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CONSUMERS PERCEPTION AND BEHAVIOUR TOWARDS GEOGRAPHICAL INDICATION PRODUCTS: THE CASE OF TRADITIONAL PESTIL FROM GUMUSHANE, TURKEY

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ABSTRACT

The main objective of this study was to assess the relationship between the level of consumers perception of products with geographical indication (GI) and their consumption of products with GI labels. Geographically indicated products were examined within the scope of Gumushane fruit pulp (mulberry pestil), which was registered as a Protected Geographical Indication (PGI) in 2004. This research conducted an online survey of 166 consumers living in Gumushane province in Turkey. Data was obtained from the online surveys that were conducted between June and September 2020. Binary logistic regression analysis method was used to identify the factors affecting the probability of consuming products with GI labels. The model results show that middle-aged, married, and middle-income and consumers who correctly perceive the concept of geographical indication products are more likely to consume products with GI labels. According to the logistic regression results, the increase in consumers level of correct perception of the product notion with GI label increases the probability of consuming products with GI label 2.5 times. The results of this study also tell us that the market share of these products can be increased by improving the consumer perception towards geographically indicated products. Policymakers can also take advantage of these insights to improve lucid understanding of how labels are actually interpreted by consumers.

Keywords consumer behaviour, perception, geographical indications (GIs), traditional food, Turkey.

INTRODUCTION

Emerging markets play an increasingly important role in the world economy nowadays (Le-Anh and Nguyen-To, 2020) and satisfy some of the traditional requirements of developed first-world markets, which radically differ for a number of reasons, *e.g.* resource shortages, customer heterogeneity, insufficient infrastructure, and socio-political turmoil (Kumar and Srivastava, 2020). In these markets, geographical indication (GI) labelling differentiates a product from its competitors as to the region where it originated. At first, GI-labelled local product was proposed as a potential help for various economic, environmental and social challenges posed by processed food, such as process quality. Consumers more and more believe that food contribute

directly to their health and want to adopt health-oriented changes in their eating habits (Prattala, 2003). No doubt those consumers are increasingly aware of it when purchasing food. At this point, products belonging to certain regions are protected in order to reduce consumers concerns about quality and reliability. Therefore, products protected with GI have started to become an important marketing tool by registering their quality and reliability by local authorities (Toklu *et al*., 2016). Traditional food with a GI label leads to economic growth at the same time. In changing global market conditions, products with a GI label enjoy increased competitiveness, broader consumer awareness of their originality, and consumers confidence that they were produced with certain standards that are important for producers as well as consumers (Belletti *et al.* 2017). As mentioned in Cafiero *et al.* (2019), there has been a growing attention towards recognizing characteristics that make food products special.

In conclusion, the presence of a quality component in the definition of traditional products allows the labelling to integrate these attributes within the concept of product quality. Labelling has been given an increasingly important role in achieving sustainability goals, providing consumers with the opportunity to consider the economic, social and health impacts of their food choices. In this context, it is important to find complementary sources that contribute to economic and GI label can be one of the sources. Bryla (2017) found that there is a strong relationship between the perception of quality signs and the attitude toward origin of food. Menapace and Moschini (2012) showed that GI certification improves the consumers ability to use their reputation as a means of assuring product quality. Therefore, consumer awareness plays an important role in developing GI-labelled products. A strong relationship between the products and the region where they are produced is an important part of local culture. Although studies identify motivations for GI-labelled traditional–food consumption, the relative contributions of these motivations have not yet been clarified. These contributions have vital impacts for the design of policies promoting traditional food. In order to deepen the understanding of consumers perceptions for GI-labelled products, this research aimed to present the perception and attitude of consumers towards GI-labelled traditional product called "pestil" (dried fruit pulp). The findings of consumer perceptions in this market can be beneficial for the emerging markets. 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 (Gumushane Governorate Publications, 2010). In the past, pestil was consumed as a snack only by the local people in Gumushane province which is in the northeast of Turkey. Today it plays a vital role as an industrial product in the production sector creating added value in the province economy and providing employment for many people (Dogan and Adanacioglu, 2021). Gumushane produces 90 % of the pestil in Turkey, and 90 % of the enterprises in the industrial sector of Gumushane province are pestil producers, with annual production of approximately 5000 tons. It was determined that the registration certificate (GI-labelled) obtained in 2004 for Gumushane pestil was not used by any producer in the current production market.

No research has been found to examine the consumer perceptions of producing GI-labelled products in the research area of this study. Nonetheless, it is obvious that production of GI-labelled pestil would provide many benefits for both producers and consumers while enhancing its social, cultural, and environmental attributes (Neilson *et al.*, 2018). The following hypotheses were developed to determine how the GIs affect consumers perceptions and behaviours: H1: Consumers who have a more accurate perception about GI-labelled products have a better attitude towards consuming these products. H2: Demographic characteristics are partially or mostly effective on consumers purchasing behaviours towards consuming GI-labelled products. H3: There is a relationship between consumers purchasing behaviour and their demographic characteristics towards consuming GI-labelled products.
Then, the aim of this study was to contribute to the literature by seeking answers to these targeted questions: Which factors affect the purchasing behaviours of consumers of GI-labelled products? and Does the perception of GI-labelled products of the consumers have an effect on their purchasing behaviour?

MATERIALS AND METHODS

Qualitative and quantitative primary data in this study was acquired from the face-to-face interviews with the households in Gumushane, the principal pestil production region. The data was collected between June and September 2020 via online survey. The sample according to the known or predicted ratio (p) of the population size N is given in the following equation (1) (Newbold 1995).

$$n = \frac{Np(1-p)}{(N-1)\sigma_{px}^2 + p(1-p)} \quad (1)$$

where: n, sample size; N, the number of households (56 398 households); p, the percentage of households consuming pestil (0.50 for maximum sample volume); σ^2_{px}, variance.

According to the proportional sampling method, with a 99 % confidence interval and 10 % error margin, the sample size was found as 166. Before the survey form was prepared, national and international literatures related to the subject were examined and survey questions were prepared according to the aim of this study. Before the survey was applied, a pilot survey was conducted, the necessary arrangements led to some changes in the form of the survey. All consumers in research sample were 18 years over and mainly responsible for pestil shopping in the household and were invited to volunteer to participate in a survey. Descriptive statistics were used to evaluate the data.
Data collected from survey covered household head demographic information, healthy food information, geographical indication information, and consumer perceptions on

GI-labelled products. GI-labelled pestil have not been introduced to consumers in the research area, so GI-labelled pestil was not yet found in the Gumushane market. This difficulty suggests the use of hypothetical questions instead. These questions have been widely used to understand consumer perceptions on purchasing when data on actual sales are not available. In the question form the size of the choice set rises with the number of attributes relating to the GI pestil and non-GI pestil. We asked consumers in the survey which of a list of product characteristics- such as taste, pestil origin, pestil content, pestil quality- are most important when purchasing pestil. Consumer attitudes towards pestil with the GI labelled was measured on a five-point Likert scale ranging from "strongly disagree" to "strongly agree".

Empirical Model

Binary logistic regression analysis was used to determine the factors that affect the probability of consuming products with GI labels. This regression is a method to determine the relationship between the explanatory variables and the outcome in cases where the response variable is observed in binary, triple and multiple categories. The fact that the logistic function has an interval between 0 and 1 so this is the first important reason for choosing the logistic regression (Karagöz, 2016).

The logistic regression model is expressed by the following equation (2) (Gujarati, 2001):

$$L_i = \ln\left(\frac{P_i}{1 - P_i}\right) = \beta_1 + \beta_2 X_i + u_i \quad (2)$$

In the above logit function equation (2), where the P value shows the probability of the consuming products with GI labels. In other words, it represents whether consumers consume products with GI or not. While *Pi*=1 means those who consume products with GI label, *Pi*=0 means those who do not consume products with GI while *Pi*=1 means those who consume products with geographical indication label, *Pi*=0 means those who do not consume products with geographical indication label. β_1 is the constant term in the model. β_2 represents the bevel and measures the change in *L* for a unit change in *X*. The dependent variable shows the probability of consuming products with GI labels. The explanatory variables are; age, education, marital status, household size, monthly household income, frequency of purchasing pestil, annual expenditure of pestil, place of purchase and level of correct perception of the GI labelled product.

Six propositions were prepared in order to measure whether the respondents correctly perceived the notion of GI labelled product. A 5-point Likert scale was used to find the extent to which the consumers agreed with each statement. The propositions presented to the consumers are as follows: "Geographical indication refers to the geography in which the product is produced.", "GI indicates that an independent inspection has been carried out for the product.", "GI means that a sustainable quality is provided in the product.", "GI indicates that the product is healthy", "GI means that the product is produced with more natural and traditional methods.", "GI means that the product

is handmade and very laborious.". While measuring the level of correct perception of the GI labelled product concept by the consumers, the Likert scale average of the answers was taken.

RESULTS AND DISCUSSION

Perceptions of GI-labelled Products in the Examined Sample

Corresponding to perceptions of GI-labelled products, participants were asked about their extent of knowledge of the GI such as sustainable quality, healthy products, and traditional production methods, handmade and where is it produced. Familiarity with GI-labelled products was measured on a Likert scale as "1= strongly disagree", "2= disagree", "3= neither agree nor disagree", "4= agree", and "5= strongly agree". "Familiarity with GI-labelled products" was calculated as the average of the five answers. The participants stated that GI-labelled product is produced in the relevant geography (4.11), it provides a sustainable quality (3.57) and it is produced with natural and traditional methods (3.55). The participants significantly agreed with these propositions.

On the other hand, they moderately agreed about the ideas that "GI-labelled indicates that an independent inspection has been made for the product" (3.14), "GI indicates that GI-labelled product is safe for health" (2.99) and that "it is handmade" (2.96). Considering these findings, we posited that the main underlying perception for the GI-labelled products was the geography of the product. The interviewed participants were found to have moderate knowledge of GI products for the proposal of an independent inspection for the product, healthy product and handmade. Similar result was reported in the study published by Meral and Şahin (2013) that GI-labelled product is produced in the relevant geography (4.03), and the interviewed participants were found to have moderate knowledge of GI products for the proposal of an independent inspection for the product (2.94) and that GI-labelled product expresses that the product is handmade (3.33).

Attitudes of the Participants towards Consuming GI-labelled Products

In this section, participants were then asked whether consuming GI products would affect their attitude or not. Approximately 58 % said "yes" to consume the GI labelled products, and 10 % said "no". The statements presented to the participants are as follows: "GI labelled products are healthier", "they are more delicious", "they have better quality" and "GI labelled products contribute to the local economy". In regard to the responses of the participants, "contribution of the product to the local economy" (4.23) is the main factor to wish consuming GI labelled products. The participants significantly agreed with this proposition. On the other hand, they moderately agreed about the ideas that "GI labelled products are healthier" (3.46), "they are more delicious" (3.11) and that "they have better quality" (3.16). Thus, we posited that the main underlying motivation for the GI labelled products was its economic benefit compared to its counterparts. In order to analyse reasons for not consuming GI

labelled products, proposals were asked to the participants as follows: "I cannot find GI labelled products", "I don't believe in labelled products", "I am satisfied with other products" and "I do not pay attention when buying".

According to results, the participants cannot consume GI labelled products because of inability to find GI labelled products in shopping places where they live. The interviewed participants were found to have moderate response on not being able to find GI labelled products in shopping places (2.87) and being satisfied compared to its counterparts (2.70). It is possible to say that the interviewed consumers slightly agree, but not strongly agree. On the other hand, the participants slightly agreed with the statement of "I do not believe in labelled products" (2.14) and "I do not pay attention to the label on the packet" (2.13). Based on this outcome, it is clear that finding GI labelled products in the current market may trigger more willingness to consume GI products. We could say that how consumers find GI labelled products in the shopping places where they live is as important as willingness to consume. According to Dogan and Adanacıoglu (2021), the recipe of Gumushane pestil made in the traditional method is not possible under current market conditions.

The components used in their present production are not the same as those used in the GI recipe. Most importantly, the recipe from the Gumushane Agriculture and Forestry Provincial Directorate consisted of very different input quantities. It calls for at least 20 kg of honey, 15 kg of milk, and 20 kg of walnuts or hazelnuts for 100 kg of Gumushane pestil, and the milk and mulberry must be from Gumushane. For industrial production, the syrup that extends shelf life used in current production is not allowed in production with GI. In the light of this information a question about GI labelled pestil, which is in the scope of this research was presented as hypothetical to the participants to evaluate the willingness of consuming: Assuming that there is a GI indication on the packet of pestil which has different ingredients, for example, there is honey instead of sugar, dried mulberry molasses instead of prepared mulberry molasses, milk instead of milk powder; and consumers were asked whether they would consume GI labelled pestil under the hypothetical proposition or not.

Majority of the participants would buy pestil, if it was produced according to GI production standards, which means that this result confirmed the expected relationship between the positive perception of GI production standards and the willingness to buy the pestil. In the study of Bryla (2017) it was mentioned that there is a strong relationship between food signs and the willingness to buy for origin food. Similar result was found in the study of Santeramo and Lamonaca (2020) that GIs are effective differentiation tools in the agri-food markets for consumers. Wang *et al.* (2020) suggested in their research that certified labels like GI enjoy more trust from the Chinese consumers than their local competitors. While they reached a result that nearly 70 % of the respondents considered labels granted by official organisations as the most reassuring guarantee for safety and quality. We found that 92 % of the participants considered the purchase status of GI labelled pestil under the hypothetical proposition. Therefore, this result allows to conclude that GIs is the main differentiation tool for

local products. In summary, the GI is shown to have enhanced the explanatory power of the perception.

The Effect of Demographic Factors, Shopping Behaviours, and Perceptions

Binary logistic regression analysis method was used to determine the factors affecting the probability of consuming products with GI labels. Some tests were conducted in order to determine the goodness of fit of the logistic regression model. When the Omnibus Test regarding the model coefficients is examined, it is seen that the independent variables in the model contribute to the estimation of the dependent variable. The chi-square value of the model was found statistically significant ($p \leq 0.05$) (Table 1).

The goodness of fit of the established model was also measured with the Hosmer and Lemeshow Test. According to the Hosmer-Lemeshow test, since Sign. = 0.283 > 0.05, the condition of goodness of model fit is met (Table 2).

The goodness of fit of the established model was analysed with the classification table. When the classification table is examined, 82.56 % of those who consume geographical indication labelled products and 48.28 % of those who do not have been estimated correctly. The correct prediction rate of consumers in general is approximately 69 % (Table 3).

Table 1. The results of the Omnibus tests for model coefficients.

		Chi-square	df	Sign. (p)
Step 1	Step	31.018	12	0.002
	Block	31.018	12	0.002
	Model	31.018	12	0.002

Table 2. The results of the Hosmer-Lemeshow test for Model.

Step 1	Chi-square	df	Sign. (*p*)
	9.747	8	0.283

Table 3. The classification of the model results (consumption products with GI).

	Observed	Predicted		Percentage of correct classification
		Non consumers	Consumers	
Step 1	Non-consumers	28	30	48.28
	Consumers	15	71	82.56
Overall percentage of correctly classified cases				68.75

The ratios of the independent variables used in the model to explain the dependent variable were 0.194 (19.4 %) according to the Cox & Snell R2 value and 0.262 (26.2 %) according to the Nagelkerke R2 value (Table 4). It is stated that a value between 0.20-0.40 is very high since pseudo R2 values tend to take very small values compared to R2 in multiple regression (Karagöz, 2016). According to these values, it can be said that thhe parameter estimates of the binary logistic regression analysis model are shown in Table 5. According to the model results; age, marital status, income and the perception level of consumers towards geographical indication products are in a statistically significant relationship with the probability of consuming products with GI labels.

The model results revealed that there is a significant relationship between age and the probability of consumers consuming GI labelled products. The highest age

Table 4. The model summary.

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	163.129[a]	0.194	0.262

Table 5. The logistic regression model estimates on the consumption of GI labelled products.

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
age1[§]	1.415	0.628	5.081	1	0.024[¶]	4.115
age2	1.843	0.632	8.492	1	0.004[ǂ]	6.315
edu1[Þ]	0.477	0.833	0.327	1	0.567	1.611
edu2	-0.095	0.439	0.047	1	0.829	0.91
marital[¤]	1.216	0.567	4.595	1	0.032[¶]	3.372
hsize[††]	-0.718	0.436	2.718	1	0.099	0.488
income1[¶¶]	1.211	0.804	2.266	1	0.132	3.356
income2	1.139	0.457	6.209	1	0.013[¶]	3.124
pfrequency[§§]	0.024	0.443	0.003	1	0.958	1.024
exp[ÞÞ]	0	0	0.174	1	0.676	1
pplace[¤¤]	-0.142	0.423	0.112	1	0.738	0.868
percept[†††]	0.924	0.286	10.45	1	0.001[ǂ]	2.519
constant	-5.089	1.446	12.391	1	0	0.006

Significant at [ǂ]$p \leq 0.01$ and [¶]$p \leq 0.05$; [§]Categorized as age1 = 34 or less; age2 = 34–44; age3 (reference category: RC) =45+ years; [Þ] Categorized as edu1 = below university degree; edu2: university degree; edu3 (RC): postgraduate degree; [¤]Categorized as "non-married" (RC) and "married"; [††]Categorized as "≤3 household members" (RC) and "> 3 household members"; [¶¶]Categorized as income1 = 5.000 TRY or less; income2 = 5.001-8.000 TRY; income3 (RC) =8.000 TRY+ ; [§§]Categorized as "shoppers made a purchase 2-6 times per year" (RC) and "shoppers purchase once a month"; [ÞÞ]Annual expenditure (TRY) of the respondents on pestil; [¤¤]Categorized as "shoppers buying from indirect outlets" (RC) and "shoppers buying directly from local producers outlets"; [†††]The level of correct perception of the GI labelled product concept by the respondents (The 5-point Likert scale: 1: the lowest level of correct perception; 5: the highest level of correct perception).

group (age3) represents the reference category in the logistic model. Young (age1) and middle (age2) age groups were found to be more likely to consume GI labelled products compared to the oldest age group, which is the reference category. When an evaluation is made according to the exponential logistic regression coefficient (Exp (β)-odds ratio); those in the young and middle age groups would like to consume 4.1 and 6.3 times more GI labelled products, respectively, than the older consumers. This result shows that especially the middle age group is more likely to consume products with GI label than other age groups. This finding is consistent with Eldesouky *et al.* (2019) in other study of perception of Spanish consumers towards labelling in food. They found that half of the focus group age (50 %) was between 36 and 50 years old which represented the middle age group in their study.

There is also a significant relationship between marital status and the probability of consuming GI labelled products. According to the model results, the probability of consuming GI labelled products increases in married consumers. When an evaluation is made according to the exponential logistic regression coefficient (Exp (β)-odds ratio), the increase in the number of married people in the household raises the probability of consuming GI labelled products approximately 3.4 times. Married couples give importance to healthy nutrition as a family and establish good social relations in general. This causes that they tend more towards products that add value to the customer, such as products with geographical indication labels. This is similar to the result of the research of Aprile *et al.* (2012) on the subject of consumers valuation of food quality labels confirming that 57 % of the respondents were married.

The results of the logistic regression model gave an idea about the relationship between the consumption of GI labelled products and household income groups. In this context, household income groups are classified as low, medium and high. Classified consumers are included in the model as dummy variables. The category that is statistically significant in terms of income groups is consumers with middle income. The third and final category, high-income consumers, represents the reference category. When evaluated according to the exponential logistic regression coefficient (Exp (β)-odds ratio), middle-income consumers would like to consume approximately 3.1 times more GI labelled products than high-income ones. This result is confirmed by the analysis of My *et al.* (2017) who applied a similar study of the consumers attitude towards food quality certifications mostly to be associated with medium income group that composed 60.2 % of the sample.

Another variable that has a significant relationship with the probability of consuming products with GI in the model is the level of perception of consumers towards products with GI. According to the model results, the probability of consuming GI labelled products increases with the raise in consumers level of correct perception of the notion of GI labelled product. When an evaluation is made according to the exponential logistic regression coefficient (Exp (β)-odds ratio), the increase in the level of correct perception of the notion of product with GI label increases the probability of consuming products labelled with GI 2.5 times. This result shows that the market

share of these products can be increased by improving the consumer perception towards geographically indicated products. In other words, the correct perception of products marked as GI makes a high contribution to the market at the consumer level.

CONCLUSIONS

Here there is an important contribution to the literature in terms of promoting the factors affecting the probability of consuming products with geographical indication (GI) label. Middle-aged, married, middle-income and consumers who correctly perceive the notion of GI products are more likely to consume products with GI. Marketers should consider the demographic factors as well as the correct way of perceiving products of this attribute in the consumption of products with geographical indication label. In addition, consumers perceive the notion of GI labelled product correctly at a moderate level (Likert scale averaged 3.40). Cumulatively, 30.7 % of consumers correctly perceive the notion of GI product between 1 and 3 on a 5-point Likert scale.

Another important finding is that only one fourth (25.3 %) of the interviewed consumers perceive the geographical indication product notion more accurately. Thus, there is an important problem regarding the correct perception of the geographical indication product notion by consumers. Therefore, it is considered important for those who market their products under the geographical indication label to conduct marketing research on the determination of consumer perception of such products. There is evidence that the market share of these products could be increased by improving the consumer perception towards geographically indicated products. Thus, it is recommended that marketers focus on sales promotion, public relations, and direct sales techniques as promotional tools within the scope of improving consumer perception of geographically indicated products.

The effect of consumer perception on the consumption of products with GI labels was assessed at the local level. Since there is a lack of information about consumer perceptions towards the traditional products with GI label in the research area, this paper contributes to a better understanding of perceptions and motivations towards food quality certifications (such as GI). Before 2020, the household interviews were planned to be conducted face-to-face for terms of consistency in the data to be obtained; but due to pandemic restrictions the surveys were done online. Therefore, this is considered as the only limitation of this research.

Finally, there is still need for other studies assessing the effect of consumer perception on products that have received GI labels. In further studies, research is suggested in different regions and products; which shall be useful for analysing how consumer perception affects the consumption of products with GI label at the regional level and by product group.

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