 76% of the participants are male and 24% are female. A similar conclusion was found in a study by Topcu & Demi (2013) that target consumer group showed more male consumers than female ones. In terms of age, 55% of the participants were in the age group 34 and under, 31% was in the age group of 35-44 and 14% was 45 and over. This result is line with the finding of Sanjuan-Lopez & Resano-Ezcaray (2020). They found that a younger sample is to be considered as an advantage when assessing potential markets. It was reported in the study published by Staples et al. (2020) that on average, the craft beer consumers were found younger and higher-educated individuals but the

Table 2. Descriptive statistics for fobit model variables.					
Variables	- Moon	Std Day	Min	Max	
Dependent variable	Mean	Stu. Dev.	IVIIII.	Iviax.	
demand	2.40	7.044	0.00	74.00	
Explanatory variables					
gender	0.76	.431	0.00	1.00	
age1*	0.55	.499	0.00	1.00	
age2	0.31	.464	0.00	1.00	
age3	0.14	.351	0.00	1.00	
edu	19.11	3.484	8.00	23.00	
marital	0.75	.433	0.00	1.00	
hsize	3.28	1.265	1.00	7.00	
inc1*	0.09	.293	0.00	1.00	
inc2	0.43	.497	0.00	1.00	
inc3	0.47	.501	0.00	1.00	
pf	0.42	.495	0.00	1.00	
рр	0.55	.499	0.00	1.00	
ck1*	0.21	.409	0.00	1.00	
ck2	0.54	.500	0.00	1.00	
ck3	0.25	.436	0.00	1.00	
GIcons	0.58	.494	0.00	1.00	
price	80.00	14.151	60.00	100.00	

Table 2. Descriptiv	e statistics for	Tobit model	variables.
	c statistics for	100m model	variables.

*Indicates the reference category (the omitted category).

commercial beer buyers, on average, were older and achieved lower educational attainment. The education period in our sample varies between 8 and 23 years and the average was 19.11 years. 75% of the participants consist of married individuals and the average household size was determined as 3.28 person. A similar conclusion was found in a paper that analysed consumers' preferences for a local food in Spain by Gracia (2014) that average household size was three members.

When the distribution of the participants according to income groups was examined it was seen that 47% of the participants were in the high income group. The monthly household income of the participants in the high income group was more than 8,000 TRY. The rate of those whose monthly household income between 5,001-8,000 TRY was 43% and participants who had 5,000TRY and under were approximately %10.

When the distribution of the participants was examined in terms of the frequency of purchasing pestil, the rate of the participants with higher purchase frequency was 42%. These individuals have bought pestil every month. On the other hand, 58% of the participants had less frequency of purchasing pestil. These individuals have bought pestil 2-6 times in a year.

Considering the distribution of the participants by the place of purchasing pestil, it was observed that 55% of the participants had bought pestil directly from the sales stores of the local pestil producers. The remaining participants, on the other hand, have bought from local product stores and partially from markets.

In terms of participants' levels of knowledge regarding geographical indicators, %21, %54 and %25 of the interviewed participants were found slight, moderate and very good respectively. Nonetheless, it was mentioned in the study by Aprile et al. (2012)

that concerning the PDO (Protected Designation of Origin); 32.5% of consumers showed a medium level of knowledge while the majority of the sample (42%) demonstrated poor knowledge of the label.

The rate of those who consume geographically labeled products among the participants was found as 58%. The rest stated that they did not consume. Binding choice set for the pestil with GI have been determined between 60-100 TRY/kg.

3.2 Factors affecting the demand for geographical indications labeled pestil

In Table 3, Tobit regression model estimates have been given, which reveal the effect of explanatory variables on the demand for pestil with GI. Explanatory variables are gender, age, education, maritual status, householdsize, monthly household income, frequency of purchasing pestil, and place of purchasing, levels of knowledge regarding products with GI, consumption situation for products with GI and price bids.

Before interpreting the Tobit model results, the goodness of fit of the model was examined. For this reason, p value of LR (the Likelihood Ratio Chi-Square test) test had been checked. According to the test p-value was found as 0.0000. This p-value is small than 0.005 so H_1 hypothese was refused. It can be said that explanatory variables explain the independent variable enough.

Considering Tobit model results, there is a statistically significant relationship between age, education, frequency of

 Table 3. Tobit regression model estimates for Geographical Indication-labeled Pestil demand.

demand	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gender	-0.346	1.2004	-0.29	0.773	-2.7033	2.0104
age2	3.088	1.1329	2.73	0.007**	0.8634	5.3119
age3	4.530	1.5486	2.93	0.004*	1.4894	7.5704
edu	-0.385	0.1468	-2.63	0.009**	-0.6736	-0.0972
marital	-1.334	1.3465	-0.99	0.322	-3.9777	1.3096
hsize	0.328	0.4180	0.78	0.433	-0.4927	1.1485
inc2	-0.635	1.7874	-0.36	0.723	-4.1440	2.8745
inc3	1.349	1.8843	0.72	0.474	-2.3508	5.0482
pf	2.024	1.0187	1.99	0.047**	0.0243	4.0244
рр	0.830	1.0144	0.82	0.413	-1.1615	2.8215
ck2	0.683	1.3901	0.49	0.623	-2.0463	3.4120
ck3	6.249	1.5247	4.10	0.000*	3.2552	9.2422
GIcons	2.268	1.0646	2.13	0.033**	0.1783	4.3586
price	-0.252	0.0349	-7.21	0.000*	-0.3200	-0.1830
1.age1	0	(omitted)				
1.inc1	0	(omitted)				
1.ck1	0	(omitted)				
_cons	17.265	4.4778	3.86	0.000*	8.4737	26.0563
/sigma	10.770	0.4461			9.894	11.646
Number of obs	720					
Log likelihood	-1,435.950					
LR chi2(14)	134.40					
Prob > chi2	0.0000					
Pseudo R2	0.0447					

*and ** denote statistical significance at the level of 1% and 5%, respectively.

purchasing pestil, levels of knowledge regarding products with GI, consumption situation for products with GI, price bids and amount demanded for pestil with geographical indication. On the other hand, there is no statistically significant effect of gender, marital status, household size, monthly household income, and purchasing place on the demand for pestil with GI.

The model results reveal that there is a positive relationship between age and the demand for pestil with GI. In other words, as the age increases, the demand for geographically labeled pestil also increases. This result confirms the hypothesis we predicted for the relationship between age and the demand for pestil with GI. The youngest age group (age1) represents reference category. It was observed that middle (age2) and upper (age3) age groups would like to consume more geographically labeled pestil compared to the reference category. Those in the middle and upper age group wanted to consume 3.08 kg and 4.53 kg more pestil with a geographical indication, respectively, than young people.

A negative relationship was found between the education period and the demand for pestil labeled with geographical indication. As the education period of the head of the household was increasing by one year, the demand for pestil with the geographical indication label decreased by 0.385 kg (385 grams). Conversely, in the study by Gunden et al. (2020), consumers with undergraduate and graduate degree of education perceived green values less positive within education level. So, our result is the opposite of the hypothesis we predicted. It is a general expectation that educated individuals will tend to geographically marked products more. However, today there are individuals who have a long education period and do not know exactly what organic and good agriculture and they cannot distinguish them from each other. Social awareness is thought to be less in geographically marked products with a newer past.

A positive relationship was found between the frequency of purchasing pestil and the demand for pestil labeled with geographical indication. Participants who purchase pestil more frequently demand 2.02 kg more than that purchase less frequent. This result confirms the hypothesis we predicted regarding the purchase frequency.

It was found a positive relationship between the level of participants' knowledge about the products with GI and the demand for pestil labeled with GI. In the Tobit model, the group with the lowest level of knowledge about the products labeled with geographical indication (ck1) represented the reference category. Tobit model results show that there is no statistically significant difference between the group (ck2) with medium level of knowledge about the geographically labeled products and the reference category. However, a statistically significant difference was found between the group (ck3) with a high level of knowledge about the products labeled with geographical indication (ck3) and the reference category. This result confirms the hypothesis we have predicted. The group with a high level of information about geographically labeled products demands 6.25 kg more geographically labeled pestil than the ck1. This difference in demand between those with low and high level of knowledge is quite high. This shows us that it is important

to increase the communal awareness regarding these products in order to increase the consumption of GI-labelled products.

The Tobit model results showed that there was a positive relationship between the consumption of geographically labeled products and the demand for pestil with geographical indication. In our hypothesis, it was predicted that those who consume the products with the geographical indication label will demand more fruit pulp with the geographical indication label than those who do not. Model results also confirm this hypothesis. According to the finding obtained those who consume the products labeled with the geographical indication demand 2.27 kg more GI-labelled pestil than those who do not.

According to the Tobit model results, a statistically significant and negative relationship was found between the price and the demand for GI-labelled pestil. As stated by Li et al. (2019) in their study, as expected, price had a significant and largely negative effect-a one dollar increase in the price reduced target group's likelihood of purchasing the oysters by 10%. In our study although pestil is a traditional food product, it is not a compulsory food. It is seen as a situation where consumers are expected to react faster to price increases. This result was also predicted in the hypothesis we had determined for the relationship between the price and the demand for GI-labelled pestil. The Tobit model results revealed that during the field study, the price offers that were gradually increased from 60 TRY/kg to 100 TRY/kg decreased the demand for pestil with the geographical indication label. According to the results, 1 Turkish Lira increase in the price decreases the demand by 0.252 kg (252 grams).

3.3 Willingness of consumers for geographically labeled pestil

Table 4 shows the willingness to pay for pestil labeled with geographical indication. Willingness to pay amounts was calculated with the Tobit model. The average amount that the participants are willing to pay for 1 kg of geographically labeled pestil was determined as 68.74 TRY. This amount was close to 70 TRY/ kg, which was one of the price bids offered to determine the willingness of the participants. As stated in the methodology part of this study, it was taken into account that the market price range for the geographically labeled pestil could be between 60-100 TRY per kg. Considering this price range, it appears that consumers are willing to pay close to the lowest price offer. In other words, consumers do not want to pay very high amounts for the pestil with a geographical indication label in the market. It was reported in the study published by Carpio & Isengildina-Massa (2009) that South Carolina consumers were willing to pay an average premium of 27% for local produce. In one case study conducted by Seetisarn & Chiaravutthi (2011),

Table 4. Willingness-to-pay estimate results from Tobit model for the Geographical Indication-labeled Pestil.

	_cons	age2	age3	edu	pf	ck3	GIcons
wtp	68.64	12.28	18.01	-1.53	8.05	24.84	9.02
11	39.74	2.88	5.17	-2.75	-0.08	11.41	0.46
ul	97.54	21.67	30.85	-0.32	16.18	38.27	17.58

ll: lower limit of the willingness to pay; ul: upper limit of the willingness to pay.

there was no significant premium percentage difference between the average bid for GI labels and the average bid for origin labels. The authors have concluded that this implies that Thai consumers value the product's origin, but do not recognize the importance of the GI label. Based on this finding Carpenter & Larceneux (2008) stated that informing consumers of the meaning of the GI label in advertising would improve its credibility and generate beliefs that enhance purchase intention. However, in the study published by Chilla et al. (2020) the respondents in the sample were willing to pay the highest premium price for product with a GI label. It was determined in our study that the lowest amount that the participants were willing to pay for 1 kg of geographical indication labeled pestil was 39.74 TRY and the highest amount was 97.54 TRY. In Table 4, willingness to pay amounts is shown in terms of variables that are included in the Tobit model and are statistically significant. It was determined that the middle (age2) age group was willing to pay an average of 12.28 TRY extra for 1 kg of labeled pestil, compared to the reference category young people. The amount that the middle age group was willing to pay extra compared to the reference category young people varied between 2.88-21.67 TRY/kg. The average amount that the high (age3) age group wanted to pay extra for 1 kg of pestil with a GI was 18.01 TRY, and this amount varies between 5.17-30.85 TRY. As it can be seen from these findings, consumers in the highest age group were more willing than other age groups in terms of paying extra for 1 kg of GI-labelled pestil. On the other hand, a study in China on WTP for GI products reported that consumers would have some differences in their WTP for different kinds of GI products. For example, Chinese consumers have the highest WTP for GI tea and the least WTP for GI Chinese herbal medicine (Dong, 2019).

When the relationship between the education period of the participants and their willingness to pay for GI-labelled pestil was examined, it was seen that the amount of willingness to pay decreased with the increase in the education period. According to the results of the model, as the education period of the household head was increasing by one year, the average amount that the head of the household wanted to pay for 1 kg of pestil with a geographical indication decreased 1.53 TRY, and this amount varied as (-2.75) - (-0.32) TRY. Considering Tobit model results, participants who have more purchase frequency comparing with less purchase frequency wanted to pay more. The average amount they wanted to pay extra for 1 kg of geographic labeled pestil was 8.05 TRY, and this amount varied between 0.08-16.18 TRY.

The model results have showed that with the increase in the level of knowledge about the products labeled with geographical indication, the amount desired to be paid for these products has increased considerably. The group with a high level of knowledge about the products labeled with geographic indication (ck3) was willing to pay an average of 24.84 TRY for 1 kg of geographically labeled pestil compared to the group with the lowest level of knowledge (ck1), and this amount varied between 11.41-38.27 TRY. According to this result, ensuring consumer awareness for geographically labeled products is important in increasing the amount that consumers are willing to pay.

Of those who consume products with GI were ready to pay more for pestil with GI as expected. According to the findings, those who consumed the products with the geographical indication label were willing to pay an average of 9.02 TRY extra for 1 kg of geographically labeled pestil compared to those who did not. This amount varied between 0.46-17.58 TRY. The fact that consumers who buy geographically labeled products know partially how and where these products are produced makes them more valuable to these products. The increase in the value given by the consumer to the product increases the amount to be paid for these products.

4 Conclusions

The findings in this study will make an important contribution to the literature in terms of seeing what factors are affected by the demand for GI-labelled products and revealing how much consumers want to pay for these products. According to the findings obtained from this research, individuals who are in the upper age group, have a high frequency of purchasing pestil, have a high level of knowledge about GI-labelled products, and consume GI-labelled products, want to consume more GIlabelled pestil. Individuals who have a long period of education would like to consume less amount of GI-labelled pestil. This situation reveals that communal awareness about GI-labelled products should not be associated with the period of education. As expected, the increase in price decreases the demand for GI-labelled pestil.

When an evaluation is made in terms of the amount of willingness to pay for GI-labelled pestil, it is understood that the consumers do not want to pay very high amounts. The average amount that consumers will be willing to pay for 1 kg of GI-labelled pestil in the range of auction ranging from 60-100 TRY has been determined as 68.74 TRY. Those who are in the middle and upper age group, have a high frequency of purchasing pestil, have a high level of knowledge about GI-labelled products, and those who consume GI-labelled products are individuals who are willing to pay extra for GI-labelled pestil. It is observed that individuals especially in the upper age group and who have a high level of knowledge about GI-labelled products are willing to pay a higher amount on average for 1 kg of GI-labelled pestil.

It is very vital for traditional pestil producers and marketers to determine the target market by taking into account the characteristics of the group willing to pay extra for GI-labelled pestil. While establishing a target market for GI-labelled pestil, those who are in the upper age group, have a high frequency of purchasing pestil, have a high level of knowledge about GIlabelled products, and consume products with a GI-labelled products should be taken into consideration. Nonetheless, it is obvious that individuals with a high level of knowledge about GI-labelled products are willing to pay an extra higher amount. It is recommended that marketers carry out promotional activities to increase the communal awareness of GI-labelled products. Considering that consumers do not want to pay very high extra price for GI-labelled pestil, it may be appropriate to apply a low pricing strategy.

Conducting this study under COVID-19 pandemic conditions has been one of the limitations. It took time to select the participants and reach the selected participants during the survey study. With the reduction of the impact of the pandemic and entering the normalization process, it is recommended to conduct similar studies in different regions in order to reach more concrete information. Traditional products are products with a high market potential. More studies are needed, especially on traditional products with geographical indications. The local product included in the scope of this research is called "pestil" (dried fruit pulp) as mentioned before is not a compulsory food, it is a snack and mostly is bought as a gift. In accordance with the purpose of the study, WTP of pestil has been searched. However, this willingness to pay may differ for commonly consumed traditional food products (such as bakery products and dairy products) that have a GI-label. We submit that in future studies, researches to be conducted within the scope of frequently consumed traditional food products with geographical indications will be useful in terms of seeing how the willingness to pay different product groups has changed.

Conflict of interest

I hereby confirm that this manuscript is being submitted solely to this journal and has not been published nor is it in press elsewhere and state that there aren't any conflict(s) of interest that we have in relation to the review of this paper.

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