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What is inside the bottle? - a comprehensive analysis of the supply and demand side of the Hungarian pálinka sector

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Doctoral Dissertation

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1. Introduction and relevance of the topic

Almost every country has its own national drink, which is decisive from a cultural, social, and economic point of view. What whisk(e)y was in the former British Empire, tequila in Mexico, cognac in France, or grappa in Italy, undoubtedly is pálinka in Hungary. Pálinka is a distillate made exclusively from fruit, which can only be made in Hungary. The only exception to this is apricot pálinka, which name can be used in four Austrian provinces (Lower Austria, Vienna, Burgenland, and Styria). In Hungary, the pálinka culture has a centuries-old past (see e.g., Békési - Pándi, 2005; Harcsa et al., 2014). Before the 21st century, pálinka was considered an extremely low-quality spirit (Török, 2013); the turning point in terms of quality occurred at the very beginning of the 21st century, as a result of which pálinka is experiencing its renaissance (Géczi et al, 2018; Harcsa, 2017a; Harcsa 2017b) thanks to changes in Hungarian and EU legislation, the efforts of the Hungarian governments, the establishment of the Pálinka National Council (PNC) the acquisition of the EU Geographical Indication (GI) and the distinguished Hungaricum status.

The pálinka, and the 'törköly' (marc) pálinka made from grapes, is a product with a geographical indication (GI) according to Hungarian and EU legislation, in addition to fourteen other regional pálinka (Békési szilvapálinka, Kecskeméti barackpálinka, Szabolcsi almapálinka, Szatmári szilvapálinka (all since 2003), Gönci barackpálinka (since 2008), Újfehértói meggypálinka (since 2013), Nagykunsági birspálinka, Nagykunsági szilvapálinka, Madarasi birspálinka, Vasi vadkörte pálinka (all since 2021), Homokháti őszibarackpálinka (since 2022), Borzag Pálinka, Nagykörűi cseresznyepálinka, and Sárréti kökénypálinka (all since 2023) receive such international protection (European Commission, 2023). Emphasizing the relationship between the geographical origin and quality of individual products (especially foodstuffs) goes back thousands of years, but its economic role only became of particular importance with the globalization of trade. The relationship between food quality and origin has been regulated for a long time in many countries, primarily in Southern Europe (e.g., France or Italy), but in the European Union, regulations in this direction have only been in force since 1992. It was the Trade-Related Aspects of Intellectual Property Rights (TRIPs) agreement concluded at the end of the Uruguay Round in 1994, which put this type of regulation on the agenda of the WTO (Török et al., 2020; Viju et al., 2013).

Although geographical indications do not (yet) play a decisive role in the establishment of international trade agreements (Jámbor - Török, 2019), the European Union has made it clear during its negotiations that the question of the place of origin of foodstuffs is unavoidable. As a result, in the trade agreements recently concluded by the EU, a separate chapter always discusses the interpretation and use of the system of geographical indications for the contracting parties (Engelhardt, 2015). There are two types of geographical indications in the EU: protected designations of origin (PDO) are very similar to the already existing French Appelation d'Origine Contrôlée (AOC) and Italian Denominazione di Origine Controllata (DOC) systems (Ilbery et al., 2000; Lamarque – Lambin, 2015). The protected geographical indication (PGI) is of German origin, but it is less likely to be linked to a specific area (Gangjee, 2006). The biggest difference between the two types is that in the case of the PDO, each step in the production of the product takes place in a given geographical area, while in the case of the PGI, part of the production of the product can be linked to a specific geographical area (Figure 1). The European Union's policy in the field of geographical indications is most decisive in the Mediterranean member states, since both the number of registered products and their economic importance are the highest in these countries (Török – Maró, 2020).

Figure 1. Geographical indications in Hungary

Source: European Commission (2023)

The relevance of the topic is further enhanced by the fact that in 2015 the Hungarian Government announced the ‘Geographical Indication Program’, the aim of which is to significantly increase the number of Hungarian food and beverages with geographical indications recognized by the EU, and that the potential inherent in the protection of

origin is better exploited (Hungarian Government, 2015). As a result, a large jump can be observed in Hungary in terms of the number of ongoing registrations (European Commission, 2023). In addition to all of this, since March 2013, pálinka has been classified as a Hungaricum based on the decision of the Committee for Hungaricums. Hungaricums are unique values of the Hungarian nation that should be preserved and symbolize belonging, unity, and national self-awareness. According to the definition, Hungaricum products, in contrast to GI products, are not necessarily linked to a specific geographical area (Kassai et al., 2016).

The importance of the research is further justified by the fact that Hungary has placed great emphasis on improving the image of palinka, as a Hungarian national drink, and that the budget receives significant revenue from the excise tax on pálinka. Pálinka is Hungary's national treasure and (alcoholic) drink, the quality of which has undergone significant changes in recent decades, and more and more foreign consumers are interested in this product. In addition, in the European Union, more and more emphasis are being placed on products with protected origin, including alcoholic beverages.

2. Theoretical background

2.1 Legislative changes in the Hungarian pálinka sector

In the period before the regime change, a total of seven, mainly state owned, large commercial enterprises and 800-1000 contract distilleries were engaged in the production and distribution of spirits. Large companies belonged to the "subsidized", contract distilleries to the "tolerated" category, while the "forbidden" category was home-made distilleries. Since the state received significant tax (excise duty) revenue from the sale of various spirits, public health aspects were not really considered (Kopcsay, 2008). After the regime change and privatization, the first change in the legislative environment of pálinka was the Act LVIII of 1993 (on excise regulation and control, as well as the excise duty on contract distilling) was passed, which states the tax rate for contract distilleries. According to Act CIII of 1997 on excise duty and special rules for the distribution of excise products, the basis of the pálinka tax is the quantity of the alcohol product, defined in hectolitres.

For a very long time, there were three types of drinks called pálinka in Hungary: (1) products made from fine spirits with added aromas (e.g., plum-flavoured vodka); (2) fine spirits and aromas, as well as mixed drinks made from real fruit pálinka; and (3) distillates made from real fruit (Harcsa, 2018). This confusing situation was clarified by the provision No. 1-3-1576 of the Hungarian Food Codex (Codex Alimentarius Hungaricus), which came into force in 2002 (Hungarian Food Code Committee, 2002), which put an end to the decades-long ‘fight’ about the uniqueness, specialness, and quality of pálinka. Pálinka was distinguished from other spirit-based, fruit-flavored alcohol products, so that since 2002, only spirits made from 100% fruit and with a minimum alcohol content of 37.5% can be considered and called pálinka. Before Hungary's accession to the European Union (EU) in 2004, due to the legal harmonization process, excise tax regulation had to be changed, thus the Act CXXVII of 2003 was born on excise duty, which fully adopted EU standards.

Act LXXIII of 2008, which is in accordance with the Regulation 110/2008/EC of the European Parliament and Council, the so-called ‘pálinka law’ provides for pálinka, ‘törkölypálinka’ and the establishment of the Pálinka National Council. According to the law, pálinka is a fruit spirit made from fruit grown in Hungary, which is also distilled, matured, and bottled in Hungary. It is important to point out that products made from concentrate or dried fruit cannot be called palinka. And distillates made

from, for example, imported fruit or vegetables, or containing honey, cannot be called pálinka either. The law also names 'törkölypálinka', which is a spirit that are made from grapes and have similar parameters as other fruit pálinkás. Neither pálinka nor 'törkölypálinka' can be flavoured, sweetened, or coloured; only enzymes, acids, yeasts, and other auxiliary materials suitable for removing heavy metals may be used. Pálinkás entitled to GI protection also appear in the law, which must also comply with individual product descriptions that are stricter than the (Hungarian) legal description. In addition, it was also possible to use the pálinka seal, which later became mandatory, in the case of domestically marketed drinks, which differ in colour from other alcoholic products.

The period between 27th September 2010 and 31st December 2014 can be considered the 'golden age' of contract distilleries, as the producers did not have to pay excise duty on the beverages made, which resulted in a significant increase in the desire to distillate (Harcsa, 2016a; Zsótér-Molnár, 2015). In addition, beside contract and commercial distillation, in 2010 home-made pálinka distillation became re-authorised too. According to the law, an individual (private distillery) is entitled to produce 50 litters of 86 V/V%, duty-free distillate each year, but above 50 litres, individuals must pay the full excise duty. A private distillery may have its own distillery, which is not subject to notification up to a capacity of 100 litres. In contrast, contract distilleries must be registered with the competent authorities; and the distillate produced in the contract distillery cannot be put on the market either, however, there are certain exceptions, in the case of the payment of full excise duty and the affixing of the seal.

Under the Directive 92/83/EEC of the European Council, Member States may be authorized to apply for reduced duty rates or duty exemptions for certain regional and traditional products if the competition in the EU's internal market is not distorted. However, this rate may not be less than 50% of the rate of national excise duty. As Hungary violated this directive by abolishing the excise duty on pálinka, the EU initiated infringement proceedings against Hungary, and as a result, the country was obliged to amend the law. According to this, from 1st January 2015, a duty of HUF 835 was levied on every litre of contract-distilled pálinka with a 50% alcohol content, if it does not exceed the amount of 86 litres (in that case, the duty rate will be doubled). In addition to contract distillation, the rules for home distillation (private distillation) have also changed. The ownership of the distillation equipment is registered by the relevant local government, and if pálinka is distilled within the given year, private distilleries

must pay a lump-sum tax of HUF 1,000 to the local government at their place of residence. In addition, the authority must be notified of the quantity of distilled drink above 86 litres, which must be destroyed within a controlled frame.

According to the current regulations (Act LXVIII of 2016 on excise duties), an alcoholic product (distillate or pálinka) can currently be made from fruit in three ways: by private distilling, in contract distilleries and in commercial distilleries. We talk about private distillation when someone makes distillate from (typically) their own fruit, with their own distillation equipment, in their home. When someone uses the services of a contract distillery to make their own fruit, we are talking about a contract distillate. If a specialized company produces distillate for commercial purposes, typically from purchased raw materials, the product made here can only be called pálinka. It is important to point out that products from private and contract distillation can only be described as distillates (with a few exceptions), they cannot be officially called pálinka; and that only the drinks produced in commercial distilleries qualify as a Hungaricum and EU's protected drinks.

In 2016, further changes were introduced in the regulation of private distillation regarding excise duty. It is still possible to produce distillate at home without prior notice, but those who are wishing to do so must purchase a distillate stamp ticket. Pursuant to the amendment of the legislation on excise duty, private distilleries must pay a tax of HUF 700 in the case of distillate with an alcohol content of 42%. A minimum of 5 and a maximum of 86 distillate stamps must be applied for after each distillation - which proves the origin of the product, for a payment of HUF 3,500, anyone can prove that the home-distilled product has been legally produced. From 2021 onwards, the rules of production changed again in several respects (National Tax and Customs Administration, 2021), as the production of distillates became duty-free up to a certain amount for both private distilleries (up to 86 litres – maximum value) and contract distilleries (up to 50 litres).

2.2 Examination of the supply side of the Hungarian pálinka sector

The analysis of the supply side of pálinka is still a relatively unexplored area. The two distillation technologies of pálinka brewing (small-pot ('kisüsti') and tower) can be compared along different economic parameters. Harcsa (2016b) investigated the feasibility of the single-stage (tower) distillation technology along several scenarios

(optimistic, realistic, and pessimistic), using different indicators (net present value, internal rate of return, profitability index and discounted payback period). Based on the results, one-stage distillation can be expected to have 25-30% lower labour costs than ‘kisüsti’ distillation method. For both methods, the cost of wages can be considered the largest expenditure. Based on Harcsa's (2016) conclusions, it can be said that only in the presence of favourable economic conditions is it worthwhile for distilleries to invest in the purchase of single-stage distillation equipment, since the value of a new equipment exceeds HUF 10 million.

Another study of Harcsa and his co-authors (2019) also found that, the specific wage cost significantly increases the costs; and energy and general costs (for example, transportation) account for only one-sixth to one-tenth of this value. In terms of energy costs, the largest item is the cost of heating energy, which is much higher in the case of the ‘kisüsti’ system due to the double heat treatment. This is important because most Hungarian distilleries use this technology. The margin value was 10-13 thousand liters of pálinka, based on which it can be concluded that contract distillation is an income-generating activity, since the average production was 18 thousand liters in recent years. With the increase in output, which may happen because of the law change in 2021, the cost of the distilleries can be reduced.

Lakner and his co-authors (2014) used a model and indicators like Harcsa's to examine the economics and profitability of establishing and operating a commercial distillery (model plant) capable of producing 30,000 litres of pálinka. The production cost of one litre pálinka excluding excise tax is around HUF 3,000; this value is higher today due to the increase in fruit and labour prices. In the case of their model plant, the most important cost items were raw material, company general, and packaging material costs; excise tax and VAT were not considered in their model. Based on their findings, a pálinka made from mixed fruit cannot be sold to a commercial unit (e.g., supermarket or hypermarket) at such a high price to ensure an acceptable profit. Based on all this, a pálinka made from one fruit can be considered more profitable.

Török (2013) examined the profitability and the economy of 65 pálinka distilleries. Based on his results, the distilleries that produce pálinka with GI can be considered more profitable (higher ROE, ROA, ROS), and the sales revenue and the total balance sheet can also be considered higher for these types of distilleries. Török extended his

research to the countries of the Central and Eastern European region that have protected fruit distillates. The alcoholic beverages of the countries of the region are known within their own national borders, but this cannot be stated at the international level, and they are generally not competitive, based the calculation of comparative advantages (Török - Jámbor, 2013).

An additional basis for comparison can be the tendering activity in the case of the two types of distilleries. Based on the tendering activities of the commercial distilleries and contract distilleries, it can be concluded that most of the commercial distilleries, and only in a few cases, typically to a much lesser extent, the contract distilleries received or receive subsidies. The subsidies were usually spent on the purchase of machineries and technological refurbishment (Kassai et al., 2016; Káposzta et al., 2015). Another point of connection can be the interweaving of the distilleries with the actors of tourism. All in all, there is a good relationship between the actors of tourism and pálinka producers, but there are only a few cases where there is tight cooperation (e.g., tasting, plant visits, product sales) between the different actors (Káposzta et al., 2015).

2.3 Consumer habits in the Hungarian pálinka sector and in the case of international competitors

Several studies have examined the pálinka consumption habits of Hungarians, and the transformation of consumer habits and the change in attitudes related to pálinka. The first significant OszKő-TNS study (2003), published in the early 2000s, analysed the marketing strategy of pálinka and dealt with consumers through it. According to the study, traditions determine the consumption habits and occasions of pálinka (e.g., slaughter of pigs, weddings). In contrast, NRC's survey of young people (2010) have revealed a change in the image of pálinka, that it has become a trendy, popular product that can be consumed at social events or festivals. The report of the GFK Hungária Market Research Institute (2008) commissioned by the Agrármarketing Centrum highlighted the poor information of consumers about the pálinka, and the remarkably high proportion of non-commercial purchases (private distillation). Spirits that cannot be called pálinka have a significant share, as opposed to real pálinkas prepared in accordance with the Pálinka Act. Consumers' attitudes towards pálinka were mostly related to nostalgia, the rural atmosphere (although pálinka consumers typically live in the larger cities) and Hungarianness, so they found that the name pálinka had become

obsolete. According to the survey, in terms of sociodemographic criteria, the typical consumers of pálinka are men between the ages of 30 and 50 with a higher level of education.

Totth et al. (2011a) attempted to explore habits and preferences using interviews (in a total of 80) examining pálinka consumers. Based on the results, positive associations (group of friends, family event, good mood, cheerfulness) are tied to pálinka; and the negative stereotypes associated with the drink (e.g., poor quality) are disappearing. When buying pálinka, the following aspects are decisive for consumers: taste, packaging (especially design) and price, followed by alcohol content and brand. In the case of a gifting, it is much more common to pay a higher price than in the case of a purchase for one's own purposes; and in the case of gifting, special flavours are the determinants, while for gatherings of friends and home consumption, traditional, more popular flavours are dominant. The role of the brand and the region is less important for the respondents, but most of them are looking for the products of Zwack, Fütyülős, Rézangyal, Zsindelyes and Szatmár plum (region). For all types, different consumption occasions, 'homemade pálinka' has appeared, mainly due to its origin (self-made, they know what it is made of) and its price (cheaper).

Totth et al. (2011b), with the help of a questionnaire survey (1,487 respondents), tried to map out the preferences of pálinka consumers between the ages of 23 and 60 who at least occasionally drink the spirit, and the role of certain characteristics of pálinka (brand name/distillery, region, taste, packaging) play in consumer decision-making. Looking at the results, it is critical to note that by then, the spirit seems to have gotten rid of the negative image of being a bit 'old-fashioned' drink. Regarding the occasion of consumption, pre-meal (aperitif) drinking was highlighted, although due to the transformation of international trends, pre-meal is replaced by post-meal (digestif) consumption in most spirits. Most respondents associate the consumption of pálinka with social events and celebrations, but there is an increasing number of respondents who consume the product 'anytime'. Only a few of the brands/distilleries are better known (e.g., Zwack, Rézangyal); rather, most of the brands and distilleries are unfamiliar to consumers. Regarding the region, only a few (Szatmár, Kecskemét, Szabolcs) are sufficiently known to the respondents. In addition, Fütyülős, Vilmos and Vilmos Mézes also appeared in the brand preference, which cannot be considered

pálinka (distillate only) under the Pálinka Act, that is consumers mix them with real pálinkas (Totth et al., 2011a, Totth et al., 2011b).

The authors repeated the research later, focusing mainly on the pálinka consumption habits of young people. Based on their results, it can be stated that a significant part of the respondents, between the ages of 18 and 39, used to buy pálinka for various occasions (e.g., home consumption, ceremonies, meetings). The authors highlighted that young people prefer and consume this spirit besides whiskey and vodka. This can contribute to increasing the image of the drink and thus its competitiveness. The most well-known pálinka-making regions among pálinka consumers are still the regions of Szatmár, Szabolcs and Kecskemét (Totth, 2017). In their research, published in 2018, the authors already reported an increase in consumer awareness, as most respondents were aware that only distillate made from 100% domestic fruit could be considered to pálinka. Consumption of pálinka is still mainly associated with celebrations (christening, name days, birthdays, Christmas, funerals) and social events (meeting of friends, family events). Classic flavours (such as plum, apricot, pear) are the most popular, however, in terms of flavour preferences, it should be mentioned that most respondents prefer 'homemade pálinka' regardless of taste. Among the not preferred flavours, in contrast to 2010, pálinka-like spirits (e.g., Fütyülős) have also appeared (Totth et al., 2018a).

In addition to the interviews, the researchers also examined the consumer habits with the help of a questionnaire survey (1550 respondents). Within spirits, the popularity of three products stood out: vodka, whiskey, and pálinka – in this regard, there was no change from the previous survey(s). Men prefer whiskey and pálinka, while women prefer vodka. The best-known pálinka flavours are plum, törköly (grape) and mixed pálinka, but in terms of taste preference, the latter two are not among the most popular flavours. Regarding the region, Szatmár, Kecskemét and Szabolcs still stand out. Overall, therefore, there were no significant changes compared to the survey conducted in 2010, which, according to the authors, results in a slowdown and stagnation in the improvement and change of the pálinka image (Totth et al., 2018b).

The study of Szegedyné Fricz et al. (2017), with a questionnaire survey (1014 respondents), also examined the behaviour and habits of consumers, and the factors determining them. The authors also supported that (basically) the occasional drinking

is the nature of pálinka consumption (e.g., weddings, house parties, illness). Based on their results, men, as well as those over 50 and 18-24 years of age, consume pálinka more frequently and more often. The main factor influencing purchasing, in addition to the type of fruit, is the recommendations of friends, and the price, followed by protection of origin. According to the respondents, incorrectly, it is possible to make pálinka from cereals, citrus fruits, and potatoes.

Mucha et al (2020a) examined the image of pálinka based on different product properties. The 626 respondents considered quality to be the most important purchasing criteria, followed by price, Hungarian origin, prestige, and fashion. Two particularly important conclusions were drawn: (1) the image of homemade distillate is more positive than that of store pálinka; (2) knowledge about pálinka is still extremely incomplete among Hungarian consumers. The respondents were not convinced of the Hungarian origin of the pálinka, and according to the respondents, the commercially available pálinkas can only surpass the homemade distillate with their elegant packaging. In a later publication, Mucha et al (2020b) concluded that in the case of purchases, price has the greatest influence on the decision, which is followed by the type of fruit used and the origin. A significant proportion of consumers prefer homemade distillate, considering the origin, which is explained by differences in image and price.

Mucha et al. (2021; 2022) also examined the image of store-bought pálinka, home-made distillate and whiskey, which is popular in Hungary. Emotional attachment is highest for homemade distillate, followed by whiskey and store-bought pálinka. Homemade spirits were considered by the respondents to be of a more reliable quality than in-store pálinkas. The latter can be explained not only by emotional and behavioural differences, but also by knowledge and knowledge gaps, which is also confirmed by the fact that most of the respondents consider homemade distillate to be a Hungaricum product. In Hungary, the consumption of whiskey is clearly a status symbol.

Examining the international competitors of pálinka, we can find some studies also deal with consumer preferences. Glenk et al. (2012), involving 400 consumers, examined consumer preferences associated with Scotch whiskey on sustainable production, consumption, and the purchase of environmentally friendly food. Based on

results, it can be said that about half of the survey participants consider the proportion of Scotch-grown barley in their whiskey at the time of purchase. Furthermore, it was proved that the demand for environmentally friendly production of Scotch malt whiskey is rather low, suggesting that consumers are unlikely to be key players in promoting sustainable production. This fact is confirmed by the fact that only one third of respondents have a strong demand for restrictions on the use of pesticides.

Wan et al. (2015) examined red wine, white wine, beer, whiskey, and Chinese grain spirit (baijiu). Based on their results in general, for consumers, it is important to serve a particular alcoholic beverage in a suitable glass, based on which they are willing to pay a higher price for it, so the type of glass or bottle affects the willingness to pay, thus, also affects product marketing as well as the design of bottles and glasses.

Prentice and Hadsjuk (2016) analysed consumer factors (brand, country of origin, packaging, social media) that arise during the purchase of vodka. Based on their results, similarly to Siegel et al. (2013), brand has a significant impact on consumer decision-making and purchasing preferences. Packaging has of relatively low importance when buying vodka, and many have found that this factor indicates to them the quality of the product they purchase. Social media has a greater effect on the frequency of purchases. They conclude that market participants need to focus on strong branding. Merlino et al. (2019) measured 667 grappa consumers' purchasing preferences and behaviours. For consumers in Italy, the choice of grappa was most related to previous experience, product knowledge and origin. In contrast, consumers considered alcohol content and packaging to be the two least crucial factors when making a purchase.

Cravero et al. (2020) examined taste sensitivity among 14 alcoholic and non-alcoholic beverages (including beer, wine, spirits, cocktails) involving 2388 Italian consumers, considering gender, age, and taste response. Despite strong gender differences, because women tend to like and consume less alcohol than men, similar patterns of liking and interest were found for both sexes. They found that consumption of alcoholic beverages decreased with age, apart from wine. It should be emphasized that people see moderate wine consumption as part of the Mediterranean diet. Marinelli et al. (2014) were confirmed that young people consume wine mostly during meals, while beer and spirits are mostly consumed outdoors, in the evening and on weekends. As for the preferred places to shop, the wines are mostly in restaurants, pizzerias, and

supermarkets; beers, especially in bars, pubs, distilleries, supermarkets, and pizzerias; and spirits are usually purchased at discos and clubs.

Table 1. Key studies examining alcohol (palinka and its direct international competitors) consumption patterns

Authors	Year of the survey	Examined alcoholic beverage	Target group and data collection technique	Investigated, most important product properties	Key findings
Totth et al. (2011a)	2010	Pálinka	Interviews (80) with people over the age of 23 who have consumed pálinka in the last 3 months.	Taste, packaging, price, alcohol content, brand	Positive associations can be connected with pálinka consumption. Purchasing aspects: taste, packaging, price, alcohol content, brand.
Totth et al. (2011b)	2010	Pálinka	Questionnaire survey (1487) among economically active consumers of pálinka aged 23–60, who consume pálinka at least occasionally.	Brand/distillery, taste, region, packaging	The pálinka got rid of its negative image. Pálinka consumption is associated with social events and holidays.
Glenk et al. (2012)	2012	Scotch malt whiskey	Questionnaire survey (400) with Scottish respondents over the age of 18.	Origin, production method	The presence of Scottish-grown barley is not a decisive factor. Demand for more environmentally friendly whiskey production is quite low.
Marinelli et al. (2014)	2014	Alcoholic drinks	Questionnaire survey (430) with Tuscan respondents aged between 18 to 35 years.	Perceptions	Young consumers prefer to see alcohol as a means of socializing and getting out of everyday life. The time of consumption and the place of purchase differ for different drinks.
Wan et al. (2015)	2015	Red wine, white wine, beer, whiskey, Chinese	Questionnaire survey (120) with Chinese students between the ages of 18 and 23 + questionnaires (100) with American	Type of the glass, type of the bottle	The type of glass or bottle affects the willingness to pay. Proper serving of the drink is essential.

Authors	Year of the survey	Examined alcoholic beverage	Target group and data collection technique	Investigated, most important product properties	Key findings
		grain spirit	respondents between the ages of 19 and 75.		
Prentice-Handsjuk (2016)	2016	Vodka	Questionnaire survey (454) with Australian respondents over 18 years of age.	Brand, country of origin, packaging, social media	The brand has a significant impact on consumer preference. Packaging is of relatively low importance when purchasing vodka.
Totth et al. (2017)	2016	Pálinka	Questionnaire survey (1550) among consumers over the age of 18, who purchase alcoholic beverages at least occasionally.	Taste, region	A significant proportion of respondents between the ages of 18 and 39 tend to buy pálinka for various occasions. In addition to whiskey and vodka, young people mostly consume pálinka.
Totth et al. (2018b)	2016	Pálinka	Questionnaire survey (1500) among economically active consumers of pálinka aged 23-60, who consume the spirit at least occasionally.	Price, taste, region	Within the spirits, the popularity of three products stood out: vodka, whiskey, pálinka. Men prefer whiskey and pálinka, while women prefer vodka.
Szegedyné Fricz et al. (2017)	2017	Pálinka	Questionnaire survey (1014) with respondents over 18 years of age.	Type of fruit (taste), recommendations of friends, price, protection of origin (geographical indication), alcohol content, producer, bottle color and label, internet reviews	Men, as well as those over 50 and 18-24 years of age, consume pálinka more frequently and more often. The main purchase aspects are the type of fruit, the recommendations of friends, the price, and the protection of origin.
Totth et al. (2018a)	2018	Pálinka	Interviews (67) with people over 23 who	Brand, producer name, appearance	Increasing consumer awareness. Among the not

Authors	Year of the survey	Examined alcoholic beverage	Target group and data collection technique	Investigated, most important product properties	Key findings
			have consumed pálinka in the last 3 months.	(e.g., packaging, label), price, taste, place of origin, alcohol content, availability, packaging	preferred flavours, pálinka-like drinks appear. Consumption of pálinka is mainly associated with festive occasions.
Merlino et al. (2019)	2019	Grappa	Interviews and questionnaire survey (667) with Italian respondents over 18 years of age.	Previous experience, product knowledge, origin, packaging, alcohol content	The most key factors in making a choice are experience, product knowledge and origin. Less crucial factors are alcohol content and packaging.
Mucha et al. (2020a)	2019-2020	Pálinka	Questionnaire survey (626) of respondents over 18 years of age who have consumed pálinka in the last 3 months.	Quality, price, Hungarian origin, prestige, fashion	Knowledge about pálinka is extremely incomplete. The most important aspect when buying is quality, followed by price, Hungarian origin, prestige, and fashion criteria.
Mucha et al. (2020b)	2019-2020	Pálinka	Questionnaire survey (626) of respondents over 18 years of age who have consumed pálinka in the last 3 months.	Price, origin, type of fruit	Price is the most crucial factor when buying pálinka or distillate. The purpose of the purchase determines the role of the price, the type of fruit, and the origin in the purchase.
Mucha et al. (2021)	2019-2020	Pálinka	Questionnaire survey (626) of respondents over 18 years of age who have consumed pálinka in the last 3 months.	Quality, taste, smell	The image of homemade distillate and whiskey is better than that of store pálinka. Consumers mistakenly consider homemade distillate to be a Hungaricum product.
Mucha et al.	2019-2020	Pálinka	Questionnaire survey (626) of respondents	Origin, price, fruit	Consumers have the most favorable attitudes towards

Authors	Year of the survey	Examined alcoholic beverage	Target group and data collection technique	Investigated, most important product properties	Key findings
(2022)			over 18 years of age who have consumed pálinka in the last 3 months.		homemade distillate, followed by whisky and then pálinka.
Cravero et al. (2020)	2020	14 alcoholic and non-alcoholic beverages	Questionnaire survey (2388) with Italian respondents aged between 18 to 60 years.	Taste	Similar preferences were found for both sexes. Consumption of alcoholic beverages has decreased with aging, with the sole exception of wine.

Source: own composition

2.4 Consumer ethnocentrism

In addition to the physical characteristics of the product, the consumer behavior and the purchasing preferences of the respondents are also influenced by social, cultural and psychological factors (Auger et al., 2010; Shimp and Sharma, 1987). Shimp and Sharma's (1987) study considered the basis of the concept of consumer ethnocentrism. According to the authors, consumer ethnocentrism refers to consumers' beliefs about the validity and morality of purchasing non-domestic products. More ethnocentric consumers show less willingness to buy foreign products and attach more importance to the country in which a product is produced or manufactured. Ethnocentrism appears as a market segmentation option in most developed countries. In the case of food and beverages, it can be observed that European consumers prefer domestically produced products (Balabanis - Diamantopoulos, 2004; Evanschitzky et al., 2008; Gao et al., 2014).

In the 1990s and early 2000s, researches examining Hungary showed that Hungarian consumers considered foreign products to be of better quality (Papadopoulos et al., 1990, Malota, 2003). This trend began to change with time and Hungarian products, especially those with a trademark, became more and more popular (Malota, 2011). Based on the most recent studies (Mucha et al., 2020c; Szakály et al., 2016), it can be concluded that the perception of foreign foodstuffs is less positive and that the respondents prefer to buy Hungarian foodstuffs. Today, Hungarian consumers

can be considered ethnocentric, which is largely influenced by age and education. Ethnocentrism is most characteristic of people living in villages, while it is least characteristic of consumers in the capital or bigger cities. In addition, many Hungarian consumers are price sensitive, which has a significant impact on the purchasing decision. So the question is, to what extent is ethnocentrism present in a quality drink, especcially in the case of pálinka? It provides the further basis and relevance of the investigation, that many studies (Akbarov, 2021; Balabanis – Diamantopoulos, 2004; Chryssochoidis et al., 2007; Evanschitzky et al., 2008) have emphasised the importance of testing the impact of consumer ethnocentrism on different products.

3. Methodology

The aim of my research is to examine on the one hand, the distilleries that exclusively carry out contract distilling (contract distilleries) and those that also carry out contract and commercial activities (commercial distilleries) along different dimensions (e.g., profitability, economic performance). Based on the examined dimensions, I am looking for answers to the following questions:

- Is there a difference between contact distilleries and commercial distilleries in terms of economic dimensions and performance?
- Is there a connection between the economic performance of the pálinka distilleries (e.g., net sales revenue, profit after tax, number of employees) and the examined characteristics (e.g., total assets, number of employees, the type of the distillery)?

The aim of my research is, on the other hand, to explore the supply side of the Hungarian pálinka industry, examining Hungarian consumers (e.g., preferences, consumption and purchasing habits); and to formulate policy and marketing. Based on all of this, I am looking for answers to the following questions:

- Has there been a change in Hungarian people's pálinka consumption habits and attitudes compared to research in recent years?
- How important do the respondents consider the purchasing preferences (e.g., production in Hungary, colour of the pálinka, packaging, colour of the bottle, alcohol content, result achieved in a palinka competition)? How do the respondents prioritize these preferences?
- Are consumers aware of the difference between pálinka and distillate? Do the respondents know the pálinka seal? If so, can it be distinguished from the seals of the distillate and other spirits?
- Where do consumers buy and how often do they consume pálinka?
- To what extent is ethnocentrism present among Hungarian consumers? How does all of this affect consumer decision-making when purchasing pálinka?
- What factors affect shopping preferences? What effect do different product attributes (e.g., brand, GI variety, production method) have on the purchasing-decision, do they represent a price premium?

Table 2. The methodology used during my research and the method of data collection to examine the various areas, as well as the published and upcoming publications

Examined area	Data collection and applied methodology	Published/upcoming publication
Supply side	• Central Excise Department of the National Tax and Customs Administration database • M&A Research Catalyst business database • Descriptive statistical analysis and visualization • Two-sample t-test • Panel regression analysis	Török, Á., & Maró, Z. M. (2020): Profitability patterns in the Hungarian pálinka industry - The performance of the commercial distilleries. Georgicon for Agriculture, 24(3), 86-97. Maró, Z. M., Maró, G., & Török, Á. (2022): A magyar pálinkaágazat - a bérfőzdék és a kereskedelmi főzdék összehasonlító elemzése. Gazdálkodás, 66(4), 354-364. doi: doi.org/10.53079/GAZDALKODAS.66.4.t.pp_354-364
Demand side	• Online questionnaire survey • Expert interviews • Descriptive statistical analysis • Regression (o-logit) analysis • Latent profile analysis (LPA) • Discrete choice experiment (DCE-model)	Maró, Z. M., Török, Á., Balogh, P., & Czine, P. (2022): Pálinkavásárlási preferenciák vizsgálata a magyar fogyasztók körében – egy diszkrét választási modell építése. Statisztikai Szemle, 100(1), 44-67. doi:10.20311/stat2022.1.hu0044 Maró, Z. M., Török, Á., Balogh, P., & Czine, P. (2023): What is Inside the Bottle? - Factors Influencing Pálinka Consumption. AGRIS on-line Papers in Economics and Informatics, 15(1), 83-98. doi:10.22004/ag.econ.334661 Maró, Z. M., Balogh, P., Czine, P., & Török, Á. (2023): The roles of geographic indication and ethnocentrism in the preferences of Central European spirit consumers: The case of pálinka. Food Quality and Preference, 108, 104878. doi: 10.1016/j.foodqual.2023.104878 Czine, P., Balogh, P., Török, Á., & Maró, Z. M. (2024). The role of ethnocentrism in relation to national and geographical indication products–The case of Hungarian pálinka. Journal of Agriculture and Food Research, 18, 101344. doi: 10.1016/j.jafr.2024.101344

3.1 Two-sample t-test and panel regression to examine the supply side of pálinka

During the examination of the supply side, those enterprises with legal personality in Hungary that operate as commercial, or contract distilleries were identified in the first round. The list of 30th June, 2017 of contract and commercial distilleries received from the Central Excise Department of the National Tax and Customs Administration, with the M&A Research Catalyst business database, in which companies principal or secondary activity was ‘to produce distilled spirits1, were compared. From this

business database, the most important economic data of a total of 462 identified distilleries (net sales revenue, operating profit, after-tax profit, balance sheet total, equity, number of employees, headquarters, location, and year of foundation) for the business years of 2009-2017 were downloaded.

On the database thus obtained, the differences between the two types of distilleries were examined using econometric methods with the version 15.0 of the STATA program package; while the charts were created using version 10.2 of the ArcGIS software. Firstly, charts were used to show in which part of the country the identified contract distilleries and commercial distilleries are located, where they are geographically most concentrated, and which are the areas where the number of distilleries is relatively high or low. After that, a two-sample t-test was carried out in relation to the individual economic characteristics (plant size, number of employees, age) to see if there was a statistically significant difference between the two types of distilleries. Finally, as follows, panel regression calculations (Best – Wolf, 2013) were conducted regarding which factors influence the economic performance of the Hungarian pálinka sector in the case of distilleries:

$$\text{Revenue} = \alpha + \beta_1 \text{Total assets}_{ij} + \beta_2 \text{Number of employees}_{ij} + \beta_3 \text{Age}_i + \beta_4 \text{Commercial distillery}_i + \varepsilon ij$$

$$\text{EBIT} = \alpha + \beta_1 \text{Total assets}_{ij} + \beta_2 \text{Number of employees}_{ij} + \beta_3 \text{Age}_i + \beta_4 \text{Commercial distillery}_i + \varepsilon ij$$

$$\text{Profit after tax} = \alpha + \beta_1 \text{Total assets}_{ij} + \beta_2 \text{Number of employees}_{ij} + \beta_3 \text{Age}_i + \beta_4 \text{Commercial distillery}_i + \varepsilon ij$$

The variables used in the panel regression models are described in Table 3.

Table 3. Description of variables used in panel regression models

Variable	Description of the variable
Revenue	Dependent variable, the net sales revenue of a given distillery in a given year, in EUR
EBIT	Dependent variable, operating profit of a given distillery in a given year, in EUR
Profit after tax	Dependent variable, the after-tax profit of a given distillery in a given year, in EUR
Total assets	Total assets of the given distillery in a given year

Variable	Description of the variable
Number of employees	Number of employees in the given distillery in the given year
Age	Number of business years closed since the establishment of the distillery
Commercial distillery	Dummy variable, set to 1 if the distillery is a commercial distillery and 0 if the distillery is a contract distillery

Source: own composition

3.2 Regression analysis (O-logit), LPA and DCE to examine the demand side

In order to examine the demand side of the pálinka industry, the data collection of an online questionnaire, with the help of an online research software (Qualtrics), was carried out by a professional market research company, called InnoFood Marketing Ltd. The data collection took place between April and July 2021. The questionnaire was optimized for both computers and mobile devices to ensure a larger number of potential respondents. The questionnaire was aimed to analyse the behaviour related to the purchase and consumption of pálinka, as well as assessing the knowledge of the respondents on the subject. To form the basis of the questionnaire, an extensive literature review (see the literature section) and expert interviews (with the president and secretary of the Pálinka National Council) were prepared. After that, a pilot survey (n=73) was conducted, based on which the questions and the answers were finalized. Based on this, the questionnaire consisted of four parts, which were as follows: (1) analysis of the behaviour related to the purchase and consumption of pálinka, and the assessment of the respondents' knowledge of the subject; (2) discrete choice experiment (DCE) to analyse pálinka-related preferences; (3) using CETSCALE to examine ethnocentrism; and (4) collecting socio-demographic characteristics of respondents.

After data cleaning (e.g., exclusion of incomplete or improperly completed questionnaires) from the data of the final Hungarian survey conducted with the participation of 1,000 Hungarian people, 760 responses were evaluated. The sample is representative for the Hungarian alcohol consuming population. Table 4 contains the most important characteristics of the respondents.

Table 4. Presentation of the sample

	Survey	HSCO census
Total respondents / Population	1,000	9,937,628
Respondent involved	760	-
Gender		
Female (%)	36.45	52.52
Male (%)	63.55	47.48
Average age (years)	54.73	41.39
Residence		
Village (%)	26.45	30.52
City (%)	40.92	34.35
Large city (%)	32.63	35.13
Education		
Basic education	2.37	31.72
Secondary education	43.42	51.31
Higher education	54.21	16.97
Average number of people living in a household (person)	2.77	2.60

Source: own composition based on survey and HSCO (2013)

In addition to the descriptive statistical analyses, a regression (o-logit) analysis was applied to understand what factors influence Hungarian palinka consumers' preferences. If the dependent variable we want to model has an ordinal measurement level, we have the option of building and estimating an ordinal logit (OL) regression model (McCullagh, 1980). This approach often appears when analysing the data of research where statements based on rating-scale-based-statements are used in the context of a questionnaire survey (Bellizzi et al., 2018; Eygu and Gulluce, 2017; Harrel, 2015). The transformed form of the model into a linear formula (taking the natural logarithm of the odds ratios) can be written according to Equation 1 (Ananth and Kleinbaum, 1997):

$$Y = \alpha_t - \sum_{k=1}^{K} \beta_k X_k, \quad (1)$$

where Y is the dependent variable, α_t is the threshold parameter for the t-th category (t = 1, 2, … ,t-1), X_k is the k-th explanatory variable, β_k denotes the estimated coefficient for the k-th explanatory variable.

The six factors examined based on the literature and the pilot questionnaire can be modelled as a function of ten explanatory variables (Table 5).

Table 5. Variables included in the model

Variable	Variable type	Value
Production in Hungary	Dependent variable	Likert scale from 1 to 5 (1: production in Hungary is not important at all for the given respondent; 5: production in Hungary is very important for the given respondent)
The colour of palinka	Dependent variable	Likert scale from 1 to 5 (1: the colour of the pálinka is not important to the respondent at all; 5: the colour of the pálinka is very important to the respondent)
The capacity of the bottle	Dependent variable	Likert scale from 1 to 5 (1: bottle capacity is not important at all for the respondent; 5: bottle capacity is very important for the respondent)
Colour of the bottle	Dependent variable	Likert scale from 1 to 5 (1: the colour of the bottle is not important at all to the respondent; 5: the colour of the bottle is very important to the respondent)
Alcohol content	Dependent variable	Likert scale from 1 to 5 (1: alcohol content is not important at all for a given respondent; 5: alcohol content is very important for a given respondent)
Place in pálinka competition	Dependent variable	Likert scale from 1 to 5 (1: the result of the pálinka competition is not important at all for the given respondent; 5: the result of the pálinka competition is very important for the given respondent)
Contract distillery	Explanatory variable	Its value is 1, if the respondent or someone in his/her family's uses the services of a contract distillery, otherwise 0
Private distiller	Explanatory variable	Its value is 1, if the respondent or someone in his/her family makes distillate at home, otherwise 0
Knows the difference	Explanatory variable	Its value is 1, if the respondent knows the difference between the distillate and the pálinka, otherwise 0
Actually knows the difference	Explanatory variable	Its value is 1, if the respondent really knows (marked the appropriate statement) what the difference between distillate and pálinka is, otherwise 0
Knows the seal	Explanatory variable	Its value is 1, if the respondent knows according to his/her own statement that the pálinka that can be purchased commercially has a unique seal different from all other alcoholic products, otherwise 0

Variable	Variable type	Value
Actually knows the seal	Explanatory variable	Its value is 1 if the respondent actually knows (mark the appropriate seal) that the commercially available pálinka has a unique seal different from all other alcoholic products, otherwise 0
Place of the pálinka purchasing	Explanatory variable	The most common place to buy pálinka indicated by the respondent (pálinka (wine) specialty store; national tobacco shop; directly from the distillery, hyper/supermarket; food discount store, other place)
The purpose of buying palinka	Explanatory variable	The most common purpose of buying pálinka indicated by the respondent (for own consumption, for consumption with family; for consumption with friends; as a gift)
Frequency of pálinka consumption	Explanatory variable	How often does the respondent consume pálinka (several times a week, weekly, monthly, a few times a year, less often, never)
Ethnocentrism	Explanatory variable	Cumulative sum of respondent values marked on the CETSCALE

Source: own composition

In the second stage of the analysis, CETSCALE statements/variables were to create consumer groups/clusters associated with different perceptions using latent profile analysis (LPA). Although the original CETSCALE consists of a seven-item Likert-type scale (Shimp – Sharma, 1987), a five-point Likert-type scale (1 – 'strongly disagree' to 5 – 'strongly agree') was used (Akbarov, 2021; Douglas - Nijssen, 2003). To choose the correct cluster number, several solutions were tested (Coakley et al., 2022; Dana et al., 2021; Spurk et al., 2020; Wardenaar, 2021). The analysis was performed using the tidyLPA package of the R program (R Core Team, 2020).

In the third stage of the analysis of the demand side, DCE was applied (see e.g., Field, 2009; Louviere, et al., 2010), which was performed in three steps. First, as it was mentioned, a comprehensive literature review and interviews with experts was conducted. Based on these, five product attributes (brand, GI, production method, price, alcohol content), which potentially influence the purchasing habits, were ranked during the pilot survey (n = 73). A D-efficient experimental design was created using the selected attributes using the Ngene 1.2 software (Choicemetrics, 2018; Rose &

Bliemer, 2009). Each decision-making situation (the respondents faced 8 decision-making situations) included three hypothetical pálinka alternatives and an opt-out (no choice) option. The final questionnaire was 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). After evaluating the pilot survey results, we excluded alcohol content due to the strong correlation with the price, since a higher alcohol content means a higher price according to the Hungarian legislation. The attributes and their levels are summarized in Table 6. The respondents, in the final questionnaire, were also faced with eight choice situations (see Figure 2). Each case contained three hypothetical alternatives and an opt-out (no choice) option.

Table 6. Tested attributes and their levels during the experiment

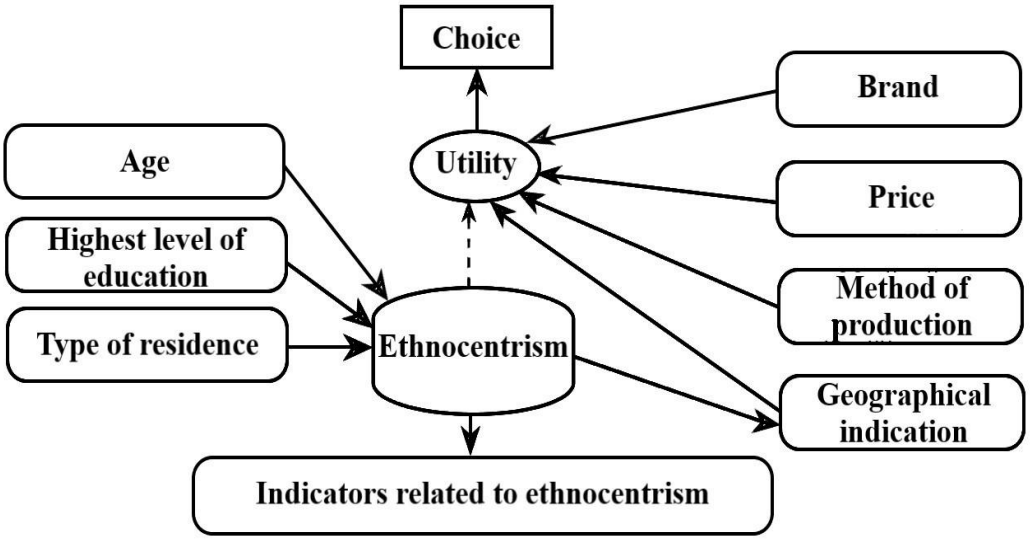
Product attribute	Description of the attribute	Attribute levels
Brand	The name of the commercial distillery	Bestillo None
GI variety	Indication of Gönci apricot pálinka GI	Gönci None
Production method	Indication of the small-pot distillation method	Small-pot (Kisüsti) None
Price (HUF)	The price of a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

Source: own composition

Figure 2. An example of a consumer decision-making situation

During our hybrid modeling (Figure 3, see more details in Article 4), latent variable (ethnocentrism) was examined, which was approximated through 17 indicators/evaluative (Likert scale from 1 to 5) statements (Shimp & Sharma, 1987). The hypothetical model is illustrated in Figure 2. Apollo 0.2.1 package of the R program was used to perform our model estimations (Hess & Palma, 2019; Hess & Palma, 2021; R Core Team, 2020).

Figure 3. The structure of the hybrid choice model



4. Summary and conclusions

4.1 Summary of the results and conclusions regarding to Article 1

My first article analyses the profitability and economic performance of the supply side of pálinka. Special attention was given to the type of the distilleries: commercial distilleries or contract distilleries. Since private distillation cannot be considered as an independent business activity, although it plays an important role in the Hungarian pálinka market, it was not included to the investigation. The economic performance of a total of 461 distilleries (345 contract distilleries, 116 commercial distilleries) was analysed. Based on the results, the different business models of the two types of distilleries can be observed. Contract distilleries penetrate the country, since they are concentrated in the fruit growing regions. In the case of contract distilleries, it is important that they are close to the fruit-producing areas, as this can reduce the transportation costs of private individuals, thus the total price of the pálinka. In

contrast, commercial distilleries buy the raw fruit during their business activities. Since we are talking about large quantities of purchases, the transportation cost is proportionally much less. It follows that when choosing a location, proximity to fruit-growing areas is not necessarily a primary consideration. Overall, the north-eastern part of the country is the most decisive in terms of the location of the distilleries.

Commercial distilleries are significantly bigger in all terms of all economic level. Due to the historical tradition, the tendering activity, and the more expensive technology (Káposzta et al., 2015; Kassai et al., 2016), these distilleries have a much larger plant size (1,6 millió EUR vs. 200 ezer EUR). The commercial distilleries have more employees (20 vs. 5 employees) in general than contract distilleries. Contract distilleries are much more seasonal (they work after the harvest), while commercial distilleries usually operate throughout the year. Commercial distilleries have a higher average age (15.8 vs. 13.5 years) than contract distilleries. Many commercial distilleries already existed before the regime change, and in the case of contract distilleries, the fluctuation is much higher, especially after the 'golden age' (Harcsa, 2016a; Zsótér-Molnár, 2015). Of the 17 pálinka distilleries established since 2017, only two are engaged in commercial activities, the remaining 15 distilleries are only authorized to be contract distilleries.

Investigating the different levels of profitability, many conclusions could be drawn. The larger (based on total assets) and the older a distillery is, the higher its revenue, operating profit and profit after tax, since palinka production is a technology-intensive economic activity. The number of employees has a positive impact only on revenue. Based on the panel regression model, the most profitable distilleries are older, contract distilleries with large plant size and high employment rate.

4.2 Summary of the results and conclusions regarding to Article 2

The second article contains the the general results of the questionnaire survey of 1,000 people. In this article, first of all, the most important aspect during pálinka purchasing were analysed (Table 7). The quality and price were not analysed and explored, since they are explored in Article 4, with the help of discrete choice experiment. The most important aspect is the production in Hungary. Since pálinka, except for apricot pálinka, can only be produced in Hungary, this supports the respondents' lack of knowledge on the subject, and it is likely that the respondents

often buy different spirits instead of palinka. However, it is positive that the origin of the drink is important to the respondents, as well as, in other alcoholic beverages (Merlino et al., 2019; Perrouty et al., 2006; Siemieniako et al., 2011). The appearance of the pálinka (colour of the bottle, capacity of the bottle), like in recent studies (see e.g., Mucha et al., 2020a) was not considered as important as the location of the production or the alcohol content.

Table 7. Respondents' views on the purchase of pálinka

Aspects of purchasing palinka	Average	Standard deviation
Production in Hungary	4.11	1.12
Alcohol content	3.80	1.02
Colour of the bottle	3.09	1.33
Capacity of the bottles	3.02	1.25
Colour of the palinka	2.74	1.25
Place in pálinka competition	2.53	1.11

Note: the answer was possible on a Likert scale from 1 to 5, where 1 meant that the aspect was not important at all to the respondent, while 5 meant that it was of paramount importance

Source: own composition

About a quarter of the respondents make distillate at home (private distillation), while more than half of them made the distillate on a contract ditilleries. The perception and judgement of private distillation in Hungary is twofold, as on the one hand it increases the consumption and the population of the drink and makes the product better known; on the other hand, only constant quality can be guaranteed for drinks produced in contract distilleries as well as in commercial distilleries.

The conceptual confusion (Mucha et al., 2020a, Mucha et al., 2020b) between pálinka and distillate continues to exist according to the research, since only 31% of all respondents knew the difference between distillate and pálinka. Seal can help to distinguish pálinkas from other alcoholic beverages, as store-bought pálinkas have a different (reddish-brown) seal according to Act LXVIII of 2016 on excise duties. Knowledge of the seal, which has not been previously examined in any study, is similarly low (41%).

The respondents usually buy pálinka in a hypermarket or supermarket, or directly from the distillery and most of the respondents (61%) consume pálinka monthly. In many cases pálinka-like drinks (e.g., Fütyülős, flavoured alcoholic beverages) may be

purchased in hypermarkets or supermarkets. The frequent consumption of the drink is not surprising, as alcohol is considered by many to be a means of socialization and they often appear during different occasions (Marinelli et al., 2014).

Finally, according to the ordinal regression models, one of the most important is that by increasing the knowledge of the seal (reddish-brown), the turnover of quality, commercial pálinkas can clearly increase. The spread of real pálinkas could also be helped by more and more consumers purchasing the product directly from pálinka distilleries, since in this case, the chance of buying palinka-like drinks is very small. The more a consumer knows the rules and regulations for pálinka (for example, because it is consumed many times or a consumer have better education or more information), the more likely it is to choose the product in a purchasing situation, and the appearance of the drink (e.g., colour of the drink) is less and less important. Furthermore, it is also clear from the results that those who have already chosen home-made distillate (e.g., makes pálinka at home) are less likely to buy pálinka more regularly. They cannot be considered as a consumer group to be targeted by companies, since they consider a drink made by themselves or bought from a family member or a friend or an acquaintance as 'real' pálinka.

4.3 Summary of the results and conclusions regarding to Article 3

The third article analysed the relationships between CETSCALE statements and socio-demographic variables. The average value of the CETSACLE items is 50.04 (standard deviations is 19.04). This value is not different from the Hungarian studies (Mucha et al., 2020c, Szakály et al., 2016), but it can be considered higher than in other developed countries (Chryssochoidis et al., 2007; Hult et al., 2012; Shimp – Sharma, 1987). All this means in practice that Hungarian producers, distilleries, or retailers should emphasize the Hungarian origin of the products much more.

In the next step, cluster analysis was applied, which identified four groups (Table 8). Rural Ethnocentrists, had the smallest group size, but are characterized by being most strongly ethnocentric. These members have at most secondary education, have a below-average income and live in a village. Based on the literature (see e.g., Erdogan – Uzkurt, 2010, Mucha et al., 2020c), there is a close positive relationship between these factors and ethnocentrism. This group cannot be considered a target group for palinka distilleries and distributors due to the limited financial capacity, the less

expensive competitors (e.g., vodka) or the above-mentioned conceptual confusion between palinka and other distillates. Ageing Ethnocentrists, with also a strong level of ethnocentrism, are typically over the age of 60. Typical pálinka consumers are also from the older age groups (Szegedyné Fricz et al., 2017), and it can also be stated that there is a positive relationship between increasing age and increasing level of ethnocentrism (Akbarov, 2021; Balabanis et al., 2001). In this case, a good corporate strategy would be to emphasise the Hungarian origin of pálinka.

Wealthy Metropolitans are characterized by a lower level of ethnocentrism, but their ethnocentricity is still stronger than in many other countries and for other products. The members of the group have higher education, higher income, and a lower average age (under 45 years old). They could be a potential future consumer of palinka (solvent demand and emphasis on the Hungarian origins), but the role of education is decisive. The Underprivileged Metropolitans live in big cities and have lowest level of ethnocentrism, which also shows a correlation based on the literature (Caruana, 1996; Mucha et al., 2020c).

Table 8. Consumer groups and their characteristics

Cluster name	Ethnocentrism	Main characteristics	Recommendation
Rural Ethnocentrists (n=47)	Strongest degree of ethnocentrism	Live in smaller cities or villages, secondary or primary level of education, below average income	Emphasizing Hungarian origin may be a good strategy; however, limited financial capacity is an obstacle.
Ageing Ethnocentrists (n=134)	Relatively high level of ethnocentrism	Over 60 years old, small proportion of people under 45 years of age	Age is characteristic of typical pálinka consumer, chance to emphasize Hungarian origins of product
Wealthy Metropolitans (n=518)	Lower degree of ethnocentrism	Under 45 years, higher education, above average income	Role of education is decisive; potential future consumers, more focus on Hungarian origins could play an important role in purchases
Underprivileged Metropolitans (n=61)	Weakest ethnocentrism	Live in large cities	Hungarian origin clearly not a significant factor.

Source: own composition

4.4 Summary of the results and conclusions regarding to Article 4

The fourth article purpose was to examine consumer preferences with a discrete choice experiment, paying special attention to the role of ethnocentrism (latent variable) in decision-making situation. The presence of the most important and investigated product attributes (the brand of the pálinka, geographical indication (GI), and production method of the drink) indicated on the bottle, all have a positive effect on consumer preferences in a decision-making situation. In parallel a higher WTP also exist. There is a willingness to pay between EUR 18,52 and EUR 20,12 for the Bestillo brand, between EUR 6,92 and EUR 8,19 for Kisüsti production method, and between EUR 24,26–24,58 for GI variety (Table 9).

The only exception is the price of the product, with the increase of which, the consumer's sense of utility for the drink decreases. 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. The level of ethnocentrism is significantly higher among respondents over 60 than among younger consumers. It is parallel with the literature (Balabanis et al., 2001; Josiassen et al., 2011; Watson & Wright, 2000) that the level of ethnocentrism is lower among younger consumers with higher education and who live in a big(ger) city. It is important to mention, as the level of ethnocentrism increases, the perceived utility related to the Gönci GI variety also increases. This was also confirmed by Fernández et al. (2018) since there are cases where a positive relationship exists between buying a foodstuff and a product related to a geographical area – especially if ethnocentrism also exists.

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.

Source: own composition

Based on the above, segmenting the market based on the investigated product attributes and ethnocentrism is possible. There is a heterogeneity in the preferences of the consumers of pálinka, thus, separable groups can be formed, just as in the case of different spirits (Gonçalves et al., 2020a; Gonçalves et al., 2020b). People tend to make purchasing decisions relating to pálinka based on only a few details, so the label and the appearing information are crucial. Since the advertising of alcoholic beverages in EU countries, thus Hungary, 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 must lead satisfaction among consumers.

4.5 Briefly answering the research questions

After summarizing the individual articles (4 articles) separately, the main research questions will be answered briefly in the following part.

Q1. Is there a difference between contact distilleries and commercial distilleries in terms of economic dimensions and performance?

The different business models of the two types of distilleries can be observed. Contract distilleries penetrate the country, since they are concentrated in the fruit growing regions. In the case of contract distilleries, it is important that they are close to the fruit-producing areas, as this can reduce the transportation costs of private individuals, thus the total price of the pálinka. In contrast, commercial distilleries buy the raw fruit during their business activities. Since we are talking about large quantities of purchases, the transportation cost is proportionally much less. It follows that when choosing a location, proximity to fruit-growing areas is not necessarily a primary consideration.

Commercial distilleries are significantly bigger in all terms of all economic level. Due to the historical tradition, the tendering activity, and the more expensive technology, these distilleries have a much larger plant size (1,6 million EUR vs. 200 thousand EUR). The commercial distilleries have more employees (20 vs. 5 employees) in general than contract distilleries. Contract distilleries are much more seasonal (they work after the harvest), while commercial distilleries usually operate throughout the year. Commercial distilleries have a higher average age (15.8 vs. 13.5 years) than contract distilleries. Many commercial distilleries already existed before

the regime change, and in the case of contract distilleries, the fluctuation is much higher, especially after the ‘golden age’ (Harcsa, 2016; Zsótér-Molnár, 2015).

Q2. Is there a connection between the economic performance of the pálinka distilleries (e.g., net sales revenue, profit after tax, number of employees) and the examined characteristics (e.g., total assets, number of employees, the type of the distillery)?

The total assets have a positive (and statistically significant) impact on all the three levels of profitability: the higher the distillery is, the higher its revenue, EBIT and profit. For instance, if a distillery’s total asset is 1 EUR more, than its revenue ceteris paribus (c.p.) is expected to increase by 0.325 EUR. However, the number of employees only has an impact on revenue: if a distillery employs 1 person more, its revenue c.p. is 60.673 EUR higher. The number of closed business years, like the total assets, has a positive impact on all the three levels of profitability, the longer a distillery has been operating, the higher its level of profitability is expected to be. In the case of profit after tax, a distillery that has one more closed business year, its profit expected to be 6.332 EUR higher. Finally, the distillery type has a proven explanatory power for operating profit and profit after tax, which suggests that if the total assets of a contract distillery and a commercial distillery is the same as the number of employees and the number of closed business years, EBIT and profit after tax will be lower in the case of the commercial distillery. The most profitable distilleries are older, contract distilleries with large plant size and high employment rate.

Q3. Has there been a change in Hungarian people’s pálinka consumption habits and attitudes compared to research in recent years?

Overall, it can be concluded that the knowledge of Hungarian consumers about pálinka can still be considered low (e.g.: the differentiation between pálinka and distillate, the knowledge of the seal). According to the consumer research, 541 people (71%) stated that they knew the difference between pálinka and distillate, but less than one in two respondents (only 31% of all respondents) knew the difference between distillate and pálinka. Although some studies (Totth et al., 2018a) have reported an increase in awareness, the most recent publications on the subject (Mucha et al., 2020a, Mucha et al., 2020b) found a similar result to this study. The most important aspect when purchasing the products, except for price and quality, is the production in

Hungary. This is consistent with the research of Mucha et al. (2020a). The appearance of the pálinka (colour of the bottle, capacity of the bottle) was not considered as important as the location of the production or the alcohol content. In the early 2010s, consumers placed even more emphasis on the appearance of the beverage (Totth et al., 2011b), however, in a recent study (Mucha et al., 2020a) we can already see results similar to our research.

Q4. How important do the respondents consider the purchasing preferences (e.g., production in Hungary, colour of the pálinka, packaging, colour of the bottle, alcohol content, result achieved in a palinka competition)? How do the respondents prioritize these preferences?

The aspects (quality and price) analysed by most studies observed using a discrete choice experiment (DCE) (see the results in Question 8). The most important aspect that arises during the purchase of pálinka is that the drink should be made in Hungary (average value of 4.11 on the 5-point Likert scale). It also follows that the respondents are not aware that, except for apricot pálinka, pálinka can only be of Hungarian origin, so it is likely that people often buy different spirits instead of pálinka.

The aspects concerning the appearance of the drink, i.e., the colour of the bottle (3.09) and the capacity of the bottle (3.02), had equivalent results. Respondents on average do not really consider it important for the drink to have colour (2.74) when purchasing. Overall, the appearance of the pálinka was not considered as important by consumers as the aspects presented earlier. According to the respondents, the least decisive factor when buying pálinka is whether the pálinka has a result in a competition (2.53). However, those who still found the results of the competition important mentioned the National Pálinka and Törkölypálinka Competition spontaneously.

Q5. Are consumers aware of the difference between pálinka and distillate? Do the respondents know the pálinka seal? If so, can it be distinguished from the seals of the distillate and other spirits?

More than half (460 people) of the 760 respondents (or one of their families) use the services of a contract distillery. If we look at private distillation, it is less common than contract distillation, as only 29% of respondents said that someone in the family distillates at home. 541 people (71%) stated that they knew the difference between

pálinka and distillate, but less than one in two respondents (only 31% of all respondents) knew the difference between distillate and pálinka.

The seal represents a guarantee of quality and certifies that the alcoholic drinks has been placed on market in accordance with the law, thus excluding the possibility of counterfeiting. The seal is reddish-brown on the pálinka, green on the distillate and blue on the other spirits. 60% of the respondents stated that they are aware that the pálinka, that can be bought commercially in Hungary, has a unique seal that is different from all other alcoholic products. However, when these respondents had to choose between the three different seal types, only 41% (165 people) correctly marked the reddish-brown seal.

By increasing the knowledge of the seal, the turnover of quality, commercial pálinkas can clearly increase. The spread of real pálinka could also be helped by more and more consumers purchasing the product directly from pálinka distilleries. The more a consumer knows the rules and regulations for pálinka (for example, because it is consumed many times), the more likely he or she is to choose the product in a purchasing situation, and the appearance of the drink (e.g., colour of the drink) is less and less important to such consumers. Furthermore, it is also clear from the results that those who have already chosen home-made distillate (e.g., makes pálinka at home) are less likely to buy pálinka more regularly. They cannot be considered as a consumer group to be targeted by companies.

Q6. Where do consumers buy and how often do they consume pálinka?

Most respondents purchase pálinka in a hypermarket or supermarket (38%) or directly from the distillery (27%). The least common place of purchase was the national tobacco shop (less than 1%). Shopping goals include consumption with friends (33%), consumption within the family (27%), shopping for gift (23%), and personal consumption (17%). As the knowledge of Hungarian consumers about pálinka is still extremely incomplete, in many cases pálinka-like drinks (e.g., Fütyülős) may be purchased in hypermarkets or supermarkets.

Most respondents (202 people) consume pálinka a few times a year, followed by weekly (160 people), monthly (156 people) and several times a week (149 people) consumptions with almost the same values (Figure 2). The least common of the fillers is that they never (47 people) or less than a year (46 people) consume pálinka.

Q7. To what extent is ethnocentrism present among Hungarian consumers? How does all of this affect consumer decision-making when purchasing pálinka?

The average value of the CETSACLE items is 50.04 (standard deviations is 19.04). This value is not different much from the Hungarian studies (Mucha et al., 2020c, Szakály et al., 2016), but it can be considered higher than in other developed countries (Chryssochoidis et al., 2007; Hult et al., 2012; Shimp – Sharma, 1987). All this means in practice that Hungarian producers, distilleries, or retailers should emphasize the Hungarian origin of the products much more.

Four consumer groups were identified according to ethnocentrism and socio-demographic characteristics. Rural Ethnocentrists (47 respondents), had the smallest group size, but are characterized by being most strongly ethnocentric. There are significantly fewer respondents from large cities with a higher education and an above-average income but significantly more respondents with a (maximum) secondary education and below-average income. This group cannot be considered a target group for palinka distilleries and distributors due to the limited financial capacity or the less expensive competitors. In the group of Aging Ethnocentrists (134 respondents), with also a strong level of ethnocentrism, there are significantly fewer consumers under the age of 45 but significantly more over the age of 60. Typical pálinka consumers are also from the older age groups (see e.g., Szegedyné Fricz et al., 2017) and in this case, a good corporate strategy would be to emphasise the Hungarian origin of pálinka.

Wealthy Metropolitans (518 respondents) are characterized by a lower level of ethnocentrism, but their ethnocentricity is still stronger than in many other countries and for other products. In contrast to the second cluster, contains significantly fewer respondents over 60 but more under 45. In terms of education, the group is characterized by significantly more people with a higher level of education and fewer with a maximum of secondary education. Examining the income situation of the respondents in this cluster, we conclude that there are significantly fewer respondents with a below-average income and significantly more with an income that is above average. They could be a potential future consumer of palinka (solvent demand and emphasis on the Hungarian origins). Finally, in the case of the Underprivileged Metropolitans (61 respondents), lowest level of ethnocentrism, a significant effect can

only be identified regarding the classification of the place of residence since there are significantly more members of this group living in big cities.

Q8. What factors affect shopping preferences? What effect do different product attributes (e.g., brand, GI variety, production method) have on the purchasing-decision, do they represent a price premium?

All the examined product characteristics (Bestillo brand, Gönci GI variety, Small-pot production method) positively affect consumer preferences. The existence of the Gönci GI variety increases consumers' sense of utility to the greatest extent; and as the level of ethnocentrism increases, the perceived utility related to the Gönci GI variety also increases. 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. In addition to the positive effect of the three product attributes, the price harms consumer preferences. 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.

4.5 Managerial and policy implication

The main new results and the added value of the dissertation:

- The low awareness of the spirit and the conceptual low knowledge and confusion between pálinka and distillate continue to exist.
- Ethnocentrism was investigated for a national fruit spirit with geographical indication.
- There is a higher level of ethnocentrism for national and GI products, and ethnocentrism is a decision-making factor in the Hungarian (alcoholic beverage) market. Parallel with increasing ethnocentrism, the level of consumers’ perceived utility also increased.
- A discrete choice model, including a latent variable (ethnocentrism), was applied for a national and GI product.
- Brand, GI variety and production method have a positive; price has a negative effect on consumer preferences in the Hungarian palinka market.

In view of the above and the results of the articles, some recommendations could be made, based on this, the government, or the players of the market (e.g., pálinka distilleries or retailers) selling the spirit can even better understand how important certain product properties and attributes are considered by the consumers. The wave of globalization has led to the evolution of global marketing, therefore, knowing consumers' buying and purchasing motivations is necessary for remaining competitive in an increasingly crowded marketplace.

Despite the significant changes (e.g., in the legislation), the knowledge of Hungarian consumers about pálinka can still be considered low (e.g.: the differentation between concepts, the knowledge of the seal). To increase the awareness of the spirit, it is essential to get to know the consumers. To do this, as in the early 2000s, it is essential to launch further well-positioned (marketing) campaigns and to make marketing strategies (e.g., segment the market based on different product attributes or ethnocentrism, as we seen earlier), customized for consumer groups.

Despite globalization, thus growing consumer cosmopolitism and openness to non-domestic products, consumer ethnocentrism remains a significant issue in the Hungarian (alcoholic beverage) market. There was a strong consensus among Hungarian (pálinka) consumers that buying non-domestic products harms the Hungarian economy and lead to job losses. Hungarian consumers are happy to choose Hungarian products, and these are considered to be the best quality. However, according to the respondents, imported products also have a place on the market, especially if there is no Hungarian alternative, and there is also agreement that foreign companies should put their products on the Hungarian market. A significant group of Hungarian consumers can be considered price sensitive and pálinka's competitors on the Hungarian market (vodka or whiskey) are typically cheaper. In market conditions, it is common for consumers to choose these products. However, of course, there is also a group of consumers in Hungary who are willing to choose and willing to pay more for pálinka.

In general, people make purchasing decisions based on only a few details, therefore, the information that appears on the bottle is crucial. Companies must emphasize Hungarian origin and quality (e.g., with the GI logo), because each of these (may) add value to consumers. There is stronger ethnocentrism with national and GI products,

which product characteristics should be also emphasized by distilleries or retailers. But also, from this point of view, education and a change of attitude are needed since while the GI label and its underlying content are known in Western or Southern Europe, many consumers in the CEE region are not really familiar with these markings or logos. Education and change of attitude also needed in the field of the basic of the product, since Hungarian consumers consider distillate a national drink, but only pálinka should be considered as such according to the legislation. Although pálinka is a GI product, its consumption outside of Hungary is quite low due to the absence of knowledge of the foreign consumers and popularity of the drink (e.g., high alcohol content). However, there are good foreign examples when a GI product becomes known and recognized throughout Europe.

4.6 Future research lines

In the future, the economic performance of the distilleries can be examined along several other dimensions (e.g., the presence of the GI pálinka, tax changes, marketing activity, hospitality industry activity). At the same time, the situation in multiple countries and/or national and GI products should be investigated to improve understanding of ethnocentric tendencies, especially the relationship between socio-demographic variables and consumer ethnocentrism. It would be worthwhile to include even more consumers interested in pálinka, even foreign ones, to get an even more accurate palinka industry analysis. Furthermore, these articles 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.

5. References

Akbarov, S. (2022): Consumer ethnocentrism and purchasing behavior: moderating effect of demographics. *Journal of Islamic Marketing*, *13*(4), 898-932. doi:10.1108/JIMA-02-2020-0047

Ananth, C. V., & Kleinbaum, D. G. (1997): Regression models for ordinal responses: a review of methods and applications. *International journal of epidemiology*, *26*(6), 1323-1333. doi:10.1093/ije/26.6.1323

Auger, P., Devinney, T. M., Louviere, J. J., & Burke, P. F. (2010): The importance of social product attributes in consumer purchasing decisions: A multi-country comparative study. *International Business Review*, *19*(2), 140-159. doi:10.1016/j.ibusrev.2009.10.002

Balabanis, G., & Diamantopoulos, A. (2004): Domestic country bias, country-of-origin effects, and consumer ethnocentrism: a multidimensional unfolding approach. *Journal of the academy of marketing science*, *32*(1), 80-95. doi:10.1177/0092070303257644

Balabanis, G., Diamantopoulos, A., Mueller, R. D., & Melewar, T. C. (2001): The impact of nationalism, patriotism and internationalism on consumer ethnocentric tendencies. *Journal of international business studies*, *32*, 157-175. doi: 10.1057/palgrave.jibs.8490943

Bellizzi, M. G., Eboli, L., Forciniti, C., & Mazzulla, G. (2018): Air transport passengers' satisfaction: an ordered logit model. *Transportation Research Procedia*, *33*, 147-154. doi:10.1016/j.trpro.2018.10.087

Best, H., & Wolf, C. (Eds.). (2013): The SAGE handbook of regression analysis and causal inference. SAGE Publications. Thousand Oaks

Békési, Z., & Pándi, F. (2005): Pálinkafőzés. Mezőgazda Kiadó. Budapest

Bliemer, M. C., Rose, J. M., & Hess, S. (2008): Approximation of Bayesian efficiency in experimental choice designs. *Journal of Choice Modelling*, *1*(1), 98-126. doi:10.1016/S1755-5345(13)70024-1

Caruana, A. (1996): The effects of dogmatism and social class variables on consumer ethnocentrism in Malta. *Marketing Intelligence & Planning*, *14*(4), 39-44. doi:10.1108/02634509610121569

Choicemetrics (2018): Ngene 1.2 User Manual & Reference Guide. ChoiceMetrics Pty Ltd., Sydney, Australia

Chryssochoidis, G., Krystallis, A., & Perreas, P. (2007): Ethnocentric beliefs and country-of-origin (COO) effect: Impact of country, product and product attributes on Greek consumers' evaluation of food products. *European Journal of Marketing*, *41*(11/12), 1518-1544. doi:10.1108/03090560710821288

Coakley, K. E., Lardier, D. T., Le, H., & Wilks, A. (2022): Food approach and avoidance appetitive traits in university students: A latent profile analysis. *Appetite*, *168*, 105667. doi:10.1016/j.appet.2021.105667

Dana, L. M., Chapman, K., Dixon, H., Miller, C., Neal, B., Kelly, B., ... & Pettigrew, S. (2021): The relative importance of primary food choice factors among different consumer groups: A latent profile analysis. *Food Quality and Preference*, *94*, 104199. doi: 10.1016/j.foodqual.2021.104199

Douglas, S. P., & Nijssen, E. J. (2003): On the use of "borrowed" scales in cross-national research: A cautionary note. *International Marketing Review*, *20*(6), 621-642. doi:10.1108/02651330310505222

Engelhardt, T. (2015): Geographical Indications Under Recent EU Trade Agreements. *Iic-International Review of Intellectual Property and Competition Law*, *46*(7), 781-818. doi:10.1007/s40319-015-0391-3

Erdogan, B. Z., & Uzkurt, C. (2010): Effects of ethnocentric tendency on consumers' perception of product attitudes for foreign and domestic products. *Cross Cultural Management: An International Journal*, *17*(4), 393-406. doi:10.1108/13527601011086595

European Commission (2023): eAmbrosia, the EU geographical indications register. https://ec.europa.eu/agriculture/eambrosia/geographical-indications-register/

European Council (1992): Council Directive 92/83/EEC of 19 October 1992 on the harmonization of the structures of excise duties on alcohol and alcoholic beverages

European Parliament and Council (2008): Regulation No 110/2008 of the European Parliament and of the Council of 15 January 2008 on the definition, description, presentation, labelling and the protection of geographical indications of spirit drinks and repealing Council Regulation (EEC) No 1576/89.

Evanschitzky, H., Wangenheim, F. V., Woisetschläger, D., & Blut, M. (2008): Consumer ethnocentrism in the German market. *International Marketing Review*, *25*(1), 7-32. doi:10.1108/02651330810851863

Eygu, H., & Gulluce, A. C. (2017): Determination of customer satisfaction in conservative concept hotels by ordinal logistic regression analysis. *Journal of Financial Risk Management*, *6*(03), 269-284. doi:10.4236/jfrm.2017.63020

Field, A. (2009): Discovering statistics using SPSS. Sage Publications, London

Gangjee, D. (2006): Melton Mowbray and the GI Pie in the Sky: Exploring Cartographies of Protection. *Intellectual Property Quarterly*, *3*, 291-309.

Gao, Z., Wong, S. S., House, L. A., & Spreen, T. H. (2014): French consumer perception, preference of, and willingness to pay for fresh fruit based on country of origin. *British Food Journal*, *116*(5), 805-820. doi:10.1108/BFJ-12-2012-0303

Géczi, G., Korzenszky, P., & Nagygyörgy, L. (2018): Analytical and sensory testing of palinkas made with different distillation technologies. *Hungarian Agricultural Research*, *27*(3), 4-9.

GFK Hungária Market Research Institute (2008): Piackutatás a pálinka népszerűsítő kampány megalapozására. Budapest.

Glenk, K., Hall, C., Liebe, U., & Meyerhoff, J. (2012): Preferences of Scotch malt whisky consumers for changes in pesticide use and origin of barley. *Food Policy*, *37*(6), 719-731. doi:10.1016/j.foodpol.2012.08.003

Gonçalves, T., Lourenço-Gomes, L., & Pinto, L. M. C. (2020a): Dealing with ignored attributes through an inferred approach in wine choice experiments. *Journal of Behavioral and Experimental Economics*, *87*, 101551. doi:10.1016/j.socec.2020.101551

Gonçalves, T., Pinto, L. M. C., & Lourenço-Gomes, L. (2020b): Attribute non-attendance in wine choice: Contrasts between stated and inferred approaches. *Economic Analysis and Policy*, *66*, 262-275. doi:10.1016/j.eap.2020.04.011

Hess, S., & Palma, D. (2019): Apollo: a flexible, powerful and customisable freeware package for choice model estimation and application. *Journal of Choice Modelling*, *32*, 100170. doi:10.1016/j.jocm.2019.100170

Hess, S., & Palma, D: (2021). Apollo version 0.2. 4, user manual.

Harcsa, I. M. (2016a): A magyarországi pálinkafőzés jogszabályi változásai és hatásai. *Ars Boni*, *4*(1), 25-42.

Harcsa, I. M. (2016b): Pálinkabérfőzdék fejlesztési lehetőségének vizsgálata. *Gazdálkodás, 60*(04), 350-359. doi:10.22004/ag.econ.258069

Harcsa, I. M. (2017a): Increasing palinka recognition with tourism and gastronomy. *APSTRACT: Applied Studies in Agribusiness and Commerce*, *11*(3-4), 37-44.

Harcsa, I. M. (2017b): Energy demand for pálinka production and some practical issues of waste treatment. *Economic and Regional Studies*, *10*(3), 82-95.

Harcsa, I. M., Kovács, S., & Nábrádi, A. (2019): Pálinkabérfőzdék gazdasági elemzése szimulációs modellezési eljárással. *Gazdálkodás, 63*(02), 116-128. doi:10.22004/ag.econ.288630

Harcsa, I. M., Nábrádi, A., & Tar, I. (2014): Hungarian spirits pálinka as a "Hungaricum" I. - Literature review and practical approaches. *APSTRACT: Applied Studies in Agribusiness and Commerce*, *8*(2-3), 133-141.

Harrell, F. E. (2015): Regression modeling strategies: with applications to linear models, logistic and ordinal regression, and survival analysis. Springer Puclications, New York

Hult, G. T. M., Keillor, B. D., & Lafferty, B. A. (1999): A cross-national assessment of social desirability bias and consumer ethnocentrism. *Journal of Global Marketing*, *12*(4), 29-43. doi:10.1300/J042v12n04_03

Hungarian Food Codex Comitte (2002): Codex Alimentarius Hungaricus Order No 1-3-1576/89

Hungarian Government (2015): Földrajzi Árujelzők Program. http://gi.gov.hu/eredetvedelmi-program

Hungarian Parliament (1993): The Act LVIII of 1993 on excise regulation and control, as well as on the excise duty on contract distilleries

Hungarian Parliament (1997): The Act CIII of 1997 on excise duty and special rules for the distribution of excise products

Hungarian Parliament (2003): The Act CXXVII of 2003 on excise duty and special rules for the distribution of excise products

Hungarian Parliament (2008): The Act XLVIII of 2008 on pálinka, törkölypálinka and the establishment of the Pálinka National Council.

Hungarian Parliament (2012): The Act XXX of 2012 on Hungarian national values and Hungarikums

Hungarian Parliament (2016): The Act LXVIII of 2016 on excise duties

Ilbery, B., Kneafsey, M., & Bamford, M. (2000): Protecting and promoting regional speciality food and drink products in the European Union. *Outlook on Agriculture*, *29*(1), 31-37. doi:10.5367/000000000101293022.

Jámbor, A., & Török, Á. (2019): A regionális kereskedelmi egyezmények létrejöttét meghatározó tényezők. *Közgazdasági Szemle, 65*(4), 418-433. doi:10.18414/ksz.2019.4.418.

Josiassen, A., Assaf, A. G., & Karpen, I. O. (2011): Consumer ethnocentrism and willingness to buy: Analyzing the role of three demographic consumer characteristics. *International Marketing Review, 28*(6), 627-646. doi:10.1108/02651331111181448

Kassai, Z., Káposzta, J., Ritter, K., Dávid, L., Nagy, H., & Farkas, T. (2016): The territorial significance of food hungaricums: the case of pálinka. *Romanian Journal of Regional Science*, *10*(2), 64-84.

Káposzta, J., Ritter, K., & Kassai, Z. (2015): Examination of the territorial significance of Pálinka as a Hungaricum. *Tér és Társadalom, 29*(4), 139-153.

Lakner, Z., Kasza, G., & Ács, S. (2014): Pálinkafőzdék jövedelem-és kockázatelemzése. *Gazdélkodás, 58*(2), 143-159. doi:s10.22004/ag.econ.201401

Lamarque, P., & Lambin, E. F. (2015): The effectiveness of marked-based instruments to foster the conservation of extensive land use: The case of Geographical Indications in the French Alps. *Land Use Policy, 42*, 706-717. doi:10.1016/j.landusepol.2014.10.009

László, Z., Hodúr, C., & Csanádi, J. (2016): "Pálinka": Hungarian Distilled Fruit. In Kristbergsson, K., & Oliveria, J.: Traditional Foods: General and Consumer Aspects. Springer. New York. 313-318.

Louviere, J. J., Flynn, T. N., & Carson, R. T. (2010): Discrete choice experiments are not conjoint analysis. *Journal of choice modelling, 3*(3), 57-72. doi:10.1016/S1755-5345(13)70014-9

Malota, E. (2003): Fogyasztói etnocentrizmus. A sztereotípiák, az etnocentrizmus és az országeredet imázs hatása a hazai és a külföldi termékek megítélésére. Doktori disszertáció. Budapesti Corvinus Egyetem

Malota, E. (2011): Magyar termék–hazai fogyasztó. *Fogyasztóvédelmi Szemle, 2*, 13-20.

Marinelli, N., Fabbrizzi, S., Sottini, V. A., Sacchelli, S., Bernetti, I., & Menghini, S. (2014): Generation Y, wine and alcohol. A semantic differential approach to consumption analysis in Tuscany. *Appetite, 75*, 117-127. doi:10.1016/j.appet.2013.12.013

McCullagh, P. (1980): Regression models for ordinal data. *Journal of the Royal Statistical Society: Series B (Methodological), 42*(2), 109-127. doi:10.1111/j.2517-6161.1980.tb01109.x

Merlino, V. M., Massaglia, S., Borra, D., & Mantino, V. (2019): New consumer targets towards a traditional spirit: The case of Grappa in Piedmont (Northwest Italy). *Italian Journal of Food Science, 31*(4), 652-668. doi:10.14674/IJFS-1375

Mucha, L., Oravecz, T., & Totth, G. (2020a): A fogyasztói attitűd kognitív komponensének a pálinka imázsában betöltött szerepe. *Táplálkozásmarketing, 7*(2), 21-32. doi:10.20494/TM/7/2/2

Mucha, L., Oravecz, T., & Totth, G. (2020b): Pálinkavásárlási szempontok vizsgálata conjoint-elemzés segítségével. *Marketing & Menedzsment, 54*(2), 41-50. doi:10.15170/MM.2020.54.02.04

Mucha, L., Kovács, I., Oravecz, T., & Totth, G. (2020c): Az etnocentrizmus szerepe a vásárlói döntésekben. *Gazdálkodás, 64*(01), 35-54. doi:10.22004/ag.econ.302631

Mucha, L., Oravecz, T., & Totth, G. (2021): A fogyasztói attitűd affektív és konatív komponenseinek elemzése a pálinka imázsában. *Táplálkozásmarketing, 8*(1), 21-32. doi:10.20494/TM/8/1/2

Mucha, L., Vámosi, K., & Totth, G. (2022): Examining the factors shaping consumer attitude towards the popular alcoholic beverages in Hungary. *Heliyon, 8*(9), 10571. doi:10.1016/j.heliyon.2022.e10571

National Tax and Customs Administration (2021): Újra adómentes a pálinkafőzés. https://nav.gov.hu/nav/sajtoszoba/hirek/Ujra_adomentes_a_pali20210204.html

NRC Kft. (2010): Pálinkafogyasztás 2009-ben. Pálinkafogyasztási szokások, jellemzők és folyamatok a 18–49 éves magyar lakosság körében. Budapest

OszKő Bt. – TNS (2003): Pálinka-marketingstratégia. Budapest.

Papadopoulos, N., Heslop, L. A., & Beracs, J. (1990): National stereotypes and product evaluations in a socialist country. *International Marketing Review, 7*(1), 32-50. doi:10.1108/02651339010141365

Perrouty, J. P., d'Hauteville, F., & Lockshin, L. (2006): The influence of wine attributes on region of origin equity: An analysis of the moderating effect of consumer's perceived expertise. *Agribusiness: An International Journal, 22*(3), 323-341. doi:10.1002/agr.20089

R Core Team (2020): A language and environment for statistical computing. R Foundation for Statistical Computing. Vienna, Austria

Rose, J. M., & Bliemer, M. C. (2009): Constructing efficient stated choice experimental designs. *Transport Reviews, 29*(5), 587-617. doi:10.1080/01441640902827623

Siemieniako, D., Kubacki, K., Glińska, E., & Krot, K. (2011): National and regional ethnocentrism: a case study of beer consumers in Poland. *British Food Journal*, 113(3), 404-418. doi:10.1108/00070701111116464

Shimp, T. A., & Sharma, S. (1987): Consumer ethnocentrism: Construction and validation of the CETSCALE. *Journal of marketing research, 24*(3), 280-289. doi:10.1177/002224378702400304

Spurk, D., Hirschi, A., Wang, M., Valero, D., & Kauffeld, S. (2020): Latent profile analysis: A review and "how to" guide of its application within vocational behavior research. *Journal of Vocational Behavior, 120*, 103445. doi:10.1016/j.jvb.2020.103445

Szakály, Z., Balogh, P., Csatáriné Dogi, I., & Polereczki, Z. (2016): Fogyasztói etnocentrizmus vizsgálata Magyarországon–Ajánlások a magyar élelmiszer-gazdaság számára. *Gazdálkodás*, *60*(02), 153-166. doi:10.22004/ag.econ.253907

Szegedyné Fricz, Á., Szakos, D., Bódi, B., Kasza, Gy. (2017): Pálinka: fogyasztói ismeretek, preferenciák, fogyasztási szokások, marketinglehetőségek. *Gazdálkodás*, *61*(02), 158–170. doi:10.22004/ag.econ.264586

Totth, G., Fodor, M., & Hlédik, E. (2011b): Fogyasztói vélemények és preferenciák a pálinka piacán. *Élelmiszer, Táplálkozás és Marketing, 8*(1-2). 41–47.

Totth, G., Hlédik, E., & Fodor, M. (2011a): Pálinkával kapcsolatos fogyasztói percepciók és preferenciák elemzése kvalitatív kutatás eredményeinek tükrében. *Marketing & Menedzsment, 45*(2) 11-15.

Totth, G., Kovács, I., Mezőné Oravecz, T. É., & Zarándné Vámosi. K. (2017): A fiatalok pálinkafogyasztási szokásai. In: Bányai, E., Lányi, B., & Töröcsik, M. (szerk.): Tükröződés, társtudományok, trendek, fogyasztás: Egyesület a Marketing Oktatásért és kutatásért. (EMOK) XXIII. országos konferencia. Pécs

Totth, G., Mezőné Oravecz, T. É., & Zarándné Vámosi, K. (2018a): A pálinkafogyasztás és a fogyasztói szokások változása. *Prosperitas, 5*(2), 87–98. doi:10.31570/Prosp_2018_02_5

Totth, G., Mezőné Oravecz, T. É., & Zarándné Vámosi, K. (2018b): A pálinka fogyasztási és vásárlási szokásainak kvalitatív vizsgálata. *Prosperitas, 5*(2). 99–115. doi:10.31570/Prosp_2018_02_6

Török, Á. (2013): Hungarikumok - Magyarország földrajzi árujelzői. Doktori disszertáció. Budapesti Corvinus Egyetem

Török, Á., & Jámbor, A. (2013): Competitiveness and Geographical Indications: The Case of Fruit Spirits in Central and Eastern European Countries. *Studies in Agricultural Economics, 115*(1), 25-32. doi:10.7896/j.1223.

Török, Á., & Maró, Z. M. (2020): A földrajzi árujelzők gazdaságtana–az empirikus bizonyítékok. *Közgazdasági Szemle*, *67*(3), 263-288. doi:10.18414/KSZ.2020.3.263

Török, Á., Jantyik, L., Maró, Z. M., & Moir, H. V. (2020): Understanding the real-world impact of geographical indications: A critical review of the empirical economic literature. *Sustainability, 12*(22), 9434. doi:10.3390/su12229434

Viju, C., Yeung, M. T., & Kerr, W. A. (2013): Geographical indications, conflicted preferential agreements, and market access. *Journal of International Economic Law*, *16*(2), 409-437. doi:10.1093/jiel/jgt012.

Wardenaar, K. (2021): Latent Profile Analysis in R: A tutorial and comparison to Mplus. University Medical Center Groningen

Watson, J. J., & Wright, K. (2000): Consumer ethnocentrism and attitudes toward domestic and foreign products. *European Journal of Marketing*, *34*(9/10), 1149-1166. doi:10.1108/03090560010342520

Zsótér, B., & Molnár, A. (2015): A pálinka előállításával kapcsolatos jogszabályváltozások (2010)-előállítási feltételek, adózási kötelezettségek-hatásainak vizsgálata a gyakorlatban. *Jelenkori Társadalmi és Gazdasági Folyamatok, 10*(2), 35-52. doi:10.14232/jtgf.2015.2.35-52

6. Published articles of the candidate

This chapter contains the published articles of the candidate of the broader topic, and the four articles selected, on the basis of which the doctoral dissertation was prepared (Table 10.).

Table 10. The candidate's publications related to the topic

Article number	Year of publication	Title	Journal	Journal ranking (in the year of publication)	Number of citations (status 04.01.2024)
-	2019	A magyar fogyasztók és az európai uniós földrajzi árujelzős élelmiszercímkék viszonya/Relationship between Hungarian consumers and EU geographic indication labels	Statisztikai Szemle	MTA A	4
-	2019	Minőségjelzős élelmiszerek helyzete és kilátásai Magyarországon – Az EU biocímke esete/Position and prospects of quality-labelled foods in Hungary: the case of the EU organic label	Vezetéstudomány	MTA B	3
-	2020	A földrajzi árujelzők gazdaságtana – az empirikus bizonyítékok/The economics of geographical indications - the empirical evidence	Közgazdasági Szemle	MTA A	3
Article 1	2020	Profitability Patterns in the Hungarian Pálinka Industry: The Performance of the Commercial Distilleries	Georgikon for Agriculture: A multidisciplinary journal in agricultural sciences	MTA A	1
-	2020	Understanding the Real-World Impact of Geographical Indications: A Critical Review of the Empirical Economic Literature	Sustainability	Scimago Q1	79
-	2022	Pálinkavásárlási preferenciák vizsgálata a magyar fogyasztók körében – egy diszkrét választási	Statisztikai Szemle	MTA A	4

Article number	Year of publication	Title	Journal	Journal ranking (in the year of publication)	Number of citations (status 04.01.2024)
		modell építése/Examining pálinka purchasing preferences among Hungarian consumers – discrete choice modelling			
-	2022	A magyar pálinkaágazat – a bérfőzdék és a kereskedelmi főzdék összehasonlító elemzése/The Hungarian palinka sector – a comparative analysis of contract and commercial distilleries	Gazdálkodás	MTA A	0
Article 2	2023	What is Inside the Bottle? - Factors Influencing Pálinka Consumption	AGRIS: Online Papers in Economics and Infromatics	Scimago Q2	0
Article 4	2023	The roles of geographic indication and ethnocentrism in the preferences of Central European spirit consumers	Food Quality and Preference	Scimago Q1 (D1)	8
Article 3	2024	The role of ethnocentrism in relation to national and geographical indication products – The case of Hungarian pálinka	Journal of Agriculture and Food Research	Scimago Q1	0

6.1 Profitability patterns in the Hungarian pálinka industry - The performance of the commercial distilleries[1]

Abstract

The paper analyses the profitability of the Hungarian pálinka sector. First, all the distilleries with legal entity are identified in order to gain comprehensive economic data of the industry. Based on the M&A Research Catalyst database (2018), altogether 461 distilleries were identified. After descriptive statistics, a panel regression model was calculated in order to identify profitability patterns, measuring the net revenues, EBIT and the profit level of the companies. Economic data of business years 2009-2017 were analysed. Special attention was given to the type of the distilleries (commercial vs. contract).

Initial results suggest that significant differences exist among the distilleries. Commercial distilleries are significantly bigger in all terms of all economic level. However, panel regressions do not always prove the importance of the distillery's type (commercial vs. contract) on all profitability levels. On the contrary, the size and the age of the company highly affects the level of profitability. The bigger (in terms of total assets) and the older is the distillery, the higher level of profitability is expected.

Keywords: pálinka industry, commercial distilleries, contract distilleries, profitability

Introduction

Pálinka is a fruit-only distillate that can only be produced with this name in Hungary (the only exception is apricot pálinka, which can be used in four provinces of Austria). In Hungary, the production and consumption of pálinka has a centuries-old tradition.

According to the current regulations (Act LXVIII. of 2016 on excise duty), there are three ways to make alcoholic products (distillate or pálinka) from fruit. It is called private distillation, when someone produces alcohol from own fruit using an own distillation apparatus. When someone makes the product from own fruit in a contract distillery, we are talking about contracted distillate. When a company makes – typically from purchased raw materials – commercial distillation, then the product made here is only allowed to be called pálinka. Commercial distilleries usually also deal with

[1] **Áron, Török, Zalán Márk, Maró**

contract distillation, but most distilleries carry out hire work only. It is important to emphasize that products from private and contract distilleries can only be referred to as a distillate and cannot be officially called pálinka (Harcsa, 2016a), moreover, only pálinka is considered to be a Hungaricum, the very special and famous products of Hungary (Harcsa, 2017).

The purpose of this study is to examine the profitability of distilleries, which are exclusively engaged in contract distillation (hereinafter referred to as contract distilleries) and those which also carry out contract and commercial activities (hereinafter referred to as commercial distilleries). As private distillation cannot be considered as an independent business activity, this segment of the sector is not included to our investigation.

In the period preceding the change of regime, a total of seven state-owned, large commercial enterprises were engaged in the production and distribution of spirits. The state generated tax revenues from the sale of various spirits, therefore, public health aspects were not really considered. However, it is important to note that the name of pálinka at that time did not refer to the technology or the place of origin; according to jargon, such products were made by alcohol and different flavourings with "cold fermentation". Before this, between 1952 and 1971, ‘half-distillation’ was in effect, meaning that half of the pálinka distilled in the official distillery could be given to the producer, the other half being owned by the state. Before the end of the socialist era, there were approximately 800-1,000 council or cooperative owned contract distilleries, after that they were privatized. The number of contract distilleries gradually decreased after the change of regime. One reason for this was that the owners had to deposit an excise deposit in order to obtain the operating license (Kopcsay, 2008). However, there was an increase in the number of commercial distilleries as well (Fodor, Hlédik, & Totth, 2011).

In the meaning of the word ’pálinka’, the change was brought by the new Hungarian Codex Alimentarius, which came into force on 1st July 2002. According to this, pálinka or fruit distillate is a spirit drink obtained exclusively by alcoholic fermentation and distillation of fruit or fruit must. This was followed by the 148/2008. (X. 1.) FVM - EszCsM - GKM joint regulation which laid down the rules of the production of pálinka (Kopcsay, 2008). The most important parameters of quality pálinka and the

establishment of the National Pálinka Council to represent the sector were laid down in Act LXXIII. of 2008.

The Act XC. of 2010 allowed the production of tax-free distillates. A theoretical difference was drawn between the tax implications of private and contract distillation. Private distillation was tax-free, while contract distillation had a "tax" of 0 HUF. Under the Directive of 92/83/EEC, „member states may be allowed to apply reduced rates or exemptions for certain regional and traditional products" provided that this does not result in distortions of competition. However, according to this directive, the reduced rate may not be less than half of the national rate of excise duty. Hungary has breached this directive by abolishing the excise duty of pálinka. From 1 January, 2015 - at the behest of the European Union - for one litre of pálinka distilled in contract distillery with an alcohol content of 50%, the tax is 835 HUF, however, if the given distiller exceeds the preferential volume limit of 86 litres, the tax will automatically be doubled. With the elimination of the excise tax relief, the turnover of the contract distilleries significantly decreased (Harcsa, 2016a).

Looking at the tendering activities of the commercial and contract distilleries, it can be concluded that the majority of the commercial distilleries, and only in a few cases - typically to a much lesser extent - the contract distilleries received or receive subsidies. The subsidies were mainly spent on the purchase of machineries and technological refurbishment (Kaposzta, Ritter, & Kassai, 2015; Kassai et al., 2016). Today, in Hungary, the majority of the costs of both contract and commercial distilleries are the costs of raw materials, corporate overheads, labour and packaging (Harcsa, Kovács, & Nábrádi, 2019; Lakner, Kasza, & Ács, 2014).

Finally, it is important to emphasize that although there is a good relationship between tourism and pálinka producers, there are only a few cases where there is conscious cooperation (e.g., tasting, plant visits, product sales) between the different actors (Kaposzta et al., 2015).

Materials and Methods

Firstly, we identified companies with legal personality in Hungary, which operate as commercial or contract distilleries. To do this, we compared the list of 30 June, 2017 of contract and commercial distilleries received from the Central Excise Department of the National Tax and Customs Administration, with the M&A Research Catalyst

business database, in which companies principal or secondary activity - according to certificate of incorporation - was “to produce distilled spirits”. In addition to this, the most important economic data of the 461 identified distilleries (net income, EBIT, profit after tax, total assets, equity, number of employees, year of establishment and headquarter) were downloaded from this business databases for the business years of 2009-2017.

Afterwards, we investigated the differences between the two types of distilleries using econometric methods with the software package of STATA version 15.0. The charts were made with the software version of ArcGIS 10.2.

First, we performed a two-sample t-test on certain economic characteristics (plant size, number of employees, age) to determine whether there is a statistically significant difference between the two types of distilleries. After that, we performed panel regression calculations on the factors influencing the profitability of distilleries in the Hungarian pálinka sector as follows:

$$\text{Revenue} = \alpha + \beta_1 \text{Total assets}_{ij} + \beta_2 \text{Number of employees}_{ij} + \beta_3 \text{Age}_i + \beta_4 \text{Commercial distillery}_i + \varepsilon ij$$

$$\text{EBIT} = \alpha + \beta_1 \text{Total assets}_{ij} + \beta_2 \text{Number of employees}_{ij} + \beta_3 \text{Age}_i + \beta_4 \text{Commercial distillery}_i + \varepsilon ij$$

$$\text{Profit after tax} = \alpha + \beta_1 \text{Total assets}_{ij} + \beta_2 \text{Number of employees}_{ij} + \beta_3 \text{Age}_i + \beta_4 \text{Commercial distillery}_i + \varepsilon ij$$

The variables used in the panel regression models are described in Table 1.

Table 1. Description of variables used in panel regression models

Variable	**Description**
Revenue	Dependent variable, the net sales revenue of a given distillery in a given year, in EUR
EBIT	Dependent variable, operating profit of a given distillery in a given year, in EUR
Profit after tax	Dependent variable, the after-tax profit of a given distillery in a given year, in EUR

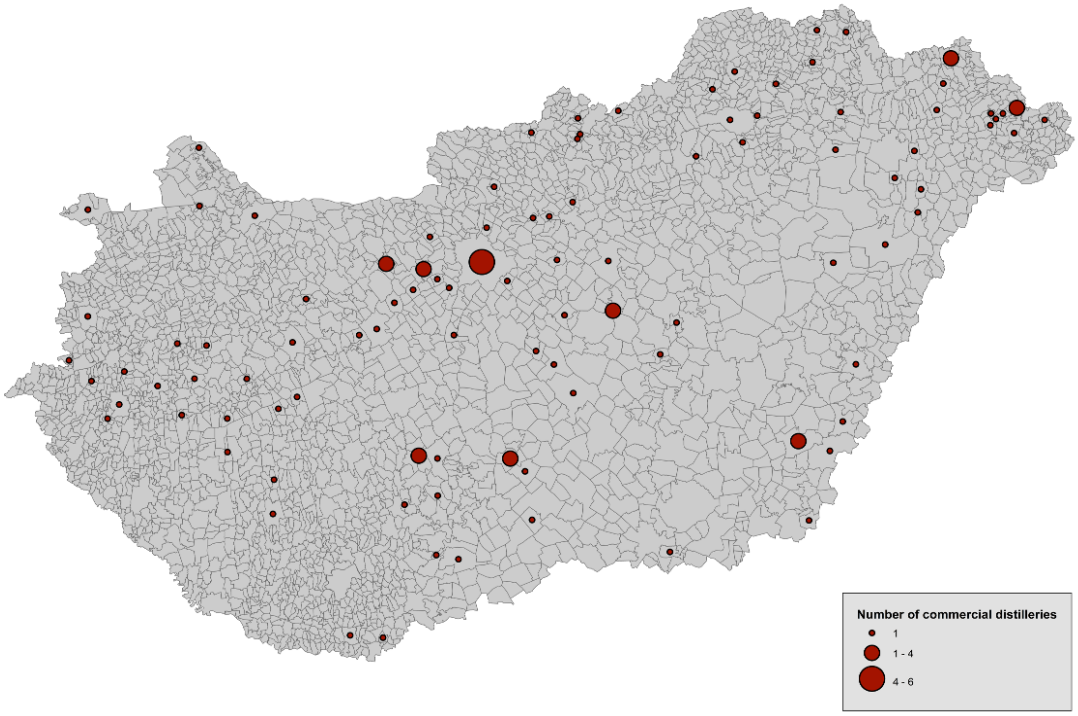
Variable	Description
Total assets	Total assets of the given distillery in a given year
Number of employees	Number of employees in the given distillery in the given year
Age	Number of business years closed since the establishment of the distillery
Commercial distillery	Dummy variable, set to 1 if the distillery is a commercial distillery and 0 if the distillery is a contract distillery

Source: Own editing

Results

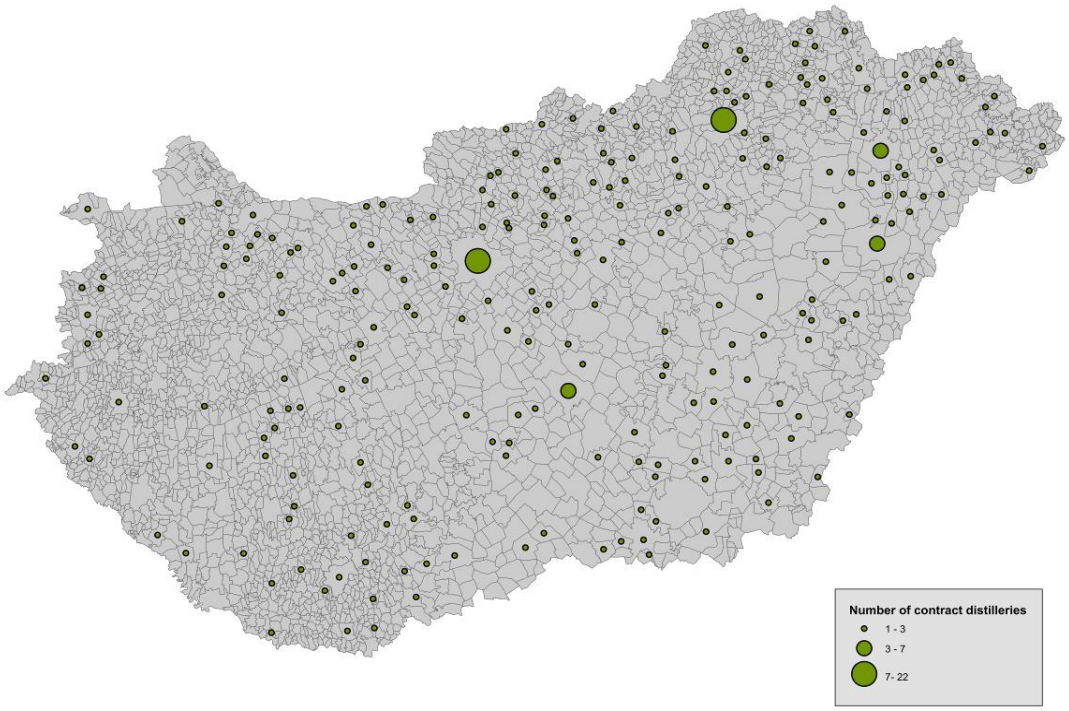
Nearly three-quarters of the 461 distilleries is contract distillery (345 distilleries, 74.84%), while the remaining 116 distilleries are commercial. If we take a look at the location of the distilleries (see Figure 1 and Figure 2), we can conclude that the majority of both types of distilleries are located in the capital (22 contract and 6 commercial distilleries have their headquarters there), moreover, that contract distilleries much more cover the whole country. The latter are most concentrated in the northern part of the country; Miskolc, Debrecen and Nyíregyháza serve as a location of 4-4 contract distilleries. These figures also show that the north-eastern part of the country is the most important one for the location of the pálinka distilleries.

Figure 1. Location of the identified commercial distilleries by their headquarters



Source: Own editing

Figure 2. Location of the identified contract distilleries by their headquarters



Source: Own editing

Comparing some of the economic characteristics of the different types of distilleries, it can be concluded that commercial distilleries are significantly different from contract distilleries. Commercial distilleries have an average of total assets of nearly eight times the size, employ more than four times as many employees, and have nearly 2.5 more closed business years than contract distilleries.

Table 2. Averages of the most important economic characteristics for different types of distilleries

	Commercial distillery	**Contract distillery**	**t-test**	**significance level***
Total assets (EUR)	1 643 795	206 854	- 13,91	***
Number of employees (FTE)	20.33	5.00	- 13,83	***
Age (year)	15.80	13.46	- 2,35	***

*Note: *** p<0,01

Source: Own editing

Finally, we tested the influence of the examined factors on the most important profitability levels.

The total assets have a positive (and statistically significant) impact on all the three levels of profitability: the higher the distillery is, the higher its revenue, EBIT and profit. For instance, if a distillery's total asset is 1 EUR more, than its revenue ceteris paribus (c.p.) is expected to increase by 0.325 EUR. However, the number of employees only has an impact on revenue: if a distillery employs 1 person more, its revenue c.p. is 60.673 EUR higher. The number of closed business years - like the total assets - has a positive impact on all the three levels of profitability, the longer a distillery has been operating, the higher its level of profitability is expected to be. In the case of profit after tax, a distillery that has one more closed business year, its profit expected to be 6.332 EUR higher.

Finally, the distillery type has a proven explanatory power for operating profit and profit after tax, which suggests that if the total assets of a contract distillery and a commercial distillery is the same as the number of employees and the number of closed business years, EBIT and profit after tax will be lower in the case of the commercial distillery.

Table 3. Factors determining the different levels of profitability

	Revenue	EBIT	Profit after tax
Total assets	0,325	0,117	0,095
	(11,80)***	(30,11)***	(29,57)***
Number of employees	60.673,301	70,154	-130,832
	(16,24)***	(0,15)	(0,33)
Age	62.086,180	7.928,946	6.332,152
	(7,68)***	(8,94)***	(8,51)***
Commercial distillery	79.585,916	-55.801,789	-47.062,300
	(0,51)	(3,39)***	(3,40)***
_cons	-922.218,573	-126.349,395	-99.570,827
	(6,64)***	(8,30)***	(7,80)***
N	2.033	2.213	2.211

Note: standard errors in parentheses, * p<0,1; ** p<0,05; *** p<0,01

Source: own editing

Discussion

Based on the location of each type of distillery, it can be stated that while contract distilleries penetrate the country more evenly, they are concentrated in the major fruit-growing regions, in the meantime, this trend is not observed in the case of the commercial distilleries. This is basically due to the different business models of the two types of distilleries. In the case of contract distilleries, private individuals in possession of their own fruit mash use the technical and professional assistance of the distilleries for the distillation, entrusting them with the final stage of the distillation process. In their case, it is crucial to look for contract distilleries that are geographically close to their place of residence and their fruit-growing areas, thus minimizing the cost of distillation. In contrast, commercial distilleries typically buy the raw material, so in their case, besides bulk purchasing, the specific transport cost is not so decisive, thus

the proximity of fruit-growing areas is not necessarily a primary consideration in choosing a location.

As far as the most important economic characteristics of distilleries are concerned, commercial distilleries have a much larger plant size. On the one hand, this is due to the historical tradition (the successors of the alcoholic businesses, which existed before the change of regime, still operate typically as commercial distilleries) and on the other hand, typically the commercial distilleries choose the more expensive technology in their investments, often involving tender sources (Kaposzta et al., 2015; Kassai et al., 2016). Contract distilleries usually use traditional low-cost little caldron technology. This is consistent with the findings of Harcsa (2016b): it would only be profitable for a contract distillery to buy more modern distillation equipment (with tower distillation methods) if all the economic conditions were adequate, even though their operating costs are lower.

The number of employees in commercial distilleries is much higher than in contract distilleries. This is explained by the fact that commercial distilleries usually operate all year round, and in the case of commercial distilleries which also carry out ancillary activities (e.g. hospitality), the business activity is continuous. In contrast of this, contract distilleries are much more seasonal and thus have lower employment rates.

The higher average age of commercial distilleries is due to the fact that the fluctuation is much higher among the contract distilleries, especially after the "golden age" of contract distilleries (2010-2014), when contract distilleries did not have to pay excise duty. From 2015, contract distillation is subject of excise duty again, which dramatically decreased the turnover and also the number of the contract distilleries (Harcsa, 2016a).

Several conclusions can be drawn in terms of the relationships affecting different levels of profitability. Since pálinka production can be considered as a technology-intensive activity, the potential for economies of scale is clearly supported by the fact that the larger a distillery is, the higher its revenue, operating profit and profit after tax. However, the number of employees has a positive impact only on revenue.

The older a distillery is, the more likely its profitability will be higher. This can be interpreted in the case of contract distilleries that are more likely to fail, the longer the

company has been in business, the more stable is its customer base, who - despite the changes in the law - use the services of the given contract distilleries.

Based on the results of the panel regression model, commercial distilleries are at a disadvantage compared to contract distilleries in terms of EBIT and profit after tax. Therefore, when we are looking at the profitability of the pálinka sector, it can be concluded that contract distilleries dominate in terms of number and geographical coverage, however, commercial distilleries are much larger, have a higher level of employment rate and typically they operate for a longer time. According to our calculations, the most profitable distilleries - based on the data of 9 years - are older, contract distilleries with large plant size and high employment rate. At the same time, profitability can be examined in many other dimensions (e.g., geographical indications, tax changes, marketing activity), which are subjects of future research.

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References

Fodor, M., Hlédik, E., & Totth, G. (2011). Fogyasztói vélemények és preferenciák a pálinka piacán. Élelmiszer, táplálkozás és marketing, 8(1-2), 41-47.

Harcsa, I. M. (2016a). A magyarorszagi palinkafőzés jogszabályi változásai és hatásai. Legislative changes and impacts of the Hungarian palinka distillation) In: ars boni, IV(1), 25-42.

Harcsa, I. M. (2016b). Pálinkabérfőzdék fejlesztési lehetőségének vizsgálata. GAZDÁLKODÁS: Scientific Journal on Agricultural Economics, 60(80-2017-666), 350.

Harcsa, I. M. (2017). A pálinka minősítése a XXI. században. Táplálkozásmarketing, 4(1-2).

Harcsa, I. M., Kovács, S., & Nábrádi, A. (2019). Pálinkabérfőzdék gazdasági elemzése szimulációs modellezési eljárással. GAZDÁLKODÁS: Scientific Journal on Agricultural Economics, 63(80-2019-1980), 116-128.

Kaposzta, J., Ritter, K., & Kassai, Z. (2015). Examination of the territorial significance of Palinka as a Hungaricum. Ter Es Tarsadalom, 29(4), 139-153. doi:10.17649/tet.29.4.2707

Kassai, Z., Káposzta, J., Ritter, K., Dávid, L., Nagy, H., & Farkas, T. (2016). The territorial significance of food hungaricums: the case of pálinka. Romanian Journal of Regional Science, 10(2), 64-84.

Kopcsay, L. (2008). A területileg differenciált italkultúra szerepe a magyar turizmusban.

Lakner, Z., Kasza, G., & Ács, S. (2014). Pálinkafőzdék jövedelem-és kockázatelemzése. GAZDÁLKODÁS, 58(80-2016-1057), 143.

6.2 What is inside the bottle? - Factors influencing pálinka consumption[2]

Abstract

Pálinka is the national spirit of Hungary and is in possession of the geographical indication of the European Union, but it used to be listed as a poor-quality product for a long time. The turnaround in this field began in the early 2000s. The aim of this study is to analyse the behaviour and attitudes regarding the purchase and consumption of pálinka and, to assess the product-related awareness of Hungarian consumers who like this particular spirit. Based on the literature, the knowledge of Hungarian consumers about pálinka is rather low, which is confirmed by the results of our questionnaire survey of 1,000 people. Furthermore, based on the results obtained, participants in the pálinka sector are more likely to understand how important certain product attributes that are perceived by consumers when purchasing pálinka. In order to increase the awareness of the spirit, it is essential to get to know the consumers, which can be followed by a well-positioned marketing strategy from both the government and corporate side.

Keywords

pálinka, spirit, Hungary, consumers, knowledge

Introduction

Almost every country has its own national drink, which is decisive from a cultural, social, and economic point of views. Which is whiskey in the former British Empire, tequila in Mexico, cognac in France, or grappa in Italy, is undoubtedly pálinka in Hungary. The name pálinka is probably derived from the Slovak word ‘palenka’ or ‘pálit’, which means to distil (László et al., 2016, Török, 2013). Pálinka is a distillate made exclusively from fruit, which can only be produced in Hungary. The only exception to this is the one made from apricot, which can be delivered in four provinces of Austria (Lower Austria, Vienna, Burgenland, Styria). In Hungary, the pálinka culture, which includes the traditions, ceremonies of making and consuming fruit

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spirits, has a centuries-old history (see e.g., Békési and Pándi, 2005, Harcsa et al., 2014).

In the 1990s, pálinka was still considered to be an extremely poor-quality spirit, due to the low reputation received during the communism, when this product could be distilled from low quality materials with industrial scale (Török, 2013). The break-through in the field of quality took place at the beginning of the 21st century, and now pálinka, as a liquid food, and the consumption of pálinka is experiencing its renaissance (Géczi et al., 2018) due to changes in Hungarian and EU legislation, the establishment of the Pálinka National Council (PNC), the acquisition of the EU Geographical Indication (GI) and the distinguished Hungarian national product (Hungaricum) status. In the last decade, pálinka has come a long way, has left the 'peasant' drink classification, and become the favourite national drink and value of Hungarians (Harcsa, 2017b, Harcsa, 2017a).

Aim of the research

The main goal of the present research is to explore the preferences of Hungarian consumers interested in pálinka during the purchase of the drink along different attributes, considering the latest changes and trends related to it. The importance of the topic is justified by the fact that Hungary has placed great emphasis on improving the image of pálinka as a national drink, and that the government budget receives significant revenue from the excise duty on this product. In addition, there is an increasing emphasis in the European Union on protected and quality products, including different kind of spirits. The novelty of the research is also given by the fact that several factors determining the purchase (e.g.: the result of spirit competition, consumer ethnocentrism, the knowledge of the pálinka seal) were included, which were not examined in previous studies. The results may be of interest from both a scientific and a marketing perspective.

Literature review

Major legislative changes of the recent years

In Hungary, for a very long time, three different types of drinks were purchasable under the same name 'pálinka' (Harcsa, 2018). This chaotic situation was clarified by the provisions of the Codex Alimentarius Hungaricus No. 1-3-1576 (Hungarian Food

Codex Committee, 2002), which entered into force in 2002. It put an end to the decades-long struggle for the uniqueness, specialty, and quality of the spirit. The Act LXXIII of 2008, provides a base for the so-called 'Pálinka Act' on pálinka, törkölypálinka (made from from grapes) and the establishment of the Pálinka National Council. According to the law, pálinka is a fruit distillate made from fruit grown in Hungary, which is also mashed, distilled, matured, and bottled within the country. As for fruit production, it essential for it to be in Hungary, since for example, imported distillates made from fruit or vegetables and honey cannot be considered as pálinka. In addition, the use of the pálinka seal, which later became mandatory, was possible for beverages marketed domestically, which is different in colour from other excisable alcoholic products.

According to the current regulations (Act LXVIII of 2016 on Excise Duties), an alcoholic product (distillate or pálinka) can currently be made from fruit in three ways: by private distilling, in contract distilleries and in commercial distilleries. We talk about private distillation when someone makes distillate from (typically) their own fruit, with their own distillation equipment, in their home. When someone uses the services of a contract distillery to make their own fruit, we are talking about a contract distillate. If a specialized company produces distillate for commercial purposes, typically from purchased raw materials, the product made here can only be called pálinka. It is important to point out that products from private and contract distillation can only be described as distillates (with a few exceptions), they cannot be officially called pálinka; and that only the drinks produced in commercial distilleries qualify as a Hungaricum and EU's protected drinks.

In recent years, many changes were introduced in the regulation of distillation regarding excise duty (Harcsa, 2016, Zsótér and Molnár, 2015). From 2021 onwards, the rules of production changed again in several respects (National Tax and Customs Office, 2021), as the production of distillates became duty-free up to a certain amount for both private distillation (up to 86 litres – maximum value) and contract distilleries (up to 50 litres).

Consumer habits for other international spirits

Examining the international competitors of pálinka, we can find some studies similar to this research that deal with consumer preferences (Table 1). Glenk et al. (2012)

examined consumer preferences associated with Scotch whisky on sustainable production, consumption, and the purchase of environmentally friendly food. Based on their results, about half of the survey participants consider the proportion of Scotch-grown barley in their whisky at the time of purchase. Furthermore, it was proved that the demand for environmentally friendly production of Scotch malt whisky is rather low, suggesting that consumers are unlikely to be key players in promoting sustainable production.

The number of studies analysing the relationship between glassware (glass or bottle) and consumer preferences has increased over the past few years. Wan et al (2015) examined red wine, white wine, beer, whiskey, and Chinese grain spirit (baijiu). It is worth noting that for consumers, it is important to serve a particular alcoholic beverage in a suitable glass, based on which they are willing to pay a higher price for it - so the type of glass or bottle affects the willingness to pay. All of this also affects product marketing as well as the design of bottles and glasses.

Prentice and Hadsjuk (2016) analysed consumer factors (brand, country of origin, packaging, social media) that arise during the purchase of vodka. Based on their results, similarly to Siegel et al. (2013), brand has a significant impact on consumer decision-making and purchasing preferences. Packaging has of relatively low importance when buying vodka, and many have found that this factor indicates to them the quality of the product they purchase. Social media has a greater effect on the frequency of purchases. For consumers in Italy, the choice of grappa was most related to previous experience, product knowledge and origin. In contrast, consumers considered alcohol content and packaging to be the two least crucial factors when making a purchase (Merlino et al., 2019).

Cravero et al. (2020) examined taste sensitivity among 14 alcoholic and non-alcoholic beverages (including beer, wine, spirits, cocktails). Despite strong gender differences, because women tend to like and consume less alcohol than men, similar patterns of liking and interest were found for both sexes. Consumption of alcoholic beverages decreased with age, apart from wine. It should be emphasized that people see moderate wine consumption as part of the Mediterranean diet. In Italy, older people associate alcohol with relaxation and everyday life (Bastian et al., 2019), while young consumers see alcohol more as a means of socializing and getting out of everyday life (Marinelli

et al., 2014). Young people consume wine mostly during meals, while beer and spirits are mostly consumed outdoors, in the evening and on weekends. As for the preferred places to shop, the wines are mostly in restaurants, pizzerias, and supermarkets; beers, especially in bars, pubs, distilleries, supermarkets, and pizzerias; and spirits are usually purchased at discos and clubs.

Table 1. Key studies examining international alcohol consumption patterns

Authors	Year of the survey	Examines alcoholic beverage	Target group and data collection technique	Key findings
Glenk et al., 2012	2012	Scotch malt whisky	Questionnaire survey (400) with Scottish respondents over the age of 18.	The presence of Scottish-grown barley is not a decisive factor. Demand for more environmentally friendly whisky production is quite low.
Marinelli et al., 2014	2014	Alcoholic drinks	Questionnaire survey (430) with Tuscan respondents aged between 18 to 35 years.	Young consumers prefer to see alcohol as a means of socializing and getting out of everyday life. The time of consumption and the place of purchase differ for different drinks.
Wan et al., 2015	2015	Red wine, white wine, beer, whiskey, Chinese grain spirit	Questionnaire survey (120) with Chinese students between the ages of 18 and 23 + questionnaires (100) with American respondents between the ages of 19 and 75.	The type of glass or bottle affects the willingness to pay. Proper serving of the drink is essential.
Prentice and Handsjuk, 2016	2016	Vodka	Questionnaire survey (454) with Australian respondents over 18 years of age.	The brand has a significant impact on consumer preference. Packaging is of relatively low importance when purchasing vodka.
Merlino et al., 2019	2019	Grappa	Interviews and questionnaire survey (667) with Italian respondents over 18 years of age.	The most key factors in making a choice are experience, product knowledge and origin. Less crucial factors are alcohol content and packaging.
Cravero et al., 2020	2020	14 alcoholic and non-	Questionnaire survey (2388) with Italian	Similar preferences were found for both sexes. Consumption of alcoholic

Authors	Year of the survey	Examines alcoholic beverage	Target group and data collection technique	Key findings
		alcoholic beverages	respondents aged between 18 to 60 years.	beverages has decreased with aging, with the sole exception of wine.

Source: own editing

Alcoholic beverages are produced all over EUs, both for domestic consumption and for export, but the number of studies on the subject is rather limited. It should also be emphasized that the number of studies examining the competitiveness and market share of fruit spirits in Central and Eastern Europe is limited (Torok and Jambor, 2013). However, in the case of wines and beers, several publications can be found. Mtimet and Albisu (2006) found that the consumption of PDO and PGI wines is increasing in Spain. During the consumer choice, the age of the wine and the protection of its origin stand out the most. Perrouty et al. (2006) concluded that brand and origin are very important decision-making aspect for those who do not have adequate information about the quality of the wines. In Japanese wine purchasing decisions, such as taste, style, colour, price and the recommendations of friends are considered outstanding (Bruwer and Buller, 2012). Men prefer beverages from Old World wine countries, while women prefer beverages from the New World wine countries. In Poland (Schaefer et al., 2018), consumers are more likely to buy wines produced outside the country.

Meanwhile, during the selection of beers, also several product attributes appear as a decision criterion (Betancur et al., 2020). In the Czech Republic, consumers' choices are mostly influenced by taste, quality brand and Czech production. Price was not found to be an influencing factor in the selection of beer, but this is due to consumers being interviewed on the street (Svatošová et al., 2021). Another tendency is that with the increase of consumer ethnocentrism, Czech consumers are less likely to choose foreign beer brands (Wanninayake and Chovancová, 2012). In Poland, beer consumers are more attached to national and regional symbols. In Siemieniako et al.'s (2011) research, respondents felt it was their moral duty to buy local beers, thereby supporting the local community by expressing their local identity. All this plays a significant role in the purchase and selection of beer. Hajdu et al. (2007) examined beer consumers in Hungary, it was found that those with a higher education consume new types of beers

more often than those with less education, who are more likely to consume traditional beverages (e.g., homemade distillate).

Consumer preferences in the Hungarian pálinka sector

Several studies have examined the pálinka consumption habits of Hungarians, the transformation of consumer habits and the change in attitudes related to pálinka (Table 2). The report of the GFK Hungária Market Research Institute (2008), commissioned by the Agrármarketing Centrum, highlighted the poor information of consumers about the pálinka, and the remarkably high proportion of non-commercial purchases. Consumers' attitudes towards pálinka were mostly related to nostalgia, the rural atmosphere (although pálinka consumers typically live in the larger cities) and Hungarianness, so they found that the name pálinka had become obsolete. Traditions determine the consumption habits and occasions of pálinka (e.g., slaughter of pigs, weddings).

A researches on the topic in the early 2010s have come to the conclusion that positive associations (group of friends, family event, good mood, cheerfulness) are tied to pálinka; and the negative stereotypes associated with the drink (e.g., poor quality, "old-fashioned" drink) are disappearing (Totth et al., 2011a, Totth et al., 2011b). When buying pálinka, the following aspects are decisive for consumers: taste, packaging (especially design) and price, followed by alcohol content and brand. In the case of a gifting, it is much more common to pay a higher price than in the case of a purchase for one's own purposes; and in the case of gifting, special flavors are the determinants, while for gatherings of friends and home consumption, traditional, more popular flavors are dominant. The role of the brand and the region is less important for the respondents, only a few of the brands/distilleries are better known (e.g., Zwack, Rézangyal). For all types different consumption occasions, 'homemade pálinka' has appeared, mainly due to its origin (self-made, they know what it is made of) and its price (cheaper). Consumers also mix pálinka and pálinka-like drinks in terms of name.

The authors repeated the research later. Based on their results, it can be stated that a significant part of the respondents, between the ages of 18 and 39, used to buy pálinka for various occasions (e.g., home consumption, ceremonies, meetings). The authors highlighted that young people prefer and consume this spirit besides whiskey and vodka - this can contribute to increasing the image of the drink and thus its

competitiveness (Totth et al., 2017). In their research, published in 2018, the authors already reported an increase in consumer awareness, as most respondents were aware that only distillate made from 100% domestic fruit could be considered to pálinka. Consumption of pálinka is still mainly associated with celebrations (christening, name days, birthdays, Christmas, funerals) and social events (meeting of friends, family events). Men prefer whiskey and pálinka, while women prefer vodka. Classic flavours (such as plum, apricot, pear) are the most popular, however, in terms of flavour preferences, it should be mentioned that the majority of respondents prefer 'homemade pálinka' regardless of taste. Overall, therefore, there were no significant changes compared to the survey conducted in 2010, which results in a slowdown and stagnation in the improvement and change of the pálinka' image (Totth et al., 2018a, Totth et al., 2018b).

The study of Szegedyné et al. (2017) concluded that (basically) the occasional drinking is the nature of pálinka consumption (e.g., weddings, house parties, illness). Men, as well as those over 50 and 18-24 years of age, consume pálinka more frequently and more often. The main factor influencing purchasing, in addition to the type of fruit, is the recommendations of friends, and the price, followed by protection of origin. According to the respondents, it is possible to make pálinka from cereals, citrus fruits and potatoes by mistake.

Mucha et al. (2020a) examined the image of pálinka based on different product properties. The 626 respondents considered quality to be the most important purchasing criteria, followed by price, Hungarian origin, prestige, and fashion. Two particularly important conclusions were drawn: (1) the image of homemade distillate is more positive than that of store pálinka; (2) knowledge about pálinka is still extremely incomplete among Hungarian consumers. In a later publication, Mucha et al. (2020b) concluded that in the case of purchases, price has the greatest influence on the decision, which is followed by the type of fruit used and the origin. A significant proportion of consumers prefer homemade distillate, considering the origin, which is explained by differences in image and price. Mucha et al. (2021) also examined the image of store-bought pálinka, home-made distillate and whiskey, which is popular in Hungary. Emotional attachment is highest for homemade distillate, followed by whisky and store-bought pálinka. This is also since homemade spirits were considered by the respondents to be of a more reliable quality than in-store pálinkas. The latter can be

explained not only by emotional and behavioural differences, but also by knowledge and knowledge gaps, which is also confirmed by the fact that the majority of the respondents consider homemade distillate to be a Hungaricum product. In Hungary, the consumption of whiskey is clearly a status symbol.

The latest consumer survey by Maró et al. (2022) who examined Hungarian pálinka consumers with the help of a discrete choice experiment. Based on their findings, the Gönc geographical indication, the Bestillo brand and small-pot (in Hungarian kisüsti) distillation method in increase the sense of utility of the customers. Branded pálinka is most preferred by those living in big cities, who typically buy pálinka in commercial units, and who are more informed about alcoholic beverages than the average consumer. Because pálinka specialties are associated with higher quality, they are willing to pay a higher price for these products. The popularity of homemade distillate is still dominant in the Hungarian countryside and in smaller towns, so branded pálinka is less likely to be consumed there.

Table 2. Key studies examining pálinka consumption patterns

Authors	Year of the survey	Target group and data collection technique	Key findings
Totth et al., 2011a	2010	Interviews (80) with people over the age of 23 who have consumed pálinka in the last 3 months.	Positive associations can be connected with pálinka consumption. Purchasing aspects: taste, packaging, price, alcohol content, brand.
Totth et al., 2011b	2010	Questionnaire survey (1487) among economically active consumers of pálinka aged 23–60, who consume pálinka at least occasionally.	The pálinka got rid of its negative image. Pálinka consumption is associated with social events and holidays.
Totth et al., 2017	2016	Questionnaire survey (1550) among consumers over the age of 18, who purchase alcoholic beverages at least occasionally.	A significant proportion of respondents between the ages of 18 and 39 tend to buy pálinka for various occasions. In addition to whiskey and vodka, young people mostly consume pálinka.
Totth et al., 2018b	2016	Questionnaire survey (1500) among economically active consumers of pálinka aged 23-	Within the spirits, the popularity of three products stood out: vodka, whiskey, pálinka. Men prefer whiskey

Authors	Year of the survey	Target group and data collection technique	Key findings
		60, who consume the spirit at least occasionally.	and pálinka, while women prefer vodka.
Szegedyné Fricz et al., 2017	2017	Questionnaire survey (1014) with respondents over 18 years of age.	Men, as well as those over 50 and 18-24 years of age, consume pálinka more frequently and more often. The main purchase aspects are the type of fruit, the recommendations of friends, the price, and the protection of origin.
Totth et al., 2018a	2018	Interviews (67) with people over 23 who have consumed pálinka in the last 3 months.	Increasing consumer awareness. Among the not preferred flavours, pálinka-like drinks appear. Consumption of pálinka is mainly associated with festive occasions.
Mucha et al., 2020a	2019-2020	Questionnaire survey (626) of respondents over 18 years of age who have consumed pálinka in the last 3 months.	Knowledge about pálinka is extremely incomplete. The most important aspect is quality, followed by price, Hungarian origin, prestige, and fashion criteria.
Mucha et al., 2020b	2019-2020	Questionnaire survey (626) of respondents over 18 years of age who have consumed pálinka in the last 3 months.	Price is the most crucial factor when buying pálinka or distillate. The purpose of the purchase determines the role of the price, the type of fruit, and the origin in the purchase.
Mucha et al., 2021	2019-2020	Questionnaire survey (626) of respondents over 18 years of age who have consumed pálinka in the last 3 months.	The image of homemade distillate and whiskey is better than that of store pálinka. Consumers mistakenly consider homemade distillate to be a Hungaricum product.
Maró et al., 2022	2021	Questionnaire survey (760) with Hungarian pálinka consumers over the age of 18.	The geographical indication, the Bestillo brand and the small-pot distillation method are associated with a higher sense of utility. People living in big cities are characterized by the consumption of pálinkas, while in the countryside home-made distillate still dominates.

Source: own editing

Materials and Methods

During our research, the data collection of the online questionnaire was carried out by a professional market research company (InnoFood Marketing Ltd.). The data collection took place between April and July 2021. Due to restrictions related to COVID-19, data collection was done online only using the research software of Qualtrics. The questionnaire was aimed at analysing the behaviour related to the purchase and consumption of pálinka and assessing the respondents' proficiency in the topic, with a special focus on collecting the sociodemographic characteristics of the respondents.

To establish the questionnaire, we prepared a wide-ranging literature review and expert interviews in advance. Subsequently, a pilot survey (n=73) was conducted, based on which the questions were finalized. From the data of the final survey of 1,000 Hungarian people, representative for the Hungarian alcohol consumer population, 760 responses were evaluated after data cleansing (e.g., exclusion of incomplete or incorrectly completed questionnaires). The most important characteristics of the sample is summarized in Table 3. In the case of gender, (older) men predominate in the sample, which is not surprising, as several studies (e.g. (Szegedyné Fricz et al., 2017, Totth et al., 2018b) have found that older men can be considered typical pálinka consumers. In terms of place of residence and the number of people living in one household, the sample is close to the national average (compared to the 2011 HSCO census). In the case of education, those with lower education were under-represented, while those with higher education were over-represented in the sample. All this is mostly explained by the online nature of the query (Bethlehem, 2010). The obtained results can be evaluated further in the light of these representativeness characteristics.

Table 3. Presentation of the sample

	Survey	**HSCO census**
Total respondents / Population	1,000	9,937,628
Respondent involved	760	-
Gender		
Female (%)	36.45	52.52
Male (%)	63.55	47.48
Average age (years)	54.73	41.39
Residence		
Village (%)	26.45	30.52
City (%)	40.92	34.35
Large city (%)	32.63	35.13

	Survey	HSCO census
Education		
Basic education	2.37	31.72
Secondary education	43.42	51.31
Higher education	54.21	16.97
Average number of people living in a household (person)	2.77	2.60

Source: own editing based on survey and HSCO (2013) data

In addition to the descriptive statistical and non-parametric correlation (Spearman's rank correlation) analyses, we performed a regression (o-logit) analysis to understand the factors influencing the preferences of Hungarian consumers regarding pálinka. In the case of our dependent variables (measured on, importance from 1 to 5, Likert scale) to be modelled, we could build and estimate an ordinal logit (OL) regression model at the ordinal measurement level. The approach often appears when analysing data from research that uses rating-scale-based statements in the context of a questionnaire survey (see, e.g., (Bellizzi et al., 2018, Eygu and Gulluce, 2017).

Prerequisites for estimating the model include aspects that appear when other types of regression are used (e.g., lack of multicollinearity), while some are procedure-specific (the level of measurement of the dependent variable should be ordinal, the proportional probabilities of threshold parameters).

The fulfilment of the 'proportional odds' condition can be examined by applying the parallel lines test. This tests whether there is a significant difference between the models estimating common and unique coefficients according to the variables explaining the threshold parameters. If the test is not significant, it can be concluded that the model estimating individual coefficients does not show a significant improvement, so the proportional odds model can be used (McCullagh, 1980, Brant, 1990, Erkan and Yildiz, 2014). The transformed form of the model into a linear formula (taking the natural logarithm of the odds ratios) can be written according to Equation 1 (Ananth and Kleinbaum, 1997):

$$Y = \alpha_t - \sum_{k=1}^{K} \beta_k X_k, \quad (1)$$

where Y is the dependent variable, α_t is the threshold parameter for the t-th category (t = 1, 2, … ,t-1), X_k is the k-th explanatory variable, β_k denotes the estimated coefficient for the k-th explanatory variable.

Based on all this, the study seeks to answer the following questions:

- How important for the respondents the pálinka purchasing preferences we have discovered (production in Hungary, colour of pálinka, bottle capacity, colour of the bottle, alcohol content, results of the pálinka competition)? How do consumers prioritize these preferences?
- What is the share of those who use private or contract distillation?
- Are consumers aware of the difference between pálinka and distillate?
- Do the respondents know the pálinka seal? If so, can it be distinguished from the seals of the distillate and other spirits?
- Where do consumers buy and how often do they consume pálinka?
- What factors affect shopping preferences?

Results and Discussion

Typical characteristics

In our research, several aspects of the purchase of pálinka, which were also examined by the literature, analysed. The aspects (quality and price) analysed by most studies (Szegedyné Fricz et al., 2017, Mucha et al., 2020a) observed using a discrete choice experiment (DCE), so these aspects were not explored in the present research. The most important aspect that arises during the purchase of pálinka (Table 4) is that the drink should be made in Hungary (average value of 4.11 on the 5-point Likert scale) - this is consistent with the research of Mucha et al. (2020a). It also follows that the respondents are not aware that, except for apricot pálinka, pálinka can only be of Hungarian origin, so it is likely that people often buy different spirits instead of pálinka. The importance of the origin of the drink is becoming increasingly emphasized in other alcoholic beverages as well (Siemieniako et al., 2011, Perrouty et al., 2006, Merlino et al., 2019). Production in Hungary was followed by alcohol content (3,80), to which applies strict rules during pálinka production (Codex Alimentarius Hungaricus, 1-3-1576).

The aspects concerning the appearance of the drink, i.e., the colour of the bottle (3.09) and the capacity of the bottle (3.02), had equivalent results. Respondents on average do not really consider it important for the drink to have colour (2.74) when purchasing. Overall, the appearance of the pálinka was not considered as important by consumers as the aspects presented earlier. In the early 2010s, consumers placed even more emphasis on the appearance of the beverage (Totth et al., 2011b), however, in a recent

study (Mucha et al., 2020a) we can already see results similar to our research. Moreover, it is clear that the appearance of pálinka is not such an important decision criterion, similar to the case of vodka (Prentice and Handsjuk, 2016), in contrast to the experiences of other competitors (Wan et al., 2015).

According to the respondents, the least decisive factor when buying pálinka is whether the pálinka has a result in a competition (2.53). However, those who still found the results of the competition important mentioned the National Pálinka and Törkölypálinka Competition spontaneously.

Table 4. Respondents' views on the purchase of pálinka

Aspects of purchasing palinka	Average	Standard deviation
Production in Hungary	4.11	1.12
Alcohol content	3.80	1.02
Colour of the bottle	3.09	1.33
Capacity of the bottles	3.02	1.25
Colour of the palinka	2.74	1.25
Place in pálinka competition	2.53	1.11

Note: the answer was possible on a Likert scale from 1 to 5, where 1 meant that the aspect was not important at all to the respondent, while 5 meant that it was of paramount importance

Source: own editing based on the survey

During the examination of the correlation among the aspects presented in Table 5, we came to the conclusion that there is mostly a weak relationship or no relationship among the aspects. There is a moderate strength correlation with positive direction (r_S>0.3) between the importance of the capacity of the bottle and the colour of the bottle, which indicates that as the importance of the former aspect (capacity of the bottle) increases, the importance of the latter aspect (colour of the bottle) also increases. A similar conclusion is true for the pairing of colour of the bottle and alcohol content as well as for the pairing of colour of the pálinka and the capacity of the bottle.

Table 5. Spearman's correlation analysis between the examined aspects

	Production in Hungary	Alcohol content	Colour of the bottle	Capacity of the bottles	Colour of the pálinka	Place in pálinka competition
Production in Hungary	**1.00**					
Alcohol content	0.23***	**1.00**				
Colour of the bottle	0.19***	0.35***	**1.00**			
Capacity of the bottles	0.16***	0.27***	0.36***	**1.00**		
Colour of the pálinka	0.17***	0.12***	0.26***	0.31***	**1.00**	
Place in pálinka competition	0.27***	0.16***	0.27***	0.17***	0.25***	**1.00**

Note: The matrix contains Spearman's rank correlation coefficients (r_S). The results (strength of correlation coefficients) were interpreted based on the categorization of Dancey and Reidy (2007). *** significant at 1%.

More than half (460 people) of the 760 respondents (or one of their families) use the services of a contract distillery. If we look at private distillation, it is less common than contract distillation, as only 29% of respondents said that someone in the family distillates at home. The changes in legislation in 2021 (e.g., the production of distillates is duty-free up to 86 litres for private distillation and up to 50 litres for contract distillation) may bring the distilleries to the forefront again, as from 2015 to 2021 was a taxable activity under the 92/83/EGK directive.

It is important to highlight opposing judgement of private distillation, since on the one hand it increases the popularity of the drink, but on the other hand quality issues arise. A similar situation can be seen in several countries of Europe or Asia, where various regulations (e.g.: restrictions on opening hours) prioritized home-made spirits over their shop counterparts (Skorobogatov, 2014, Manthey et al., 2020, Probst et al., 2021). As in the case of home-distilled pálinka, the quantity and quality of home-made drinks

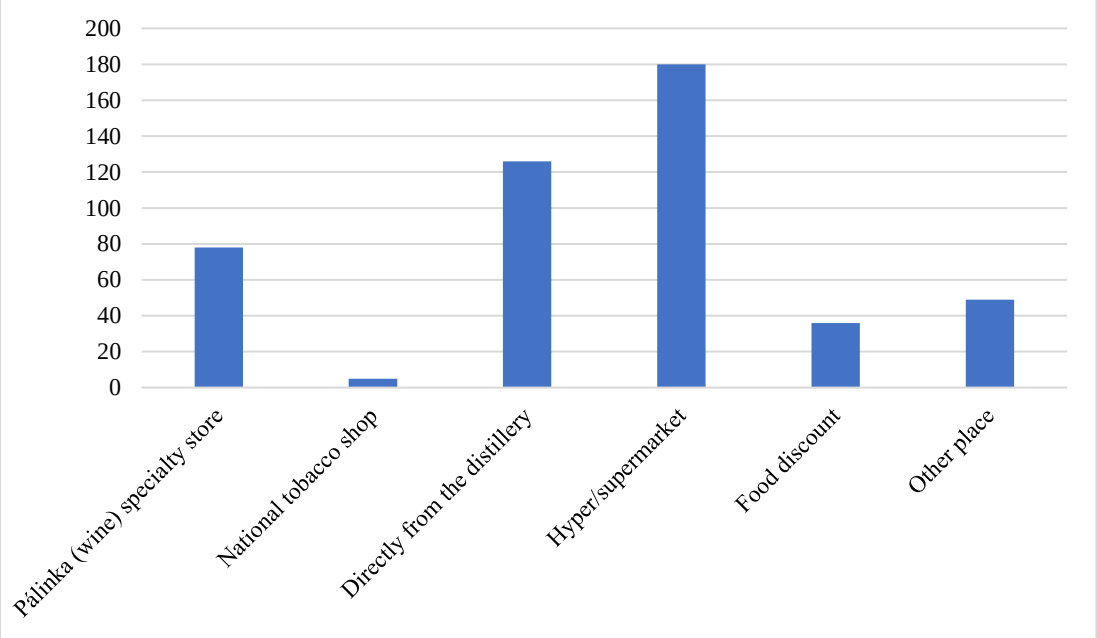
also causes problems in other countries of the word and of the European Union. In 5 member states (Croatia, Finland, Greece, Hungary, Portugal) of the Europaion Union, home-made, unrecorded alcohol made a significant contribution to total consumption (Manthey et al., 2020, Manthey et al., 2019). It is clear from the literature (Manthey et al., 2019, Probst et al., 2021) that consumers of home-made distillates (as well as wines and beers) are usually from the lower social classes. In contrast, the consumers of store-bought spirits (e.g., pálinka) come from the higher social classes, and it can be concluded from this that the consumers must be properly targeted by companies.

541 people (71%) stated that they knew the difference between pálinka and distillate, but less than one in two respondents (only 31% of all respondents) knew the difference between distillate and pálinka. Although some studies (Totth et al., 2018a) have reported an increase in awareness, the most recent publications on the subject (Mucha et al., 2020a, Mucha et al., 2020b) found a similar result to this study. Pálinka, distillate and other spirits (e.g., vodka, whiskey) have different seals (Act LXVIII of 2016 on Excise Duties). The seal represents a guarantee of quality and certifies that the alcoholic drinks has been placed on market in accordance with the law, thus excluding the possibility of counterfeiting. The seal is reddish-brown on the pálinka, green on the distillate and blue on the other spirits. 60% of the respondents stated that they are aware that the pálinka, that can be bought commercially in Hungary, has a unique seal that is different from all other alcoholic products. However, when these respondents had to choose between the three different seal types, only 41% (165 people) correctly marked the reddish-brown seal.

Most respondents purchase pálinka in a hypermarket or supermarket (38%) or directly from the distillery (27%). The least common place of purchase was the national tobacco shop (less than 1%) (Figure 1). Shopping goals include consumption with friends (33%), consumption within the family (27%), shopping for gift (23%), and personal consumption (17%). As the knowledge of Hungarian consumers about pálinka is still extremely incomplete, in many cases pálinka-like drinks (e.g., Fütyülős) may be purchased in hypermarkets or supermarkets. In contrast, in the case of purchases directly from the distillery, the chances of this are much lower, as only a few contract distilleries can market their product after paying the excise duty and affixing the pálinka seal. Among the shopping goals, consumption with friends was in the first place, followed by consumption within the family, shopping for a gift, and own

consumption. Pálinka consumption is tied to various occasions (e.g., family events, meetings of friends), which has been confirmed by several previous studies (Totth et al., 2018a, Totth et al., 2011b).

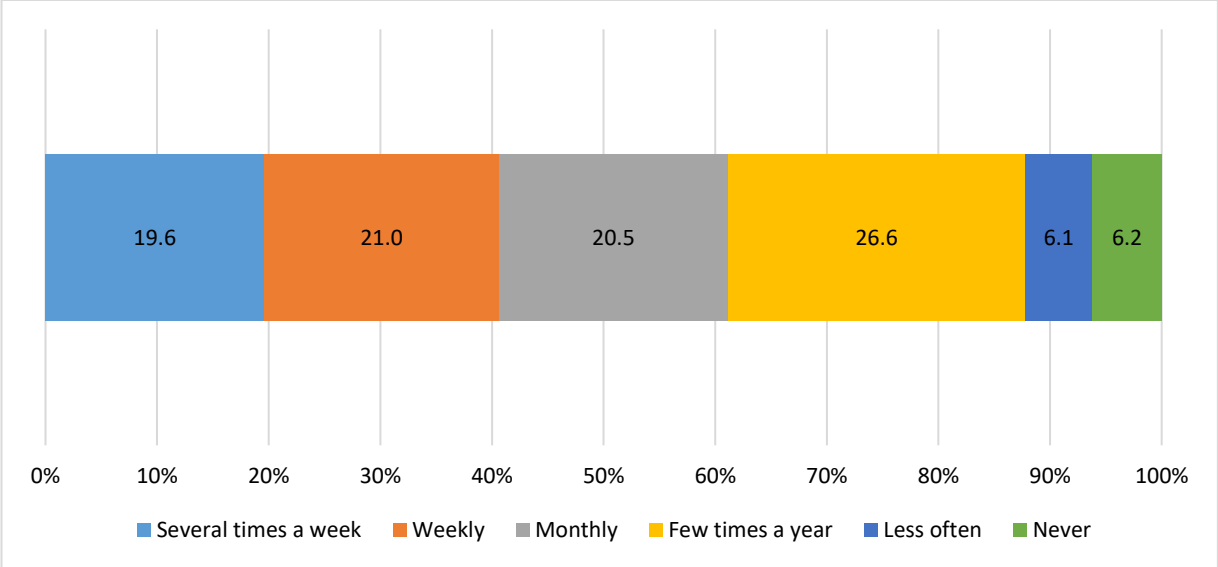
Figure 1. Respondents' most common place to purchase pálinka



Source: own editing based on the questionnaire

Most respondents (202 people) consume pálinka a few times a year, followed by weekly (160 people), monthly (156 people) and several times a week (149 people) consumptions with almost the same values (Figure 2). The least common of the fillers is that they never (47 people) or less than a year (46 people) consume pálinka. Such frequent consumption of the drink is not surprising, as alcohol is considered by many to be a means of socialization (Marinelli et al., 2014).

Figure 2. Frequency of respondents' pálinka consumption



Source: own editing based on the questionnaire

Factors affecting certain product properties

Following the descriptive statistics, Table 6 shows the results of the estimated regression models. The columns contain the examined dependent variables, while the rows contain the explanatory variables of the models. It is necessary to mention that the modelling of our independent variables was done simultaneously, without any algorithms, in order to avoid the often-mentioned disadvantages of stepwise methods (Harrel, 2015). The fit of the models was first examined using the Deviance and Pearson χ^2 tests, the results of which were not significant in either case, suggesting that our models fit well - the predicted values do not differ significantly from those observed. Henceforth, the result of the likelihood ratio test shows significant results for five models (the only exception being model 3), which leads to the conclusion that we obtained significantly better fitting models compared to the base model without explanatory variables (Field, 2009). Finally, the parallel lines test did not show a significant difference at the level of 1% for any of the models. The results of additional indicators related to the fit of the models can be found in the notes to Table 6.

Table 6. Results of the estimated ordinal logistic regression models

Explanatory variables	**Production in Hungary** (1st model)	**Colour of the pálinka** (2nd model)	**Capacity of the battle** (3rd model)	**Colour of the bottle** (4th model)	**Alcohol content** (5th model)	**Place in pálinka competition** (6th model)
Coefficient (β) exp (β)						
Does anyone in your family uses the services of a contract distillery?						

Explanatory variables	**Production in Hungary** (1st model)	**Colour of the pálinka** (2nd model)	**Capacity of the battle** (3rd model)	**Colour of the bottle** (4th model)	**Alcohol content** (5th model)	**Place in pálinka competition** (6th model)
(base category: No)						
Yes	0.022 (1.022)	0.007 (1.007)	-0.151 (0.860)	-0.082 (0.921)	-0.056 (0.945)	0.075 (1.078)
Does anyone in your family make pálinka (distillate) at home? (base category: No)						
Yes	-0.176 (0.838)	-0.215 (0.806)	-0.325* (0.723)	-0.323* (0.724)	-0.554*** (0.575)	-0.121 (0.886)
Do you know the difference between pálinka and distillate? (base category: Do not know)						
Knows	-0.013 (0.987)	-0.333* (0.717)	-0.196 (0.822)	0.592*** (1.808)	0.455** (1.577)	0.152 (1.164)
What is the difference between pálinka and distillate? (base category: Do not know)						
Actually knows	-0.138 (0.871)	-0.006 (0.994)	0.047 (1.048)	-0.323 (0.724)	0.063 (1.065)	0.048 (1.049)
Did you know that pálinka, that can be bought commercially in Hungary, has a unique seal different from all other alcoholic products? (base category: Did not know)						
Knew	0.414* (1.512)	0.291 (1.338)	-0.002 (0.998)	0.165 (1.179)	0.091 (1.095)	0.532*** (1.702)
Which of the following is the pálinka seal? (base category: Do not know)						
Actually knows	0.226 (1.254)	-0.092 (0.912)	-0.086 (0.917)	-0.027 (0.974)	-0.103 (0.902)	0.393* (1.482)
Where do you usually purchase pálinka? (base category: Directly from the distillery)						
From a pálinka (wine) specialty store	-0.259 (0.772)	0.162 (1.176)	0.162 (1.176)	-0.133 (0.875)	-0.329 (0.720)	0.542** (1.719)
From a national tobacco shop	-1.528* (0.217)	-0.315 (0.730)	0.778 (2.178)	-1.132 (0.323)	-0.704 (0.495)	-0.942 (0.390)
From hypermarket/supermarket	-0.786*** (0.456)	0.164 (1.178)	0.166 (1.180)	-0.201 (0.818)	-0.174 (0.840)	-0.070 (0.932)
Food discount store	-1.117*** (0.327)	0.535 (1.708)	-0.202 (0.817)	0.026 (1.026)	0.007 (1.007)	0.330 (1.391)
Elsewhere	-0.734** (0.480)	0.032 (1.032)	-0.177 (0.838)	-0.119 (0.887)	0.019 (1.019)	0.033 (1.034)
For what purpose do you usually purchase pálinka? (base category: For own consumption)						
For consumption within the family	0.370 (1.448)	0.236 (1.266)	0.337 (1.401)	-0.043 (0.958)	-0.047 (0.954)	0.077 (1.080)
For consumption with friends	0.612** (1.844)	0.023 (1.024)	0.211 (1.235)	-0.159 (0.853)	-0.057 (0.945)	0.129 (1.138)
As a gift	0.786** (2.195)	-0.131 (0.877)	0.061 (1.063)	0.084 (1.088)	-0.016 (0.985)	0.219 (1.245)
How often do you consime pálinka? (base category: Several times a week)						
Weekly	0.552* (1.736)	0.058 (1.060)	0.344 (1.410)	0.275 (1.316)	-0.692** (0.501)	0.296 (1.345)
Monthly	0.312 (1.366)	-0.058 (0.944)	0.227 (1.255)	-0.173 (0.841)	-0.949*** (0.387)	-0.028 (0.973)
A few times a year	0.124 (1.132)	0.489* (1.630)	0.249 (1.282)	0.224 (1.250)	-0.941*** (0.390)	0.191 (1.210)

Explanatory variables	**Production in Hungary** (1st model)	**Colour of the pálinka** (2nd model)	**Capacity of the battle** (3rd model)	**Colour of the bottle** (4th model)	**Alcohol content** (5th model)	**Place in pálinka competition** (6th model)
Less often than a year	-1.007* (0.365)	0.005 (1.005)	0.649 (1.914)	0.736 (2.087)	-0.041 (0.960)	-0.039 (0.962)
Never	0.196 (1.216)	1.195** (3.304)	0.623 (1.864)	0.238 (1.269)	-0.389 (0.678)	1.440** (4.222)
Ethnocentrism						
Ethnocentrism	0,043*** (1,044)	0,025*** (1,026)	0,009 (1,009)	0,024*** (1,024)	0,026*** (1,026)	0,017*** (1,017)

Note: *1st model:* Akaike's information criteria: 1071,226; Bayesian information criteria: 1171,095; Likelihood ratio test: χ^2=89,581, df=20, p<0,01; *2nd model:* Akaike's information criteria: 1484,350; Bayesian information criteria: : 1584,219; Likelihood ratio test: χ^2=39,054, df=20, p<0,01; *3rd model:* Akaike's information criteria: 1467,294; Bayesian information criteria: : 1567,163; Likelihood ratio test: χ^2=18,988, df=20, p=0,523; *4th model:* Akaike's information criteria: 1482,809; Bayesian information criteria: 1582,678; Likelihood ratio test: χ^2=41,908, df=20, p<0,01; *5th model:* Akaike's information criteria: 1194,060Bayesian information criteria: : 1293,929; Likelihood ratio test: χ^2=51,856, df=20, p<0,01; *6th model:* Akaike's information criteria: 1386,102; Bayesian information criteria: Bayesian information criteria: 1485,971; Likelihood ratio test: χ^2=50,632, df=20, p<0,01. *** significant at 1%, ** significant at 5%, * significant at 10%.

Based on the significant coefficients of the 1st model, we can conclude that the chances of higher importance values for pálinka made in Hungary were 1.51 times higher for those respondents who claimed to be aware of the existence of a unique seal for commercially available pálinkas in Hungary, compared to respondents who have no knowledge of it. In comparison to respondents who buy directly from the pálinka distillery, respondents who purchase from the national tobacco shop, grocery discount, hypermarkets and supermarkets, and other places (e.g., nightclubs) are also less likely to place more importance on home-made products. Compared to buying for own consumption, those who buy pálinka as a gift or for consumption with friends are more likely (1.84 times and 2.22 times, respectively) to consider the product made in Hungary to be essential. Respondents who consume pálinka weekly are more likely; while those who drink pálinka less than a few times a year are less likely to give priority to domestically produced products, compared to those who consume such a product several times a week. Along with the increase in the level of ethnocentrism, the chances that respondents fill in the Hungarian origin more important when buying are increasing. If the goal is to increase the turnover of Hungarian drinks, especially pálinka, it may be a good strategy to introduce Hungarian consumers to the difference between the seals (e.g., colour).

In the case of the 2nd model, respondents who claimed to know the difference between pálinka and distillate were less likely to associate a higher importance value with the colour of the pálinka than those who claimed not to know what the difference between the two types of drinks. In contrast to those who drink pálinka several times a week, both respondents who drink pálinka a few times a year and those who never drink pálinka are more likely to prioritize the colour of pálinka when choosing a drink. The higher the value of ethnocentrism for a pálinka consumer on the CETSCALE, the greater their chances of prioritizing the colour of the drink. Only natural, fruit-coloured alcoholic beverages can be considered pálinka. If Hungarian consumers are aware of this, they do not consider it a primary priority whether a given pálinka is matured on a fruit bed.

Based on the significant coefficients of the 3rd and 4th models, we can see that those in whose family distillate drinks at home are 0.72 times more likely to have a higher importance value in terms of the capacity and the colour of the bottle than those who do not have private distillery in their family. Furthermore, the colour of the bottle (4th model) is much more likely to be a priority for those who have claimed to know what the difference is between pálinka and distillate; and those with a higher level of ethnocentrism. The 5th model (for alcohol content) shows similar significant values and coefficients (home distillation; difference between pálinka and distillate; ethnocentrism) as for the colour of the bottle. However, compared to those who drink pálinka several times a week, those who drink pálinka once or less a week are less likely to find alcohol content important.

Based on the 6th model, it can be stated that the chances of higher importance values for receiving a place in a pálinka competition were 1.70 times higher for those who claimed to be aware of the existence of a unique seal for commercially available pálinkas in Hungary, compared to respondents who are unaware of this. Those respondents who actually knew about the legislation had a 1.48 higher chance of showing a greater importance value assigned to the result achieved in the pálinka competition. Compared to those who buy directly from the pálinka distillery, buyers from the pálinka (wine) specialty store are more likely to have a priority to the places the drink achieved in any pálinka competition. Contrasted to fillers who consume pálinka several times a week, those who never consume pálinka are more likely (4.22) to prefer whether a given pálinka has a result in a pálinka competition. Similar to all

models where ethnocentrism was significant, simultaneously with the increase in the level of ethnocentrism, there is a higher chance that a respondent considers the result achieved in the pálinka competition to be important.

Conclusions

About a quarter of the respondents (or their families) make distillaties at home (private distillation), while more than half of them use the services of a distillery. The perception of private distillation in Hungary is twofold, as on the one hand it increases the consumption of distillates and makes the product better known; on the other hand, only constant quality can be guaranteed for drinks produced in contract distilleries as well as in commercial distilleries

The conceptual confusion between pálinka and distillate continues to exist according to the research. Seal can help to distinguish pálinkas from other alcoholic beverages, as pálinkas, that can be purchased commercially in Hungary, have a different (reddish-brown) seal. Knowledge of the seal, which has not been previously examined in any study, is considered to be similarly low, than knowledge of the actual difference between pálinka and distillate. Respondents most often purchase pálinka in a hypermarket or supermarket, as well as directly from the distillery and a sizeable proportion of respondents (approximately 61%) consume pálinka monthly. It is important to emphasize the moderate consumption of the drink, as Hungary is at the forefront of per capita alcohol consumption both in the European Union and in the world.

For Hungarian pálinka consumers, the most important decision-making aspect when purchasing is the Hungarian origin of the drink, followed by the alcohol content and the appearance of the drink. The Hungarian origin of pálinka is clearly defined by laws, which also shows the low proficiency of Hungarian consumers in the subject. Furthermore, there is a close relationship between alcohol content and price, so we can conclude that price is also a decisive factor for Hungarian consumers.

Finally, several conclusions can be drawn from the ordinal regression models. One of the most important is that by increasing the knowledge of the seal, the turnover of quality, commercial pálinkas can clearly increase. The spread of real pálinkas could also be helped by more and more consumers purchasing the product directly from pálinka distilleries. The more a consumer knows the rules and regulations for pálinka

(for example, because it is consumed many times), the more likely he or she is to choose the product in a purchasing situation, and the appearance of the drink (e.g., colour of the drink) is less and less important to such consumers. Furthermore, it is also clear from the results that those who have already chosen home-made distillate (e.g., makes pálinka at home) are less likely to buy pálinka more regularly. They cannot be considered as a consumer group to be targeted by companies.

Overall, it can be concluded that the knowledge of Hungarian consumers about pálinka can still be considered low (e.g.: the differentation between pálinka and distillate, the knowledge of the seal), the increase of which is an important task at both the governmental and corporate level. To do this, it is essential to launch further (marketing) campaigns and a well-positioned marketing strategy, which can help to make the drink more widely known. Based on the presented results, the pálinka distilleries and the companies selling the spirit can even better understand how important certain product attributes are considered by the consumers. However, it is worth emphasizing that the results cannot be considered representative of the entire Hungarian population (due to, among other things, the limitations of online research), we conducted our survey among consumers interested in pálinka. Further examination of this target group of consumers (e.g., the role of prices, the effect of the existence of the geographical indication) would also be important, since it would give us an even more accurate picture of the Hungarian pálinka sector.

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References

Act LXXIII of 2008 on Palinka, Törkölypalinka and the National Palinka Council (2008) [Online]. Available: https://eurlex.europa.eu/legalcontent/EN/TXT/HTML/?uri=CELEX:52021XC0426 (01)&rid=7 [Accessed: Sept. 20, 2022].Act LXVIII of 2016 on Excise Duties.

Act LXVIII of 2016 on Excise Duties (2016) [Online]. Available: https://ec.europa.eu/growth/ tools-

databases/tris/en/search/?trisaction=search.detail&year=2016&num=561 [Accessed: Sept. 20, 2022].

Ananth, C. V. and Kleinbaum, D. G. (1997) "Regression models for ordinal responses: a review of methods and applications", *International journal of epidemiology*, Vol. 26, No. 6, pp. 1323 - 1333. ISSN: 1464-3685. DOI 10.1093/ije/26.6.1323.

Bastian, S. E., Danner, L., Niimi, J., Ristic, R. and Johnson, T. E. (2019) "Alcoholic beverages in context", *Context*, Vol. 2019, pp. 605 - 630. DOI 10.1016/B978-0-12-814495-4.00029-5.

Békési, Z. and Pándi, F. (2005). "Pálinkafőzés", Mezőgazda Kiadó, Budapest, p. 214. ISBN 9789632865607.

Bellizzi, M. G., Eboli, L., Forciniti, C. and Mazzulla, G. (2018) "Air transport passengers' satisfaction: an ordered logit model", *Transportation Research Procedia*, Vol. 33, pp. 147 - 154. ISSN 2352-1465. DOI 10.1016/j.trpro.2018.10.087.

Betancur, M. I., Motoki, K., Spence, C. and Velasco, C. (2020) "Factors influencing the choice of beer: A review", *Food Research International*, Vol. 137, pp. 109367. ISSN 0963-9969. DOI 10.1016/j.foodres.2020.109367.

Bethlehem, J. (2010) "Selection bias in web surveys", *International statistical review*, Vol. 78, No. 2, pp. 161 - 188. ISSN 0306-7734. DOI 10.1111/j.1751-5823.2010.00112.x.

Brant, R. (1990) "Assessing proportionality in the proportional odds model for ordinal logistic regression", *Biometrics*, Vol. 46, No. 4, pp. 1171 - 1178. ISSN 0006-341X. DOI 10.2307/2532457.

Bruwer, J. and Buller, C. (2012) "Consumer behavior insights, consumption dynamics, and segmentation of the Japanese wine market", *Journal of International Consumer Marketing*, Vol. 24, No. 5, pp. 338 - 355. ISSN 0896-1530. DOI 10.1080/08961530.2012.741478.

Cravero, M. C., Laureati, M., Spinelli, S., Bonello, F., Monteleone, E., Proserpio, C., Lottero, M. R., Pagliarini, E. and Dinnella, C. (2020) "Profiling individual differences in alcoholic beverage preference and consumption: New insights from a large-scale study", *Foods*, Vol. 9, No. 8, pp. 1131. ISSN 2304-8158. DOI 10.3390/foods9081131.

Dancey, C. P. and Reidy, J. (2007) "Statistics without maths for psychology", Pearson Education, Harlow, p. 619. ISBN 978-0-132-05160-6.

Erkan, A. and Yildiz, Z. (2014) "Parallel lines assumption in ordinal logistic regression and analysis approaches", *International Interdisciplinary Journal of Scientific Research*, Vol. 1, No. 3, pp. 8 - 23. ISSN 2200-9833.

Eygu, H. and Gulluce, A. C. (2017) "Determination of customer satisfaction in conservative concept hotels by ordinal logistic regression analysis", *Journal of Financial Risk Management*, Vol. 6, No. 03, pp. 269 – 284. ISSN 2167-9541. DOI 10.4236/jfrm.2017.63020.

Field, A. (2009) "Discopering statistics using SPSS", SAGE Publications, London, p. 856. ISBN: 978-1-84787-907-3.

Géczi, G., Korzenszky, P. and Nagygyörgy, L. (2018) "Analytical and sensory testing of palinkas made with different distillation technologies", *Hungarian Agricultural Research*, Vol. 27, No. 3, pp. 4 - 9. ISSN 1216-4526.

Glenk, K., Hall, C., Liebe, U. and Meyerhoff, J. (2012) "Preferences of Scotch malt whisky consumers for changes in pesticide use and origin of barley", *Food*

Policy, Vol. 37, No. 6, pp. 719 - 731. ISSN 0306-9192. DOI 10.1016/j.foodpol.2012.08.003.

Hajdu, I., Major, A. and Lakner, Z. (2007) "Consumer behaviour in the Hungarian beer market", *Studies in Agricultural Economics*, Vol. 106, pp. 89 - 103. ISSN 1418-2106. DOI 10.22004/ag.econ.47016.

Harcsa, I. M. (2016) "A magyarországi pálinkafőzés jogszabályi változásai és hatásai", *Ars Boni*, Vol. 4, No. 1, pp. 25 - 42.

Harcsa, I. M. (2017a) "Energy demand for pálinka production and some practical issues of waste treatment", *Economic and Regional Studies (Studia Ekonomiczne i Regionalne)*, Vol. 10, No. 3, pp. 82 – 95. ISSN 2451-182X.

Harcsa, I. M. (2017b) "Increasing palinka recognition with tourism and gastronomy", *APSTRACT: Applied Studies in Agribusiness and Commerce*, Vol. 11, No. 3-4, 37 - 44. ISSN 1789-7874. DOI 10.19041/APSTRACT/2017/3-4/6.

Harcsa, I. M. (2018) "A pálinkafőzés gazdasági hatásai", PhD dissertation, University of Debrecen

Harcsa, I. M., Nábrádi, A. and Tar, I. (2014) "Hungarian spirits pálinka as a "Hungaricum" I. - Literature review and practical approaches", *Applied Studies in Agribusiness and Commerce*, Vol. 8, No. 2-3, pp. 133 - 141. ISSN 1789-7874.

Frank, E. H. (2015). "Regression modeling strategies with applications to linear models, logistic and ordinal regression, and survival analysis", Springer Nature, Berlin, p. 607. ISBN 978-3-319-19425-7.

Hungarian Food Codex Comitte (2002) "Codex Alimentarius Hungaricus" Order No 1-3-1576/89 Alcoholic Beverages.

GFK Hungária Market Research Institute (2008): "Piackutatás a pálinka népszerűsítő kampány megalapozására", Budapest.

László, Z., Hodúr, C. and Csanádi, J. (2016). ""Pálinka": Hungarian Distilled Fruit", In Traditional Foods (pp. 313-318). Springer, Boston. DOI 10.1007/978-1-4899-7648-2_24.

Manthey, J., Probst, C., Kilian, C., Moskalewicz, J., Sierosławski, J., Karlsson, T. and Rehm, J. (2020) "Unrecorded alcohol consumption in seven European Union countries", *European addiction research*, Vol. 26, No. 6, pp. 316 – 325. ISSN 1022-6877. DOI 10.1159/000506333.

Manthey, J., Shield, K. D., Rylett, M., Hasan, O. S., Probst, C. and Rehm, J. (2019) "Global alcohol exposure between 1990 and 2017 and forecasts until 2030: a modelling study", *The Lancet*, Vol. 393, pp. 2493 - 2502. ISSN 0140-6736. DOI 10.1016/S0140-6736(18)32744-2.

Marinelli, N., Fabbrizzi, S., Sottini, V. A., Sacchelli, S., Bernetti, I. and Menghini, S. (2014) "Generation Y, wine and alcohol. A semantic differential approach to consumption analysis in Tuscany", *Appetite*, Vol. 75, pp. 117 - 127. ISSN 0195-6663. DOI 10.1016/j.appet.2013.12.013.

Maró, Z. M., Török, Á., Balogh, P. and Czine, P. (2022) "Pálinkavásárlási preferenciák vizsgálata a magyar fogyasztók körében-egy diszkrét választási modell építése", *Statisztikai Szemle*, Vol. 100, No. 1, pp. 44 - 67. ISSN 0039-0690. DOI 10.20311/stat2022.1.hu0044.

McCullagh, P. (1980) "Regression models for ordinal data", *Journal of the Royal Statistical Society: Series B (Methodological)*, Vol. 42, No. 2, pp. 109 - 127. ISSN 0035-9246. DOI 10.1111/j.2517-6161.1980.tb01109.x.

Merlino, V. M., Massaglia, S., Borra, D. and Mantino, V. (2019) “New consumer targets towards a traditional spirit: The case of Grappa in Piedmont (Northwest Italy)”, *Italian Journal of Food Science*, Vol. 31, No. 4, pp. 652 – 668. ISSN: 1120-1770. DOI 10.14674/IJFS-1375.

Mtimet, N. and Albisu, L. M. (2006) “Spanish wine consumer behavior: a choice experiment approach”, *Agribusiness: An International Journal*, Vol. 22, No. 3, pp. 343-362. ISSN: 0742-4477. DOI 10.1002/agr.20090.

Mucha, L., Oravecz, T. and Totth, G. (2020a) “A fogyasztói attitűd kognitív komponensének a pálinka imázsában betöltött szerepe”, *Táplálkozásmarketing*, Vol. 7, No. 2, pp. 21 - 32. ISSN 2631-1380. DOI 10.20494/TM/7/2/2.

Mucha, L., Oravecz, T. and Totth, G. (2020b) “Pálinkavásárlási szempontok vizsgálata conjoint-elemzés segítségével”, *Marketing & Menedzsment*, Vol. 54, No. 2, pp. 41 – 50. ISSN 1219-0349. DOI 10.15170/MM.2020.54.02.04.

Mucha, L., Oravecz, T., & Totth, G. (2021) “A fogyasztói attitűd affektív és konatív komponenseinek elemzése a pálinka imázsában”, *Táplálkozásmarketing*, Vol. 8, No. 1, pp. 21 - 32. ISSN 2631-1380. DOI 10.20494/TM/8/1/2.

National Tax and Customs Office (2021) “Újra adómentes a pálinkafőzés”, [Online]. Available: https://nav.gov.hu/nav/sajtoszoba/hirek/Ujra_adomentes_a_pali20210204.html. [Acessed: 06 May. 2022].

Perrouty, J. P., d'Hauteville, F. and Lockshin, L. (2006) “The influence of wine attributes on region of origin equity: An analysis of the moderating effect of consumer's perceived expertise”, *Agribusiness: An International Journal*, Vol. 22, No. 3, pp. 323 - 341. ISSN 0742-4477. DOI 10.1002/agr.20089.

Prentice, C. and Handsjuk, N. (2016) “Insights into Vodka consumer attitude and purchasing behaviors”, *Journal of retailing and consumer services*, Vol. 32, pp. 7 - 14. ISSN 0969-6989. DOI 10.1016/j.jretconser.2016.05.009.

Probst, C., Manthey, J., Ferreira-Borges, C., Neufeld, M., Rakovac, I., Andreasyan, D., ... and Rehm, J. T. (2021) “Cross-sectional study on the characteristics of unrecorded alcohol consumption in nine newly independent states between 2013 and 2017”, *BMJ open*, Vol. 11, No. 12, pp. 1-10. ISSN 2044-6055. DOI 10.1136/bmjopen-2021-051874.

Schaefer, R., Olsen, J. and Thach, L. (2018) “Exploratory wine consumer behavior in a transitional market: The case of Poland”, *Wine Economics and Policy*, Vol. 7, No. 1, pp. 54 - 64. ISSN 2212-9774. DOI 10.1016/j.wep.2018.01.003.

Siegel, M., DeJong, W., Naimi, T. S., Fortunato, E. K., Albers, A. B., Heeren, T., ... and Jernigan, D. H. (2013) “Brand-specific consumption of alcohol among underage youth in the United States”, *Alcoholism: Clinical and experimental research*, Vol. 37, No. 7, pp. 1195 - 1203. ISSN 0145-6008. DOI 10.1111/acer.12084.

Siemieniako, D., Kubacki, K., Glińska, E. and Krot, K. (2011) “National and regional ethnocentrism: a case study of beer consumers in Poland”, *British Food Journal*, Vol. 113, No. 3, pp. 404 – 418. ISSN 0007-070X. DOI 10.1108/00070701111116464.

Skorobogatov, A. (2014) “The effect of closing hour restrictions on alcohol use and abuse in Russia”, Higher School of Economics Research Paper No. WP BRP, 63/EC/2014. DOI 0.2139/ssrn.2501865.

Svatošová, V., Kosová, P. and Svobodová, Z. (2021) “Factors influencing consumer behaviour in the beer market in the Czech Republic”, *Czech Journal of Food*

Sciences, Vol. 39, No. 4, pp. 319 - 328. ISSN 1805-9317. DOI 10.17221/153/2020-CJFS.

Szegedyné Fricz, Á., Szakos, D., Bódi, B. and Kasza, G. (2017) "Pálinka: fogyasztói ismeretek, preferenciák, fogyasztási szokások, marketinglehetőségek", *GAZDÁLKODÁS: Scientific Journal on Agricultural Economics*, Vol. 61, No. 02, pp. 158 - 170. ISSN 0046-5518. DOI 10.22004/ag.econ.264586.

Torok, A. and Jambor, A. (2013) "Competitiveness and Geographical Indications: the case of fruit spirits in Central and Eastern European countries", *Studies in Agricultural Economics*, Vol. 115, No. 1, pp. 25 - 32. ISSN 1418 2106. DOI 10.22004/ag.econ.146816.

Torok, A. (2013) "Hungaricums–Hungary's geographical indications. The role of origin in agriculture and food production in the 21th century – lessons learnt from the case of the pálinka", Doctoral Dissertation, Corvinus University of Budapest.

Totth, G., Hlédik, E. and Fodor, M. (2011a) "Pálinkával kapcsolatos fogyasztói percepciók és preferenciák elemzése kvalitatív kutatás eredményeinek tükrében", *Marketing & Menedzsment*, Vol. 45, No. 2, pp. 11-15. ISSN 1219-0349.

Totth, G., Hlédik, E. and Fodor, M. (2011b) "Fogyasztói vélemények és preferenciák a pálinka piacán", *Élelmiszer, táplálkozás és marketing*, Vol. 8, No. 1-2, pp. 41 - 47. ISSN 2560-2551.

Totth, G., Kovács, I., Mezőné Oravecz, T. and Zarándné Vámosi, K. (2017) "A fiatalok pálinkafogyasztási szokásai" In Bányai E., Lányi B. and Törőcsik M.(edt.): Tükröződés, társtudományok, trendek, fogyasztás: Egyesület a Marketing Oktatásért és kutatásért (EMOK) XXIII. országos konferencia, Pécs

Totth, G., Mezőné Oravecz, T. and Zarándné Vámosi, K. (2018a) "A pálinka fogyasztási és vásárlási szokásainak kvalitatív vizsgálata", *Prosperitas*, Vol. 5, No. 2, pp. 100 - 115. ISSN 2064-759X. DOI 10.31570/Prosp_2018_02_6.

Totth, G., Mezőné Oravecz, T. and Zarándné Vámosi, K. (2018b) "A pálinkafogyasztás és a fogyasztói szokások változása" *Prosperitas*, Vol. 5, No. 2, pp. 87 - 98. ISSN 2064-759X. DOI 10.31570/Prosp_2018_02_5.

Wan, X., Zhou, X., Woods, A. T. and Spence, C. (2015) "Influence of the glassware on the perception of alcoholic drinks", *Food Quality and Preference*, Vol. 44, pp. 101 - 110. ISSN 0950-3293. DOI 10.1016/j.foodqual.2015.03.018

Wanninayake, W. M. C. and Chovancová, M. (2012) "Consumer ethnocentrism and attitudes towards foreign beer brands: With evidence from Zlin Region in the Czech Republic", *Journal of Competitiveness*, Vol. 4, No. 2, pp. 3 – 19. ISSN 1804-171X. DOI 10.7441/joc.2012.02.01.

Zsótér, B. and Molnár, A. (2015) "A pálinka előállításával kapcsolatos jogszabályváltozások (2010) - előállítási feltételek, adózási kötelezettségek-hatásainak vizsgálata a gyakorlatban", *Jelenkori Társadalmi és Gazdasági Folyamatok*, Vol. 10, No. 2, pp. 35 - 52. ISSN 1788-7593. DOI 10.14232/jtgf.2015.2.35-52.

6.3 The role of ethnocentrism in relation to national and geographical indication products – The case of Hungarian pálinka[3]

Abstract

Consumer ethnocentrism plays a key role in the markets of developed countries when governments take protectionist measures due to economic crises and downturns. Consumer ethnocentrism appears to be stronger in relation to the choice and purchase of food and beverages. The purpose of the current study is to investigate the relationship between consumer ethnocentrism and socio-demographic characteristics in the case of a Hungarian national 'geographical indication' (GI) spirit called pálinka. The literature emphasises the importance of testing the impact of consumer ethnocentrism on different products, and research on national and GI products is quite limited. Although pálinka is one of the best-known products in Hungary, the perception and quality of the alcoholic beverage have undergone significant changes in recent decades. The analysed sample, representative of the Hungarian alcohol-consuming population, contains the answers of 760 respondents. Consumers' Ethnocentric Tendencies Scale items were used to cluster consumer groups with different perceptions using latent profile analysis (LPA). According to the results, consumer ethnocentrism remains a significant issue in the Hungarian pálinka market despite growing globalisation and consumers' openness to foreign products. There is a higher level of ethnocentrism with national and GI products, which needs to be taken into account by market participants. With the help of cluster analysis, four consumer groups with different socio-demographic characteristics were identified. The results may help actors in the pálinka industry and their competitors (e.g., vodka and whiskey producers and distributors) to understand the Hungarian alcohol market and related consumer groups in respect of ethnocentrism.

Keywords: consumer ethnocentrism, CETSCALE, national product, GI product, geographical indication, pálinka, latent profile analysis

1. Introduction

One of the most important issues in the international economy and marketing is the tendency of customers to prefer local products and brands over foreign ones [1]. This

[3] **Péter, Czine; Péter, Balogh; Áron, Török; Zalán Márk, Maró**

phenomenon, called ethnocentrism, means that purchasing decisions depend not only on price or quality but also on the place of origin or country of products [2, 3]. Due to the increasing role of globalisation, consumer ethnocentrism may play an important role in markets [1, 4], especially nowadays, when economic downturns and crises are encouraging governments to take protectionist measures. A company's success or failure in the local or export markets, particularly in a globally competitive business environment, depends on the ability to understand consumers' needs and preferences [5], especially regarding ethnocentrism.

Ethnocentric consumers are reluctant to buy products from non-domestic suppliers and companies (‘foreign countries’) because of their loyalty towards their own country. In addition, ethnocentric consumers believe that products from their home country are better quality. This may significantly reduce the purchase of non-domestic products [6, 7]. However, there are important differences in consumers' cognitive processes and purchasing behaviour that are mainly associated with four demographic characteristics: age, gender, level of education, and income [8-13], which can be considered a means of segmentation in purchasing and marketing practice.

Consumer ethnocentrism and various socio-demographic variables impact the purchase of food and beverages [12, 14, 15], and the latter can be considered influencing factors. The current research aims to assess the impact of demographic characteristics (e.g. gender, age, level of education and personal income) on ethnocentrism and purchasing behaviour. The research sample included Hungarian pálinka consumers since many studies have emphasised the importance of testing the impact of consumer ethnocentrism on different products, and the literature on national and GI products investigating their consumers’ ethnocentrism is quite limited [13, 16-19]. While numerous studies have explored the impact of consumer ethnocentrism on various products or general product categories, there remains a significant gap in the context of traditional and culturally significant products associated with GI. This study aims to fill this gap by focusing on Hungarian pálinka, a product with deep and specific cultural context and national significance and offers a deeper understanding of how ethnocentrism influences consumer behaviour in relation to culturally and nationally embedded products. Moreover, according to previous research [15, 20, 21], clusters or groups can be created based on ethnocentrism and socio-demographic characteristics, thus the strategies of companies producing or selling pálinka should vary according to

the targeted population segment. Applying statistical techniques on a well-defined sample, as described in the methodology, to segment consumers based on ethnocentric tendencies and socioeconomic characteristics is a relatively novel approach that is not widespread in the literature. Thus, this study offers a conceptual and methodological template for (future) research in similar cultural contexts.

1.1 Pálinka as a national and GI product

Pálinka is the national drink of Hungary, and the perception and quality of this product have undergone significant changes in recent years. From the 1990s until the millennium, pálinka was considered to be a low-quality spirit due to its poor reputation – it was typically distilled using low-quality materials in unregulated conditions on an industrial scale. The breakthrough and turnaround in quality and the perception of the drink took place at the beginning of the twenty-first century [22, 23] due to changes in legislation, the acquisition of the EU Geographical Indication (GI) label, and the award of distinguished Hungarian national product (‘Hungaricum’) status [24-27]. According to the legislation, only those fruit spirits can be called pálinka, which are made from fruit grown in Hungary and are also mashed, distilled, matured, and bottled within the country. The only exception is apricot pálinka, whose ingredients can also be sourced from four Austrian provinces (Burgenland, Lower Austria, Styria, and Vienna).

Pálinka and 'törkölypálinka', made from marc (grape pomace), are products with GI that have been recognised by the EU since 2008, while fourteen other regional pálinkas have obtained such recognition [28]. According to Hungarian regulations (Act LXVIII of 2016 on Excise Duties), spirits (distillate or pálinka) can currently be made in three ways (private, contract, and commercial distillation), but only commercial distilleries can produce pálinka as a national and GI drink, and the products from private and contract distillation can only be described as ‘distillates’ (with a few exceptions).

1.2 Ethnocentrism and consumer ethnocentrism

Human behaviour is motivated by numerous factors (e.g., physical, social, cultural, and psychological). Ethnocentrism, introduced by Summer [29], is a sociological concept that describes how one's own group may be perceived as the centre of everything, with all other groups being evaluated from this perspective. Shimp and Sharma's [2] definition can be considered the basis of the concept of consumer ethnocentrism. According to the latter, consumer ethnocentrism refers to consumers' beliefs about the

validity and morality of purchasing non-domestic products. Ethnocentric behaviour and ethnocentrism may be declining in a more globalised world (e.g., Francis [30]), although the economic and social challenges and changes of the 2000s onwards have partly reversed this phenomenon.

More ethnocentric consumers are less willing to purchase products from foreign countries and have favourable cognitive, normative, and emotional attitudes toward domestic products. More ethnocentric people prefer products from countries with similar cultures and objects and reject cultures and objects dissimilar to their own [31, 32]. Purchasing non-domestic products may lead to domestic job losses and negatively affect one's national economy, so consumers with strong ethnocentrism tend to consider purchasing non-domestic products to be harmful, 'non-ethnic' behaviour, while consumers with weak ethnocentrism instead purchase products based on their perceived value or benefit (e.g., organic products) [8, 33-35]. This behaviour may lead consumers to overestimate the value of domestic products and underestimate that of imported ones.

Nationalism and patriotism can be considered an integral part of consumer ethnocentrism and affect attitude, purchasing behaviour, and action [8, 36, 37]. It follows that demographic and cultural differences may explain the differences between countries. Consumers who are more nationalistic may be willing to make sacrifices to buy local products because they perceive that imported products may damage their country's economy. Patriotic consumers consider domestic goods to be better or higher quality products than imported ones, strengthening the intention to purchase domestic products. Ethnocentric consumers have strongly favourable attitudes towards products from local countries and brands [38].

1.3 Consumers and ethnocentrism

Research on ethnocentrism can be found in both developed [8, 9, 17, 39, 40] and developing countries [19, 41-43]. Concerning foodstuffs and beverages, consumers in developed countries usually prefer domestic products to imported ones [35, 40, 43]. In contrast, in some developing countries, people are less ethnocentric because they consider their domestic products to be of lower quality than imported products from the 'developed' world [44, 45]. In the 1990s and 2000s, the trend in Central and Eastern European countries, including Hungary, was similar to that in developing countries

today [46-48]. Since Hungary joined the European Union, however, Hungarian consumers have started to see Hungarian products as of higher quality, and the level of ethnocentrism (particularly associated with foodstuffs and alcoholic beverages) has begun to increase [49-52]. However, Hungarian consumers were found to differ along various socio-demographic characteristics [53, 54]. In CEE countries, the presence of ethnocentrism can be established by examining Czech and Polish beer and wine consumers [55, 56]. Overall, it can be concluded that ethnocentrism is present in relation to alcoholic beverages and foodstuffs in Europe, and the situation in Central and Eastern Europe is no exception.

In general, the level of ethnocentrism can be considered high for foodstuffs and beverages, and European consumers generally prefer and choose domestic products in these product categories [17, 18, 43, 57, 58]. Furthermore, it has been observed that ethnocentrism is even stronger for products of ‘national importance’ [54, 59-61].

The Consumers' Ethnocentric Tendencies Scale (CETSCALE) is most often used in the literature to measure consumer ethnocentrism [9, 62, 63]. Our study also applies the scale created by Shimp and Sharma [2], developed in the context of US consumers and containing 17 statements (items), which is the one most often used in the literature. However, many studies [39, 42, 64-67] have applied 12, 11, 10, 6, 4, or 3 items, which approach is also considered reliable.

The literature supports the claim that women [8, 9, 15, 31, 39, 68], older people [8, 9, 15, 19, 31, 34, 39, 42, 65, 68-70], people with a lower-level education [9, 31, 34, 68-70] and those with a smaller income [9, 31, 68] have a tendency to be more ethnocentric. Some studies [71, 72] have shown that ethnocentric tendencies may be stronger among consumers living in smaller cities, towns, or villages. Thus, ethnocentrism is less characteristic of the consumers of larger cities due to the greater purchasing opportunities and the numerous foreign products and brands. Moreover, according to Ma, Yang [73], global-minded consumers are less ethnocentric than local-minded customers.

Table 1. Studies that have investigated ethnocentrism from a socio-demographic perspective

Author (Year)	Country	Product/service	Respondents (n)	Examined socio-demographic characteristics	Significant variable(s)*
[9]	Poland, Russia	General	947	Age, sex, education, income	In Poland, age (older), sex (female), education (lower) and income (lower); in Russia, only level of education (lower)
[69]	Malta	General	350	Occupation, education, residence, summer residence, income, cars, age, gender, status	Level of education (lower) and age (older)
[31]	New-Zealand	refrigerators, televisions and cameras	421	Gender, age, education, income	Gender (female), age (older), education (lower), and income (lower)
[8]	Turkey, Czech Republic	General	783	Gender, age, income, university education	In Turkey, gender (female), age (older) and income (lower); in the Czech Republic, only income (higher)
[65]	Russia	General	211	Gender, age	Age (older)
[68]	Turkey	General	283	Gender, education level, age, income	Gender (female), education level (lower), age (older) and income (lower)
[39]	Australia	General	361	Age, gender, income	Age (older) and gender (female)
[42]	China, Slovenia, Croatia, Macedonia	FMCGs (e.g., toiletries, cosmetics and soft drinks)	929	Age	Age (older)
[34]	China	groceries, laptops, luxury products	347	Gender, age group, education level	Age group (older) and education level (lower)
[15]	Portugal	olive oil	421	Gender, age, education, work role, income	Gender (female) and age (older)
[53]	Hungary	food products	1001	Age, gender, qualification, education level, residence	Education level (lower) and residence (village)
[19]	Azerbaijan	clothing, food, technology, cleaning,	467	Gender, age, personal income, marital status	Age group (older) and marital status (married)

Author (Year)	Country	Product/service	Respondents (n)	Examined socio-demographic characteristics	Significant variable(s)*
		construction, and medical products			
[12]	Poland	food products	1000	Gender, age, household size, number of children, residence, education, income	Age (middle-aged), household size (bigger) and household size (bigger)
[70]	Bangladesh	electronic products	172	Gender, age, educational level, family income, occupation, marital status	Age (older), educational level (lower), occupation and marital status (married)

Note: *Brackets show which groups are considered more ethnocentric consumers.

Source: Authors' construction

Some authors have created different groups according to ethnocentrism and socio-demographic characteristics, in a similar manner to the currently described study, based on which companies can apply different (marketing or sales) strategies. For example, Szakály, Balogh [21] created three groups ('Patriots'; 'Young cosmopolitans' and 'Elderly nationalists') and Schnettler, Miranda [20] created five groups ('Ethnocentric, patriotic, but practical'; 'Patriotic'; 'Ethnocentric, patriotic and protectionist'; 'Receptive to food imports'; 'Pragmatic with respect to food imports').

The main goal of the paper is to describe research that has examined the impact of ethnocentrism on the choices of Hungarian pálinka consumers, paying close attention to various socio-demographic variables. In the literature, very little attention is paid to the importance of ethnocentrism, particularly among Central and Eastern European (CEE) consumers, and pálinka is a product with a specific cultural context. Accordingly, this study provides new insights that enrich the literature on consumer ethnocentrism and product perception. However, since the European Union is placing more and more emphasis on products with geographical indications, it is interesting, both from the scientific and corporate perspective, to examine consumer ethnocentrism through this example of this product.

2. Materials and Methods

2.1 Research process and presentation of the sample

The research took place between April and June 2021. The data collection associated with the online questionnaire was carried out by a professional market research company, InnoFood Marketing Ltd., based on a four-part questionnaire: (1) behaviour and knowledge related to the purchase and consumption of pálinka, (2) a discrete choice experiment (DCE) used to measure preferences, (3) application of CETSCALE, and (4) sociodemographic characteristics of respondents. In this study, the responses to the CETSCALE statements related to ethnocentrism are described and analysed in depth. The sample (Table 2), using answers from 1,000 respondents representative of the Hungarian alcohol-consuming population, contained the answers of 760 people after data cleaning (i.e., the exclusion of incomplete or incorrectly completed questionnaires). The exclusion criteria were having drunk pálinka within the last six months. Most of the consumers in the sample are male, over 45 years old, have completed at least secondary education, and have an above-average income. These factors coincide with the image of a typical pálinka consumer identified in previous research [74, 75].

Table 2. Presentation of the sample

Characteristics	**Sample (n=760)**	**Sample (%)**
	Gender	
Female	277	36.4
Male	483	63.6
	Age	
Under 45 years	191	25.1
45–60	237	31.2
Over 60 years	332	43.7
	Place of residence*	
Village	201	26.5
City	311	40.9
Large city	248	32.6
	Level of education**	
Basic education	18	2.4
Secondary education	330	43.4
Higher education	412	54.2
	Income situation***	
Below-average income	67	8.8
Average income	268	35.3

Characteristics	Sample (n=760)	Sample (%)
Above-average income	425	55.9

Note: Village: <10,000 inhabitants, City: 10,000–100,000 inhabitants, Large city: 100,000 < inhabitants. **Basic education: lower secondary education or below; Secondary education: upper secondary education or college qualification below a degree; Higher education: at least Bachelor's degree or post-graduate qualifications; ***Income based on respondents' self-classification using the three subjective income categories.

Source: Authors' construction

2.2 Description of methodology

For the first stage of the study, a descriptive statistical analysis of 17 statements that measure the level of ethnocentrism was undertaken. For the ratios, arithmetic averages and standard deviations were calculated. Although the original scale consisted of a seven-item Likert-type scale [2], a five-point Likert-type scale (1 – 'strongly disagree' to 5 – 'strongly agree') was used for the ease of participants' use [19, 76].

In the second stage of the analysis, the CETSCALE statements/variables were used to create consumer groups/clusters associated with different perceptions using latent profile analysis (LPA). To identify the correct cluster number, several solutions were tested. The model types included: (1) Constrained variance, fixed covariance (EII); (2) Constrained variance, constrained covariance (EEE); (3) Freed variance, fixed covariance (VVI); and (4) Freed variance, freed covariance (VVV) [77]. To compare the models, the following information criteria and factors were examined: (1) converged log-likelihood value; (2) Bayesian information criterion (BIC); (3) entropy value; and (4) the size of the cluster with the fewest persons. In the case of the first two indicators, a lower value indicates a better model fit, while in the case of the entropy value mentioned in (3), a higher value indicates an improvement in the specification. Regarding the size of the clusters, it was examined whether there are clusters that contain less than 5% of respondents from the entire sample [78-80]. The analysis was performed using the tidyLPA package of the R program [81].

Analysis of variance (ANOVA) and Pearson's chi-squared test were applied to examine the characteristics of the clusters. The first test was a parametric procedure that examined the existence of a significant difference between independent groups. When

a significant difference was identified, Bonferroni's post hoc test was used to examine it in more depth. The latter test (Pearson's chi-squared) is used to identify the existence of a significant difference between an empirical and a hypothetical (as expected in the case of independence) frequency table. For the tests, a 5% type-I error (α=5%) was determined [82].

3. Results

3.1 The ethnocentrism of pálinka consumers

The descriptive statistics associated with the seventeen statements related to ethnocentrism are presented in Table 3.

Table 3. Descriptive statistics for CETSCALE items measured using a 5-point Likert-scale

CETSCALE items	Mean	Median	Standard deviation
By purchasing Hungarian products, we can protect Hungarian jobs.	4.03	4.00	1.03
I prefer Hungarian products above all.	3.71	4.00	1.09
Hungarian people should always buy Hungarian-made products instead of imports.	3.61	4.00	1.13
Only those products that are unavailable in Hungary should be imported.	3.59	4.00	1.16
There should be very little trading or purchasing of goods from other countries unless out of necessity.	3.49	4.00	1.09
We should only buy products from foreign countries that we cannot obtain within our own country.	3.17	3.00	1.25
It may cost me in the long run, but I prefer to support Hungarian products.	3.12	3.00	1.12
We should purchase products manufactured in Hungary instead of letting other countries get rich off us.	3.11	3.00	1.21
It is always best to purchase Hungarian products.	2.94	3.00	1.18
It is not right to purchase foreign products because it puts Hungarians out of jobs.	2.76	3.00	1.20
Foreign products should be taxed heavily to reduce their entry into Hungary.	2.61	3.00	1.19
Hungarians should not buy foreign products because this hurts Hungarian businesses and causes unemployment.	2.54	2.00	1.17
Purchasing foreign-made products is un-Hungarian	2.46	2.00	1.23
A real Hungarian should always buy Hungarian-made products.	2.40	2.00	1.26
Hungarian consumers who purchase products made in other countries are responsible for putting their fellow Hungarians out of work.	2.25	2.00	1.13

CETSCALE items	Mean	Median	Standard deviation
Curbs should be put on all imports.	2.17	2.00	1.10
Foreigners should not be allowed to put their products on our market.	2.08	2.00	1.00
Sample	**50.04**	**50.00**	**19.54**

Source: Authors' construction based on Shrimp and Sharma (1987)

Based on the results of Table 3, the strongest consensus occurs with the statement, 'By purchasing Hungarian products, we can protect Hungarian jobs' (mean 4.03). The weakest degree of agreement is with 'Foreigners should not be allowed to sell their products on our market' (mean 2.08). According to the CETSCALE statements, respondents believe that imported products may be present in the Hungarian market, especially if there is no Hungarian product alternative. Overall, the CETSCALE items in the sample are associated with an average mean score of 50.04 and a standard deviation of 19.54.

3.2 Consumer groups and their sociodemographic characteristics in relation to ethnocentrism

During the cluster analysis, the optimal number of clusters was first determined according to the criteria described in the previous chapter. The four-cluster (constrained variance, constrained covariance [EEE]) solution type was considered to be optimal based on the examined information criteria (Table 4) and considering the interpretability of the results. It can be determined from the values in Table 4 that, although the value of the log-likelihood decreased even in the five-cluster case, BIC increased, and the entropy value decreased, indicating the poor fit of the five-cluster model. Furthermore, regarding the size of the clusters, in the case of the four-cluster solution, the smallest cluster size is still 6% (i.e., the cluster with the smallest number of elements includes 6% of the entire sample), while for the five-cluster model, it only reaches the threshold of 5%.

Table 4. Information criteria about the number of clusters examined during the cluster analysis

	Log-likelihood	BIC	Entropy	Minimum class size (%)
Two clusters	-12778.99	26805.05	0.81	0.22
Three clusters	-12757.41	26881.29	0.82	0.07

Four clusters	**-12657.54**	**26800.94**	**0.84**	**0.06**
Five clusters	-12646.74	26898.74	0.82	0.05

Source: Authors' construction

Table 5 shows the average values of the clusters for the tested statements.

Table 5. Mean values of clusters for the CETSCALE items measured on a 5-point Likert-scale

CETSCALE items	Mean				F-value
	Rural Ethnocentrists (*n*=47)	**Ageing Ethnocentrists** (*n*=134)	**Wealthy Metropolitans** (*n*=518)	**Underprivileged Metropolitans** (*n*=61)	
Hungarian people should always buy Hungarian-made products instead of imports.	4.64 [a]	4.45 [a]	3.49	1.93	125.36*
Only those products that are unavailable in Hungary should be imported.	4.55 [a]	4.32 [a]	3.48	2.16	79.93*
By purchasing Hungarian products, we can protect Hungarian jobs.	4.79 [a]	4.83 [a]	4.05	1.54	391.58*
I prefer Hungarian products above all.	4.70 [a]	4.60 [a]	3.57	2.11	138.23*
Purchasing foreign-made products is un-Hungarian	4.34	3.71	2.08	1.51	199.84*
It is not right to purchase foreign products because it puts Hungarians out of jobs.	4.55	3.87	2.46	1.57	176.83*
A real Hungarian should always buy Hungarian-made products.	4.51	4.08	1.90	1.39	475.43*
We should purchase products manufactured in Hungary instead of letting other countries get rich off us.	4.68	4.12	2.88	1.67	144.82*
It is always best to purchase Hungarian products.	4.49	3.87	2.69	1.74	124.10*
There should be very little trading or purchasing of goods from other countries unless out of necessity.	4.45 [a]	4.12 [a]	3.42	2.02	87.37*
Hungarians should not buy foreign products because this hurts Hungarian businesses and causes unemployment.	4.34	3.67	2.22	1.41	197.25*
Curbs should be put on all imports.	4.13	2.76	1.94	1.34	120.56*
It may cost me in the long run but I prefer to support Hungarian products.	4.51	4.09	2.89	1.84	142.51*
Foreigners should not be allowed to put their products on our market.	4.45	2.46	1.85	1.33	210.75*
Foreign products should be taxed heavily to reduce their entry into Hungary.	4.49	3.40	2.36	1.48	125.97*

CETSCALE items	Mean				F-value
	Rural Ethnocentrists (*n*=47)	**Ageing Ethnocentrists** (*n*=134)	**Wealthy Metropolitans** (*n*=518)	**Underprivileged Metropolitans** (*n*=61)	
We should only buy products from foreign countries that we cannot obtain within our own country.	4.64	4.10	2.96	1.80	108.04*
Hungarian consumers who purchase products made in other countries are responsible for putting their fellow Hungarians out of work.	4.30	3.01	1.97	1.30	156.28*
Total	76.56	65.46	46.21	28.14	

Note: *Statistical significance at the 5% level. Use of the same superscript indicates that the evaluations of the statements do not differ significantly.

Source: Authors' construction

Based on the results of Table 5, there is a significant difference between the clusters in their assessment of the CETSCALE items/statements. However, based on the pairwise comparisons, we conclude that there no significant difference in the strength of agreement with specific statements (first, second, third, fourth and tenth) only between the first and second clusters.

The **first cluster (**Rural Ethnocentrists) includes a relatively small number of respondents (forty-seven people) with the highest average values for agreement (except for the previously mentioned five statements, where no significant difference in the assessment of the statements can be detected compared to the second group). Members of this group have the strongest degree of ethnocentrism. The **second group** (Aging Ethnocentrists) contains 134 people and is characterised by a relatively high level of ethnocentrism. Agreement with all statements is significantly stronger than with the third and fourth groups. The **third cluster** (Wealthy Metropolitans) includes the largest proportion of respondents (518 people). Members of this group are less committed to ethnocentrism, and agreement with the statements is significantly less than that of members of the first and second clusters. The members of the **fourth cluster** (Underprivileged Metropolitans, 61 people) are characterised by having the weakest agreement with all CETSCALE statements compared to the other three groups.

Table 6. Frequency of pálinka consumption among the identified clusters (%)

Characteristic	Rural Ethnocentrists (*n*=47)	Ageing Ethnocentrists (*n*=134)	Wealthy Metropolitans (*n*=518)	Underprivileged Metropolitans (*n*=61)	χ^2 - statistic
Never	12.7	6.4^{-}	59.6	21.3^{+}	37.92*
Very infrequently	13.0^{+}	10.9	63.1	13.0	
Few times a year	6.0	16.3	68.8	8.9	
Monthly	5.8	18.6	70.5	5.1	
Weekly	1.9^{-}	20.6	73.7	3.8^{-}	
Several times a week	7.4	20.8	63.1	8.7	

Note: *Statistical significance at the 5% level. The '+' symbol in the superscript indicates that the value of the adjusted residual is greater than 2. The '-'symbol in the superscript indicates that the value of the adjusted residual is less than -2.

According to the frequency of pálinka consumption, there are differences between the clusters (Table 6). Significantly fewer people never drink pálinka in the second cluster (Aging Ethnocentrists), and significantly more people never drink pálinka in the fourth cluster (Underprivileged Metropolitans). Significantly more people consume pálinka less often than annually in the first cluster (Rural Ethnocentrists), and significantly fewer people drink pálinka every week in the first (Rural Ethnocentrists) and fourth clusters (Underpriviliged Metropolitans).

Table 7. Characterisation of clusters according to socio-demographic characteristics

Characteristic	Rural Ethnocentrists (*n*=47)	Ageing Ethnocentrists (*n*=134)	Wealthy Metropolitans (*n*=518)	Underprivileged Metropolitans (*n*=61)	χ^2 - statistic
Gender (%)					
Female	5.1	17.0	71.8	6.1	3.82
Male	6.8	18.0	66.1	9.1	
Age (%)					
Under 45 years	6.3	9.4^{-}	78.0^{+}	6.3	20.03*
45–60	6.3	16.5	66.7	10.5	
Over 60 years	6.0	23.2^{+}	63.6^{-}	7.2	
Residence (%)					
Village	7.9	19.4	66.2	6.5	13.31*
City	7.4	19.3	66.9	6.4	
Large city	3.2^{-}	14.1	71.4	11.3^{+}	
Level of education (%)					
Basic education	11.1	27.8	55.5	5.6	17.93*
Secondary education	9.4^{+}	19.1	62.4^{-}	9.1	
Higher education	3.4^{-}	16.0	73.3^{+}	7.3	
Income situation (%)					
Below-average income	14.9^{+}	16.4	55.2^{-}	13.5	20.05*
Average income	7.8	19.4	65.0	7.8	

Characteristic	Rural Ethnocentrists (*n*=47)	Ageing Ethnocentrists (*n*=134)	Wealthy Metropolitans (*n*=518)	Underprivileged Metropolitans (*n*=61)	χ^2-statistic
Above-average income	3.8^{-}	16.7	72.2^{+}	7.3	

Note: *Statistical significance at the 5% level. The '+' symbol in the superscript indicates that the value of the adjusted residual is greater than 2. The '-' symbol in the superscript indicates that the value of the adjusted residual is less than -2.

Source: Authors' construction

Table 7 shows that there is a significant relationship between the clusters with age, place of residence, level of education and income status, and there is no statistically significant effect in terms of gender. In the case of **Rural Ethnocentrists** (47 respondents), there are significantly fewer respondents from large cities with a higher education and an above-average income but significantly more respondents with a (maximum) secondary education and below-average income. In the group of **Aging Ethnocentrists** (134 respondents), there are significantly fewer consumers under the age of 45 but significantly more over the age of 60. **Wealthy Metropolitans** (518 respondents), in contrast to the second cluster, contains significantly fewer respondents over 60 but more under 45. In terms of education, the group is characterised by significantly more people with a higher level of education and fewer with a maximum of secondary education. Examining the income situation of the respondents in this cluster, we conclude that there are significantly fewer respondents with a below-average income and significantly more with an income that is above average. Finally, in the case of the **Underprivileged Metropolitans** (61 respondents), a significant effect can only be identified regarding the classification of the place of residence since there are significantly more members of this group living in big cities.

4. Discussion

The research identified that the average value of the CETSCALE statements is 50.04, and the average value of the standard deviations is 19.04. These values are much higher than the values found in the developed countries of the EU [12, 16, 83], the USA [2, 83], Japan [83] and Oceania [31, 84]. However, Turkish [68] and Hungarian values [49, 53] do not differ greatly. This suggests that, in practice, Hungarian companies (producers, distilleries, and retailers) should emphasise the Hungarian origin of products much more. During the research, Hungarian origin was *not* decisive, at least

to some extent, for only a few respondents. There is already a state-owned label dedicated to Hungarian products [85] but it is necessary to verify through further research which labels, in addition to the GI logo [71], create additional value or a price premium.

There was a strong consensus among Hungarian pálinka consumers that purchasing non-domestic products leads to job losses, which can harm the domestic economy. Choosing Hungarian products instead of imported ones is also seen as necessary, and it is common to consider them to be of the best quality. These findings for food and beverages have been found to be typical in several pieces of research [8, 34, 53]. However, according to Hungarian consumers, imported products also have a place on the market, especially if there is no Hungarian alternative. This can be inferred from the fact that Hungarians generally do not agree that curbs on imported products are necessary, and there is also agreement that foreign companies should put their products on the Hungarian market. Therefore, there is some inconsistency in the responses to the CETSCALE statements. This inconsistency (confirmed by Szakály and his co-authors [49]) can be explained by noting that Hungarian pálinka consumers consider purchasing domestic products to be a moral act, but this does not necessarily follow through to purchasing situation(s). Furthermore, it must be emphasised that pálinka has alternatives and competitors in the Hungarian market, mainly whiskey and vodka, which are typically cheaper. In market conditions, consumers often prefer these products. However, of course, some Hungarian consumers are willing to pay more for pálinka in a real buying situation. In general, people make purchasing decisions based on only a few details, so the information displayed on the bottle is crucial. Companies must emphasise Hungarian origin and quality (e.g., with the GI logo) because both (may) add value to consumers.

To obtain a more accurate picture of Hungarian consumers, cluster analysis was applied, which identified four distinct groups (Table 8). The results provide market participants with a detailed understanding of which customer groups are the most ethnocentric. The effect of age, place of residence, level of education and income status were significant in the model, while no significant effect was detectable for gender. Even though most of the literature [8, 39, 68] shows that women can be considered more ethnocentric, there are many studies, including in the CEE region, that find no statistically significant relationship between ethnocentrism and gender [19, 34, 65, 70].

Rural Ethnocentrists are characterised by being most strongly ethnocentric. Unsurprisingly, this group is characterised by containing members who typically live in a village, have at most a secondary school education, and have a below-average income. Several studies have shown a strong relationship between strong ethnocentrism and these socio-demographic factors [9, 31, 53, 68]. Therefore, this consumer group could be targeted by emphasising the Hungarian origin of products; however, due to the conceptual confusion between pálinka and other distillates, less expensive competitors (e.g., vodka and whiskey) and limited financial capacity [86, 87], they cannot be considered a target group for pálinka distilleries and distributors. According to Hungarian regulations [88], an alcoholic beverage (pálinka or 'distillate') can be made in one of three ways: by private distilling, by a contract distillery, or by a commercial distillery. Homemade (or private) 'distillate' involves individuals making pálinka from their own fruit with their own distillation equipment. Contract 'distillate' refers to when someone uses the services of a contract distillery. If a company produces distillate for commercial purposes, typically from purchased raw materials, the product can then be called pálinka. In addition, only alcoholic beverages produced in commercial distilleries qualify as GI products. Furthermore, it is important to note that Hungarian consumers consider distillate a national drink (a 'Hungaricum') [54, 87], but only pálinka should be considered as such according to the legislation.

Ageing Ethnocentrists are also characterised by strong ethnocentrism; members of this group are typically over 60. The literature shows a strong relationship between (higher) age and stronger ethnocentrism [8, 19, 34, 39, 42] – a very typical characteristic of pálinka consumers is their older age [74, 75]. Among these consumers, a good corporate strategy would be to emphasise the Hungarian origin of products. **Wealthy Metropolitans** are characterised by a lower level of ethnocentrism, and based on preliminary expectations, it is not surprising that the members of the group have a lower average age, higher education, and higher income status. Balabanis and his co-authors [8] concluded that higher income status is associated with stronger ethnocentrism, but this was not confirmed by our research. However, it should be emphasised that even though there is a significant difference in the strength of ethnocentrism in this group compared to the first and second clusters, their ethnocentricity is still stronger than in many other countries and for other products. In the case of pálinka – a national and GI product – consumer ethnocentrism is typically

strong. The third group is the most interesting from both the corporate and marketing point of view, as they have solvent demand and emphasis on the Hungarian origins of the product, which could increase demand. Members of the **Underprivileged Metropolitans** are characterised by the lowest level of ethnocentrism and living in big cities. The relationship between these two characteristics has not been explored as deeply as most socio-demographic characteristics [53, 69], but it can be stated that there is an inverse relationship between living in a big city and ethnocentrism.

Table 8. Consumer groups and their characteristics

Cluster name	Ethnocentrism	Main characteristics	Recommendation
Rural Ethnocentrists (n=47)	Strongest degree of ethnocentrism	Live in smaller cities or villages, secondary or primary level of education, below-average income	Emphasising Hungarian origin may be a good strategy; however, limited financial capacity is an obstacle.
Ageing Ethnocentrists (n=134)	Relatively high level of ethnocentrism	Over 60 years old, small proportion of people under 45 years of age	Age is characteristic of typical pálinka consumer, chance to emphasise Hungarian origins of product
Wealthy Metropolitans (n=518)	Lower degree of ethnocentrism	Under 45 years, higher education, above-average income	Role of education is decisive; potential future consumers, more focus on Hungarian origins could play an important role in purchases
Underprivileged Metropolitans (n=61)	Weakest ethnocentrism	Live in large cities	Hungarian origin clearly not a significant factor.

Source: Authors' construction

The use of 'Hungarian' as a product indicator, as mentioned earlier, has become a fashionable marketing tool in Hungary, and there has been an increase in demand for national and regional foodstuffs and beverages from healthy, traceable and authentic sources [89-92]. Furthermore, in the CEE region, consumer ethnocentrism influences consumer preferences for local beverage brands [55, 56]. Ethnocentrism is present among typical Hungarian pálinka consumers, but in order to target new consumer groups, it may be more favourable for companies to emphasise the presence of a brand or GI to a greater degree. The connection between GI status and stronger ethnocentrism has been confirmed by Fernández-Ferrín et al. [93]. The results indicate that consumer

ethnocentrism directly affects purchase behaviour associated with GI products. Geographical Indication is not only an objective quality criterion but is associated with many other economic advantages [94]. However, from this point of view, more education and a change of attitude are needed since while the GI label and its underlying content are known in Europe, many consumers in the CEE region are not really familiar with these markings [95, 96].

5. Conclusion

Globalisation has led to the evolution of global marketing. Globalisation facilitates consumer choices and purchasing decisions about foodstuffs and beverages from different countries – from this perspective, the world has no borders. Therefore, as managerial and policy implications, knowing consumers' buying and purchasing motivations is necessary for remaining competitive in an increasingly crowded marketplace. In the case of the present research, it is important that companies that produce or distribute pálinka and producers and distributors of other substitute products (e.g., whiskey and vodka) understand consumers' behaviour and decisions in terms of ethnocentrism and socio-demographic factors. Different corporate strategies can be used to target the four groups (clusters) we have identified, and at the government level, it should be easier to determine which means or measures may be used to target these different groups and increase knowledge about pálinka and the consumption of this quality, Hungarian drink. Despite growing consumer cosmopolitism and openness to non-domestic products, consumer ethnocentrism remains a significant issue in the Hungarian alcoholic beverage market, including for pálinka. This study also confirmed that there is stronger ethnocentrism with national and GI products, which product characteristics should be emphasised by companies.

The present study analysed the relationships between CETSCALE statements/items and socio-demographic variables. The study contributes to the literature that investigates the phenomenon in different countries and across various categories of products by examining the attitudes of Hungarian pálinka consumers. However, the research has several limitations that represent opportunities for further research. First, it focused on the consumers of only one national and GI product (pálinka) and one country (Hungary). Thus, the higher values of the CETSSCALE could be due to the characteristics of the Hungarian alcohol-consuming population (e.g., the greater

number of older people). Therefore, the sample is not representative of the Hungarian population; this means that the results cannot be generalised to all types of national and GI products or other countries. Our findings suggest that the situation in multiple countries and/or national and GI products should be investigated to improve the understanding of ethnocentric tendencies, especially the relationship between socio-demographic variables and consumer ethnocentrism. Measurement errors may have occurred during the survey, which can bias the results. This includes, for example, socially desirable responding, which is also common with Likert-scale statements. Furthermore, the analytical approach also involved a number of decisions, such as whether to treat Likert-type statements as ordinal or scale measurement-level variables, what type of clustering procedure to use, whether to choose the optimal number of clusters based on completely objective criteria (based only and exclusively on information criteria) or also by taking into account subjective factors (e.g., the interpretability of results). Further, whether hypothesis testing should be undertaken using a parametric or non-parametric approach.

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6. References

1. K. De Ruyter, M. Van Birgelen, M. Wetzels, Consumer ethnocentrism in international services marketing, International Business Review 7 (1998) 185-202, https://doi.org/10.1016/S0969-5931(98)00005-5
2. T.A. Shimp,S. Sharma, Consumer ethnocentrism: Construction and validation of the CETSCALE, Journal of marketing research 24 (1987) 280-289, https://doi.org/10.1177/002224378702400304
3. P. Auger, T.M. Devinney, J.J. Louviere, P.F. Burke, The importance of social product attributes in consumer purchasing decisions: A multi-country comparative study, International Business Review 19 (2010) 140-159,
4. E. Kaynak,A. Kara, An examination of the relationship among consumer lifestyles, ethnocentrism, knowledge structures, attitudes and behavioural tendencies: A comparative study in two CIS states, International Journal of

Advertising 20 (2001) 455-482, https://doi.org/10.1080/02650487.2001.11104906

5. M.R. Czinkota, I.A. Ronkainen, M.H. Moffett, *International business*, ed. C.U. Press. 2011, Cambridge: Wiley.
6. M. Zolfagharian, R. Saldivar, Q. Sun, Ethnocentrism and country of origin effects among immigrant consumers, Journal of Consumer Marketing 31 (2014) 68-84, https://doi.org/10.1108/JCM-06-2013-0620
7. C.C. Baughn,A. Yaprak, Economic nationalism: Conceptual and empirical development, Political Psychology 17 (1996) 759-778, https://doi.org/10.2307/3792137
8. G. Balabanis, A. Diamantopoulos, R.D. Mueller, T.C. Melewar, The impact of nationalism, patriotism and internationalism on consumer ethnocentric tendencies, Journal of international business studies 32 (2001) 157-175,
9. L.K. Good,P. Huddleston, Ethnocentrism of Polish and Russian consumers: are feelings and intentions related, International Marketing Review 12 (1995) 35-48., https://doi.org/10.1108/02651339510103047
10. B. Cooil, T.L. Keiningham, L. Aksoy, M. Hsu, A longitudinal analysis of customer satisfaction and share of wallet: Investigating the moderating effect of customer characteristics, Journal of Marketing 71 (2007) 67-83,
11. J. Meyers-Levy,D. Maheswaran, Exploring differences in males' and females' processing strategies, Journal of consumer research 18 (1991) 63-70, https://doi.org/10.1086/209241
12. P. Bryła, Selected predictors of consumer ethnocentrism in the food market (gender differences), Energies 14 (2021) 7667,
13. P. Bryła,T. Domański, *Consumer Ethnocentrism, country of origin and marketing: Food market in Poland*. 2023: Routledge.
14. L. Mucha, I. Kovács, T. Oravecz, G. Totth, Az etnocentrizmus szerepe a vásárlói döntésekben, GAZDÁLKODÁS: Scientific Journal on Agricultural Economics 64 (2020) 35-54,
15. R. Bernabeu, F. Oliveira, A. Rabadan, M. Diaz, Influence of ethnocentrism on consumer preference patterns: the case of olive oil in Portugal, New Medit 19 (2020) 55-68, https://doi.org/10.30682/nm2001d
16. G. Chryssochoidis, A. Krystallis, P. Perreas, Ethnocentric-beliefs and country-of-origin (COO) effect - Impact of country, product and product attributes on

Greek consumers' evaluation of food products, European Journal of Marketing 41 (2007) 1518-1544, https://doi.org/10.1108/03090560710821288

17. H. Evanschitzky, F.v. Wangenheim, D. Woisetschläger, M. Blut, Consumer ethnocentrism in the German market, International Marketing Review 25 (2008) 7-32, https://doi.org/10.1108/02651330810851863
18. G. Balabanis,A. Diamantopoulos, Domestic country bias, country-of-origin effects, and consumer ethnocentrism: a multidimensional unfolding approach, Journal of the academy of marketing science 32 (2004) 80-95,
19. S. Akbarov, Consumer ethnocentrism and purchasing behavior: moderating effect of demographics, Journal of Islamic Marketing 13 (2021) 898-932, https://doi.org/10.1108/JIMA-02-2020-0047
20. B. Schnettler, H. Miranda, G. Lobos, J. Sepulveda, M. Denegri, A study of the relationship between degree of ethnocentrism and typologies of food purchase in supermarkets in central-southern Chile, Appetite 56 (2011) 704-712, https://doi.org/10.1016/j.appet.2011.02.007
21. Z. Szakály, P. Balogh, I. Csatáriné Dogi, Z. Polereczki, Fogyasztói etnocentrizmus vizsgálata Magyarországon–Ajánlások a magyar élelmiszer-gazdaság számára, GAZDÁLKODÁS: Scientific Journal on Agricultural Economics 60 (2016) 153-166,
22. G. Géczi, P. Korzenszky, L. Nagygyörgy, Analytical and sensory testing of palinkas made with different distillation technologies, Hungarian Agricultural Research 27 (2018) 4-9,
23. I.M. Harcsa, A. Nabradi, I. Tar, Hungarian spirits pálinka as a “Hungaricum” I, APSTRACT: Applied Studies in Agribusiness and Commerce 8 (2014) 133-141, https://doi.org/10.19041/APSTRACT/2014/2-3/16
24. European Commission, eAmbrosia, the EU geographical indications register, (2023)
25. European Parliament and Council, Regulation No 110/2008 of the European Parliament and of the Council of 15 January 2008 on the definition, description, presentation, labelling and the protection of geographical indications of spirit drinks and repealing Council Regulation (EEC) No 1576/89, (2008)
26. Hungarian Food Codex Committee, *Codex Alimentarius Hungaricus* 2002.
27. Hungarian Parliament, The Act XLVIII of 2008 on pálinka, törkölypálinka and the establishment of the Pálinka National Council, (2008)

28. European Commission, *E-Ambrosia database*, E. Commission, Editor. 2024.
29. W.G. Sumner, *Folkways: The Sociological Importance of Usages, Manners, Customs, Mores and Morals*. 1906, New York: Ginn & Co.
30. F. Francis, *The End of History and The Last Man*. 1992, New York: Free Press.
31. J.J. Watson,K. Wright, Consumer ethnocentrism and attitudes toward domestic and foreign products, European Journal of Marketing 34 (2000) 1149-1166, https://doi.org/10.1108/03090560010342520
32. F. Liu, J. Murphy, J. Li, X. Liu, English and Chinese? The role of consumer ethnocentrism and country of origin in Chinese attitudes towards store signs, Australasian Marketing Journal 14 (2006) 5-16,
33. S. Sharma, T.A. Shimp, J. Shin, Consumer ethnocentrism: A test of antecedents and moderators, Journal of the academy of marketing science 23 (1994) 26-37,
34. Q.S. Ding, Chinese products for Chinese people? Consumer ethnocentrism in China, International Journal of Retail & Distribution Management 45 (2017) 550-564, https://doi.org/10.1108/IJRDM-11-2016-0212
35. T. Sadra, E. Pouyan, S. Murali, The role of animosity, religiosity and ethnocentrism on consumer purchase intention: A study in Malaysia toward European brands, African Journal of Business Management 6 (2012) 6890-6902, https://doi.org/10.5897/AJBM11.2867
36. M.Y.A. Rawwas, K.N. Rajendran, G.A. Wuehrer, The influence of worldmindedness and nationalism on consumer evaluation of domestic and foreign products, International Marketing Review 13 (1996) 20-38, https://doi.org/10.1108/02651339610115746
37. P. Sharma, Country of origin effects in developed and emerging markets: Exploring the contrasting roles of materialism and value consciousness, Journal of International Business Studies 42 (2011) 285-306, https://doi.org/10.1057/jibs.2010.16
38. E. Kipnis, K. Kubacki, A.J. Broderick, D. Siemieniako, N.L. Pisarenko, 'They don't want us to become them': Brand Local Integration and consumer ethnocentrism, Journal of Marketing Management 28 (2012) 836-864, https://doi.org/10.1080/0267257X.2012.698634
39. A. Josiassen, A.G. Assaf, I.O. Karpen, Consumer ethnocentrism and willingness to buy: Analyzing the role of three demographic consumer

characteristics, International Marketing Review 28 (2011) 627-646, https://doi.org/10.1108/02651331111181448

40. P. Fernández-Ferrín, A. Calvo-Turrientes, B. Bande, M. Artaraz-Miñón, M.M. Galán-Ladero, The valuation and purchase of food products that combine local, regional and traditional features: The influence of consumer ethnocentrism, Food Quality and Preference 64 (2018) 138-147,
41. P. Huddleston, L.K. Good, L. Stoel, Consumer ethnocentrism, product necessity and Polish consumers' perceptions of quality, International Journal of Retail & Distribution Management 29 (2001) 236-246, https://doi.org/10.1108/09590550110390896
42. M. Rašković, Z. Ding, V. Škare, Đ.O. Došen, V. Žabkar, Comparing consumer innovativeness and ethnocentrism of young-adult consumers, Journal of Business Research 69 (2016) 3682-3686, https://doi.org/10.1016/j.jbusres.2016.03.029
43. J. Thøgersen, S. Pedersen, J. Aschemann-Witzel, The impact of organic certification and country of origin on consumer food choice in developed and emerging economies, Food Quality and Preference 72 (2019) 10-30,
44. M.N. Shankarmahesh, Consumer ethnocentrism: an integrative review of its antecedents and consequences, International marketing review (2006)
45. C.L. Wang,Z.X. Chen, Consumer ethnocentrism and willingness to buy domestic products in a developing country setting: testing moderating effects, Journal of Consumer Marketing 21 (2004) 391-400, https://doi.org/10.1108/07363760410558663
46. E. Malota, *Fogyasztói etnocentrizmus. A sztereotípiák, az etnocentrizmus és az országeredet imázs hatása a hazai és a külföldi termékek megítélésére*. 2003, Budapesti Corvinus Egyetem.
47. N. Papadopoulos, L.A. Heslop, D. Bennett, National image correlates of product stereotypes: a study of attitudes towards East European countries, European Advances in Consumer Research 1 (1993) 206-213,
48. N. Papadopoulos, L.A. Heslop, J. Beracs, National stereotypes and product evaluations in a socialist country, International Marketing Review 7 (1990) 32-47, https://doi.org/10.1108/02651339010141365
49. Z. Szakály, P. Balogh, I. Csatáriné Dogi, Z. Polereczki, Fogyasztói etnocentrizmus vizsgálata Magyarországon–Ajánlások a magyar élelmiszer-

gazdaság számára, GAZDÁLKODÁS: Scientific Journal on Agricultural Economics 60 (2016) 153-166, https://doi.org/10.22004/ag.econ.253907

50. S. Molnár,L. Szőllősi, Az étkezési tojás fogyasztási szokásainak főbb jellemzői Magyarországon, Táplálkozásmarketing 1 (2014) 133-138,
51. I. Csatáriné Dogi, Fogyasztói etnocentrizmust befolyásoló tényezők vizsgálata – szakirodalmi áttekintés, Journal of Central European Green Innovation 3 (2015) 37-44, https://doi.org/10.22004/ag.econ.206647
52. M. Garai-Fodor,A. Popovics, Hungarian food consumers' preferences, from the aspect of ethnocentrism, Acta Polytechnica Hungarica 18 (2021) 105-121,
53. L. Mucha, I. Kovács, T. Oravecz, G. Totth, Az etnocentrizmus szerepe a vásárlói döntésekben, Gazdálkodás: Scientific Journal on Agricultural Economics 64 (2020) 35-54, https://doi.org/10.22004/ag.econ.302631
54. L. Mucha, K. Vámosi, G. Totth, Examining the factors shaping consumer attitude towards the popular alcoholic beverages in Hungary, Heliyon 8 (2022) e10571, https://doi.org/10.1016/j.heliyon.2022.e10571
55. D. Siemieniako, K. Kubacki, E. Glinska, K. Krot, National and regional ethnocentrism: a case study of beer consumers in Poland, British Food Journal 113 (2011) 404-418, https://doi.org/10.1108/00070701111116464
56. W. Wanninayake,M. Chovancová, Consumer ethnocentrism and attitudes towards foreign beer brands: With evidence from Zlin Region in the Czech Republic, Journal of Competitiveness 4 (2012) 3-19, https://doi.org/10.7441/joc.2012.02.01
57. Z. Gao, S.S. Wong, L.A. House, T.H. Spreen, French consumer perception, preference of, and willingness to pay for fresh fruit based on country of origin, British Food Journal 116 (2014) 806-820, https://doi.org/10.1108/BFJ-12-2012-0303
58. I.D. Nebenzahl, E.D. Jaffe, B. Kavak, Consumers' punishment and rewarding process via purchasing behavior, Teaching Business Ethics 5 (2001) 283-305,
59. L. Miguel, S. Marques, A.P. Duarte, The influence of consumer ethnocentrism on purchase of domestic fruits and vegetables: application of the extended theory of planned behaviour, British Food Journal 124 (2022) 599-618., https://doi.org/10.1108/BFJ-11-2021-1208

60. Y. Bernard, V. Collange, A. Ingarao, S. Zarrouk-Karoui, Products labeled as "made in domestic country": the brand matters, European Journal of Marketing 54 (2020) 2965-2987, https://doi.org/10.1108/EJM-04-2018-0229
61. S. Chambers, A. Lobb, L. Butler, K. Harvey, W.B. Traill, Local, national and imported foods: A qualitative study, Appetite 49 (2007) 208-213, https://doi.org/10.1016/j.appet.2007.02.003
62. R.G. Javalgi, V.P. Khare, A.C. Gross, R.F. Scherer, An application of the consumer ethnocentrism model to French consumers, International Business Review 14 (2005) 325-344, https://doi.org/10.1016/j.ibusrev.2004.12.006
63. I. Cheah,A.S. Shimul, Consumer ethnocentrism, market mavenism and social network analysis, Australasian Marketing Journal 26 (2018) 281-288, https://doi.org/10.1016/j.ausmj.2018.05.017
64. I. Šmaižienė,R. Vaitkienė, Consumer ethnocentrism and behavior in a market of dietary supplements, Procedia-Social and Behavioral Sciences 156 (2014) 463-467, https://doi.org/10.1016/j.sbspro.2014.11.222
65. M. Supphellen,K. Grønhaug, Building foreign brand personalities in Russia: the moderating effect of consumer ethnocentrism, International journal of advertising 22 (2003) 203-226, https://doi.org/10.1080/02650487.2003.11072849
66. I. Vida, T. Dmitrović, C. Obadia, The role of ethnic affiliation in consumer ethnocentrism, European Journal of Marketing 42 (2008) 327-343., https://doi.org/10.1108/03090560810852968
67. T. Dmitrovic, I. Vida, J. Reardon, Purchase behavior in favor of domestic products in the West Balkans, International Business Review 18 (2009) 523-535, https://doi.org/10.1016/j.ibusrev.2009.05.003
68. B.Z. Erdogan,C. Uzkurt, Effects of ethnocentric tendency on consumers' perception of product attitudes for foreign and domestic products, Cross Cultural Management: An International Journal 17 (2010) 393-406., https://doi.org/10.1108/13527601011086595
69. A. Caruana, The effects of dogmatism and social class variables on consumer ethnocentrism in Malta, Marketing Intelligence & Planning 14 (1996) 39-44., https://doi.org/10.1108/02634509610121569
70. M.A. Alam, D. Roy, R. Akther, R. Hoque, Consumer ethnocentrism and buying intentions on electronic products: moderating effects of demographics, South

Asian Journal of Marketing 3 (2022) 82-96., https://doi.org/10.1108/SAJM-03-2021-0032

71. Z.M. Maró, P. Balogh, P. Czine, Á. Török, The roles of geographic indication and ethnocentrism in the preferences of Central European spirit consumers: the case of palinka, Food Quality and Preference 108 (2023) 104878, https://doi.org/10.1016/j.foodqual.2023.104878
72. F. Olšavský, P. Štarchoň, Ľ. Mitková, B. Dudić, Dynamics of the slovak consumer behaviour in the context of ethnocentrism: managerial implications, Agriculture & Forestry 68 (2022) 7-21, https://doi.org/10.17707/AgricultForest.68.3.01
73. J. Ma, J. Yang, B. Yoo, The moderating role of personal cultural values on consumer ethnocentrism in developing countries: The case of Brazil and Russia, Journal of Business Research 108 (2020) 375-389, https://doi.org/10.1016/j.jbusres.2019.12.031
74. Á. Szegedyné Fricz, D. Szakos, B. Bódi, G. Kasza, Pálinka: fogyasztói ismeretek, preferenciák, fogyasztási szokások, marketinglehetőségek, GAZDÁLKODÁS: Scientific Journal on Agricultural Economics 61 (2017) 158, https://doi.org/10.22004/ag.econ.264586
75. G. Totth, T. Mezőné Oravecz, K. Zarándné Vámosi, A pálinkafogyasztás és a fogyasztói szokások változása, Prosperitas V (2018) 87-98, https://doi.org/10.31570/Prosp_2018_02_5
76. S.P. Douglas,E.J. Nijssen, On the use of “borrowed” scales in cross-national research: A cautionary note, International marketing review 20 (2003) 621-642, https://doi.org/10.1108/02651330310505222
77. K. Wardenaar, Latent Profile Analysis in R: A tutorial and comparison to Mplus, (2021)
78. D. Spurk, A. Hirschi, M. Wang, D. Valero, S. Kauffeld, Latent profile analysis: A review and “how to” guide of its application within vocational behavior research, Journal of vocational behavior 120 (2020) 103445, https://doi.org/10.1016/j.jvb.2020.103445
79. K.E. Coakley, D.T. Lardier, H. Le, A. Wilks, Food approach and avoidance appetitive traits in university students: A latent profile analysis, Appetite 168 (2022) 105667, https://doi.org/10.1016/j.appet.2021.105667

80. L.M. Dana, K. Chapman, H. Dixon, C. Miller, B. Neal, B. Kelly, K. Ball, S. Pettigrew, The relative importance of primary food choice factors among different consumer groups: A latent profile analysis, Food Quality and Preference 94 (2021) 104199, https://doi.org/10.1016/j.foodqual.2021.104199
81. R Core Team, *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. 2020, Vienna, Austria.
82. A. Field, *Discovering statistics using SPSS*. 2009: Sage publications.
83. G.T.M. Hult, B.D. Keillor, B.A. Lafferty, A cross-national assessment of social desirability bias and consumer ethnocentrism, Journal of Global Marketing 12 (1999) 29-43, https://doi.org/10.1300/J042v12n04_03
84. C. Acharya,G. Elliott, Consumer ethnocentrism, perceived product quality and choice—An empirical investigation, Journal of International Consumer Marketing 15 (2003) 87-115, https://doi.org/10.1300/J046v15n04_05
85. I. Hajdu,M. Notari, Are Hungarian customers quality conscious?, International Journal of Sales, Retailing and Marketing 1 (2012) 9-16,
86. Z.M. Maró, Á. Török, P. Balogh, P. Czine, Pálinkavásárlási preferenciák vizsgálata a magyar fogyasztók körében–egy diszkrét választási modell építése, Statisztikai Szemle 100 (2022) 44-67,
87. L. Mucha, T. Oravecz, G. Totth, A fogyasztói attitűd kognitív komponensének a pálinka imázsában betöltött szerepe, Táplálkozásmarketing 7 (2020) 21-32, https://doi.org/10.20494/TM/7/2/2
88. Hungarian Parliament, The Act LXVIII of 2016 on Excise Duties, (2016)
89. D. Skuras,E. Dimara, Regional image and the consumption of regionally denominated products, Urban Studies 41 (2004) 801-815, https://doi.org/10.1080/0042098042000194115
90. J.D. Jensen, T. Christensen, S. Denver, K. Ditlevsen, J. Lassen, R. Teuber, Heterogeneity in consumers' perceptions and demand for local (organic) food products, Food Quality and Preference 73 (2019) 255-265, https://doi.org/10.1016/j.foodqual.2018.11.002
91. S. Rachão, Z. Breda, C. Fernandes, V. Joukes, Food tourism and regional development: A systematic literature review, European Journal of Tourism Research 21 (2019) 33-49,
92. P. Balogh, D. Békési, M. Gorton, J. Popp, P. Lengyel, Consumer willingness to pay for traditional food products, Food policy 61 (2016) 176-184,

93. P. Fernández-Ferrín, B. Bande, M.M. Galán-Ladero, D. Martín-Consuegra, E. Díaz, S. Castro-González, Geographical indication food products and ethnocentric tendencies: The importance of proximity, tradition, and ethnicity, Journal of cleaner production 241 (2019) 118210, https://doi.org/10.1016/j.jclepro.2019.118210

94. Á. Török, L. Jantyik, Z.M. Maró, H.V. Moir, Understanding the real-world impact of geographical indications: A critical review of the empirical economic literature, Sustainability 12 (2020) 9434, https://doi.org/10.3390/su12229434

95. W. Verbeke, Z. Pieniak, L. Guerrero, M. Hersleth, Consumers' awareness and attitudinal determinants of European Union quality label use on traditional foods, Bio-based and Applied Economics 1 (2012) 213-229, https://doi.org/10.13128/BAE-10558

96. Á. Török, Z.M. Maró, L. Jantyik, A magyar fogyasztók és az európai uniós földrajzi árujelzős élelmiszercímkék viszonya, Statisztikai Szemle 97 (2019) 546-567, https://doi.org/10.20311/stat2019.6.hu0546

6.4 The roles of geographic indication and ethnocentrism in the preferences of Central European spirit consumers: The case of pálinka[4]

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. Segmenting the market based on different product attributes and ethnocentrism is possible. 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.

Keywords: pálinka, alcoholic beverage, geographical indication, ethnocentrism, hybrid choice modeling

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).

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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; Thomes 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, 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 a given wine.

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, Lourenço-Gomes, et al. (2020a)	Wine	Medals, landscape, alcohol content, country of origin, grape variety, price	Most consumers consider price, and different preferences exist due to cultural differences.
Gonçalves, Lourenço-Gomes, et al. (2020b)			
Gonçalves, Pinto, et al. (2020)			
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

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 2010s, 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.

1.4 Research goals and aims

Based on the above, the main goal 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 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.

2. Methodology

2.1 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 Figure 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 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 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 Figure 1). Each case contained three hypothetical pálinka alternatives and an opt-out (no choice) option.

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 liter	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.*

Figure 1. An example of a decision-making situation

2.2 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.

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*

2.3 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 modelling 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.

$$U_{n,i} = V_{n,i} + \varepsilon_{n,i}, \quad (1)$$

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.

$$V_{n,i} = \beta' X_{n,i}, \quad (2)$$

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.

$$V_{n,i} = \beta_n' X_{n,i}, \quad (3)$$

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.

$$\begin{aligned} LV_n &= \gamma_{\text{Age}_{\text{Above 60}}} \text{Age}_{\text{Above 60}_n} \\ &+ \gamma_{\text{Highest level of education}_{\text{Higher education}}} \text{Highest level of education}_{\text{Higher educatio}} \\ &+ \gamma_{\text{Type of residence}_{\text{City}}} \text{Type of residence}_{\text{City}_n} + \eta_n, \end{aligned} \tag{5}$$

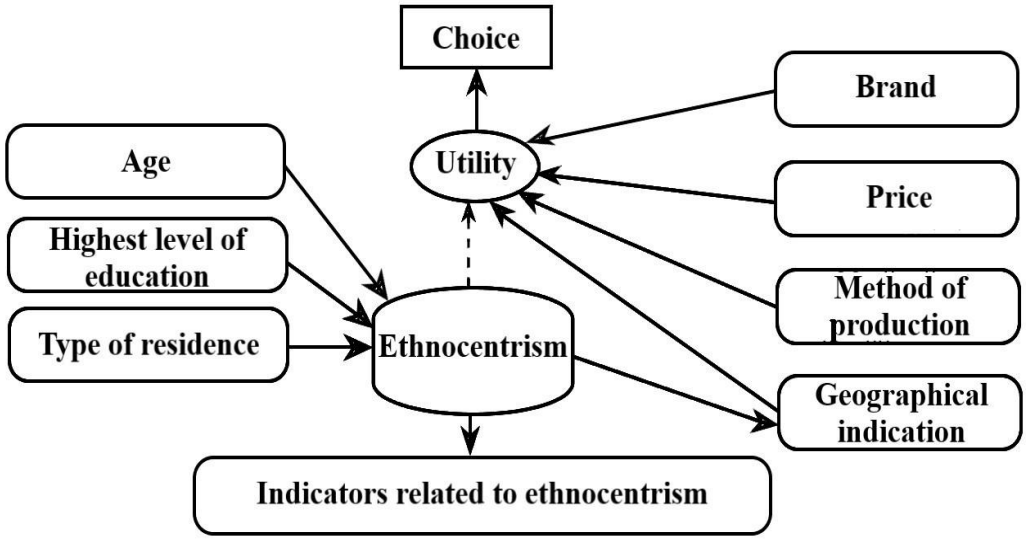
where γ denotes the vector of parameters estimated for the explanatory variables of the structural equation, and η denotes the random term of the structural equation.

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

where k is the k^{th} investigated indicator/statement, ζ_k is the estimated effect for the latent variable (for the i^{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 Figure 2.

Figure 2. The structure of the hybrid choice model



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.

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

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

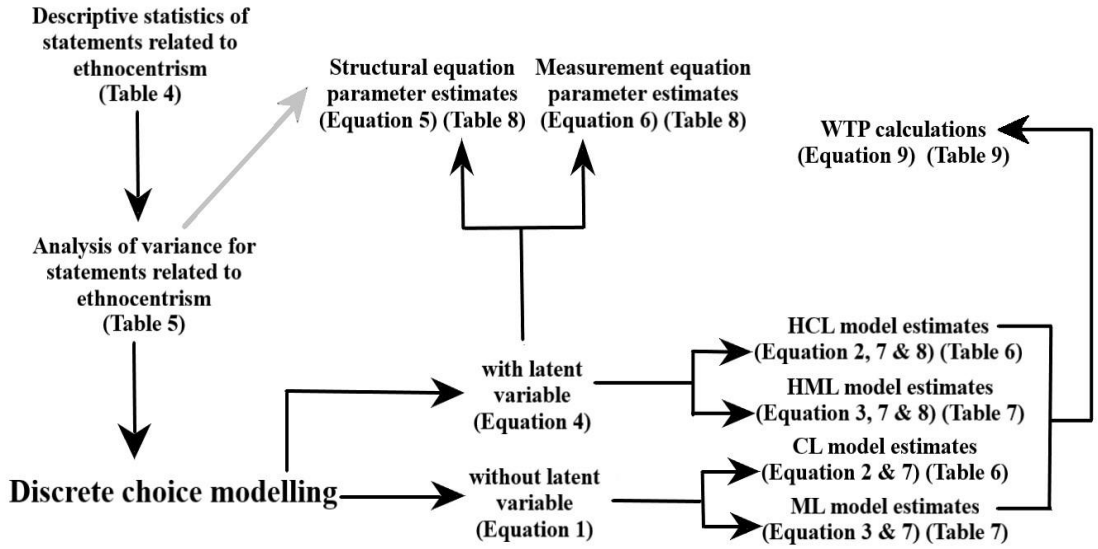
In the case of all specifications, we also carried out willingness to pay (WTP) calculations, for which we used a WTP space specification (Train & Weeks, 2005). For this, we performed the transformation according to Equation 9 on our utility function shown in Equation 7.

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

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 Figure 3.

Figure 3. The structure of the analysis.



3. Results

3.1 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.).

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	30.4	33.7	21.5	9.7	4.7	***2.25***	1.13

countries are responsible for putting their fellow Hungarians out of work.							

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

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% significant 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.

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** $\bar{X}_1 = 3.76^{a}$, $\bar{X}_2 = 3.66^{a}$, $\bar{X}_3 = 3.42^{b}$	F = 3.14* $\bar{X}_1 = 4.06^{a}$, $\bar{X}_2 = 3.68^{a}$, $\bar{X}_3 = 3.53^{a}$
Statement 2	n.s.d.	n.s.d.	F = 8.61** $\bar{X}_1 = 3.77^{a}$, $\bar{X}_2 = 3.67^{a}$, $\bar{X}_3 = 3.35^{b}$	F = 6.58** $\bar{X}_1 = 3.78^{ab}$, $\bar{X}_2 = 3.75^{a}$, $\bar{X}_3 = 3.45^{b}$
Statement 3	F = 4.18* $\bar{X}_1 = 4.13^{a}$, $\bar{X}_2 = 3.98^{b}$	n.s.d.	F = 4.83** $\bar{X}_1 = 4.12^{a}$, $\bar{X}_2 = 4.11^{a}$, $\bar{X}_3 = 3.87^{b}$	n.s.d.
Statement 4	F = 6.00* $\bar{X}_1 = 3.83^{a}$, $\bar{X}_2 = 3.63^{b}$	n.s.d.	F = 3.30* $\bar{X}_1 = 3.83^{a}$, $\bar{X}_2 = 3.73^{ab}$,	n.s.d.

Statement	F-statistics Group averages			
	Gender	**Age category**	**Place of residence**	**Highest level of education**
			$\bar{X}_3 = 3.57^{b}$	
Statement 5	n.s.d.	F = 8.91** $\bar{X}_1 = 2.27^{a}$, $\bar{X}_2 = 2.31^{a}$, $\bar{X}_3 = 2.67^{b}$	F = 6.69** $\bar{X}_1 = 2.62^{a}$, $\bar{X}_2 = 2.54^{a}$, $\bar{X}_3 = 2.23^{b}$	F = 11.25** $\bar{X}_1 = 3.06^{a}$, $\bar{X}_2 = 2.65^{a}$, $\bar{X}_3 = 2.27^{b}$
Statement 6	n.s.d.	F = 5.56** $\bar{X}_1 = 2.54^{a}$, $\bar{X}_2 = 2.75^{ab}$, $\bar{X}_3 = 2.90^{b}$	n.s.d.	F = 3.48* $\bar{X}_1 = 3.11^{a}$, $\bar{X}_2 = 2.87^{a}$, $\bar{X}_3 = 2.67^{a}$
Statement 7	n.s.d.	F = 14.20** $\bar{X}_1 = 2.07^{a}$, $\bar{X}_2 = 2.32^{a}$, $\bar{X}_3 = 2.65^{b}$	F = 5.76** $\bar{X}_1 = 2.54^{a}$, $\bar{X}_2 = 2.49^{a}$, $\bar{X}_3 = 2.19^{b}$	F = 9.11** $\bar{X}_1 = 3.06^{a}$, $\bar{X}_2 = 2.57^{a}$, $\bar{X}_3 = 2.24^{b}$
Statement 8	n.s.d.	n.s.d.	F = 5.99** $\bar{X}_1 = 3.27^{a}$, $\bar{X}_2 = 3.18^{a}$, $\bar{X}_3 = 2.90^{b}$	F = 3.77* $\bar{X}_1 = 3.33^{ab}$, $\bar{X}_2 = 3.24^{a}$, $\bar{X}_3 = 3.00^{b}$
Statement 9	n.s.d.	F = 6.83** $\bar{X}_1 = 2.78^{a}$, $\bar{X}_2 = 2.81^{a}$, $\bar{X}_3 = 3.11^{b}$	n.s.d.	F = 6.43** $\bar{X}_1 = 3.61^{a}$, $\bar{X}_2 = 3.05^{a}$, $\bar{X}_3 = 2.82^{b}$
Statement 10	F = 6.03* $\bar{X}_1 = 3.62^{a}$, $\bar{X}_2 = 3.42^{b}$	n.s.d.	F = 7.26** $\bar{X}_1 = 3.65^{a}$, $\bar{X}_2 = 3.56^{a}$, $\bar{X}_3 = 3.29^{b}$	n.s.d.
Statement 11	n.s.d.	n.s.d.	F = 3.80* $\bar{X}_1 = 2.68^{a}$, $\bar{X}_2 = 2.58^{ab}$, $\bar{X}_3 = 2.39^{b}$	F = 5.24** $\bar{X}_1 = 2.83^{ab}$, $\bar{X}_2 = 2.68^{a}$, $\bar{X}_3 = 2.42^{b}$
Statement 12	n.s.d.	F = 4.34* $\bar{X}_1 = 2.05^{a}$, $\bar{X}_2 = 2.08^{ab}$, $\bar{X}_3 = 2.30^{b}$	F = 7.15** $\bar{X}_1 = 2.36^{a}$, $\bar{X}_2 = 2.21^{a}$, $\bar{X}_3 = 1.98^{b}$	F = 14.23** $\bar{X}_1 = 2.61^{a}$, $\bar{X}_2 = 2.38^{a}$, $\bar{X}_3 = 1.98^{b}$
Statement 13	n.s.d.	n.s.d.	n.s.d.	n.s.d.
Statement 14	n.s.d.	F = 5.22** $\bar{X}_1 = 1.95^{a}$, $\bar{X}_2 = 2.00^{a}$, $\bar{X}_3 = 2.21^{b}$	F = 5.30** $\bar{X}_1 = 2.22^{a}$, $\bar{X}_2 = 2.11^{ab}$, $\bar{X}_3 = 1.92^{b}$	F = 13.95** $\bar{X}_1 = 2.50^{a}$, $\bar{X}_2 = 2.27^{a}$, $\bar{X}_3 = 1.91^{b}$
Statement 15	n.s.d.	F = 6.91** $\bar{X}_1 = 2.43^{a}$, $\bar{X}_2 = 2.49^{a}$, $\bar{X}_3 = 2.79^{b}$	F = 7.47** $\bar{X}_1 = 2.81^{a}$, $\bar{X}_2 = 2.65^{a}$, $\bar{X}_3 = 2.39^{b}$	F = 4.16* $\bar{X}_1 = 2.50^{ab}$, $\bar{X}_2 = 2.75^{a}$, $\bar{X}_3 = 2.50^{b}$
Statement 16	n.s.d.	n.s.d.	F = 9.31** $\bar{X}_1 = 3.40^{a}$, $\bar{X}_2 = 3.22^{a}$, $\bar{X}_3 = 2.91^{b}$	F = 5.11** $\bar{X}_1 = 3.28^{ab}$, $\bar{X}_2 = 3.33^{a}$, $\bar{X}_3 = 3.04^{b}$
Statement 17	n.s.d.	F = 3.71* $\bar{X}_1 = 2.12^{a}$,	F = 3.89* $\bar{X}_1 = 2.34^{a}$,	n.s.d.

Statement	F-statistics Group averages			
	Gender	Age category	Place of residence	Highest level of education
		$\bar{X}_2 = 2.18^{ab}$, $\bar{X}_3 = 2.37^{b}$	$\bar{X}_2 = 2.32^{a}$, $\bar{X}_3 = 2.08^{b}$	

*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.*

3.2 CL and HCL model

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

Table 6. Results of the estimated CL and HCL models

Attributes and descriptive data of the model	CL model		HCL model	
	Estimates	t-ratio	Estimates	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)				

Attributes and descriptive data of the model	CL model		HCL model	
	Estimates	**t-ratio**	**Estimates**	**t-ratio**
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.*

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 indicator). 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.

Table 7. Results of the estimated ML and HML models

Attributes and descriptive data of the model	**ML model**		**HML model**	
	Estimates	**t-ratio**	**Estimates**	**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
Bestillo brand (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.*

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.

Table 8. Estimated parameters of the structural and measurement equations

Structural equation parameters	**HCL model**		**HML model**	
	Estimates	**t-ratio**	**Estimates**	**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.*

3.3 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 Kisüsti 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 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)

Product attributes	**CL**	**ML**	**HCL**	**HML**
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.*

4. 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), 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.

5. 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), we managed to estimate a model showing a better fit and conclude 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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References

Akbarov, S. (2021). Consumer ethnocentrism and purchasing behavior: moderating effect of demographics. *Journal of Islamic Marketing*, *13*(4), 898-932. https://doi.org/10.1108/JIMA-02-2020-0047

Auger, P., Devinney, T. M., Louviere, J. J., & Burke, P. F. (2010). The importance of social product attributes in consumer purchasing decisions: A multi-country comparative study. *International Business Review*, *19*(2), 140-159. https://doi.org/10.1016/j.ibusrev.2009.10.002

Baber, R., Upadhyay, Y., Baber, P., & Kaurav, R. P. S. (2023). Three decades of consumer ethnocentrism research: A bibliometric analysis. *Business Perspectives and Research*, 11(1), 137-158. https://doi.org/10.1177/22785337221098472

Balabanis, G., & Diamantopoulos, A. (2004). Domestic country bias, country-of-origin effects, and consumer ethnocentrism: a multidimensional unfolding approach. *Journal of the academy of marketing science*, *32*(1), 80-95. https://doi.org/10.1177/0092070303257644

Balabanis, G., Diamantopoulos, A., Mueller, R. D., & Melewar, T. C. (2001). The impact of nationalism, patriotism and internationalism on consumer

ethnocentric tendencies. *Journal of international business studies*, *32*(1), 157-175. https://doi.org/10.1057/palgrave.jibs.8490943

Ben-Akiva, M., & Lerman, S. R. (1985). Discrete choice analysis: theory and application to travel demand. MIT press, Cambridge

Ben-Akiva, M., McFadden, D., Train, K., Walker, J., Bhat, C., Bierlaire, M., Bolduc, D., Boersch-Supan, A., Brownstone, D., & Bunch, D. S. (2002). Hybrid choice models: Progress and challenges. *Marketing Letters*, *13*(3), 163-175. https://doi.org/10.1023/A:1020254301302

Ben-Akiva, M., Walker, J., Bernardino, A. T., Gopinath, D. A., Morikawa, T., & Polydoropoulou, A. (2002). Integration of choice and latent variable models. In Perpetual motion: Travel behaviour research opportunities and application challenges (pp. 431-470).

Bernabéu, R., Prieto, A., & Díaz, M. (2013). Preference patterns for wine consumption in Spain depending on the degree of consumer ethnocentrism. *Food Quality and Preference*, 28(1), 77-84. https://doi.org/10.1016/j.foodqual.2012.08.003

Bliemer, M. C., Rose, J. M., & Hess, S. (2008). Approximation of Bayesian efficiency in experimental choice designs. *Journal of choice modelling*, *1*(1), 98-126. https://doi.org/10.1016/S1755-5345(13)70024-1

Bolduc, D., Ben-Akiva, M., Walker, J., & Michaud, A. (2005). Hybrid choice models with logit kernel: Applicability to large scale models1. In M. Lee-Gosselin & S. T. Doherty (Eds.), Integrated land-use and transportation models. Emerald Group Publishing Limited.

Brown, U., & O'cass, A. (2006). Foreign wine consumption in Australia: the influence of consumer perceptions to foreign cultures on wine choice. *Journal of Food Products Marketing*, 12(2), 15-26. https://doi.org/10.1300/J038v12n02_02

Bruning, E. R. (1997). Country of origin, national loyalty and product choice: the case of international air travel. *International Marketing Review*, *14*(1), 59-74. https://doi.org/10.1108/02651339710159215

Chang, E. C., & Ritter, E. H. (1976). Ethnocentrism in black college students. *The Journal of Social Psychology*, *100*(1), 89-98. https://doi.org/10.1080/00224545.1976.9711910

Choicemetrics. (2018). Ngene 1.2 User Manual & Reference Guide.

Christian, J. E., & Wang, D. (2022). Bias behind closed doors: Chinese consumers' perception of foreign wines. *Journal of Consumer Behaviour*, 21(6), 1318-1333. https://doi.org/10.1002/cb.2093

Csatáriné Dogi, I. (2015). Fogyasztói etnocentrizmust befolyásoló tényezők vizsgálata – szakirodalmi áttekintés. *Journal of Central European Green Innovation*, *3*(3), 37-44. https://doi.org/10.22004/ag.econ.206647

Douglas, S. P., & Nijssen, E. J. (2003). On the use of "borrowed" scales in cross-national research: A cautionary note. *International Marketing Review*, 20(6), 621-642. https://doi.org/10.1108/02651330310505222

Erdogan, B. Z., & Uzkurt, C. (2010). Effects of ethnocentric tendency on consumers' perception of product attitudes for foreign and domestic products. *Cross Cultural Management: An International Journal*, *17*(4), 393-406. https://doi.org/10.1108/13527601011086595

European Commission. (2023). eAmbrosia, the EU geographical indications register.

European Parliament and Council. (2008). Regulation No 110/2008 of the European Parliament and of the Council of 15 January 2008 on the definition, description, presentation, labelling and the protection of geographical indications of spirit drinks and repealing Council Regulation (EEC) No 1576/89.

Evanschitzky, H., Wangenheim, F. v., Woisetschläger, D., & Blut, M. (2008). Consumer ethnocentrism in the German market. *International Marketing Review*, *25*(1), 7-32. https://doi.org/10.1108/02651330810851863

Fernández-Ferrín, P., Calvo-Turrientes, A., Bande, B., Artaraz-Miñón, M., & Galán-Ladero, M. M. (2018). The valuation and purchase of food products that combine local, regional and traditional features: The influence of consumer ethnocentrism. *Food Quality and Preference*, *64*, 138-147. https://doi.org/10.1016/j.foodqual.2017.09.015

Gallego, J. M. G., Mera, A. C., & Galán, M. D. M. G. (2015). The region-of-origin effect in the purchase of wine: The moderating role of familiarity. *Spanish Journal of Agricultural Research*, 13(3), 1-11. http://doi.org/10.5424/sjar/2015133-7581

Gallenti, G., Troiano, S., Marangon, F., Bogoni, P., Campisi, B., & Cosmina, M. (2019). Environmentally sustainable versus aesthetic values motivating millennials' preferences for wine purchasing: evidence from an experimental

analysis in Italy. *Agricultural and Food Economics*, *7*(1), 1-16. https://doi.org/10.1186/s40100-019-0132-x

Gao, Z., Wong, S. S., House, L. A., & Spreen, T. H. (2014). French consumer perception, preference of, and willingness to pay for fresh fruit based on country of origin. *British Food Journal*, *116*(5), 806-820. https://doi.org/10.1108/BFJ-12-2012-0303

GFK Hungária Market Research Institute. (2008). Piackutatás a pálinka népszerűsítő kampány megalapozására.

Glenk, K., Hall, C., Liebe, U., & Meyerhoff, J. (2012). Preferences of Scotch malt whisky consumers for changes in pesticide use and origin of barley. *Food Policy*, *37*(6), 719-731. https://doi.org/10.1016/j.foodpol.2012.08.003

Gonçalves, T., Lourenço-Gomes, L., & Pinto, L. (2020a). Modelling consumer preferences heterogeneity in emerging wine markets: a latent class analysis. *Applied Economics*, *52*(56), 6136-6144. https://doi.org/10.1080/00036846.2020.1784389

Gonçalves, T., Lourenço-Gomes, L., & Pinto, L. M. C. (2020b). Dealing with ignored attributes through an inferred approach in wine choice experiments. *Journal of Behavioral and Experimental Economics*, *87*, 101551. https://doi.org/10.1016/j.socec.2020.101551

Gonçalves, T., Pinto, L. M. C., & Lourenço-Gomes, L. (2020). Attribute non-attendance in wine choice: Conatrasts between stated and inferred approaches. *Economic Analysis and Policy*, *66*, 262-275. https://doi.org/10.1016/j.eap.2020.04.011

Harcsa, I. M., Nabradi, A., & Tar, I. (2014). Hungarian spirits pálinka as a "Hungaricum" I. *APSTRACT: Applied Studies in Agribusiness and Commerce*, *8*(2-3), 133-141. https://doi.org/10.19041/APSTRACT/2014/2-3/16

Hess, S., & Palma, D. (2019). Apollo: a flexible, powerful and customisable freeware package for choice model estimation and application. *Journal of choice modelling*, *32*, 100170. https://doi.org/10.1016/j.jocm.2019.100170

Hess, S., & Palma, D. (2021). Apollo version 0.2. 4, user manual.

Hess, S., Train, K. E., & Polak, J. W. (2006). On the use of a Modified Latin Hypercube Sampling (MLHS) method in the estimation of a Mixed Logit model for vehicle choice. *Transportation Research Part B: Methodological*, *40*(2), 147-163. https://doi.org/10.1016/j.trb.2004.10.005

Hungarian Food Codex Comitte (2002). Codex Alimentarius Hungaricus Order No 1-3-1576/89

Hungarian Parliament. (2008). The Act XLVIII of 2008 on pálinka, törkölypálinka and the establishment of the Pálinka National Council.

Field, A. (2009). Discovering statistics using SPSS. Sage publications, London

Josiassen, A., Assaf, A. G., & Karpen, I. O. (2011). Consumer ethnocentrism and willingness to buy: Analyzing the role of three demographic consumer characteristics. *International Marketing Review*, *28*(6), 627-646. https://doi.org/10.1108/02651331111181448

Le, N. H., Thi Nguyen, H. M., & Van Nguyen, T. (2013). National identity and the perceived values of foreign products with local brands: The case of local wine in Vietnam. *Asia Pacific Journal of Marketing and Logistics*, 25(5), 765-783. https://doi.org/10.1108/APJML-01-2013-0017

Kaynak, E., & Kara, A. (2001). An examination of the relationship among consumer lifestyles, ethnocentrism, knowledge structures, attitudes and behavioural tendencies: A comparative study in two CIS states. International Journal of Advertising, 20(4), 455-482. https://doi.org/10.1080/02650487.2001.11104906

Lee, W.-N., Hong, J.-Y., & Lee, S.-J. (2003). Communicating with American consumers in the post 9/11 climate: An empirical investigation of consumer ethnocentrism in the United States. *International Journal of Advertising*, *22*(4), 487-510. https://doi.org/10.1080/02650487.2003.11072865

Lockshin, L., Jarvis, W., d'Hauteville, F., & Perrouty, J.-P. (2006). Using simulations from discrete choice experiments to measure consumer sensitivity to brand, region, price, and awards in wine choice. *Food Quality and Preference*, *17*(3-4), 166-178. https://doi.org/10.1016/j.foodqual.2005.03.009

Louviere, J. J., Flynn, T. N., & Carson, R. T. (2010). Discrete choice experiments are not conjoint analysis. *Journal of choice modelling*, *3*(3), 57-72. https://doi.org/10.1016/S1755-5345(13)70014-9

Lund, S., & Tyson, L. (2018). Globalization is not in retreat: Digital technology and the future of trade. *Foreign Affairs*, *97*(3), 130-140.

Maksan, M. T., Kovačić, D., & Cerjak, M. (2019). The influence of consumer ethnocentrism on purchase of domestic wine: Application of the extended

theory of planned behaviour. *Appetite*, 142, 104393. https://doi.org/10.1016/j.appet.2019.104393

Malota, E. (2003). Fogyasztói etnocentrizmus. A sztereotípiák, az etnocentrizmus és az országeredet imázs hatása a hazai és a külföldi termékek megítélésére. Thesis, Corvinus University of Budapest

Malota, E. (2011). Magyar termék–hazai fogyasztó. *Fogyasztóvédelmi Szemle*, *2*, 13-20.

McFadden, D. (1973). Conditional logit analysis of qualitative choice behavior. In P. Zarembka (Ed.), Frontiers in Econometrics (pp. 105-142). Academic Press.

Miguel, L. P., Marques, S. H., & Duarte, A. P. (2022). Characterising the fruit and vegetables Consumer Ethnocentrism in a southern European Country: An assessment of the Reliability and Validity of the "CETSCALE" in Portugal. *Food Quality and Preference*, *105*, 104770. https://doi.org/10.1016/j.foodqual.2022.104770

Molnár, S., & Szőllősi, L. (2014). Az étkezési tojás fogyasztási szokásainak főbb jellemzői Magyarországon. *Táplálkozásmarketing*, *1*, 133-138.

Mucha, L., Kovács, I., Oravecz, T., & Totth, G. (2020). Az etnocentrizmus szerepe a vásárlói döntésekben. *GAZDÁLKODÁS: Scientific Journal on Agricultural Economics*, *64*(1), 35-54. https://doi.org/10.22004/ag.econ.302631

Mucha, L., Oravecz, T., & Totth, G. (2020a). A fogyasztói attitűd kognitív komponensének a pálinka imázsában betöltött szerepe. *Táplálkozásmarketing*, *7*(2), 21-32. https://doi.org/10.20494/TM/7/2/2

Mucha, L., Oravecz, T., & Totth, G. (2020b). Pálinkavásárlási szempontok vizsgálata conjoint-elemzés segítségével. *Marketing & Menedzsment*, *54*(2), 41-50. https://doi.org/10.15170/MM.2020.54.02.04

Mucha, L., Oravecz, T., & Totth, G. (2021). A fogyasztói attitűd affektív és konatív komponenseinek elemzése a pálinka imázsában. *Táplálkozásmarketing*, *8*(1), 21-32. https://doi.org/10.20494/TM/8/1/2

Mucha, L., Vámosi, K., & Totth, G. (2022). Examining the factors shaping consumer attitude towards the popular alcoholic beverages in Hungary. *Heliyon*, *8*(9), e10571. https://doi.org/10.1016/j.heliyon.2022.e10571

Mueller, S., Lockshin, L., Saltman, Y., & Blanford, J. (2010). Message on a bottle: The relative influence of wine back label information on wine choice. *Food Quality and Preference*, *21*(1), 22-32. https://doi.org/10.1016/j.foodqual.2009.07.004

Netemeyer, R. G., Durvasula, S., & Lichtenstein, D. R. (1991). A cross-national assessment of the reliability and validity of the CETSCALE. *Journal of Marketing Research*, *28*(3), 320-327. https://doi.org/10.1177/002224379102800306

Neuliep, J. W., & McCroskey, J. C. (1997). The development of a US and generalized ethnocentrism scale. *Communication Research Reports*, *14*(4), 385-398. https://doi.org/10.1080/08824099709388682

Nishina, S. (1990). Japanese consumers: Introducing foreign products/brands. *Journal of Advertising Research, 30*(2), 35-45.

Olsen, J. E., Biswas, A., & Granzin, K. L. (1993). Influencing consumers' selection of domestic versus imported products: implications for marketing based on a model of helping behavior. *Journal of the academy of marketing science, 21*(4), 307-321. https://doi.org/10.1007/BF02894523

Orth, U. R., & Firbasova, Z. (2003). The role of consumer ethnocentrism in food product evaluation. *Agribusiness: An International Journal*, *19*(2), 137-153. https://doi.org/10.1002/agr.10051

Papadopoulos, N., Heslop, L. A., & Bennett, D. (1993). National image correlates of product stereotypes: a study of attitudes towards East European countries. *European Advances in Consumer Research, 1*, 206-213.

Papadopoulos, N., Heslop, L. A., & Beracs, J. (1990). National stereotypes and product evaluations in a socialist country. *International Marketing Review*, *7*(1), 32-47. https://doi.org/10.1108/02651339010141365

Perrouty, J. P., d'Hauteville, F., & Lockshin, L. (2006). The influence of wine attributes on region of origin equity: An analysis of the moderating effect of consumer's perceived expertise. *Agribusiness: An International Journal, 22*(3), 323-341. https://doi.org/10.1002/agr.20089

Qing, P., Lobo, A., & Chongguang, L. (2012). The impact of lifestyle and ethnocentrism on consumers' purchase intentions of fresh fruit in China. *Journal of Consumer Marketing*, *29*(1), 43-51. https://doi.org/https://doi.org/10.1108/07363761211193037

RC Team. (2020). R: A Language and Environment for Statistical Computing. RC Team.

Ribeiro, T., Corsi, A., Lockshin, L., Louviere, J., & Loose, S. M. (2020). Analysis of consumer preferences for information and expert opinion using a discrete

choice experiment. *Portuguese Economic Journal, 19*(1), 67-80. https://doi.org/10.1007/s10258-019-00154-3

Rose, J. M., & Bliemer, M. C. (2009). Constructing efficient stated choice experimental designs. *Transport Reviews, 29*(5), 587-617. https://doi.org/10.1080/01441640902827623

Sharma, S., Shimp, T. A., & Shin, J. (1994). Consumer ethnocentrism: A test of antecedents and moderators. *Journal of the academy of marketing science, 23*(1), 26-37. https://doi.org/10.1177/0092070395231004

Shimp, T. A., & Sharma, S. (1987). Consumer ethnocentrism: Construction and validation of the CETSCALE. *Journal of Marketing Research, 24*(3), 280-289. https://doi.org/10.1177/002224378702400304

Siamagka, N. T., & Balabanis, G. (2015). Revisiting consumer ethnocentrism: review, reconceptualization, and empirical testing. *Journal of International Marketing*, 23(3), 66-86.

Siemieniako, D., Kubacki, K., Glińska, E., & Krot, K. (2011). National and regional ethnocentrism: a case study of beer consumers in Poland. *British Food Journal*. https://doi.org/10.1108/00070701111116464

Szakály, Z., Balogh, P., Csatáriné Dogi, I., & Polereczki, Z. (2016). Fogyasztói etnocentrizmus vizsgálata Magyarországon–Ajánlások a magyar élelmiszer-gazdaság számára. *GAZDÁLKODÁS: Scientific Journal on Agricultural Economics, 60*(2), 153-166. https://doi.org/10.22004/ag.econ.253907

Szakály, Z., Horvát, A., Soós, M., Pető, K., & Szente, V. (2014). A minőségre és származásra utaló jelölések szerepe a fogyasztói döntéshozatalban. *Élelmiszer, táplálkozás és marketing, 10*(1), 3-10.

Szegedyné Fricz, Á., Szakos, D., Bódi, B., & Kasza, G. (2017). Pálinka: fogyasztói ismeretek, preferenciák, fogyasztási szokások, marketinglehetőségek. *GAZDÁLKODÁS: Scientific Journal on Agricultural Economics, 61*(2), 158. https://doi.org/10.22004/ag.econ.264586

Thøgersen, J., Pedersen, S., & Aschemann-Witzel, J. (2019). The impact of organic certification and country of origin on consumer food choice in developed and emerging economies. *Food Quality and Preference, 72*, 10-30. https://doi.org/10.1016/j.foodqual.2018.09.003

Thomes, T., Singh, N., & Ambady, K. (2020). Effect of ethnocentrism and attitude towards foreign brands in purchase decision. *Vision*, *24*(3), 320-329. https://doi.org/10.1177/0972262919867509

Torok, A., & Jambor, A. (2013). Competitiveness and Geographical Indications: the case of fruit spirits in Central and Eastern European countries. *Studies in Agricultural Economics*, *115*(1), 25-32. https://doi.org/10.22004/ag.econ.146816

Totth, G., Fodor, M., & Hlédik, E. (2011). Fogyasztói vélemények és preferenciák a pálinka piacán. *Élelmiszer, táplálkozás és marketing*, *8*(1-2), 41-47.

Totth, G., Hlédik, E., & Fodor, M. (2011). Pálinkával kapcsolatos fogyasztói percepciók és preferenciák elemzése kvalitatív kutatás eredményeinek tükrében. *Marketing & Menedzsment*, *45*(2), 11-15.

Totth, G., Kovács, I., Mezőné Oravecz, T., & Zarándné Vámosi, K. (2017). A fiatalok pálinkafogyasztási szokásai. Bányai E., Lányi B., Törőcsik M.(szerk.): Tükröződés, társtudományok, trendek, fogyasztás: Egyesület a Marketing Oktatásért és kutatásért (EMOK) XXIII. országos konferencia: Tanulmánykötet.

Totth, G., Mezőné Oravecz, T., & Zarándné Vámosi, K. (2018a). A pálinka fogyasztási és vásárlási szokásainak kvalitatív vizsgálata. *Prosperitas*, *5*(2), 99-115. https://doi.org/10.31570/Prosp_2018_02_6

Totth, G., Mezőné Oravecz, T., & Zarándné Vámosi, K. (2018b). A pálinkafogyasztás és a fogyasztói szokások változása. *Prosperitas*, *V*(2), 87-98. https://doi.org/10.31570/Prosp_2018_02_5

Train, K., & Weeks, M. (2005). Discrete choice models in preference space and willingness-to-pay space. In *Applications of simulation methods in environmental and resource economics* (pp. 1-16). Springer. https://doi.org/10.1007/1-4020-3684-1_1

Train, K. E. (2009). *Discrete choice methods with simulation*. Cambridge university press.

Wanninayake, W., & Chovancová, M. (2012). Consumer ethnocentrism and attitudes towards foreign beer brands: With evidence from Zlin Region in the Czech Republic. *Journal of Competitiveness*, *4*(2), 3-19. https://doi.org/10.7441/joc.2012.02.01

Warr, P. B., Faust, J., & Harrison, G. J. (1967). A British ethnocentrism scale. *British Journal of Social and Clinical Psychology*, *6*(4), 267-277. https://doi.org/10.1111/j.2044-8260.1967.tb00529.x

Watson, J. J., & Wright, K. (2000). Consumer ethnocentrism and attitudes toward domestic and foreign products. *European Journal of Marketing*, *34*(9/10), 1149-1166. https://doi.org/10.1108/03090560010342520

Yang, Y., & Paladino, A. (2015). The case of wine: understanding Chinese gift-giving behavior. *Marketing Letters*, 26, 335-361. https://doi.org/10.1007/s11002-015-9355-0

Appendices

Appendix 1. Threshold parameter estimates of the measurement equations

Estimated threshold parameters of the measurement equations	HCL model		HML model	
	Estimates	t-ratio	Estimates	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
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.

7. List of own (or co-authored) publications related to the topic

Foreign language articles of the dissertation

Czine, P., Balogh, P., Török, Á., & Maró, Z. M. (2024). The role of ethnocentrism in relation to national and geographical indication products–The case of Hungarian pálinka. Journal of Agriculture and Food Research, 18, 101344. doi: 10.1016/j.jafr.2024.101344

Török, Á., & Maró, Z. M. (2020): Profitability patterns in the Hungarian pálinka industry The performance of the commercial distilleries. Georgikon for Agriculture: A multidisciplinary journal in agricultural sciences, 24(3), 87-98.

Maró, Z. M., Balogh, P., Czine, P., & Török, Á. (2023): The roles of geographic indication and ethnocentrism in the preferences of Central European spirit consumers: The case of pálinka. Food Quality and Preference, 108, 104878. doi: 10.1016/j.foodqual.2023.104878

Maró, Z. M., Török, Á., Balogh, P., & Czine, P. (2023): What is Inside the Bottle? - Factors Influencing Pálinka Consumption. AGRIS on-line Papers in Economics and Informatics, 15(1), 83-98. doi:10.22004/ag.econ.334661

Other Hungarian language articles related to the topic

Maró, Z. M., Maró, G., & Török, Á. (2022): A magyar pálinkaágazat–a bérfőzdék és a kereskedelmi főzdék összehasonlító elemzése. Gazdálkodás, 66(4), 354-364. doi:10.53079/GAZDALKODAS.66.4.t.pp_354-364

Maró, Z. M., Török, Á., Balogh, P., & Czine, P. (2022): Pálinkavásárlási preferenciák vizsgálata a magyar fogyasztók körében-egy diszkrét választási modell építése. Statisztikai Szemle, 100(1), 44-67. doi:10.20311/stat2022.1.hu0044

Török, Á., Jantyik, L., & Maró, Z. M. (2019): Minőségjelzős élelmiszerek helyzete és kilátásai Magyarországon. Vezetéstudomány, 50(10), 13-25. doi:10.14267/VEZTUD.2019.10.02

Török, Á., & Maró, Z. M. (2020): A földrajzi árujelzők gazdaságtana–az empirikus bizonyítékok. Közgazdasági Szemle, 67(3), 263-288. doi:10.18414/KSZ.2020.3.263

Török, Á., Maró, Z. M., & Jantyik, L. (2019): A magyar fogyasztók és az európai uniós földrajzi árujelzős élelmiszercímkék viszonya. Statisztikai Szemle, 97(6), 546-567. doi: 10.20311/stat2019.6.hu0546

Other foreign language articles related to the topic

Török, Á., Jantyik, L., Maró, Z. M., & Moir, H. V. (2020): Understanding the real-world impact of geographical indications: A critical review of the empirical economic literature. *Sustainability*, *12*(22), 9434. doi:10.3390/su12229434