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The roles of geographic indication and ethnocentrism in the preferences of Central European spirit consumers: The case of pálinka

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ABSTRACT

The purpose of this study is to examine consumer preferences towards a Central European alcoholic beverage possessing a Geographical Indication (GI), paying special attention to the role of ethnocentrism in decision-making. Pálinka is one of the best-known products in Hungary, and the regulation and perception of the product have undergone significant changes in recent years. A total of 1,000 Hungarian consumers, taken to be representative of the Hungarian alcohol consumer population, participated in the study using an online survey. A discrete choice model was applied, including a latent variable (ethnocentrism). Willingness to pay (WTP) calculations were also carried out for the product attributes examined. The presence of the most important identified product attributes (brand, GI, production method) indicated on the bottle all have a positive effect on consumer preferences; moreover, higher WTP also applies. As the level of ethnocentrism increases, the level of utility ascribed to the GI-labelled product also increases. The level of ethnocentrism is significantly higher among respondents over 60 and lower among those with higher education and who are urban. In previous literature, very little attention has been given to discrete choice experiments (DCEs) on alcoholic products, even in the case of pálinka's direct competitors (mainly whisky and vodka). Our study, however, clearly indicates that it is possible to segment the market based on different product attributes and ethnocentrism.

1. Introduction

Globalization significantly impacts trade between countries, as consumers have easier access to foreign products than ever before (Lund & Tyson, 2018; Qing et al., 2012). However, economic downturns and crises typically increase the spread of protectionist measures in countries as governments try to protect various industries from foreign competition. At the same time, on the consumer side there may also be felt to be an obligation to choose domestic products over foreign ones (Lee et al., 2003; Olsen et al., 1993; Shimp & Sharma, 1987). Furthermore, due to the increasing emphasis on nationalism and cultural and ethnic identity, consumer ethnocentrism is predicted to become stronger in the global business environment in the 21st century (Baber et al., 2023; Siamagka & Balabanis, 2015). The form taken by consumer ethnocentrism depends on the given country and its values, customs, and behavior patterns, affecting attitudes toward products and, thus, purchasing decisions (Netemeyer et al., 1991; Thomas et al., 2020).

Consumer ethnocentrism plays a vital role in choosing between local and global (non-local) products and alcoholic beverages are no different in this respect. Examining the area is also important because almost every country has its own national drink, a decisive factor from a cultural, social, and economic point of view. The position occupied by whisky in the former British Empire, tequila in Mexico, cognac in France, or grappa in Italy, undoubtedly is held by pálinka in Hungary. The quality of this product has undergone significant changes in recent decades, as from the 1990s until the turn of the millennium, the drink was treated as a low-quality spirit (Harcsa et al., 2014). The turnaround in the quality and perception of the drink began in the early 2000s (European Parliament and Council, 2008; Hungarian Food Codex Committee, 2002; Hungarian Parliament, 2008). The 'Pálinka Act' (and the regulation of the European Parliament and Council) stipulates stricter individual product descriptions for spirits with a geographical indication (GI). Pálinka and 'törkölypálinka', made from marc, are products geographical indications recognized by the European Union,

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and eleven other regional pálinkas have also achieved such international protection. In Central and Eastern Europe, pálinka is not the only product with GI, as, for example, Croatia (Zadarski maraschino), Estonia (Estonian vodka), Greece (Tsipouro, Ouzo), Lithuania (Lithuanian vodka, Vilnius Gin) Poland (Polish Vodka), Romania (Pălincă), Slovakia (Spišská borovička) or Slovenia (Brinjevec) also have their national treasures (European Commission, 2023; Torok & Jambor, 2013).

1.1. Ethnocentrism in the case of foodstuffs and alcoholic beverages

In addition to the physical characteristics of the product, social, cultural, and psychological factors also influence consumer behavior and customers' purchasing preferences (Auger et al., 2010; Orth & Firbasova, 2003; Shimp & Sharma, 1987). More ethnocentric consumers show less willingness to purchase foreign products and assign more importance to a product's country of production. Ethnocentrism appears as a market segmentation 'tool' in most developed countries. In the case of foodstuffs, European consumers prefer domestically produced products, as British (Balabanis & Diamantopoulos, 2004), French (Gao et al., 2014), and German (Evanschitzky et al., 2008) studies show.

Fernández et al. (2018) and Thøgersen et al. (2019) pointed out a positive relationship between ethnocentrism and the purchase and consumption of local, regional and traditional food products. Taking demographic factors into account, the literature has concluded that ethnocentrism is more prevalent among people with lower income (Erdogan & Uzkurt, 2010; Miguel et al., 2022; Watson & Wright, 2000), women (Akbarov, 2021; Bruning, 1997; Josiassen et al., 2011), older age groups (Balabanis et al., 2001; Josiassen et al., 2011; Miguel et al., 2022; Sharma et al., 1994; Szakály et al., 2016), people with lower education (Erdogan & Uzkurt, 2010; Miguel et al., 2022; Nishina, 1990; Watson & Wright, 2000).

There are also a few studies on ethnocentrism regarding alcoholic beverages. The degree of consumer ethnocentrism is negatively correlated with the favorable attitude of customers towards foreign beer brands in the Czech Republic and with the fact that highly ethnocentric customers are less favorably disposed towards foreign brands (Wanninayake & Chovancová, 2012). In Poland, factors such as a brand image based on Polish culture and reference to its symbols, emphasis on local brands as factors and forms of expression contributing to local identity, and a perceived moral obligation to purchase local brands are decisive in the case of beer consumption (Siemieniako et al., 2011). Ethnocentrism is also identified for wines. Brown and O'Cass (2006) found that in Australia, age and sex does not directly affect consumer willingness to buy foreign wine, but consumer ethnocentrism is a significant indicator of consumers' willingness to buy foreign wine products. In Vietnam, national identity and consumer ethnocentrism are found to be important motivators of local wine consumption (Le et al., 2013). In China, consumer ethnocentrism affects not only personal consumption, but also when buying wine as a gift (Yang – Paladino, 2015). Another study shows that ethnocentrism is not predominant in China, as in many cases, consumers prefer French or Australian wines instead of Chinese (Christian – Wang, 2022). In Spain, García-Gallego et al. (2015) found that consumer ethnocentrism affects the purchase intentions of wines directly and indirectly; however, a study concluded that wine consumers from Barcelona and Madrid show less ethnocentric behavior, which indicates that consumers look for the most convenient products (Bernabéu et el., 2013). A study by Maksan et al. (2019) showed that consumer ethnocentrism has strong and positive impact on attitudes for domestic wine purchase. Overall, it can be concluded that ethnocentrism is observable among alcoholic beverages and foodstuffs, and especially so in Central and Eastern Europe.

In the 1990s and early 2000s, research examining Hungary also showed that Hungarian consumers, similar to the developing countries, considered foreign products to be of better quality (Malota, 2003; Papadopoulos et al., 1993; Papadopoulos et al., 1990). However, this trend began to change and Hungarian products, especially with distinctive marks, became increasingly popular (Malota, 2011). In the early 2010s, the greatest willingness to pay was shown for products with a trademark indicating the domestic source, ahead of products with organic or geographical indications (Szakály et al., 2014). A strong sense of national identity affects the purchase of the product. This was also proven by Molnár and Szőllősi (2014), as the Hungarian origin is much more important than the trademark or the designation of origin. The result of Csatáriné Dogi's (2015) study is that ethnocentrism among Hungarian consumers decreased after joining the European Union; however, in a parallel development, Hungarian products are increasingly perceived to be of higher quality. In the study of Szakály and his co-authors (2016) found that Hungarians consider the purchase of domestic products as a moral act but do not observe it in purchasing situations. According to Mucha et al. (2020), the perception of foreign foods is less positive, and the respondents prefer to buy Hungarian foodstuffs. However, in Hungary, the degree of ethnocentrism decreases with increased education and ethnocentrism is the most characteristic of people living in villages. However, for Hungarian consumers, much as in other countries in the region, the product's price is the decisive factor during the purchase. Regarding patriotism, Hungarian consumers do not consider the consumption of store-bought pálinka and whisky to be patriotic, in contrast to the consumption of homemade distillates (Mucha et al., 2021; Mucha et al., 2022).

1.2. DCE models applied to investigate alcoholic beverages

As the pálinka sector has not been examined by any study using the DCE model before, this section presents experiments applied to other alcoholic beverages, focusing mainly on direct international competitors (whisky and vodka) and wines (Table 1). Lockshin et al. (2006) investigated Australian wine consumers. Price significantly affects the likelihood of purchase, but there is a turning point at a certain amount ($22.99). The gold medal received in wine competitions increases the choice probability the most, but mainly in the lower and middle price ranges. A well-known region increases the likelihood of choosing smaller brands over larger ones. Involvement in wine purchases also influences preferences and perceptions of quality: low-involved consumers are mostly concerned with gold medals and price, while the region of origin and brand influence more-involved consumers. Australian wine consumers were also analyzed by Mueller et al. (2010). The most important attributes were the price, information about the general history of the winery, taste descriptions, and food pairing. For French, German, Austrian, and British wine consumers, brand and origin are very important decision aspects, especially if they do not have adequate information about the quality of the wines (Perrouty et al., 2006). Gallenti et al. (2019) examined the millennial generation and found that there is a consumer group that is increasingly interested in environmentally friendly products, including environmentally friendly wines, and is willing to pay a price premium for such goods. A similar result was reached by Glenk and his co-authors (2012), who investigated consumers of Scotch malt whisky. Although there is a demand for more environmentally friendly production, the demand can be considered limited.

Based on studies by Gonçalves and his co-authors (Gonçalves, Lourenço-Gomes, et al., 2020a; Gonçalves, Lourenço-Gomes, et al., 2020b; Gonçalves, Pinto, et al., 2020), wine consumers make decisions based on very little information (and very often ignore certain attributes), which requires an appropriate communication strategy from the wineries (e.g., regarding the information shown on the labels). Many consumers take price into account, and there may be different preferences due to distinct cultural differences. For example, French and Portuguese consumers attach more importance to award-winning wines, North American consumers to grape variety, and Chinese and Russian consumers to country of origin (and are willing to pay a higher price). Ribeiro et al.'s (2020) DCE model concluded that additional information and high expert ratings significantly influence the willingness to pay for

Table 1
Studies of alcoholic drinks applying DCE.

Authors	Type of alcoholic beverage	Product attributes investigated	Main conclusions
Lockshin et al. (2006)	Wine	Price, region of origin, brand name, achieved ranking	Participation in wine shopping influences preferences. Price is a very important factor.
Perrouty et al. (2006)	Wine	Region of origin, brand, grape variety, bottler, price	Brand and origin are important decision-making factors among those unfamiliar with the wine market.
Mueller et al. (2010)	Wine	Price, history, grape sources, production method, simple taste, elaborate taste, food pairing, consumption advice, use of environmentally friendly technology, website, ingredients	The most significant attribute is price, but the taste and food pairing are also important.
Glenk et al. (2012)	Whisky	Pesticide use restriction, amount of barley produced in Scotland, price	Demand for more environmentally friendly whisky production is limited.
Gallenti et al. (2019)	Wine	Price, origin, win escape, carbon footprint labeling, quality certification	The millennial generation is increasingly willing to pay a price premium for (more) environmentally friendly wines.
(Gonçalves et al., 2020a) (Gonçalves et al., 2020b) (Gonçalves et al., 2020)	Wine	Medals, landscape, alcohol content, country of origin, grape variety, price	Most consumers consider price, and different preferences exist due to cultural differences.
Ribeiro et al. (2020)	Wine	Many product features, such as photographs of real wines, were used	Good expert ratings mean a price premium.

Source: own editing.

a given wine.

1.3. Consumer preferences and habits for pálinka

Several studies have examined the transformation of Hungarians' pálinka consumption habits and the changes in attitudes related to pálinka. Based on the first significant market research (GFK Hungária Market Research Institute, 2008), pálinka consumption was linked to tradition and nostalgia, Hungarianness, and the rural atmosphere. At the beginning of the 2010 s, the consumption of the alcoholic beverage gained even more importance (Totth, Fodor, et al., 2011; Totth, Hlédik, et al., 2011), and positive associations (e.g. group of friends, good mood, cheerfulness) began to be associated with pálinka. When purchasing pálinka, taste, packaging (mainly the design), price, alcohol content, and brand were the determining factors for the consumers. In later studies, in addition to whisky and vodka, young people mostly prefer and consume pálinka (Totth et al., 2017; Totth et al., 2018a, 2018b). Men prefer whisky and pálinka, while women purchase more vodka. There was no big change in the most well-known and favorite flavors (plum, apricot, pear); however, unlike in the earlier study, pálinka-like spirits have also appeared among the dispreferred flavors, which indicates an increase in consumers' knowledge. A similar big change is that the brand became the most important decision-making factor ahead of the producer's name.

According to Szegedyné Fricz et al. (2017), men and the age group over 50 and 18–24 consume pálinka more likely and more often. Besides the type of fruit, the main factors influencing purchasing are friends' recommendations and the price, followed by the origin. In the study by Mucha et al. (2020a), the respondents considered quality the most important purchase criterion, followed by price, Hungarian origin, prestige, and fashion. The image of the homemade spirit is more positive than in the case of store-bought pálinka, and knowledge about pálinka is still extremely poor among Hungarian consumers. Mucha and his co-authors (2020b) also found that the price mostly influences the decision during purchases, followed by the type of fruit used and the origin. In terms of origin, most consumers prefer homemade distillate over its store counterpart, which is caused by the difference in image, popularity, and price. In the case of price, in keeping with the findings of earlier research (Szegedyné Fricz et al., 2017; Totth, Fodor, et al., 2011; Totth, Hlédik, et al., 2011), consumers are willing to pay a higher price for pálinka bought as a gift.

2. Research goal and aim

Based on the above, the aim of this research is to examine the preferences of Hungarian pálinka consumers using a discrete choice experiment (DCE), paying special attention to the role of ethnocentrism in decision-making. To the best of our knowledge, no DCE analysis has been carried out in Hungary to examine pálinka consumers' preferences. In the international literature, very little attention is dedicated to DCE experiments on alcoholic products, including pálinka's direct competitors (mainly whisky and vodka). However, in the case of alcoholic products, many authors have analyzed the product attributes examined in this study. The importance of the topic is further justified by the fact that Hungary has placed great emphasis on improving the image of pálinka as a national drink with a geographical indication, and the country's budget receives significant revenue from the excise duty on pálinka. In addition, the European Union is placing more and more emphasis on products, including alcoholic beverages, with GIs. The results may be of interest from both scientific and corporate perspectives.

3. Methodology

3.1. Data collection and overview of the research

During our research, the data collection of the online questionnaire was carried out by a professional market research company (InnoFood Marketing Ltd.). Data collection took place between April 2021 and July 2021 using the online platform of Qualtrics. The questionnaire was optimized for both computers and mobile devices to reach a larger number of potential respondents.

The questionnaire consisted of four parts. At first, (1) behavior related to the purchase and consumption of pálinka, as well as assessment of the respondents' knowledge of the topic were analyzed. In this part, we assessed the respondents' knowledge about pálinka (e.g., what is allowed to be called pálinka). In addition, the respondents' pálinka purchasing habits were explored (e.g., the type of retail), and respondents' attitudes toward different product attributes (e.g., origin, color of the drink) were measured on a 5 point Likert scale. The next part was a (2) DCE to measure pálinka-related preferences (see below, Table 2 and Fig. 1). After that, (3) CETSCALE (Consumers' Ethnocentric Tendencies Scale) was used to examine ethnocentrism. Ethnocentrism can be measured in many ways, but most studies use a Likert-scale (Chang & Ritter, 1976; Neuliep & McCroskey, 1997; Shimp & Sharma, 1987; Warr et al., 1967), and therefore our study also uses Shimp and Sharma's scale containing 17 statements (items). Although the original scale consists of a seven-item Likert-type scale (Shimp and Sharma, 1987), a five-point Likert-type scale (1 - 'strongly disagree' to 5 - 'strongly agree') was used for the ease of participants' use (Akbarov, 2021; Douglas and Nijssen, 2003). In the last part, (4) sociodemographic characteristics of respondents were also collected (the sample's

Table 2
Tested attributes and their levels during the experiment.

Product attribute	Description of the attribute	Attribute levels
Brand	The name of the commercial distillery	Bestillo None
GI variety	Indication of Gönci apricot pálinka GI	Gönci None
Production method	Indication of the small-pot distillation method	Small-pot (Kisüsti) None
Price (HUF)*	The price of a bottle with a capacity of 0.5 L	4 990 HUF (14 EUR) 8 990 HUF (25.25 EUR) 12 990 HUF (36.50 EUR) 16 990 HUF (47.75 EUR)

Note: Bestillo: One of the oldest and best-known commercial distilleries in the production area of Gönci GI pálinka. Gönci: one of the regional pálinka with GI. Kisüsti: one of the two most common distillation methods in Hungary.

* Unit prices of all major Hungarian producers and/or distributors were collected, based on which we determined the various price levels. The conversion was made at the current (April 2021) EUR/HUF exchange rate at the time of data collection.

characteristics are detailed in Table 3).

The DCE was performed in three steps. First, we prepared an extensive literature review and conducted interviews with industry experts(including the president and the secretary of the Pálinka National Council, the professional body of the product). Based on these, in the second step, we chose five product attributes (brand, GI, production method, price, alcohol content) that potentially influence the purchase of pálinka, which was ranked during a pilot survey (between March 2021 and April 2021, $n = 73$). We created a D-efficient experimental design using the selected attributes using the Ngene 1.2 software (Choicemetrics, 2018; Rose & Bliemer, 2009). In the pilot study, the design contained 16 decision-making situations. We organized them into two blocks, so the respondents were faced with only a subset (8 choice situations). Each case included three hypothetical pálinka alternatives and an opt-out (no choice) option. Based on the pilot study, we estimated a conditional logit (CL) model and used the results (coefficients and standard errors for the attributes measured) to redesign

Table 3
Presentation of the sample.

Total respondents / Population	1,000
Respondent involved	760
Gender	
Female (%)	36.45
Male (%)	63.55
Average age (years)	54.73
Age category	
Under 45 years (%)	25.13
45–60 years (%)	31.19
Over 60 years (%)	43.68
Residence*	
Village (%)	26.45
City (%)	40.92
Large city (%)	32.63
Education	
Basic education (%)	2.37
Secondary education (%)	43.42
Higher education (%)	54.21

* Note: Village: <10,000 inhabitants, City: 10,000–100,000 inhabitants, Large city: 100,000 < inhabitants.

Fig. 1. An example of a decision-making situation.

our experimental design. The decision-making situations of the final questionnaire were prepared using a Bayesian D-efficient experiment design, where the prior coefficients of the attributes were determined based on the results of the pilot study (Bliemer et al., 2008). When constructing the Bayesian design, we defined a normal distribution for all attributes. The prior coefficient for the production method was defined as zero, since the coefficient estimated for the attribute did not differ significantly from zero based on the pilot study results. Furthermore, after evaluating the pilot survey results, we excluded alcohol content due to the strong correlation with the price.

The attributes and their levels examined in the final experiment (questionnaire) are summarized in Table 2. Bayesian D-efficient experimental design contained 32 decision situations arranged in four blocks. As a result, our respondents, similarly to the pilot study, were also faced with eight choice situations (for an illustration, see Fig. 1). Each case contained three hypothetical pálinka alternatives and an opt-out (no choice) option.

3.2. Participants

From the data of the Hungarian survey conducted with the participation of 1,000 people, representative of the Hungarian alcohol consumer population, 760 responses were evaluated after data cleaning (e.g., exclusion of incomplete or incorrectly completed questionnaires) (Table 3). In terms of gender, there is a larger number of men (especially older ones) in the sample, which is not surprising, since several studies (e.g., Szegedyné Fricz et al., 2017; Totth et al., 2018b) have shown that older men can be considered typical pálinka consumers in Hungary.

3.3. Data analysis

In the first stage of our analysis, we calculated descriptive statistics (ratios, averages and standard deviations). We then performed hypothesis testing using one-way analysis of variance (ANOVA). The one-way ANOVA is a parametric statistical method, which examines for the existence of significant differences between independent samples. For this test, the null hypothesis (H_0) assumes that the groups examined are independent (H_0: $\mu_1 = \mu_2 = \ldots = \mu_k$, where k denote the number of groups examined). In the case where H0 is rejected ($p < \alpha$), it can be concluded that there is a significant difference between at least two groups with respect to the dependent variable under analysis (Field, 2009).

In the next stage of our analysis, we performed discrete choice modeling by using data from our discrete choice experiment (DCE). The DCE is a stated type preference evaluation method, and it examines the choices of individuals in a hypothetical context. The analysis of choices in DCE is based on the theory of random utility (RUT); hence it assumes that a latent construct (utility) exists in the mind of the decision-makers for each alternative of the decision set to be analyzed (Louviere et al., 2010). This utility consists of a systematic and a random component (Equation (1), the former of which derives from certain attributes of the alternatives, while the latter includes unidentified factors.

$$U_{n,i} = V_{n,i} + \varepsilon_{n,i}, \tag{1}$$

where n is the individual, i is the alternative, U is the total utility, V is the systematic part of the utility, and ε is the random component of the utility (Ben-Akiva & Lerman, 1985).

Many types of models are available to analysts for processing DCE data. Among these, the conditional logit (CL) specification is widely known, in which the systematic part of the utility can be written according to Equation (2).

$$V_{n,i} = \beta' X_{n,i}, \tag{2}$$

where β' denotes the parameter vector estimated for the investigated attributes, and X denotes the vector of attributes for alternative i (McFadden, 1973).

One serious limitation of the CL specification (the assumption of homogeneous preferences) can be handled by the type of the mixed logit (ML) model. The model achieves all this by allowing the coefficients for the attributes to vary along a predetermined distribution among the respondents and then estimates certain parameters of it (e.g. mean and standard deviation). In the case of the specification, the systematic part of the utility forms according to Equation (3).

$$V_{n,i} = \beta_n' X_{n,i}, \tag{3}$$

where β_n' denotes the random parameter vector estimated for the investigated attributes (Train, 2009).

In the context of decision-making, the importance of examining latent attitudes is a topic that often comes to the fore in recent years (Ben-Akiva, McFadden, et al., 2002). By expanding the standard choice model (Equation (1) with a further (latent construct) part (Equation (4), a more complex picture of consumer behavior could be achieved.

$$U_{n,i} = V_{n,i} + \lambda LV_n + \varepsilon_{n,i}, \tag{4}$$

where LV denotes the latent variable and λ denotes the estimated coefficient for the latent variable (Ben-Akiva, Walker, et al., 2002).

The so-called hybrid choice models, including latent variable(s), expand the standard approach with two additional parts. The first is the structural equation(s), which characterize the latent variable(s) as a function of various observable variables. In contrast, the second are the measurement equations, which characterize the relationship between the latent variable and the related questions (indicators) (Bolduc et al., 2005).

In the case of our experiment, we defined a structural equation according to Equation (5) and measurement equations corresponding to Equation (6).

$$LV_n = \gamma_{Age_{Above\ 60}} Age_{Above\ 60_n} + \gamma_{Highest\ level\ of\ education_{Higher\ education}} Highest\ level\ of\ education_{Higher\ education_n} + \gamma_{Type\ of\ residence_{City}} Type\ of\ residence_{City_n} + \eta_n, \tag{5}$$

where γ denotes the vector of parameters estimated for the explanatory variables of the structural equation, and η denotes the random term of the structural equation.

$$ME_{k,n} = \zeta_k LV_n + \sigma_{k,n}, \tag{6}$$

where k is the k^{th} investigated indicator/statement, ζ_k is the estimated

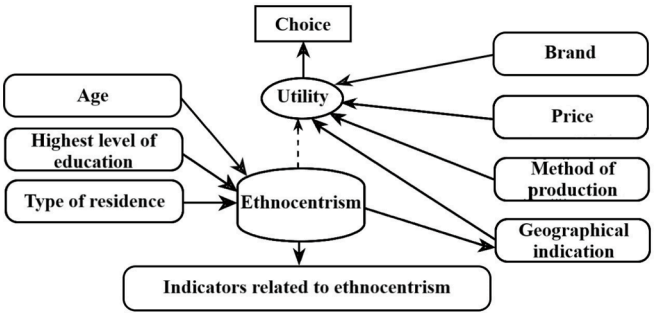

Fig. 2. The structure of the hybrid choice model.

effect for the latent variable (for the k^{th} indicator), and σ is the random term of the measurement equation.

During our hybrid modeling, we wanted to examine a latent variable (ethnocentrism), which was approximated through 17 indicators/evaluative (Likert scale from 1 to 5) statements (Shimp & Sharma, 1987). Our hypothetical model is illustrated in Fig. 2.

In the case of our model estimations, we used the utility function formula according to Equation (7), and our latent variable was incorporated through the interaction according to Equation (8).

$$U_i = ASC_i + \beta_{Brand_{Bestillo}} Brand_{Bestillo_i} + \beta_{Geographical\ indication_{Gönci}} Geographical\ indication_{Gönci_i} + \beta_{Method\ of\ production_{Small-pot}} Method\ of\ production_{Small-pot_i} + \beta_{Price} Price_i + \varepsilon_i \quad (7)$$

$$\beta_{Geographical\ indication_{Gönci_{New\ term}}} = \beta_{Geographical\ indication_{Gönci}} + \lambda LV \quad (8)$$

In the case of all specifications, we also carried out willingness to pay (WTP) calculations, for which we used a WTP space specification (Train & Weeks, 2005). For this, we performed the transformation according to Equation (9) on our utility function shown in Equation (7).

$$U_i = ASC_i + \beta_{Price} * (WTP_{Brand_{Bestillo}} Brand_{Bestillo_i} + WTP_{Geographical\ indication_{Gönci}} Geographical\ indication_{Gönci_i} + WTP_{Method\ of\ production_{Small-pot}} Method\ of\ production_{Small-pot_i} + Price_i) + \varepsilon_i, \quad (9)$$

where WTP denotes the estimated willingness to pay for the given attribute.

We used the Apollo 0.2.1 package of the R program to perform our model estimations (Hess & Palma, 2019; Hess & Palma, 2021; RC Team, 2020). The analyses in the Results chapter follow the structure shown in Fig. 3.

4. Results

4.1. Consumer ethnocentrism

To examine consumer ethnocentrism, we included 17 evaluation statements in the questionnaire (CETSCALE). Based on the results of Table 4, the highest degree of agreement was shown in connection with statements 1 (*Hungarian people should always buy Hungarian-made products instead of imports.*), 3 (*By purchasing Hungarian products, we can protect Hungarian jobs.*) and 4 (*I prefer Hungarian products above all.*). At the same time, the respondents of our sample mostly disagreed with statements 12 (*Curbs should be put on all imports.*), 14 (*Foreigners should not be allowed to put their products on our market.*), and 17 (*Hungarian consumers who purchase products made in other countries are responsible for putting their fellow Hungarians out of work.*).

In the next step, we analyzed significant differences between different groups (based on the sociodemographic variables shown in Table 3) for the 17 statements. With this, our goal was to provide a basis for selecting the explanatory variables of the structural equation according to Equation (5). The results of the analysis of variance (ANOVA) used to examine the differences are shown in Table 5. Based on the results, for all four variables, there was a significant difference in the assessment of the statements at a 5% significance level; however, to avoid creating an overspecified model, we omitted the variable of gender (since in the case of this variable we found the least significant differences regarding the assessment of the statements) from the explanatory variables of Equation (5).

Based on the results of the post-hoc analysis, it can be concluded that, in terms of age, it is mainly the ratings of respondents over 60 years that differ from those of respondents under 60 years. In terms of place of residence, the ratings of respondents in large cities differ significantly from those in non-metropolitan areas. As regards the highest level of education, significant differences in the assessment of the statements are mainly found between respondents with secondary and higher education.

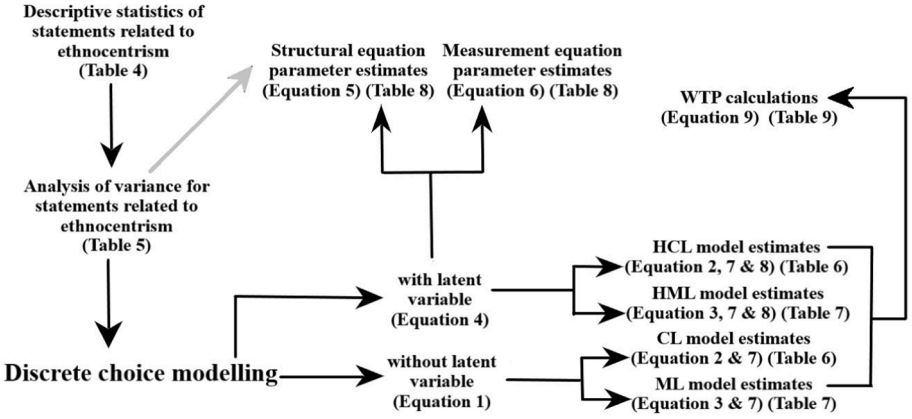

Fig. 3. The structure of the analysis.

Table 4
Descriptive statistics of statements related to ethnocentrism.

Statement	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Average	Standard deviation
1. Hungarian people should always buy Hungarian-made products instead of imports.	5.4	9.5	30.2	28.7	26.2	**3.61**	1.13
2. Only those products that are unavailable in Hungary should be imported.	5.3	13.9	22.8	32.7	25.3	3.59	1.16
3. By purchasing Hungarian products, we can protect Hungarian jobs.	3.7	4.3	16.3	36.3	39.4	**4.03**	1.03
4. I prefer Hungarian products above all.	4.1	9.2	26.0	33.3	27.4	**3.71**	1.09
5. Purchasing foreign-made products is un-Hungarian	25.3	32.4	22.7	10.5	9.1	2.46	1.23
6. It is not right to purchase foreign products, because it puts Hungarians out of jobs.	14.3	31.5	29.2	13.4	11.6	2.76	1.20
7. A real Hungarian should always buy Hungarian-made products.	29.0	30.4	20.9	10.8	8.9	2.40	1.26
8. We should purchase products manufactures in Hungry instead of letting other countries get rich of us.	10.9	20.4	29.9	23.9	14.9	3.11	1.21
9. It is always best to purchase Hungarian products.	12.6	22.8	35.1	17.2	12.3	2.94	1.18
10. There should be very little trading or purchasing of goods from other countries unless out of necessity.	4.9	12.8	29.7	33.4	19.2	3.49	1.09
11. Hungarians should not buy foreign products, because this hurts Hungarian business and causes unemployment.	20.5	31.8	28.3	11.5	7.9	2.54	1.17
12. Curbs should be put on all imports.	32.2	34.6	21.3	7.4	4.5	***2.17***	1.10
13. It may cost me in the long-run but I prefer to support Hungarian products.	8.8	19.6	34.2	25.8	11.6	3.12	1.12
14. Foreigners should not be allowed to put their products on our market.	32.8	37.2	22.4	4.7	2.9	***2.08***	1.00
15. Foreign products should be taxed heavily to reduce their entry into Hungary.	21.7	25.9	29.9	15.0	7.5	2.61	1.19
16. We should buy from foreign countries only those products that we cannot obtain within our own country.	12.1	18.8	24.8	28.8	15.5	3.17	1.25
17. Hungarian consumers who purchase products made in other countries are responsible for putting their fellow Hungarians out of work.	30.4	33.7	21.5	9.7	4.7	***2.25***	1.13

Note: Bold indicates the three highest averages, while italic bold indicates the three lowest averages.

4.2. Discrete choice model estimates in preference space

Tables 6 and 7 contain the results of our estimated models based on the utility function according to Equation (7). The ASC estimated for the 'no choice' option is negative and significant (Table 6). This suggests that the 'opt-out' option was less preferred than the choice of pálinka alternatives. The presence of the investigated product attributes (Bestillo brand, Gönci GI variety, Small-pot production method) all had a positive effect on consumer preferences. The only exception is the price, with the increase of which, the consumer's sense of utility for the product decreases simultaneously. With the inclusion of our latent variable, we managed to estimate a model showing a better fit, the conclusions of which are similar to those drawn for the base CL specification. The value of the estimated λ coefficient for the interaction of the latent variable and the geographical indication is positive and significant, which indicates that as the level of ethnocentrism increases, the perceived utility related to the Gönci GI variety also increases.

In the next step, we performed mixed logit model estimations according to the structure presented earlier (Table 7). First, without including a latent variable, and then by capturing consumer ethnocentrism, we performed an estimation in a hybrid context. Normal distribution was used for all parameters except for the price, where a lognormal distribution was applied. The estimations were performed with 1,000 mlhs draws for both models (Hess et al., 2006).

Through the inclusion of random parameters (Table 7), we achieved at models with a significantly better fit (lower Log-likelihood (final), AIC and BIC, and higher Pseudo R^2). We can confirm our conclusion in the previous models that 'not purchasing' was less preferred than the choice; however, with the present specifications, the estimated ASC parameters already indicate some (decision) heuristics. All this is manifested in the fact that the second alternative can be chosen significantly more often compared to the first option representing the base level (the positive and significant ASC parameter indicates this for alternative 2). From the direction of the estimated coefficients, we can draw the same conclusions as for the CL models. The presence of the Gönci GI variety increases consumers' sense of utility to the greatest extent, followed by the Bestillo brand and the Small-pot production method. As expected, the price increase negatively affects the participant's preferences when purchasing pálinka. A significant standard deviation parameter was estimated for each attribute, which indicates the existence of heterogeneity in the preferences of the respondents. In the case of the estimated model in the hybrid context, ethnocentrism also represents a positive and significant effect. A higher level of ethnocentric emotions increases the level of utility attributed to the existence of the Gönci GI variety.

In the next step, we describe the estimated parameters of our structural and measurement equations based on formulas according to Equations (5) and (6) for both the HCL and HML models (Table 8). Based on the γ parameters in Table 8 (which shows the effect of the explanatory variables of the structural equation), ethnocentrism is significantly higher among respondents over 60 than among younger respondents. In addition, the degree of ethnocentrism among respondents with a higher education and those who live in a big city is already weaker than among respondents with a lower education or those who live in smaller towns and villages. In the case of the measurement equations, the estimated ζ parameters (which show the effect of ethnocentrism on the examined indicators) show a positive and significant effect one by one, which indicates that simultaneously with the increase in the level of ethnocentrism, the examined statements are evaluated higher by the respondents (they increasingly agree with them).

The largest estimated parameters can be seen in the case of statements 7 (*A real Hungarian should always buy Hungarian-made products.*), 8 (*We should purchase products manufactured in Hungry instead of letting other countries get rich of us.*), and 11 (*Hungarians should not buy foreign products, because this hurts Hungarian business and causes unemployment.*), from which we can conclude that the assessment of these indicators increases to the greatest extent simultaneously with the increase in the level of ethnocentrism emotions.

4.3. Willingness to pay calculations

The results of WTP space estimates based on the formula according to Equation (9) are described in Table 9. Based on the WTP calculations, there are rather large differences between the models that do not include random parameters (CL and HCL) and those that apply them (ML and HML). It can be concluded from the WTP estimates of models showing a significantly better fit by address preference heterogeneity with random parameters (ML and HML models) that there is a willingness to pay between EUR 18.52 and EUR 20.12 for the Bestillo brand, and respondents would pay between EUR 6.92 and EUR 8.19 more for small-pot production method. The highest willingness to pay is shown in the case of the Gönci GI variety and amounts to approximately EUR 24.26–24.58.

Table 5
Results of the analysis of variance.

Statement	F-statistics Group averages			
	Gender	Age category	Place of residence	Highest level of education
Statement 1	n.s.d.	n.s.d.	$F = 5.42^{**}$ $\overline{X}_1 = 3.76^{a}$, $\overline{X}_2 = 3.66^{a}$, $\overline{X}_3 = 3.42^{b}$	$F = 3.14^{*}$ $\overline{X}_1 = 4.06^{a}$, $\overline{X}_2 = 3.68^{a}$, $\overline{X}_3 = 3.53^{a}$
Statement 2	n.s.d.	n.s.d.	$F = 8.61^{**}$ $\overline{X}_1 = 3.77^{a}$, $\overline{X}_2 = 3.67^{a}$, $\overline{X}_3 = 3.35^{b}$	$F = 6.58^{**}$ $\overline{X}_1 = 3.78^{ab}$, $\overline{X}_2 = 3.75^{a}$, $\overline{X}_3 = 3.45^{b}$
Statement 3	$F = 4.18^{*}$ $\overline{X}_1 = 4.13^{a}$, $\overline{X}_2 = 3.98^{b}$	n.s.d.	$F = 4.83^{**}$ $\overline{X}_1 = 4.12^{a}$, $\overline{X}_2 = 4.11^{a}$, $\overline{X}_3 = 3.87^{b}$	n.s.d.
Statement 4	$F = 6.00^{*}$ $\overline{X}_1 = 3.83^{a}$, $\overline{X}_2 = 3.63^{b}$	n.s.d.	$F = 3.30^{*}$ $\overline{X}_1 = 3.83^{a}$, $\overline{X}_2 = 3.73^{ab}$, $\overline{X}_3 = 3.57^{b}$	n.s.d.
Statement 5	n.s.d.	$F = 8.91^{**}$ $\overline{X}_1 = 2.27^{a}$, $\overline{X}_2 = 2.31^{a}$, $\overline{X}_3 = 2.67^{b}$	$F = 6.69^{**}$ $\overline{X}_1 = 2.62^{a}$, $\overline{X}_2 = 2.54^{a}$, $\overline{X}_3 = 2.23^{b}$	$F = 11.25^{**}$ $\overline{X}_1 = 3.06^{a}$, $\overline{X}_2 = 2.65^{a}$, $\overline{X}_3 = 2.27^{b}$
Statement 6	n.s.d.	$F = 5.56^{**}$ $\overline{X}_1 = 2.54^{a}$, $\overline{X}_2 = 2.75^{ab}$, $\overline{X}_3 = 2.90^{b}$	n.s.d.	$F = 3.48^{*}$ $\overline{X}_1 = 3.11^{a}$, $\overline{X}_2 = 2.87^{a}$, $\overline{X}_3 = 2.67^{a}$
Statement 7	n.s.d.	$F = 14.20^{**}$ $\overline{X}_1 = 2.07^{a}$, $\overline{X}_2 = 2.32^{a}$, $\overline{X}_3 = 2.65^{b}$	$F = 5.76^{**}$ $\overline{X}_1 = 2.54^{a}$, $\overline{X}_2 = 2.49^{a}$, $\overline{X}_3 = 2.19^{b}$	$F = 9.11^{**}$ $\overline{X}_1 = 3.06^{a}$, $\overline{X}_2 = 2.57^{a}$, $\overline{X}_3 = 2.24^{b}$
Statement 8	n.s.d.	n.s.d.	$F = 5.99^{**}$ $\overline{X}_1 = 3.27^{a}$, $\overline{X}_2 = 3.18^{a}$, $\overline{X}_3 = 2.90^{b}$	$F = 3.77^{*}$ $\overline{X}_1 = 3.33^{ab}$, $\overline{X}_2 = 3.24^{a}$, $\overline{X}_3 = 3.00^{b}$
Statement 9	n.s.d.	$F = 6.83^{**}$ $\overline{X}_1 = 2.78^{a}$, $\overline{X}_2 = 2.81^{a}$, $\overline{X}_3 = 3.11^{b}$	n.s.d.	$F = 6.43^{**}$ $\overline{X}_1 = 3.61^{a}$, $\overline{X}_2 = 3.05^{a}$, $\overline{X}_3 = 2.82^{b}$
Statement 10	$F = 6.03^{*}$ $\overline{X}_1 = 3.62^{a}$, $\overline{X}_2 = 3.42^{b}$	n.s.d.	$F = 7.26^{**}$ $\overline{X}_1 = 3.65^{a}$, $\overline{X}_2 = 3.56^{a}$, $\overline{X}_3 = 3.29^{b}$	n.s.d.
Statement 11	n.s.d.	n.s.d.	$F = 3.80^{*}$ $\overline{X}_1 = 2.68^{a}$, $\overline{X}_2 = 2.58^{ab}$, $\overline{X}_3 = 2.39^{b}$	$F = 5.24^{**}$ $\overline{X}_1 = 2.83^{ab}$, $\overline{X}_2 = 2.68^{a}$, $\overline{X}_3 = 2.42^{b}$
Statement 12	n.s.d.	$F = 4.34^{*}$ $\overline{X}_1 = 2.05^{a}$, $\overline{X}_2 = 2.08^{ab}$, $\overline{X}_3 = 2.30^{b}$	$F = 7.15^{**}$ $\overline{X}_1 = 2.36^{a}$, $\overline{X}_2 = 2.21^{a}$, $\overline{X}_3 = 1.98^{b}$	$F = 14.23^{**}$ $\overline{X}_1 = 2.61^{a}$, $\overline{X}_2 = 2.38^{a}$, $\overline{X}_3 = 1.98^{b}$
Statement 13	n.s.d.	n.s.d.	n.s.d.	n.s.d.
Statement 14	n.s.d.	$F = 5.22^{**}$ $\overline{X}_1 = 1.95^{a}$, $\overline{X}_2 = 2.00$	$F = 5.30^{**}$ $\overline{X}_1 = 2.22^{a}$, $\overline{X}_2 = 2.11$	$F = 13.95^{**}$ $\overline{X}_1 = 2.50^{a}$, $\overline{X}_2 = 2.27^{a}$, $\overline{X}_3 = 1.91^{b}$
Statement 15	n.s.d.	$F = 6.91^{**}$ $\overline{X}_1 = 2.43^{a}$, $\overline{X}_2 = 2.49^{a}$, $\overline{X}_3 = 2.79^{b}$	$F = 7.47^{**}$ $\overline{X}_1 = 2.81^{a}$, $\overline{X}_2 = 2.65^{a}$, $\overline{X}_3 = 2.39^{b}$	$F = 4.16^{*}$ $\overline{X}_1 = 2.50^{ab}$, $\overline{X}_2 = 2.75^{a}$, $\overline{X}_3 = 2.50^{b}$
Statement 16	n.s.d.	n.s.d.	$F = 9.31^{**}$ $\overline{X}_1 = 3.40^{a}$, $\overline{X}_2 = 3.22^{a}$, $\overline{X}_3 = 2.91^{b}$	$F = 5.11^{**}$ $\overline{X}_1 = 3.28^{ab}$, $\overline{X}_2 = 3.33^{a}$, $\overline{X}_3 = 3.04^{b}$
Statement 17	n.s.d.	$F = 3.71^{*}$ $\overline{X}_1 = 2.12^{a}$, $\overline{X}_2 = 2.18^{ab}$, $\overline{X}_3 = 2.37^{b}$	$F = 3.89^{*}$ $\overline{X}_1 = 2.34^{a}$, $\overline{X}_2 = 2.32^{a}$, $\overline{X}_3 = 2.08^{b}$	n.s.d.

Note: * and ** indicate statistical significance at the 5% and 1% levels. n.s.d.: no significant difference. The statements can be found in Table 4. The sub-index meanings of the averages are: Gender (1: Female, 2: Male), Age category (1: Under 45 years, 2: 45–60, 3: Over 60 years), Place of residence (1: Village, 2: City, 3: Large city), Highest level of education (1: Basic education, 2: Secondary education, 3: Higher education). Bonferroni post-hoc test was used for pairwise comparisons. Use of the different superscript indicates that the evaluations of the statements significantly differ between groups.

Table 6
Results of the estimated CL and HCL models.

Attributes and descriptive data of the model	CL model		HCL model	
	Estimate	t-ratio	Estimate	t-ratio
ASC (reference category: Alternative 1)				
Alternative 2	0.03	0.73	0.05	1.33
Alternative 3	0.03	0.90	0.03	0.91
No choice	−0.97**	−15.19	−1.00**	−15.36
Brand (reference category: No brand)				
Bestillo brand	0.74**	22.48	0.78**	22.54
Geographical indication (reference category: No geographical indication)				
Gönci GI variety	0.88**	25.81	1.02**	15.06
Method of production (reference category: Production method is not indicated)				
Small-pot	0.55**	18.20	0.57**	18.30
Price (scaled by 1 000)	−0.07**	−19.60	−0.08**	−20.35
λ	–	–	0.86**	20.42
Individuals	760			
Observations	6 080			
Parameters	7		8	
Log-likelihood (0) (for choice model)	−8 428.67		−8 428.67	
Log-likelihood (final) (for choice model)	−7 270.33		−6 695.45	
Pseudo R^2	0.14		0.21	
AIC	14 554.66		13 406.90	
BIC	14 601.65		13 460.60	

Note: ASC: Alternative specific constant. λ: Interaction effect of the latent variable and geographical indication. AIC: Akaike information criterion. BIC: Bayesian information criterion. Base levels: ASC (Alternative 1), No brand, No geographical indication, Production method is not indicated.
** indicate statistical significance at the 1% level.

5. Discussion

Ethnocentric behavior among consumers is typical for national drinks (e.g., beers and wines) in both developed and developing countries, which is confirmed by numerous studies (Brown and O'Cass, 2006; Le et al., 2013; Maksan et al., 2019; Wanninayake & Chovancová, 2012),

Table 7
Results of the estimated ML and HML models.

Attributes and descriptive data of the model	ML model		HML model	
	Estimate	t-ratio	Estimate	t-ratio
ASC (reference category: Alternative 1)				
Alternative 2	0.12*	2.03	0.12**	2.67
Alternative 3	0.08	1.35	0.07	1.64
No choice	−2.82**	−22.23	−2.70**	−22.51
Brand (reference category: No brand)				
Bestillo brand	0.97**	14.11	0.92**	14.11
Standard deviation	1.32**	16.77	1.27**	16.06
Geographical indication (reference category: No geographical indication)				
Gönci GI variety	1.40**	12.81	1.30**	10.67
Standard deviation	2.43**	21.01	1.92**	20.67
Method of production (reference category: Production method is not indicated)				
Small-pot	0.66**	14.85	0.66**	15.62
Standard deviation	0.55**	8.21	0.46**	6.20
Price (scaled by 1 000)	−0.18**	−11.40	−0.22**	−10.60
Standard deviation	0.40**	4.76	0.58**	5.04
λ	–	–	1.42**	14.87
Individuals	760			
Observations	6 080			
Parameters	11		12	
Log-likelihood (0) (for choice model)	−8 428.67		−8 428.67	
Log-likelihood (final) (for choice model)	−5 604.07		−5 605.53	
Pseudo R^2	0.34		0.33	
AIC	11 230.15		11 235.05	
BIC	11 303.99		11 315.61	

Note: ASC: Alternative specific constant. λ: Interaction effect of the latent variable and geographical indication. AIC: Akaike information criterion. BIC: Bayesian information criterion. Base levels: ASC (Alternative 1), No brand, No geographical indication, Production method is not indicated. * and ** indicate statistical significance at the 5% and 1% levels.

Table 8
Estimated parameters of the structural and measurement equations.

Structural equation parameters	HCL model		HML model	
	Estimate	t-ratio	Estimate	t-ratio
$\gamma_{Age_{Above\ 60}}$	0.24**	3.18	0.41**	6.39
$\gamma_{Highest\ level\ of\ education_{Higher\ education}}$	−0.20**	−2.70	−0.20**	−3.05
$\gamma_{Type\ of\ residence_{City}}$	−0.30**	−3.76	−0.13*	−1.75
Measurement equation parameters	Estimates	t-ratio	Estimates	t-ratio
ζ_{q1}	1.28**	17.99	1.33**	18.59
ζ_{q2}	1.07**	17.20	1.11**	17.75
ζ_{q3}	1.16**	16.59	1.20**	17.13
ζ_{q4}	1.33**	17.90	1.38**	18.50
ζ_{q5}	1.52**	18.67	1.58**	19.49
ζ_{q6}	1.67**	18.85	1.73**	19.48
ζ_{q7}	**2.00****	18.63	**2.12****	19.08
ζ_{q8}	**1.76****	18.97	**1.85****	19.52
ζ_{q9}	1.43**	18.75	1.49**	19.51
ζ_{q10}	1.20**	17.95	1.24**	18.49
ζ_{q11}	**1.87****	18.76	**1.94****	19.46
ζ_{q12}	1.28**	17.93	1.32**	18.42
ζ_{q13}	1.30**	18.52	1.36**	19.43
ζ_{q14}	1.39**	18.02	1.43**	18.40
ζ_{q15}	1.28**	18.42	1.34**	19.01
ζ_{q16}	1.41**	18.65	1.45**	19.18
ζ_{q17}	1.68**	18.65	1.74**	19.27

Note: * and ** indicate statistical significance at the 5% and 1% levels. γ denotes the estimated vector of parameters for variables in the structural equation. ζ_s denote the estimated parameters for the latent variable in measurement equations. Threshold parameters are shown in Appendix 1. The statements can be found in Table 4.

Table 9
Results of WTP calculations for the models.

Product attributes	CL	ML	HCL	HML
Bestillo brand	10.441**	**7.161**** (10.32)	10.040**	**6.594**** (11.22)
Gönci GI variety	12.420**	**8.635**** (17.95)	11.986**	**8.750**** (17.49)
Small-pot production method	7.801**	**2.462**** (4.83)	7.366**	**2.916**** (5.07)

Note: ** indicates statistical significance at the 1% level. The standard deviations in mixed logit based models are shown in parentheses below the WTP estimates.

and this therefore presents opportunities for market segmentation. But it should be noted that there are cases where the degree of ethnocentrism is quite low (Bernabéu et el., 2013; Christian – Wang, 2022). The former is also the case for Hungarian consumers, as confirmed by previous studies (Malota, 2011; Szakály et al., 2016) and validated by our research. Although pálinka is a GI product, its consumption outside of Hungary is quite low due to the absence of knowledge and popularity of the drink. Furthermore, in Hungary, the legislative environment and the clear preference for homemade distillates put producers of commercial pálinkas under double pressure; to compete and survive, it is necessary to get to know consumer decisions and consumption habits more thoroughly.

In the case of the Hungarian pálinka consumers, in terms of ethnocentrism, the greatest degree of agreement was shown in connection with Shimp and Sharma's 1st (*Hungarian people should always buy Hungarian-made products instead of imports.*), 3rd (*By purchasing Hungarian products, we can protect Hungarian jobs.*) and 4th (*I prefer Hungarian products above all.*) statements. These statements were emphasized in the study by Szakály et al. (2016) and Mucha et al. (2020). Furthermore, since typical Hungarian pálinka consumers are older men (e.g., (Szegedyné Fricz et al., 2017; Totth et al., 2018b) our results fit in with international trends (Balabanis et al., 2001; Josiassen et al., 2011; Sharma et al., 1994). The respondents of our sample did not agree with statements 12 (*Curbs should be put on all imports.*), 14 (*Foreigners should not be allowed to put their products on our market*), and 17 (*Hungarian consumers who purchase products made in other countries are responsible for putting their fellow Hungarians out of work.*). From this, we can conclude that more and more young people are consuming pálinka (Szakály et al., 2016). It fits well with the international literature (Balabanis et al., 2001; Josiassen et al., 2011; Nishina, 1990; Watson & Wright, 2000) that the level of ethnocentrism is lower among younger consumers with higher education and who live in a big city. Ethnocentric attitudes can also be fueled by marketing strategies that target consumer groups potentially receptive to patriotic or ethnocentric messages (Kaynak & Kara, 2001). Since the advertising of alcoholic beverages in EU countries can take place within extremely strict frameworks, one of the most important marketing tasks may be to promote the purchase of the product, and it is also important to ensure that the purchase, consumption, and use of the product leads to satisfaction among consumers. The primary interest of the pálinka producers and distributors is to shift the emotions and behavior of domestic consumers towards pálinka in a favorable direction.

All the examined product characteristics (Bestillo brand, Gönci GI variety, Small-pot production method) positively affect consumer preferences. The brand impacts decision-making for pálinka (Totth et al., 2018a, Totth et al., 2018b) and other alcoholic beverages (Perrouty et al., 2006). The existence of the Gönci GI variety increases consumers' sense of utility to the greatest extent. This was also pointed out by Fernández et al. (2018) since there are cases where a positive relationship exists between the purchase of a food product and a product related to a geographical area, especially if ethnocentrism is also considered. The value of the positive and significant λ coefficient for the interaction of the latent variable and the geographical indication confirms all this.

The brand and origin, just as in the case of wines (Gonçalves, Lourenço-Gomes, et al., 2020a; Gonçalves, Lourenço-Gomes, et al., 2020b; Gonçalves, Pinto, et al., 2020; Perrouty et al., 2006), are also important decision-making factors for pálinka consumers who do not have adequate quality and quantity of information about pálinka (and its quality). Another important message is that people tend to make purchasing decisions relating to pálinka based on only a few details, so exactly what information appears on the label is crucial. A significant standard deviation parameter for each attribute was estimated, which indicates the existence of heterogeneity in the preferences of the consumers, that is, separable groups can be formed among pálinka consumers, just as in the case of different spirits (Gonçalves, Lourenço-Gomes, et al., 2020a; Gonçalves, Lourenço-Gomes, et al., 2020b; Gonçalves, Pinto, et al., 2020).

In addition to the positive effect of the three product attributes, the price harms consumer preferences. This is also highlighted by Hungarian (Mucha, Oravecz, et al., 2020a, 2020b; Szegedyné Fricz et al., 2017) and international studies (Lockshin et al., 2006; Perrouty et al., 2006). There is a willingness to pay between EUR 18.52 and EUR 20.12 for the Bestillo brand, and respondents would pay a premium between EUR 6.92 and EUR 8.19 for the Small-pot production method. The highest willingness to pay is shown in the case of the Gönci GI variety and amounts to approximately EUR 24.26–24.58.

6. Conclusions

The presence of the product attributes investigated (Bestillo brand, Gönci GI variety, small-pot production method) all have a positive effect on consumer preferences. It is clear from the results that there is a demand for quality pálinka as both the brand and the quality label (geographical indication) carry added value for consumers, and they are willing to pay more for these attributes. At the same time, when the price increases, the consumer's sense of utility for the product decreases. By including a latent variable (ethnocentrism), weconclude that the perceived utility related to the Gönci GI variety increases as ethnocentrism increases. The level of ethnocentrism is significantly higher among respondents over 60 than among younger respondents. In addition, the level of ethnocentrism among respondents with higher education and those who live in an urban environment is already weaker than among respondents with lower education or those who live in the countryside. From the WTP estimates, it can be concluded that there is a positive WTP for the brand, the traditional production method, and the GI.

Despite significant changes (e.g. legislative changes) having taken place in the life of pálinka in Hungary, the knowledge of Hungarian consumers about pálinka can still be considered low. Based on the presented results, the pálinka distilleries and the companies selling the spirit can understand even better than before how important certain product attributes (e.g. production method and GIs) are considered by the consumers. Increasing sales and awareness from both the government and the corporate side is an important task, where similar surveys can help. However, the results may reflect some bias, mainly due to the online nature of the survey. In the future, it would be worthwhile to include even more consumers interested in pálinka, even foreign ones, to get an even more accurate industry analysis. Ethnocentrism is nation and cultural dependent and does not always play (an important) role with different foodstuffs and beverages. Furthermore, our research and discrete choice modeling can serve as a basis for examining other alcoholic beverages. The Central and Eastern European region has many GI spirits, so it would be worthwhile to expand or jointly explore these alcoholic beverages and their consumers.

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CRediT authorship contribution statement

Zalán Márk Maró: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Visualization. **Péter Balogh:** Methodology, Software, Validation, Formal analysis, Writing – review & editing. **Péter Czine:** Methodology, Software, Writing – review & editing. **Áron Török:** Conceptualization, Methodology, Investigation, Data curation, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors are unable or have chosen not to specify which data has been used.

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Appendix 1. Threshold parameter estimates of the measurement equations.

Estimated threshold parameters of the measurement equations	HCL model		HML model	
	Estimate	t-ratio	Estimate	t-ratio
τ_{q1_1}	−2.72**	−18.39	−2.54**	−18.41
τ_{q1_2}	−1.78**	−15.10	−1.61**	−14.84
τ_{q1_3}	−0.36**	−3.51	−0.19*	−1.99
τ_{q1_4}	0.85**	8.12	1.02**	10.24
τ_{q2_1}	−2.51**	−18.81	−2.35**	−18.72
τ_{q2_2}	−1.37**	−13.79	−1.22**	−13.34
τ_{q2_3}	−0.41**	−4.54	−0.27**	−3.20
τ_{q2_4}	0.83**	8.97	0.97**	11.04
τ_{q3_1}	−2.85**	−18.57	−2.69**	−18.66
τ_{q3_2}	−2.23**	−17.78	−2.08**	−17.83
τ_{q3_3}	−1.17**	−11.49	−1.02**	−10.86

(*continued on next page*)

(*continued*)

Estimated threshold parameters of the measurement equations	HCL model		HML model	
	Estimate	t-ratio	Estimate	t-ratio
τ_{q3_4}	0.25**	2.62	0.40**	4.53
τ_{q4_1}	−3.04**	−18.26	−2.87**	−18.20
τ_{q4_2}	−1.94**	−15.53	−1.77**	−15.28
τ_{q4_3}	−0.60**	−5.63	−0.42**	−4.29
τ_{q4_4}	0.80**	7.42	0.98**	9.57
τ_{q5_1}	−1.36**	−10.92	−1.17**	−10.15
τ_{q5_2}	0.13	1.09	0.33**	3.06
τ_{q5_3}	1.36**	10.71	1.56**	12.87
τ_{q5_4}	2.27**	15.47	2.47**	17.25
τ_{q6_1}	−2.14**	−14.62	−1.92**	−14.51
τ_{q6_2}	−0.48**	−3.77	−0.25*	−2.18
τ_{q6_3}	1.04**	7.81	1.26**	9.89
τ_{q6_4}	2.21**	14.15	2.42**	15.79
τ_{q7_1}	−1.45**	−9.28	−1.20**	−8.30
τ_{q7_2}	0.21	1.43	0.49**	3.49
τ_{q7_3}	1.65**	10.12	1.94**	12.17
τ_{q7_4}	2.80**	14.83	3.10**	16.39
τ_{q8_1}	−2.56**	−15.82	−2.36**	−15.95
τ_{q8_2}	−1.19**	−8.56	−0.96**	−7.58
τ_{q8_3}	0.30*	2.25	0.54**	4.31
τ_{q8_4}	1.88**	12.40	2.14**	14.17
τ_{q9_1}	−2.09**	−15.79	−1.91**	−15.64
τ_{q9_2}	−0.81**	−7.09	−0.62**	−5.91
τ_{q9_3}	0.73**	6.40	0.92**	8.50
τ_{q9_4}	1.84**	14.08	2.04**	15.83
τ_{q10_1}	−2.69**	−18.76	−2.52**	−18.63
τ_{q10_2}	−1.55**	−14.22	−1.39**	−13.78
τ_{q10_3}	−0.25**	−2.56	−0.09	−0.96
τ_{q10_4}	1.20**	11.44	1.35**	13.56
τ_{q11_1}	−1.87**	−12.19	−1.63**	−11.67
τ_{q11_2}	−0.18	−1.29	0.07	0.57
τ_{q11_3}	1.59**	10.33	1.84**	12.31
τ_{q11_4}	2.86**	15.45	3.11**	16.86
τ_{q12_1}	−0.89**	−8.41	−0.71**	−7.34
τ_{q12_2}	0.54**	5.25	0.71**	7.33
τ_{q12_3}	1.77**	14.67	1.92**	16.57
τ_{q12_4}	2.67**	17.38	2.81**	18.74
τ_{q13_1}	−2.31**	−17.53	−2.14**	−17.41
τ_{q13_2}	−1.07**	−9.89	−0.90**	−9.00
τ_{q13_3}	0.34**	3.32	0.52**	5.32
τ_{q13_4}	1.81**	14.68	1.99**	16.53
τ_{q14_1}	−0.90**	−8.05	−0.72**	−6.97
τ_{q14_2}	0.72**	6.52	0.91**	8.63
τ_{q14_3}	2.28**	16.12	2.45**	17.73
τ_{q14_4}	3.15**	17.11	3.31**	18.27
τ_{q15_1}	−1.39**	−12.52	−1.22**	−11.86
τ_{q15_2}	−0.24*	−2.32	−0.07	−0.69
τ_{q15_3}	1.04**	9.69	1.21**	11.86
τ_{q15_4}	2.19**	16.24	2.36**	17.94
τ_{q16_1}	−2.14**	−16.06	−1.95**	−15.69
τ_{q16_2}	−0.99**	−8.65	−0.80**	−7.59
τ_{q16_3}	0.07	0.64	0.26**	2.55
τ_{q16_4}	1.54**	12.55	1.72**	14.83
τ_{q17_1}	−1.18**	−8.87	−0.95**	−7.86
τ_{q17_2}	0.48**	3.72	0.70**	5.83
τ_{q17_3}	1.85**	12.74	2.07**	14.66
τ_{q17_4}	3.14**	16.47	3.35**	17.66

Note: *, and ** indicate statistical significance at the 5% and 1% levels. τ_s denote the estimated threshold parameters in measurement equations.

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