

## Dubravka Užar, Jelena Filipović: CONSUMERS' PREFERENCES TOWARDS CHEESE ATTRIBUTES IN SERBIA: CONJOINT ANALYSIS

### PREFERENCIJE POTROŠAČA PREMA ATRIBUTIMA SIRA U SRBIJI: KONDŽOINT ANALIZA

Dubravka Užar<sup>9</sup>, Jelena Filipović<sup>10</sup>

**Abstract.** When considering GI cheeses, the research of consumer preferences, motivations, and attitudes is of essential importance for marketing strategy definitions. This study investigates the relative importance that geographical indications (Protected Designation of Origin and Protected Geographical Indications) associated with extrinsic (packaging, availability, and price) characteristics of cheeses have in consumer preferences. Conjoint analysis as an adequate tool to determine the attributes of cheeses and their combinations, which affect the consumers preferences was applied. The ideal cheese profile for the overall consumers was with a geographical indication, purchased in a delicatessen shop, packed in a plastic box or bag at a price of 5.12 euros per kg. The results of our research provide food companies helpful data for better market segmentation, consumer targeting, and effective product promotion through origin labeling.

**Keywords:** Conjoint analysis, cheeses with GIs, positioning

**JEL Classification:** M31, Q10, C30

**Apstrakt:** U pogledu sireva sa oznakom geografskog porekla, za definisanje marketinške strategije od suštinskog značaja jeste istraživanje potrošačkih preferencija, motivacija i stavova. Ovaj rad istražuje relativni značaj koji geografske oznake (Zaštićeno ime porekla i Zaštićena geografska oznaka) povezane sa ekstrinzičnim (pakovanje, dostupnost i cena) karakteristikama sireva imaju u preferencijama potrošača. Primenjena je kondžoint analiza kao adekvatan alat za određivanje atributa sireva i njihovih kombinacija koji utiču na preferencije potrošača. Idealan profil sira prema preferencijama potrošača jeste sa oznakom geografskog porekla, kupljen u delicatessen prodavnici, upakovan u plastičnu kutiju ili kesu po ceni od 5,12 evra/kg. Rezultati našeg istraživanja pružaju korisne podatke prehrambenim kompanijama za bolju segmentaciju tržišta, targetiranje potrošača i efektivnu promociju proizvoda putem označavanja porekla.

**Ključne reči:** Kondžoint analiza, sirevi sa oznakom geografskog porekla, pozicioniranje

**JEL klasifikacija:** primer: M31, Q10, C30

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<sup>9</sup>Independent researcher, [dubravkauzar@gmail.com](mailto:dubravkauzar@gmail.com)

<sup>10</sup>Faculty of Economics and Business, University of Belgrade, Belgrade, Republic of Serbia, [jelena.filipovic@ekof.bg.ac.rs](mailto:jelena.filipovic@ekof.bg.ac.rs)

## 1. Introduction

In recent years, food products increasingly differentiate through information and certifications related to production practices and production locations (Onozaka & McFadden, 2011; Mattas et al., 2019; Dogan & Adanacioglu, 2021). Therefore, consumers have become more interested in higher quality products made with environmentally friendly production processes that prevent health issues (Gracia & de-Magistris, 2016), and generally foods produced by traditional methods, which makes them especially relevant for marketing research and practice (Silvestri et al., 2020).

The PDO (Protected designation of origin) and PGI (Protected geographical indications) labels were created as quality indicators to reduce asymmetry in information and consumer uncertainty about desirable product characteristics when making food purchases (Palmieri et al., 2021). Simultaneously, the consumer is assured that a product complies with EU Regulation 2801/92 (Council Regulation, 1992), which describes the techniques of production, processing, and standardization utilized. The annual average consumption amount of cheeses in the EU was 20.4 kg per capita and 14.98 kg per capita in Serbia and both of them have a growing tendency. Traditional products protected by geographical indications for Serbia provide an important potential for the country's economy when considering the local product richness. However, there is virtually inexistence of Serbian GI cheeses on the EU level, which is caused by the limited understanding of consumer preferences and market potential.

The overarching aim of this paper is to help bridging that gap and provide insights on how to better market Serbian GI cheeses in the European market and achieve better results for the national agricultural sector. By performing a conjoint analysis, we seek to quantify consumers' attribute preferences and thereby contribute to the literature on GI products, which have gained scant consideration from marketing researchers. This study provides some insight into Serbian consumer preferences by comparing specific attributes, particularly origin, prices, packaging, and availability. Our paper offers twofold contributions to the existing literature. In a theoretical sense, this study is one of the pioneers in the application of conjoint analyses in the investigation of consumer preferences for GI labels on cheeses in Serbia. From a managerial perspective, this study enhances the wisdom of producers, stakeholders, SMEs, and start-ups in the cheese sector on the pivotal product attributes in order to determine the best positioning and marketing strategy for their products in order to enable them to survive and stay competitive in the market.

## 2. Literature review

Consumer preferences towards various food labels have been widely investigated for numerous food products over the last decade. When choosing a food to purchase, consumers are influenced by their perceptions of the intrinsic and extrinsic characteristics of products (Lee et al., 2019). Several researchers have emphasized the significance of defining the relevance of the various types of information in order to identify the key attributes that influence consumer attitudes and define the relative importance of these elements in order to increase their demands for cheese and other GI products.

In the agri-food industry, geographical origin certifications have often been examined as the predictors of consumer's choices and preferences. Due to their special characteristics and quality, traditional food and food with GI are usually have higher prices than food produced using traditional production methods. Price may be seen as a quality cue by consumers; that is, the higher the price, the higher the perceived quality. At the same time, consumers who are familiar with the region to which the certified products refer are more optimistic about the products labelled with GIs, and hence more willing to pay even a price premium (Balogh et al., 2016). According to Erraach et al. (2014), the attributes that most influence consumers' preferences are price and origin labelling (PDO label). In the research by

Skubic et al. (2018), conducted in Slovenia, the price for respondents is the most important criterion when choosing and buying cheese.

Moreover, several studies have been conducted to assess consumer preference for cheeses and other GI products based on origin, method of production, and processing. In Portugal, Monteiro and Lucas (2001) showed that consumers display a strong preference for PDO as the most essential attribute for traditional cheese choice, followed by price, texture, and unit of sale. In a study performed in Spain, Bernabéu et al. (2008) discovered that the main distinguishing feature of cheese was its origin, followed by the cheese type, price, and production system (organic). In Italy, Garavaglia and Marcoz (2014), studying the value of PDO certification of Fontina cheese, found that the PDO certification has substantial importance on consumer purchasing decisions. Finally, Garavaglia and Mariani (2017) investigated consumers' preferences for cured ham in Spain, where the most important attribute is the presence of PDO certification (extrinsic cue), followed by taste (intrinsic cue). These studies in general showed that the origin and GI labels are the most important attributes.

The availability of food is another important factor that influences food choices. The majority of the consumption of GI products is focused on the environment where the product is manufactured. The further away the region, the less informed or accustomed the consumer is to the product (Bonetti, 2004) and the less aware of the intrinsic value of the concept of the origin label. It is precisely this inability to access the market and the lack of market information that leads to less demand for these products. Consumers who live in the same area as the GI food's production have a bigger preference for the origin of the producers, perceiving that the location of production itself delivers higher-quality food (Garavaglia & Marcoz, 2014).

Finally, studies on consumer preference for the packaging attributes of cheese are scarce. Packaging is one of the most important factors influencing sales and product identity. Amblard et al. (2013) revealed that packaging is not a very important attribute, but surprisingly, prepacked fresh cow cheese is preferred by consumers. Additionally, Murphy et al. (2004) demonstrated that packaging was felt to be the most important product attribute for cheese consumers in Ireland, followed by flavor, price, color, nutritional information, pasteurization, and texture.

Based on this literature review, we conclude that the influence of extrinsic characteristics on consumer preference varies among products and countries. It is observable from the review, that despite the fact that previous body of pertinent literature covers different European countries, there is severe paucity of research on the impact of cheese attributes on consumer preferences for countries from outside the EU.

### **3. Methodology**

#### **3.1. Sample and data collection**

The research is conducted in Serbia throughout the period of two months. Utilizing the proportional sampling method, a number of households as the size of the population with a 99% confidence interval and 10% error margin, a minimum sample size was determined. In order to avoid under or over-representation of certain consumer profiles, stratified random sampling was used with proportional allocation relative to age, gender, and education. A self-administered structured online survey with 130 consumers was conducted. The number of responses exceeded the minimum (100-200) advised by Quester and Smart (1998) for obtaining reliable results from conjoint analysis (Resano et al., 2012). The study addressed cheese consumers aged 18 and above who were responsible for purchasing or making food purchase decisions in their households. Their characteristics are provided in Table 1.

Table 1. Demographic information of respondents participating in the conjoint analysis

Variable	Description	Percent (%)	Variable	Description	Percent (%)
Gender	Female	58.5	Average household size	1 - 2	42.0
	Male	41.5		3 - 4	42.0
Age	18-24	13.1		5 or more	16.0
	25-34	33.1	Monthly income (€)	Up to 255	10.0
	35-44	16.9		256 - 427	15.4
	45-54	13.8		428 - 597	20.0
	55-64	16.9		598 - 768	19.2
	> 65 and over	6.2		769 - 1024	16.2
Level of education	Primary school	4.6	More than 1025	19.2	
	High school degree	50.0			
	Bachelor degree	33.1			
	Post-graduate degree	12.3			

Source: Authors' calculation

### 3.2. Conjoint Study Design

The primary objective of conjoint analysis is to predict consumer demands and discover the factors that drive subjects' responses toward their preferences for specific products or product concepts. The result of the conjoint analysis is the identification of the combination of the attributes that provide the greatest benefit to the consumer, as well as the determination of the relevance of the attributes in terms of contribution to the total utility (Murphy et al., 2004).

Based on a relevant literature review (De Monteiro & Lucas, 2001; Skubic et al., 2018; Murphy et al., 2004; Amblard et al., 2013; Imami et al., 2016; Van Loo et al., 2019), we adopted four attributes and their levels in the research: geographical origin (with or without label), packaging (sold loose or prepackaged), availability (Farmers' market, supermarket or delicatessen shop), and price (5.12 €/kg, 6.83 €/kg or 9.39 €/kg). A Linear Less relationship was formed for price because the utility or preference decreases as the price increases (Amblard et al., 2013). The remaining attributes were regarded as discrete variables.

A ranking-based conjoint analysis has been carried out. Between 36 possible profiles (2x2x3x3), an orthogonal design of experiments was obtained using SPSS version 21 statistical program and generated 9 profiles. Two holdouts were added to the orthogonal design to assess the predictive quality of the model. Each product profile was visually presented in the form of cards for the hypothetical cheese. Respondents were asked to rank 11 cards from the most to the least preferred one (Table 2). Besides the conjoint survey, the questionnaire included some sociodemographic questions, too.

Table 2. Hypothetical card combinations are shown to consumers according to orthogonal design

Combination	Label	Packaging	Availability	Price (€/kg)
1	No label	Sold loose (on desired weight)	Supermarket	6.83
2	No label	Prepackaged	Farmers' market	9.39
3	No label	Sold loose (on desired weight)	Delicatessen shop	5.12
4	With label	Sold loose (on desired weight)	Delicatessen shop	9.39
5	With label	Sold loose (on desired weight)	Farmers' market	5.12
6	With label	Sold loose (on desired weight)	Farmers' market	6.83
7	With label	Prepackaged	Delicatessen shop	6.83
8	With label	Prepackaged	Supermarket	5.12
9	With label	Sold loose (on desired weight)	Supermarket	9.39
10a	With label	Prepackaged	Farmers' market	6.83
11a	No label	Prepackaged	Farmers' market	6.83

Note: a. Holdout

Source: Authors' calculation

The validity of the conjoint analysis model was determined using Pearson's R and Kendall's tau association values.

#### 4. Results and discussion

The aggregate preference model is depicted in Table 3, including both the relative importance and the part-worth utility scores for each level of each attribute. Analyzing results with reference to the relative importance of each attribute, it was determined that consumers consider “price” as the most important attribute in selecting GI cheeses, with a relative importance of 35%. Of slightly less importance at the aggregate level is availability (29.64%), followed by geographical indication (20.37%) with an average importance of 15%, whereas packaging was the least important attribute at the aggregate level.

Table 3. The part-worths of attributes levels and the relative importance of attributes

Attributes and levels		Part-worth utilities	Std. error	Relative importance (%)
Label	With label	0.463	0.070	20.37
	No label	-0.463	0.070	
Availability	Open market	-0.154	0.093	29.64
	Supermarket	-0.046	0.093	
	Delicatessen shop	0.200	0.093	
Packaging	Sold loose (on desired weight)	0.181	0.070	14.99
	Prepackaged (already sealed in a plastic bag or box)	-0.181	0.070	
Price (€ per kg)	5.12	0.403	0.093	35.00
	6.83	0.290	0.093	
	9.39	-0.692	0.093	
(Constant)		4.906	0.074	

Source: Authors' calculation

The third level of attribute, “price”, 9.39 €/kg, has negative values of part-worth, indicating that it decreases consumers’ total preferences. Specifically, with regard to the price attribute, respondents prefer the cheapest cheese (5.12 €/kg), and this price level increased the consumers’ total preferences. This shows that, overall, 130 consumers were sensitive to price. The main role of price was also indicated by Erraach et al. (2014), who found that price was the factor most influential on consumers’ preferences towards olive oil in Spain. Also, De Monteiro & Lucas (2001) highlighted price as an important attribute of cheese selection in Lisbon. Price is an important factor, especially for consumers with small incomes. Given the low purchasing power of Serbian consumers and that they are consequently used to purchasing relatively affordable food items, their unwillingness to spend a lot of money on daily products is the expected result.

Regarding “availability” utility levels, consumers expressed their preference for the delicatessen shop, having a positive part-worth (0.200), while the other two levels (farmers’ market and supermarkets) had negative part-worth values and decreased total preferences. Our results support the finding of Colonna et al. (2011) that consumers most frequently selected specialized food grocery stores for their GI product purchases. Furthermore, Murphy et al. (2004) revealed that Irish farmhouse cheese customers who bought cheese from a speciality cheese shop were less price-sensitive than those who bought cheese from a supermarket. Hence, respondents prefer to purchase cheese from supermarkets and specialist stores since they have a larger assortment and better hygienic storage conditions in comparison with the farmers’ markets. The respondents show the least tendency to

choose farmers' markets, taking into account the perception of the credibility and quality of the cheese itself sold in these places.

Within the "label" attribute levels, the GI label on cheeses had the higher part-worth (0.463) and was valued more than the absence of any information (not indicated label). Our analysis strongly supports the idea that GI certification is an attribute that positively affects consumer preferences relative to cheese purchasing. PDO and PGI label certification has a positive effect on customer preferences, demonstrating that consumers regard labels as important information from which they can infer internal product attributes that cannot be observed directly from external cues (Garavaglia & Marcoz, 2014). The positive impact of the geographical origin label on consumer preferences is supported by the empirical literature on different countries and food products (Tendero & Bernabeu, 2005; Garavaglia & Marcoz, 2014; Skubic et al., 2018; Van Loo et al., 2019).

Finally, cheese packed in a plastic box or bag was preferred over sold loose packaging, in which part-worths were negative (-0.181). This may be explained by the fact that consumers use to buy it at a delicatessen shop and maybe because this packaging is more convenient. The obtained result is in line with previous studies that indicated the high level of consumer concern about packaging used in food commercialization (Murphy et al., 2004; Amblard et al., 2013; Speight et al., 2019). Therefore, Giraud et al. (2013) emphasized the necessity of aligning cheese packaging with GIs in accordance with consumer preferences regarding industrial packaging in boxes or plastic bags.

The ideal cheese profile for the overall consumers was with a geographical indication, purchased in a delicatessen shop, packed in a plastic box or bag at a price of 5.12 € per kg. The resulting model is consistent for both the prediction and the inference purposes since Pearson's R parameter had a value of 0.991 ( $p = 0.000$ ) and Kendall's Tau is 0.833 ( $p = 0.001$ ). The Kendall coefficient for two holdout profiles has a value of 1.000, which is an additional indicator of the high quality of the obtained data.

#### **4. Conclusions**

This study stems from the notion that consumers have placed significant importance on the authenticity and origin of food products recently, while these relations have not been sufficiently investigated. Given the scarcity of studies on consumer preferences for geographical labels in developing regions, the purpose of this study was to enhance the knowledge of cheese attributes as predictors of purchase intentions in a specific area. Furthermore, we confirm the appropriateness of utilizing conjoint analysis for GI products in developing countries. Examination of the relative importance of the various attributes indicated that price is the most powerful driver of consumers' preferences and the packaging is the least preferable cheese attribute. The primary explanation is related to the low purchasing power of customers in developing countries. The second reason could be that consumers in developing countries are not entirely aware of the benefits of certification, hence price was discovered to be the essential attribute. The presence of GI certification conveys positive utility to consumers therefore it should be emphasized to encourage purchasing. Additionally, the logo for GI certification should be promoted in marketing campaigns to increase consumers' trust and deter them from purchasing mislabeled products.

From a managerial perspective, our results confirm the positive role of the GI certification scheme on consumers' utility. On the basis of preferred attributes using conjoint analysis, it is suggested that real or perceived product differentiation is necessary for origin labelling to have a credible interpretation in the national or international market. It is recommended that marketers carry out promotional activities and select appropriate channels of marketing communications in order to increase the communal awareness of GI-labelled products and their consumption. Given that cheese prices are important to customers, marketers can emphasize the benefits, affordability, and distinctive attributes of these products. Our results claim the need to strengthen the policy schemes toward

enhancing food quality and increasing the number of producers who will enter this sector. In order to encourage greater consumption of food with GIs, institutions and producers must guarantee the availability and variety of these food products. From an economic standpoint, GI labels can be a potential tool for cheese differentiation and the potential to convert this added value into economic income for cheese farmers and small local producers.

The research has some limitations, which should be overcome in future studies. Data was collected and preferences were measured via an online survey, which resulted in the limited selection and distribution of respondents. Further investigation could organize products tasting on the point of sale and then observe the purchase of actual cheese. Moreover, the model developed for this study focused on the evaluation of four main extrinsic attributes. Future research should consider also intrinsic attributes. Finally, the subject research focused on the preferences of consumers of Serbia only, while it could be beneficial to take into account and examine other European emerging markets in various national contexts.

## Literature

1. Amblard, C., Prugnard, E., Giraud, G., & Mora, C. (2013). Utilising Conjoint Analysis: Understanding Consumer Preferences for Traditional Food. In *Food Consumer Science*, Springer, Dordrecht, 107-125.
2. Balogh, P.; Békési, D.; Gorton, M.; Popp, J.; Lengyel, P. (2016). Consumer Willingness to Pay for Traditional Food Products. *Food Policy*, 61, 176–184.
3. Bernabéu, R., Olmeda, M., Díaz, M., & Olivas, R. (2008). Determination of the surcharge that consumers are willing to pay for an organic cheese in Spain 12th Congress of the European Association of Agricultural Economists. pp. 1-5
4. Bonetti, E. (2004). The effectiveness of meta-brands in the typical product industry: Mozzarella cheese. *British Food Journal*. Vol. 106 No. 10/11, pp. 746-766
5. Colonna, A., Durham, C., & Meunier-Goddik, L. (2011). Factors affecting consumers' preferences for and purchasing decisions regarding pasteurized and raw milk specialty cheeses. *Journal of Dairy Science*, 94(10), 5217-5226.
6. de Monteiro, D. M., & Lucas, M. R. V. (2001). Conjoint measurement of preferences for traditional cheeses in Lisbon. *British Food Journal*, 103(6), 414-424.
7. Dogan, N., & Adanacioglu, H. (2021). Consumers' willingness to pay for traditional products with geographical indication: a case study on pestil from Gümüşhane. *Turkey, Food Science and Technology*. 42.
8. Erraach, Y., Sayadi, S., Gomez, A. C., & Parra-Lopez, C. (2014). Consumer-stated preferences towards Protected Designation of Origin (PDO) labels in a traditional olive-oil-producing country: The case of Spain. *New Medit*, 13(4), 11-19.
9. Garavaglia, C., & Marcoz, E. M. (2014). Willingness to pay for PDO certification: an empirical investigation. *International Journal on Food System Dynamics*, 5(1), 11-22.
10. Garavaglia, C., & Mariani, P. (2017). How much do consumers value protected designation of origin certifications? Estimates of willingness to pay for PDO dry-cured ham in Italy. *Agribusiness*, 33(3), 403-423.
11. Giraud, G., Amblard, C., Thiel, E., Zaouche-Laniau, M., Stojanović, Ž., Pohar, J., ... & Barjolle, D. (2013). A cross-cultural segmentation of western Balkan consumers: focus on preferences toward traditional fresh cow cheese. *Journal of the Science of Food and Agriculture*, 93(14), 3464-3472.
12. Gracia, A. & de-Magistris, T. (2016). Consumer preferences for food labelling: What ranks first, *Food Control*, 61. 39–46.
13. Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C., (1995). *Conjoint Analysis*, in *Multivariate Data Analysis*, Prentice Hall, Englewood Cliffs NJ, 556- 599
14. Imami, D., Skreli, E., Zhllima, E., Canavari, M., Chan, C., & Cela, A. (2016). Analysis of consumers' preferences for typical local cheese in Albania applying conjoint analysis. *New Medit*, 15(3), 49-55.
15. Lee, D., Moon, J., & Ryu, M. H. (2019). The effects of extrinsic cues on online sales of fresh produce: a focus on geographical indications. *Cahiers Agricultures*, 28, 13.
16. Mattas, K., Baourakis, G., Tsakiridou, E., Hedoui, M. A., & Hosni, H. (2020). PDO olive oil products: a powerful tool for farmers and rural areas. *Journal of International Food & Agribusiness Marketing*, 32(4), 313-336.
17. Murphy, M., Cowan, C., Meehan, H., & O'Reilly, S. (2004). A conjoint analysis of Irish consumer preferences for farmhouse cheese. *British Food Journal*, Vol. 106 Issue: 4, pp.288-300.
18. Onozaka, Y., & McFadden, D. T. (2011). Does local labeling complement or compete with other sustainable labels? A conjoint analysis of direct and joint values for fresh produce claim. *American Journal of Agricultural Economics*, 93(3), 693-706.
19. Palmieri, N., Pesce, A., Verrascina, M., & Perito, M. A. (2021). Market Opportunities for Hay Milk: Factors Influencing Perceptions among Italian Consumers. *Animals*, 11, p.431.
20. Resano, H., Sanjuan, A. & Albisu, L. (2012). Consumer's response to the EU quality policy

- allowing heterogeneous preferences. *Food Policy*. Vol. 37 No. 4. pp. 355-365.
21. Silvestri, C., Aquilani, B., Piccarozzi, M., & Ruggieri, A. (2020). Consumer quality perception in traditional food: Parmigiano Reggiano cheese. *Journal of International Food & Agribusiness Marketing*, 32(2), 141- 167
  22. Skubic, M. K., Erjavec, K., & Klopčič, M. (2018). Consumer preferences regarding national and EU quality labels for cheese, ham and honey: The case of Slovenia. *British Food Journal.*, Vol. 120 Issue: 3, pp.650-664
  23. Speight, K. C., Schiano, A. N., Harwood, W. S., & Drake, M. A. (2019). Consumer insights on prepackaged Cheddar cheese shreds using focus groups, conjoint analysis, and qualitative multivariate analysis. *Journal of Dairy Science*, 102(8), 6971-6986.
  24. Steenkamp, J. B. E. (1997). Dynamics in consumer behavior with respect to agricultural and food products. In *Agricultural marketing and consumer behavior in a changing world* (pp. 143-188). Springer, Boston, MA.
  25. Tendero, A., Bernabéu, R., (2005). Preference structure for cheese consumers: a Spanish case study. *British Food Journal*, 107(2), 60-73
  26. Van Loo, E. J., Grebitus, C., Roosen, J. (2019). Explaining attention and choice for origin labeled cheese by means of consumer ethnocentrism. *Food Quality and Preference*, 78, 103716.
- Internet sources:
27. Council Regulation (EEC) No 2081/92 of 14 July 1992 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs, Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31992R2081> accessed: 5th January, 2023
  28. The Food and Agriculture Organization of the United Nations, Available at: <https://www.fao.org/3/i8737en/i8737en.pdf> accessed: 2nd January, 2023