CONSUMERS' INTENTION TO BUY CHEESES WITH GEOGRAPHICAL INDICATIONS: THE CASE OF SERBIA

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ABSTRACT

In recent years, GI cheese consumption has attracted increasing interest among consumers, due to its beneficial properties for local economies and the surrounding environment. Given the high importance that consumers ascribe to geographical indications, considered one of the most relevant attributes for agro-food consumers, this study aims at detecting the main variables that influence purchasing intention for GI cheese. A total of 806 consumers took part in the study from all four regions of the Republic of Serbia. For this purpose, a binary logistic regression model analysis was performed. The research highlights that tradition and origin, education, and higher knowledge only had a significant effect on consumer attitudes toward GI cheeses.

Introduction

Consumption of traditionally produced food has received significant attention in the food purchasing domain over the last decade. Today there is an increasing number of consumers who want to purchase and use in their diet indigenous products produced in small quantities according to the ecological norms of the EU. Consumer desire for preferably innovative, high-quality, health-guaranteed products is causing the agri-food industry to evolve in order to meet these demands and compete in the marketplace (Tendero & Bernabeu, 2005).

Studies based on the significance consumers attach to Geographical Indications (GIs), such as "Protected Designation of Origin" (PDO) and "Protected Geographical

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Indication" (PGI) labels, have been rather scarcely or infrequently explored, despite recent research efforts to analyze the role of geographical origin in consumers' choices of cheese from various markets (Menozzi et al., 2021). A Protected Designation of Origin (PDO) label is "applied to agricultural products and foodstuffs that are produced, processed, and prepared in a defined geographical area, a specific place, or a country, and whose quality or characteristics are primarily or exclusively due to that geographical environment's inherent natural and human factors" (EU Regulation 510/2006). Contrarily, agricultural goods and foodstuffs that are strongly connected to a particular geographic region are those that have the Protected Geographical Indication (PGI) label. In the region, at least one stage of production, processing, or preparation takes place (EU Regulation 510/2006). Third, the Traditional Specialty Guaranteed (TSG) label signifies "food that recognizes tradition but is not linked to any particular region" (Ferrer-Pérez et al., 2020). The European Commission's study from 2020 states that PDOs and PGIs help to maintain the variety of native plants, promote tourism, and promote rural regeneration (Likoudis et al., 2015). The goal of European origin protection is to prevent misleading geographical source indications and to protect regionally anchored products and production methods from "reputation exploitation, imitation, and deception." (Chilla et al., 2021). The labeling scheme is recognized as a key foundation for sustainable rural development because of its capacity to provide significant additional value in less accessible and distant locations like oasis and mountainous regions (Arfini et al., 2019). Furthermore, PDO/PGI certification of specific area foodstuffs could offset the negative effects of globalization and possibly present a significant economic opportunity (especially in underdeveloped and remote areas), allowing for product differentiation according to different areas and thereby promoting the growth of these areas (Likoudis et al., 2015). A label is meant to aid consumers in distinguishing the food from other goods that are similar to it and assist them make better decisions based on their preferences (Vecchio & Annunziata, 2011).

Autochthonous cheeses are milk products are created in a certain geographical region as a result of the long-term development of traditional production (Ostojić & Topisirović, 2006; Savić & Đurić, 2008). Each of these cheeses has a rich history and represents a potential lever for engaging local human and material resources and improving lives in the communities where they are produced (Užar et al., 2019). Consumers in our country are aware of the importance of nutrition and its impact on health, so new demands are increasingly being created for products with added value, among which cheese plays an important role (Popović et al., 2017). The importance of the production of cheeses with a geographical indication is also reflected in their contribution to developed countries. Customers who buy Parmigiano Reggiano PDO cheese from a nearby dairy store support advantageous externalities at the local level, such as the maintenance of local agriculture and, consequently, the stabilization of nearby rural towns (Mancini et al., 2019). The case of PDO Comté cheese in France illustrates how a PDO certification can generate public recognition of a product's quality, enabling rural producers' incomes to increase and contribute to rural development (Gerz & Dupont, 2006).

Studies examining the variables influencing consumer intention regarding food with GIs are rare in Serbia, since there is no tradition of utilizing EU quality labels, despite the growing professional interest in and literature on consumer preferences for EU quality labels. Therefore, the goal of the current study was to find out what influences Serbian customers' decision to purchase cheeses with GIs. Promoting specially labeled agri-foodstuffs requires an understanding of the key variables that affect consumers' purchasing decisions for GI cheeses (Likoudis et al., 2015). The primary goal of the current study was to determine how customer traits, attributes, and knowledge affected their desire to buy cheeses with GI. By offering a methodology to evaluate the effects of customers' perceptions and characteristics on purchasing intention of GI products, this article adds to the collection of existing marketing literature on consumer research.

The first section of this article provides a brief summary of the literature that has already been addressed about the key variables affecting consumer behavior with regard to GI goods. The second section describes the process for acquiring data and consumer recruitment, as well as the logistic regression that was used. The key findings are presented and discussed in the third section, and the main implications and limitations of our study are discussed in the conclusion.

Literature review

Previous research has focused primarily on the impact of intrinsic characteristics on consumer acceptance. Consumers' desire to buy and readiness to pay for the protected PDO/PGI product are significantly influenced by their interest in the origin of foods, how well the product is marked with a PDO/PGI label, and their perception that a PDO/PGI label indicates higher quality (Van Der Lans et al., 2001). Studies confirm that consumers are interested in the specific location, techniques used for production, ingredients used, processing methods and individual sensory characteristics of the product (de-Magistris & Lopéz-Galán, 2016; Dias & Mendes, 2018). In their 2005 survey of Spanish cheese buyers, Tendero and Bernabeu came to the conclusion that in order to ensure quality and safety, the place of origin is more significant than other factors (such as the type of cheese). Among Italian consumers, results demonstrated that Italian origin was one of the most important factors most highly rated by the respondents (Vecchio & Annunziata, 2011). Additionally, research by Teuber (2011) shows that consumers who value the origin of products are most often ready to support the local economy and purchase GI products.

Previous research have paid a lot of attention to the impact of consumer acceptance of intrinsic traits. According to Teuber (2011), the perceived higher quality of PDO/PGI products compared to unprotected products is the most important element that affects their success in the market. The results obtained within the study of Fandos and Flavian, (2006) revealed that the perceived quality associated with the internal attributes of a traditional food product (taste, flavor, texture, naturality, etc.) clearly has a positive and significant impact on consumer purchase intentions. Consumers perceive local foods to be fresher in terms of food quality because they are grown close to

consumers and distributed over a shorter transport distance (Arsil et al., 2014) which represents a significant determinant of quality.

In marketing literature, functional characteristics were found to be determinants of actual purchase in the cheese sector (de Souza Monteiro & Lucas, 2001). Tregear and Ness (2005) indicate that extrinsic (environmental impact, welfare and origin) and functional characteristics of food (price, appearance, packaging) are important determinants in consumers' consideration of purchasing GI food. Respondents also choose to consume traditional products because they find functional characteristics linked to the appearance and brand (Pieniak et al., 2009). Consumers who attach importance to packaging and labels are more inclined to better evaluate the benefits of the product. Previous research on packaging characteristics (Becker et al., 2011) revealed that visual design parameters such as the color and shape of the packaging affect consumer perceptions and expectations.

In more recent research, consumer perception studies specifically investigated whether cheese has any positive health effects (Vujanić et al., 2021; Di Vita et al., 2021). An analysis conducted in a study by Voinea et al., (2020) revealed that the attributes "healthy" and "convenience" are the main characteristics of traditional foods that guide the consumption decision of respondents. De Magistris and López-Galan (2016) point out that motives related to personal health, well-being, and quality of life, including "naturalness" in production, as well as a particularly observed absence of agrochemical use influence consumers' willingness to pay a higher price for cheese. This data results in the fact that consumers are primarily interested in their own health and that it represents the main motive for consuming food prepared from traditional ingredients according to a traditional recipe.

It is commonly known that consumer product knowledge has a significant impact on how they behave as buyers (Likoudis et al., 2015). The level of product knowledge is a significant factor influencing the level of information searches (Pillai & Hofacker, 2007). Despite the fact that PDO/PGI products are more prevalent and easily accessible to consumers now than ever before, there is evidence that consumers lack clarity and awareness regarding their definition and attributes. Previous literature shows there are also indications that Greek consumers lack of information about certified product labels, which seems to influence their lower purchasing intentions (Fotopoulos & Krystallis, 2003). More specifically, in a study by Aprile et al., (2008) consumers were not always able to identify the products with the European designation of origin and the ones without, although the products fall within the regular purchase and consumption choices. Additionally, Stojanovic et al. (2013) discovered that consumers' frequency of consumption of traditional foods was positively influenced by their level of knowledge.

A qualitative method revealed the relationship between cheese consumption and a few socioeconomic factors, including gender, age, education level, family size, and income. In instance, a higher income and older age cohort are positively connected with cheese intake (Fotopoulus & Krystallis, 2003). According to Goudis and Skuras (2020) as the

educational level of the respondent increases, the odds that the consumer is PDO logo aware increase significantly, therefore and their intention to purchase PDO labeled food. In the line with this study, Grunert and Aachmann (2016) examine studies that show that consumers of average or older age prefer PDO-labeled products. The importance of education as a consumer characteristic also indicated that highly educated respondents tend to buy locally produced food (Skubic et al., 2018). In addition, the findings of Stojanovic et al. (2013) discovered that consumers with higher income levels purchase more labeled food. A higher WTP for PDO cheese is favorably connected with female gender, high wealth, and education levels, according to de-Magistris & Lopéz-Galán (2016). Additionally, earlier research suggested that consumers' household sizes were important sociodemographic factors that affected their acceptance of traditional foods. For instance, Goudis and Skuras (2020) discovered that households with smaller sizes were more likely to purchase functional foods than those with bigger sizes.

The purpose of this study was to investigate into the factors that contribute to Serbian consumers' intention to purchase GI cheeses. Understanding the primary elements influencing customers' purchasing intentions for GI cheeses is a critical step toward promoting special labelled agri-foodstuffs.

Methodology

In order to identify the key factors influencing the consumption of GI cheese, a convenience sample of consumers in Serbia was used in the survey. Despite the fact that the study's representativeness is limited by the use of this non-probabilistic sampling approach, it was decided to utilize it nonetheless due to the validity of the data, which is supported by the frequent usage of this sampling technique for consumer surveys (Di Vita et al., 2021).

A number of sections made up the questionnaire. The demographic details of the sample, including gender, age, education level, annual family income, and the number of household members, were included in the first part. On a 5-point Likert scale (1-5 not at all important, 2-5 low important, 3-5 moderately important, 4-5 very important, 5-5 extremely important), respondents were also asked to rate the significance of various selection criteria (factors) that they considered when making a purchasing decision, such as taste, flavor, color, price, appearance, packaging, brand name, origin, health, nutritional value, traditional production, freshness, and manufacturer knowledge. Consumers' knowledge was measured on several statements (Label is a quality guarantee; label is a guarantee of tradition and method of production, the label is a guarantee of the country of origin, the label is a guarantee of the place of production) on a 5-point Likert scale (1-I totally disagree, 5-I totally agree). Finally, the intention to buy GI products was directly assessed by the following statement: "I intend to purchase GI cheeses in the next 6 months" (1-I totally disagree, 5-I totally agree).

Twenty people participated in a pilot survey to test the questionnaire, which was then verified. We gathered a total of 806 completed questionnaires at the conclusion of

the interviews before we processed the data. Table 1 reports the socio-demographic characteristics of the sample. The majority of respondents (18.5%) are aged 25 to 34, and the gender distribution shows a somewhat higher frequency of females (60.3%) than males (39.1%) and respondents who are unable to self-identify (0.6%). Additionally, the "Four Years High School Diploma" (37.6%) is the most prevalent educational level, followed by the graduate level (33.5%). Additionally, we noted that "766-1020 €" (20.1%) is the monthly salary range with the highest prevalence. About 49.3% of survey participants live in households with three or more people.

Table 1. The structure of the sample

		%			%
Gender	Female	60.3	*Household size*	1 - 2	28.5
	Male	39.1		3 - 4	49.3
	I cannot identify myself	0.6		5 or more	22.2
Age	18-24 years	10.3	*Income (EUR)*	< 255	8.2
	25-34 years	18.5		256-425	17.7
	35-44 years	18.4		426-595	15.8
	45-55 years	21.5		596-765	18.7
	56-65 years	13.8		766-1020	20.1
	Over > 65 years	17.6		> 1021	19.5
Level of education	Unfinished primary school	1.1			
	Primary school	4.2			
	Three years high-school diploma	7.1			
	Four years high-school diploma	37.6			
	Bachelor's degree or equivalent level	33.5			
	Master, Postgraduate, or doctoral degree	16.5			
Note: n=806					

Source: Authors' calculation

Data were analyzed using descriptive statistics. Exploratory Factor Analysis (EFA), which identifies the underlying latent components derived from observed variables, was performed to explore the structure of our data utilizing 18 attributes. Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy were also employed to check for deviations from statistical presumptions. Both of these methods determine whether the dataset of interest contains enough big associations to execute EFA. Value KMO measure of sampling adequacy higher of 0.60 and insignificant Bartlett's test it is an indicator that latent factors may be present and EFA may be performed (Dziuban & Shirkey, 1974). The internal consistency of each of the factors within the scale was assessed using Cronbach's coefficient alpha. All yielded suitable answers over the 0.70 level advised by author DeVellis and & Thorpe (2021).

In order to determine the key variables that are linked to respondents' intentions to purchase cheese with geographic indications, binary logistic regression analysis was lastly carried out. The dependent variable is a latent variable that has a value of one (1) when a respondent plans to buy GI cheeses and null (0) in all other circumstances (Likoudis et

al., 2015). Independent variables included in the regression were factors obtained from EFA and socio-demographic characteristics: gender, age, level of education, household size and income. The sum of the following four binary variables was used to create a quantitative variable that represented the respondent's geographic knowledge of cheese: (Label is quality guarantee; label is guarantee of tradition and method of production, label is guarantee of country of origin, label is guarantee of place of production). Factors obtained from EFA and a quantitative variable were set as continuous variables, and socio-demographic characteristics were set as categorical variables. The goodness of fit of the logit model was assessed by Omnibus test of model coefficients and Hosmer and Lemeshow Test. Probability was calculated as ExpB/(ExpB+1). Reference category for gender - I don't want to make a statement; for age - over 65y; for education - finished Master, Postgraduate, or doctoral studies; for household size - over 5 members; for income - over 1022 EUR. Data were analyzed using the Statistical Package for the Social Sciences (IBM SPSS Statistics 21.0) software.

Results and discussion

Prior to estimating the binary logit model, an explorative factor analysis (EFA) was used to reduce the numerous variables into a small number of independent factors that could be included in the model. A four-factor solution was developed, with the five components explaining 58.45% of the overall variance. The factor model had a Kaiser-Meyer-Olkin Measure verify the sampling adequacy, with KMO = 0.895, which is above the acceptable limit. Bartlett's Test of Sphericity Approx. ChiSquare = 6776.615, p = 0.000, indicated that correlations between the items were sufficiently large. The variables with the highest factor loadings aided in the recognition and determination of the identity of the key factors. Table 2 explains the obtained four factors.

Table 2. Factor analysis on factors associated with respondents' purchasing intent

Factor (Cronbach α)	Factor interpretation (% variance explained)	Loading	Items
Tradition and origin	38.81%	,976	Region of origin
		,921	Country of origin
		,737	Geographical Indication
		,668	Knowledge of the producer
		,592	Traditional production
		,470	Brand's name
Intrinsic characteristics	10.45%	,893	Flavor
		,829	Quality
		,622	Freshness
		,587	Odor
Functional characteristics	5.52%	,731	Appearance
		,690	Color
		,562	Exterior appearance and packaging

Factor (Cronbach α)	Factor interpretation (% variance explained)	Loading	Items
Healthy and wholesome	3.66%	,855	Nutrition value
		,537	Naturality
		,534	Dairy fat content

Source: Authors' calculation

In order to evaluate the influence of personal characteristics, attributes and knowledge on the intention to purchase GI cheeses, the measurement model was evaluated by checking the overall model fit. The significance value of less than 0.05 for Omnibus Tests of Model Coefficients indicates that the current model outperforms the null model. Hosmer and Lemeshow Test goodness-of-fit test was not significant (p=0.908), which suggests a well-fitting model (table 3).

Table 3. Model goodness of fit

Cox & Snell R Square	Nagelkerke R Square	Hosmer and Lemeshow Test			Omnibus Tests of Model Coefficients		
		Chi-square	df.	Sig.	Chi-square	df.	Sig.
,116	,210	3,382	8	,908	99,746	26	,000

Source: Authors' calculation

In terms of consumer intentions, around 48.3% of the respondents said they planned to purchase GI cheeses in the upcoming six months. According to the results of binary logistic regression (Table 4), Tradition and Origin, Education, and knowledge significantly influenced consumers' intention to purchase GI cheese. In the survey, GI cheeses were more likely to be purchased by respondents who valued tradition and origin in their purchasing decisions. With every unit increase of implementation of this factor in promoting GI foods, the probability of consumers' intention to buy GI cheese increases by 63.35%, respectively. Our findings indicate that similar to other studies (Likoudis et al., 2016), the participants were more likely to consume PDO/PGI certified products if there were associated with origin and labeling and studies of Verbeke et al., (2012) who that traditions with origin played a significant part in how European consumers perceived and used EU labeling. Consumer ethnocentrism, or the preference for domestic over imported goods, may be used to explain why people generally prefer food products from their own nation or region. It is also important to note that, Serbian participants were aware that GI cheeses were of better quality compared with the conventional ones and guaranteed traditional production methods and country of origin.

Regarding socio-demographic characteristics, only education has a statistically significant influence on purchase intention. Consumers' intention to buy GI cheese differs statistically between those who didn't finish elementary school and those who finished their Master's, Postgraduate, or doctoral studies. The likelihood that a respondent will buy GI cheese considerably rises as their level of education does.

Probability of consumers' intention to buy cheese decreased by 9.31% for those who didn't finish elementary school compared with those with master's, postgraduate or doctoral degrees. In order to effectively search for, find, and retrieve information as well as perceive and comprehend knowledge, a consumer's level of education is essential (Goudis & Skuras, 2020). This result is in line with previous studies where socio-economic groups with a higher level of education scored better knowledge about nutrition and traditional products compared to socio-economic groups with a lower level of education (Sanchez-Villegas et al., 2003; Bogue et al., 2005).

In contrast to what was discovered in other studies on the consumption of common cheese (de-Magistris & Lopéz-Galán, 2016; Skubic et al., 2018), the other covariates related to socio-demographic characteristics—gender, age, income, and household size—do not seem to have a significant impact on consumers' GI attitudes. In this regard, Likoudis et al. (2016) used a logit model to evaluate Greek customers' propensity to purchase PDO products and discovered no correlation between willingness to purchase and socio-demographic traits. As a result, it appears that socio-demographic characteristics only partially explain customers' intent to purchase GI products.

Table 4. Results of binary logistic regression on intentions to buy GI cheeses

	B	S.E.	Wald	df	Sig.	Exp(B)	Probability
Tradition and origin	,547	,163	11,287	1	,001	1,728	63,35%
Intrinsic qualities	,080	,149	,290	1	,590	1,084	52,01%
Functional qualities	-,053	,172	,096	1	,757	,948	48,67%
Healthy and wholesome	-,264	,197	1,799	1	,180	,768	43,43%
Gender			2,343	2	,310		
Gender (man)	1,102	1,064	1,073	1	,300	3,011	75,07%
Gender (women)	1,333	1,060	1,581	1	,209	3,791	79,13%
Age			6,675	5	,246		
Age (18-24)	,230	,423	,295	1	,587	1,258	55,72%
Age (25-34)	,451	,380	1,403	1	,236	1,569	61,08%
Age (35-44)	,880	,404	4,748	1	,029	2,410	70,68%
Age (45-54)	,627	,369	2,886	1	,089	1,872	65,19%
Age (55-64)	,680	,411	2,736	1	,098	1,974	66,38%
Education			12,084	5	,034		
Education (unfinished elementary school)	-2,277	,855	7,087	1	,008	,103	9,31%
Education (finished elementary school)	-,236	,607	,151	1	,698	,790	44,14%
Education (finished 3y high school)	,242	,574	,177	1	,674	1,273	56,01%
Education (finished 4y high school)	-,107	,397	,072	1	,788	,899	47,34%

	B	S.E.	Wald	df	Sig.	Exp(B)	Probability
Education (finished college)	,398	,391	1,038	1	,308	1,489	59,82%
Household size			7,657	4	,105		
Household size (1 member)	1,096	,521	4,430	1	,035	2,994	74,96%
Household size (2 members)	-,223	,352	,402	1	,526	,800	44,44%
Household size (3 members)	,067	,357	,035	1	,852	1,069	51,67%
Household size (4 members)	-,178	,315	,320	1	,572	,837	45,56%
Income (EUR)			5,056	5	,409		
Income (255)	-,692	,447	2,396	1	,122	,501	33,37%
Income (256-426)	-,146	,393	,138	1	,711	,864	46,36%
Income (427-596)	,071	,412	,030	1	,862	1,074	51,79%
Income (597-767)	,277	,398	,483	1	,487	1,319	56,88%
Income (768-1022)	,059	,382	,024	1	,877	1,061	51,47%
Score_Knowledge	,489	,095	26,433	1	,000	1,630	61,98%
Constant	-1,486	1,214	1,498	1	,221	,226	

Source: Authors' calculation

Respondents who were knowledgeable of geographical indications and their benefits scored higher on the intention to buy GI cheeses. In this study, product knowledge clearly has a favorable impact on consumers' intentions to buy. The odds ratio indicates that with every unit increase in consumers' knowledge, the probability of consumers' intention to buy GI cheese increases by 61.98%. The study's findings are consistent with earlier research, which shows that product awareness positively influences consumers' intentions to buy PDO cheese (Cacciolatti et al., 2015).

Conclusion

This paper presents the preliminary results of a study on which factors attach importance to purchasing intention of GI cheeses. Tradition and origin, education, and knowledge were found to be strongly connected in the current study with Serbian consumers' intention to purchase GI cheeses. A crucial first step in promoting labeled agri-food products and supporting local sustainable development may be to recognize the key variables that impact consumers' purchasing intentions toward GI products.

In assessing the effect of certain specific personal characteristics, purchasing attributes and knowledge, the article has generated insights for producers and managers. Tradition and origin are the only factors influencing consumers' intention to buy cheeses with GI. It has been shown that consumers who place a high value on product quality perceive product origin as a significant quality determinant and a way to support local or regional (small) producers. Producers, in particular, should identify their products by labeling them with geographical indications, emphasizing the link between both the origin and the territory as a whole. Because this variable may significantly improve the likelihood

of purchase, the empirical setting of this study has brought attention to the significance of measuring the perceived origin image when building a marketing plan. It is essential that the schemes and standards are transparent enough to allow consumers to understand what they are purchasing. This suggests that producers should clearly highlight these attribute(s) adding value to the product and present their products, including their benefits and distinguishing characteristics. The product may appear to have a higher value to consumers as a result. The study shows that customers' prior product knowledge has a significant impact on their purchasing decisions for traditional cuisine. As a result, it is critical to provide appropriate and trustworthy information about GI in order to increase market demand, as such information may increase consumers' knowledge and attitudes toward GI cheeses. Also, the findings of this study suggest that the promotion of specialty foods should incorporate all of these factors.

By presenting the data of factors influencing customers' propensity to buy GI cheeses, this study makes a contribution to the existing literatures. However, this study has several drawbacks, like all empirical investigations. First, more analysis on comparable products from these and other categories should be done. Second, in further research, it is necessary to look at the statistically significant influence of mentioned factors on the actual purchase of products with GIs. Third, this study effectively lays the foundation for future research based on a larger and cross-national sample that can help to delve deeper into these initial findings, despite the use of a convenience sample representing a constraint and suggesting extending the considerations to a wider population with carefulness. Finally, given the substantial growth of GIs in agricultural landscapes, academic emphasis should be directed to examining the actions of farmers in the GI process since they should be leading the labeling initiative.

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Conflict of interests

The authors declare no conflict of interest.

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