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The role of farmers' markets and consumer ethnocentrism in apple purchasing decisions in Europe

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The role of farmers' markets and consumer ethnocentrism in apple purchasing decisions in EuropeAbstract

Despite globalisation, local food preferences and consumer ethnocentrism remain influential, particularly for staple products like fresh fruit. This paper examines the interaction between points of sale, specifically focusing on farmers' markets, and consumer ethnocentrism regarding apple purchasing behaviour and decision-making in three European countries: the UK, Hungary, and Italy. Using a discrete choice experiment with ethnocentrism as a latent variable in the modelling phase, consumer preferences were analysed across key attributes: point of sale, geographical origin, organic certification, and visual appearance. Results indicate that consumers in all three countries strongly prefer apples sold at farmers' markets. Local and national origin significantly increase the likelihood of purchase in all three countries, and the GI label is also positively perceived everywhere. The organic label, however, is more divisive, being clearly preferred only by consumers in Italy and the UK. Ethnocentrism positively influences preferences for farmers' markets, and this effect appears only in the Hungarian sample. Sociodemographic variables, such as age, education, and residence, were found to significantly influence ethnocentric attitudes. These findings confirm the hypothesised relationship between ethnocentric values and local food choices. The results underscore the importance of cultural and local contexts in shaping consumer behavior. For policymakers and supply chain stakeholders, the study provides valuable insights into the relevance of aligning marketing strategies and supply systems with local values and consumer expectations.

Keywords: points of sale, apples, ethnocentrism, famers' market, short food supply chains, consumer preference, hybrid choice

1. Introduction

Consumer decision-making can be examined from many perspectives, and it is particularly important to study it in recent times, which caused many changes to agrifood markets and consumer behaviour (Elleby et al., 2020; Maró et al., 2025; Sharma & Jhamb, 2020). Individuals make numerous choices each day and make (more or less) conscious decisions on what food to eat based on many criteria. Factors determining consumer decision-making and choice can be classified into groups (Anisha & Kalaivani, 2016; Shepherd, 2001). First are personal preferences, attitudes and interests (consumer-related factors) since the individual's unique tastes, habits, personality traits, beliefs, or income can be decisive in purchasing decisions (Shepherd, 2001; Vabø & Hansen, 2014). Second, social factors such as cultural background, values, social status or family and friend relationships often influence consumer decisions (Nestle et al., 1998; Shimp & Sharma, 1987). Third, sustainability and environmental protection play a role, as more and more consumers are paying attention to whether products offered in a sustainable manner (Moser, 2016; Normann et al., 2019). Fourth, several additional factors influencing consumer decision-making may be mentioned, such as corporate marketing (Wong et al., 1996).

Many of these factors are mediated by individual beliefs and attitudes. Therefore, this research aims to assess whether consumer ethnocentrism and product attributes such as the point of sale, quality labels or the appearance of products affect purchasing decisions in three countries (the United Kingdom, Hungary, and Italy), with special attention to farmers' markets (FMs), which retail chanel plays a distinctive role in the selected three countries. Despite the dominance of globalised food value chains, ethnocentrism and short food supply chains (SFSCs) continue to exist. For a very long time, it seemed that ethnocentrism was disappearing from the globalised world, but economic and social changes and the increasing emphasis on nationalism and cultural identity that have occurred since the 2010s have reversed this phenomenon (Bizumic et al., 2021; Kinawy, 2025; Siamagka & Balabanis, 2015).

Consumer ethnocentrism is a relevant factor in the choice between local and imported (global) products or services. According to Vabø and Hansen (2014), research on food or beverage choice mainly focuses on psychological or physiological determinants, and less attention has been paid to cultural or demographic factors. Consumers in developed countries usually prefer domestic products to imported ones (Fernández-Ferrín et al., 2018; Kinawy, 2025), in opposition to the typical structure of the modern food industry with its longer supply chains and the metropolitan lifestyle. The demand for local food has also risen (Bianchi & Mortimer, 2015; Fernández-Ferrín et al., 2018), especially since the COVID pandemic. Furthermore, ethnocentrism has become increasingly important regarding SFSCs (Hanus, 2020; Wojciechowska-Solis, 2022). Consumers assign higher value to food products that combine local, regional, and traditional features, and that ethnocentric attitudes strongly shape such preferences (Fernández-Ferrín et al., 2018), thus, more ethnocentric consumers are showing a stronger preference for domestic products (Bernabéu et al., 2013).

This study is highly relevant in the current global context, as recent political and economic disruptions (e.g., Brexit, the COVID-19 pandemic, and rising nationalist tendencies) have shifted consumer preferences and attitudes. Despite the dominance of modern food supply chains, local food preferences and consumer ethnocentrism also continue to influence purchasing decisions. This paper provides timely insights into how these forces shape food purchasing behavior across different cultural context. While consumer ethnocentrism has been widely studied, existing work has primarily focused on brand-level or national origin preferences in high-involvement, everyday food purchasing decisions; and, in many cases, investigated one country (Baber et al., 2024; Siamagka & Balabanis, 2015).

In contrast, this paper offers a novel extension of ethnocentrism research by examining low-involvement, everyday food purchasing decisions through the lens of a discrete choice experiment (DCE) using realistic point-of-sale scenarios. Specifically, this approach expands prior ethnocentrism research, which has largely concentrated on durable goods (Baber et al., 2024), high-value products (Maró, Balogh, et al., 2023), or situations involving conscious national identity cues (Praveen et al., 2025). Everyday food decisions, such as fruit purchases, are typically driven by habit and convenience, yet they also reveal deeply embedded cultural and value-based preferences (Miguel et al., 2022). Investigating ethnocentrism in this context therefore bridges a gap between attitudinal theory and routine consumer behaviour (see e.g., Sabina del Castillo et al., 2024). By employing DCE, this study offers a more deeper understanding of how latent ethnocentric attitudes shape trade-offs between product attributes, thereby providing theoretical advancement and practical insights for food marketing and policy.

To the authors' knowledge, this is the first study to apply a DCE with a specific focus on the role of FMs and consumer ethnocentrism in the market of apple products. Apples are selected due to their universal consumption, low involvement nature, and visibility of origin and quality cues. The research contributes to the existing literature in three main ways. First, it applies a hybrid choice modelling framework in which consumer ethnocentrism operates as a latent psychological construct rather than a direct observed variable, allowing a more nuanced understanding of how attitudinal and demographic factors influence preferences. Second, as the literature highlights the need (Farah & Mehdi, 2021), it examines how this construct interacts with the concepts of SFSCs, specifically FMs, which are both economic and cultural institutions reflecting local identity and trust. Third, by comparing consumer behavior across three European countries with diverse cultural and market profiles, the study introduces a cross-cultural dimension that is often lacking in ethnocentrism research.

2. Background and formulation of hypotheses

2.1. Theoretical background

This paper builds on three interconnected theoretical foundations to explain and model consumer behavior regarding apple purchases across different points of sale and different cultural contexts. First, the concept of consumer ethnocentrism, introduced by Shimp and Sharma (1987), serves as the central attitudional framework. Consumer ethnocentrism refers to the belief that purchasing domestic products is morally superior and beneficial, whereas buying foreign goods is seen as harmful to the national economy. This attitude is closely linked to national identity, cultural values, and perceived economic patriotism (Balabanis et al., 2001; Watson & Wright, 2000). Ethnocentric consumers therefore tend to favor and chooce local and national products, regardless of objective quality or price.

Second, the study is grounded in the SFSCs literature, which emphasizes the role of place, proximity, and trust in consumer decision-making (Marsden et al., 2000). FMs, as a key form of SFSCs in the investigated countries, function not only as venues for economic exchange but also as social spaces that reinforce values such as sustainability, community identity, and food transparency (Maró, Maró, et al., 2023; Török et al., 2024). From this perspective, the act of purchasing at FMs often reflects a broader commitment to supporting local economies. For consumers with strong ethnocentric attitudes, these markets may represent an ideal setting for aligning their identity-based preferences with everyday shopping behaviour.

Lastly, the methodological foundation of the study relies on random utility theory (RUT) (Ben-Akiva & Lerman, 1985), which posits that individuals make choices by maximizing their utility based on the perceived value of alternatives. This theory underpins the DCE design employed in the research, allowing for the estimation of preference structures over multiple product attributes. In addition, the hybrid choice modeling is used to incorporate consumer ethnocentrism as a latent variable, which provides a better and richer understanding of unobservable psychological factors influencing decision-making (Mariel et al., 2021; Walker & Ben-Akiva, 2002). This combination of attitudinal theory and behavioral modelling enables a comprehensive analysis of how cultural tendenctis interact with tangible product features in shaping consumer preferences.

2.2. The importance of points of sale

The point of sale significantly influences consumers' product choices. Consumers often make decisions based on convenience, perceived credibility, pricing strategy of the vendor and characteristics of the purchasing location. These factors, combined with the appearance and origin of the products (see Subchapter 1.4) play a major role in shaping consumer preferences and willingness to buy.

Food quality (e.g., healthier and tastier food) (Bellemare & Nguyen, 2018; Larimore, 2018), food price (Baker et al., 2009; Conner et al., 2010), and market atmosphere (e.g., social interaction, meeting places) (Charatsari et al., 2018; Maró, Maró, et al., 2023) are the main reasons why people purchase food through SFSCs. This is not surprising, as food safety scandals at the turn of the 21st- century, combined with consumers' growing interest in healthier, tastier, and more sustainably produced food, have brought SFSCs back into focus (Luo et al., 2021; Renting et al., 2003).

Among the various types of SFSC, FMs were selected for analysis, as they are currently the most popular and widespread form of SFSC (Michel-Villarreal et al., 2020; Török et al., 2024) in the selected countries (Hungary, Italy, and the United Kingdom). In Hungary and many Central and Eastern European countries, FMs have existed alongside traditional food selfprovisioning practices (Vittersø et al., 2019). In Italy, FMs are one of the most important components of food retailing chains, never declining in significance over the centuries (Guthrie et al., 2006). In the United Kingdom, FMs lost popularity during the agricultural modernisation of the 1970s, parallel with the rise of supermarkets, but have regained importance in the 21st century (Guthrie et al., 2006; McEachern et al., 2010). Consumers of FMs have well-defined sociodemographic profiles, typically middle-aged or older, well-educated women with a above-average income (Maró, Maró, et al., 2023). Supporting local farmers and the local economy is important for consumers (Cirone et al., 2023), the role of ethnocentric attitudes in this context remains underexplored.

In contrast, purchasing apples from a supermarkets or greengrocers highlights convenience, standardisation, and affordability, appealing to those who value efficiency and consistent quality (Maró, Balogh, et al., 2023; Maró et al., 2024; Platania et al., 2015). The study of Vannoppen et al. (2002) concludes while farm shops rely on direct communication to build trust and promote products, supermarkets mainly emphasise cognitive aspects such as production techniques, often neglecting emotional values like health and taste. Moreover, greengrocers may attract consumers seeking niche varieties or organic options (Günden et al., 2010; Szegedyné Fricz et al., 2020). Based on the above, the following hypothesis can be established:

Hypothesis 1: Consumers show a stronger preference for farmers' markets compared to other types of point of sales when purchasing apples.

2.3. Drivers of consumer preferences for apples

Many previous studies have focused on consumers' fruit preferences, especially for apples. The literature has investigated several product attributes, including the importance of appearance (in this study, product imperfection), origin , and quality certifications (organic, geographical indication) as well as variety (represented here by colour). Regarding the appearance of apples, decision-making is significantly influenced by the perfection of the product. Consumers generally prefer apples with a flawless appearance, associating them with higher quality and greater health benefits (George, 2010; White et al., 2016). Moreover, apples with suboptimal appearance are perceived as less sweet and crispy, which further discourages purchase (Normann et al., 2019). The literature also suggests that socio-cultural and economic factors (e.g., lifestyle and purchasing habits) impact consumer preferences for imperfect apples, and there is a growing awareness and acceptance of visually imperfect products (Shao et al., 2020; Xu et al., 2021).

The colour of an apples also influences perceived quality. Most consumers do not recognise apples by the name of the variety (Skreli & Imami, 2012). Therefore, colour was used as an attribute in the study instead of variety. However, findings of the literature are mixed. According to Ceschi et al. (2018) and Moser and Raffaelli (2012), yellow (golden) apples are the most well-known variety, and customers are willing to pay more for them. In contrast, based on Denver and Jensen (2014), respondents have relatively weak preferences for green and yellow apples but a strong preference for red apples. Furthermore, some studies (see e.g., Carew & Smith, 2004) suggest that the colour of the apple is not a decisive attribute in consumer choice.

Origin is also among the key characteristics associated with apples and is often considered the most important attribute. Consumers prefer more locally produced foodstuffs than those from other (EU-)countries (Ceschi et al., 2018; Denver & Jensen, 2014; Massaglia et al., 2019). In the case of apples, local origin is commonly linked to higher quality and freshness (Kim & Kim, 2022). This attribute is often accompanied by consumer ethnocentrism (Hanus, 2020;

Wojciechowska-Solis, 2022), with consumers usually willing to pay more for domestic products than imported ones (Ceschi et al., 2018). Some authors have also highlighted how local food systems and place-based experiences contribute to consumers' perception of authenticity and regional identity (Fusté-Forné et al., 2021; Ginés-Ariza et al., 2024). These studies suggest that origin-related cues play a central role in shaping both producer strategies and consumer choices.

Regarding food quality schemes, the geographical indication (GI) and organic labels can significantly impact consumer perceptions of apple quality and value. Although the demand for GI and organic is increasing rapidly, their impact on apple-related decision-making remains relatively underexplored. In previous studies (see e.g., Massaglia et al., 2019), organic certifications were found to be less influential in consumers' evaluations, often due to the higher prices. However, recent studies (Meyerding & Merz, 2018; Qu et al., 2023) suggest that consumers are willing to pay a premium for apples with organic labels since it is associated with reduced pesticide use and environmentally friendly production methods. Santeramo and Lamonaca (2020) noted that the relevance of GIs is more significant for expensive products and varies across countries due to cultural and national factors. In the western part of the EU, there is growing consumer awareness and demand for sustainable products (Kowalska et al., 2021; Moser & Raffaelli, 2012), and in general, the GI label adds perceived value through its association with regional identity (Maró, Balogh, et al., 2023; Török et al., 2020). Based on the discussed products attributes, the following hypothesis can be stated:

Hypothesis 2: Consumers have the strongest preference for apples that are visually perfect, locally produced, and carry organic or geographical indication labels.

2.4. Ethnocentrism and consumer ethnocentrism

Ethnocentrism is a fundamental aspect of the business environment. Highly ethnocentric individuals are less willing to choose imported goods and tend to hold favourable cognitive, normative, and emotional attitudes toward domestic products (Liu et al., 2006). Moreover, consumers often consider domestic products to be of higher quality, and they are willing to make sacrifices to buy them (Balabanis et al., 2001). According to the literature, concerning sociodemographic characteristics, older individuals (Balabanis et al., 2001; Josiassen et al., 2011; Maró, Balogh, et al., 2023), women (Balabanis et al., 2001; Josiassen et al., 2011; Zafer Erdogan & Uzkurt, 2010), people with lower education (Mucha et al., 2020; Shan Ding, 2017; Watson & Wright, 2000), and those with lower income (Watson & Wright, 2000; Zafer Erdogan & Uzkurt, 2010) are liable to be more ethnocentric. Studies (Maró and Balogh et al., 2023; Mucha et al., 2020; Olšavský et al., 2022) have also shown that ethnocentric behaviour is stronger in less populated or rural areas.

Consumer ethnocentrism plays a significant role in determining whether individuals choose local, regional or non-local foodstuffs (Chryssochoidis et al., 2007), and in a growing number of studies, consumer ethnocentrism is examined at a regional and subnational level (Fernández-Ferrín et al., 2018; Poon et al., 2010), suggesting that ethnocentric consumers have strongly favourable attitudes towards products from local food suppliers. Moreover, some studies also show that as the level of ethnocentrism increases, SFSCs gain importance as preferred points of sale (Hanus, 2020). Thus, the following hypotheses can be stated:

Hypothesis 3: As the level of ethnocentrism rises, the farmers' market becomes more preferable compared to other point of sales.

Hypothesis 4: The heterogeneity in the level of ethnocentrism is well explained by sociodemographic variables.

3. Materials and methods

3.1. Process of research and presentation of sample

The research focuses on the preferences and ethnocentric tendencies of British, Hungarian and Italian consumers, which was analysed indirectly by examining consumer preferences for a typical fruit product, paying special attention to the place of purchase. During the analysis, the focus is on the interaction between the attributes connected to the purchase of apples, the point of sale (with special attention to FMs) and ethnocentrism. To investigate consumer preferences and ethnocentric tendencies related to apples, a DCE was performed, the attributes of which are listed in Table 1.

Table 1. Attributes of the discrete choice experiment

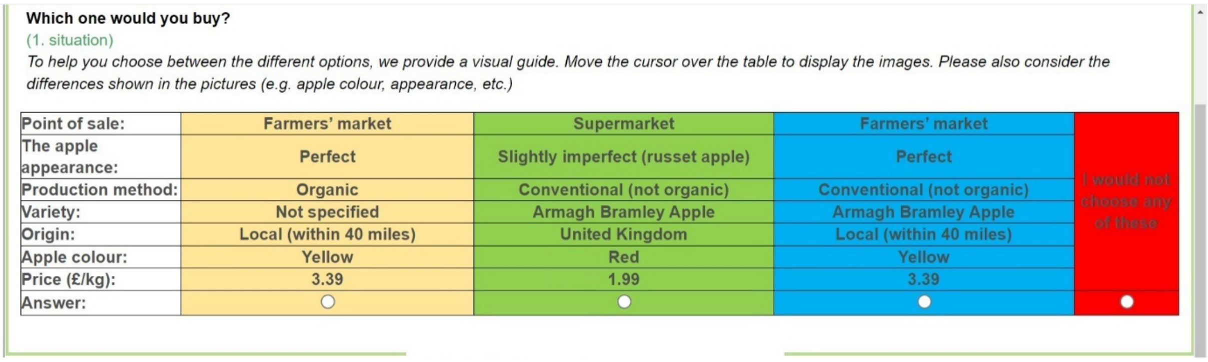
Attributes	Level of the attributes	Description of the attributes
Point of sale	Farmer's market	Place/location of purchase
	Supermarket	
	Greengrocer	
Ugliness	Perfect	Perfection of apples
	Slightly perfect	
	Fully imperfect	
Organic label	Yes	Indication of organic logo
	No	
Geographical indication	Yes	Indication of GI logo
	No	
Origin	Local	Origin of apples*
	National	
	Imported	
Colour	Red	Colour of apples
	Green	
	Yellow	
	Mix of colours	
Price	329 Ft / 1.49 € / 1.99 £	Price of one kilogram of apples in local currency**
	659 Ft / 2.39 € / 3.39 £	
	989 Ft / 3.29 € / 4.69 £	
	1 299 Ft / 4.19 € / 5.99 £	

Note: *'Local' apples differed in each of the three countries due to specific legal regulations. In the United Kingdom, a product is considered 'local' if it comes from within a 40-mile radius; in Hungary, 40 kilometres; and in Italy, 70 kilometres. **Market research was conducted in all three countries to determine realistic price levels.

After defining the attributes, the structure of the DCE was tested through a pilot survey. The structure of the experiment was based on the 16-3-7 (number of decision-making situations, number of alternatives included in decision-making situations, number of attributes characterising the alternatives) parameter combination in the context of a D-efficient experimental design (Rose & Bliemer, 2009). In view of the large number of decision-making situations, blocking was already applied during the pilot survey; the 16 decision-making situations were organised into 2 blocks. Thus, the respondents faced only eight choice situations. In addition, to reduce the distorting effect caused by the hypothetical situation, an "I would not choose" option (opt-out) was included among the decision alternatives.

In the case of the final survey, a mixed type of approach was used in the DCE part: the alternatives to the decision-making situations were presented to the respondents in tabular form (without pictures); however, when they approached the given alternative (with the computer cursor or equivalent smart device), its image appeared to them. Figure 1 shows an example of this.

Figure 1. Example of a decision-making situation



Which one would you buy?
(1. situation)
To help you choose between the different options, we provide a visual guide. Move the cursor over the table to display the images. Please also consider the differences shown in the pictures (e.g. apple colour, appearance, etc.)

Point of sale:	Farmers' market	Supermarket	Farmers' market	I would not choose any of these
The apple appearance:	Perfect	Slightly imperfect (russet apple)	Perfect	
Production method:	Organic	Conventional (not organic)	Conventional (not organic)	
Variety:	Not specified	Armagh Bramley Apple	Armagh Bramley Apple	
Origin:	Local (within 40 miles)	United Kingdom	Local (within 40 miles)	
Apple colour:	Yellow	Red	Yellow	
Price (£/kg):	3.39	1.99	3.39	
Answer:	○	○	○	○

The experimental design was also D-efficient during the final survey, which also included three apple options and a 'no choice' ("I would not choose any of these") option. The only difference compared to the design of the pilot survey was that the number of decision-making situations was increased from 16 to 32 to ensure greater variability in the data. Accordingly, the number of blocks was also doubled.

Data from the online questionnaire was collected by a professional market research company (Szinapszis Ltd., Quercus Consulting Group) in November 2023. Stratified quota sampling was applied based on key socio-demographic variables (age, gender, education, region, and residence) to enhance representativeness. Screening questions were applied and respondents not responsible for their household food buying and those not purchased apple in the previous six months were excluded. In addition, the respondents with unrealistic, short completion times (less than 40% of the average) were replaced. Although these measures improved sample quality and representativeness, participation in online surveys is voluntary and may still lead to some degree of self-selection bias, potentially attracting respondents who are, for example, more food-involved. In addition, the hypothetical nature of discrete choice experiments may lead to hypothetical bias; to mitigate this, an opt-out ("I would not choose any option") alternative and visual representations of the choice sets were included to enhance realism, as mentioned earlier. Nevertheless, this limitation was explicitly acknowledged.

All participants were adults aged 18 years and above, and were fully informed about the purpose of the study before providing their consent to the market research company. The manuscript obtained ethics approval of the Ethical Committee of the Corvinus University of Budapest (KRH/261/2023).

The details of the sample are described in Table 2.

Table 2. Presentation of the sample

	British (*n*=600)	**Hungarian** (*n*=614)	**Italian** (*n*=600)
Gender (%)			
Female	52.17	50.33	51.00
Male	47.50	49.51	49.00
Other/Prefer not to say	0.33	0.16	0.00
Age category (%)			
18–24	11.67	10.10	8.17

25–34	21.67	18.08	14.83
35–44	19.33	20.85	18.00
45–54	20.17	23.29	23.33
55–64	17.83	15.96	25.83
65–70	9.33	11.73	9.83
Education level (%)			
Lower secondary or below	16.33	2.77	9.50
Upper secondary or college qualification below a degree	37.67	59.45	57.00
Higher education	46.00	37.79	33.50
Residence (%)			
City	39.50	41.53	36.17
Medium/Large town	44.83	39.25	52.00
Village	15.67	19.22	11.83
Household size (%)			
1 person	16.50	12.54	13.00
2 persons	32.00	39.74	25.00
3 persons	19.67	23.13	28.17
4 or more persons	31.83	24.59	33.83
Subjective income level category (%)			
Very low	38.17	32.74	39.67
Low	13.67	14.33	14.67
Medium-low	14.33	14.01	16.83
Medium-high	12.67	14.82	11.83
High	6.83	8.96	5.83
Very high	14.33	15.15	11.17

Note: The subjective income categories were constructed based on the five statements of the Consumer Financial Protection Bureau (2024), measured on a 7-point agreement scale. In order to create subjective income categories from the scores given to the statements, the categorisation of the agency was used after converting the aggregate scores into percentages: (1) 0-29–very low; (2) 30-37–low; 38-49–medium-low; 50-57–medium-high; 58-67–high; 68-100–very high. It is important to note that, for ease of interpretation, the category names have been reversed, so "very low" refers to the weakest income situation, while "very high" refers to the most stable income situation.

3.2. Methodology

DCE is a stated preference (SP) type procedure, which means that preferences are examined in a hypothetical situation (Louviere et al., 2010). The analysis of the decisions made during the DCE is done through RUT, which divides the total utility into a systematic and a random part according to Equation 1 (Ben-Akiva & Lerman, 1985):

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

where U denotes the total utility, V is the observable part , ε the random part , n is the individual, i is the alternative, and t is the decision situation.

During the modelling of DCEs, a frequently applied approach is so-called random parameter logit modelling (RPL). In the case of the RPL model, the coefficients of the analysed attributes are not treated as fixed but are allowed to vary along a preliminary distribution among the respondents (McFadden & Train, 2000; Train, 2009). Thus, the systematic part of utility can be described according to Equation 2McFadden (1974):

$$V_{n,i,t} = \beta'_n X_{n,i,t}, \tag{2}$$

where X is the vector of the observed attributes, ; while β'_n is the parameter vector estimated for the observed attributes, for the *n*th decision maker.

For the modelling, the utility function was created according to Equation 3 based on Equation 2.

$$\begin{gathered} V_{n,i,t} = ASC_i + \beta_{Farmers'market,n_{Point\ of\ sale}} Farmers'\ market_{Point\ of\ sale_{n,i,t}} + \\ \beta_{Supermarket,n_{Point\ of\ sale}} Supermarket_{Point\ of\ sale_{n,i,t}} + \beta_{Perfect,n_{Ugliness}} Perfect_{Ugliness_{n,i,t}} \\ + \beta_{Slightly\ perfect,n_{Ugliness}} Slightly\ perfect_{Ugliness_{n,i,t}} + \beta_{Organic,n_{Label}} Organic_{Label_{n,i,t}} + \\ \beta_{GI,n_{GI\ indication}} GI_{GI\ indication_{n,i,t}} + \beta_{Local,n_{Origin}} Local_{Origin_{n,i,t}} + \beta_{National,n_{Origin}} \\ National_{Origin_{n,i,t}} + \beta_{Red,n_{Colour}} Red_{Colour_{n,i,t}} + \beta_{Green,n_{Colour}} Green_{Colour_{n,i,t}} + \\ \beta_{Yellow,n_{Colour}} Yellow_{Colour_{n,i,t}} + \beta_{Price,n} Price_{n,i,t}, \end{gathered} \tag{3}$$

where ASC_i is the alternative-specific constant estimated for the *i*th alternative, and the βs denote the random parameters estimated for the attributes where normal distribution was used (except for the price, where lognormal distribution was used), with 500 MLHS throws (Hess et al., 2006). During the modelling, dummy specifications were applied for the categorical attributes, so for these attributes, one category was always treated as the base scenario: greengrocer (point of sale), fully imperfect (ugliness), no organic (organic label), no GI (GI label), imported (origin), mix of colour (colour).

In addition to handling some of the heterogeneity in preferences through RPL modelling, it is important to be aware that other factors that cannot be directly measured also contribute to the explanation of differences in preferences. Such factors may include different attitudes, which can be incorporated into the model and managed correctly using hybrid choice modelling (HCM) (McFadden, 1986). HCM incorporates latent variable(s) into the choice model (in this case, according to Equation 4) and expands the standard structure (Figure 2) with two additional parts (Figure 3) (Walker & Ben-Akiva, 2002): (1) structural equation(s): the latent variable(s) are described as a function of certain explanatory variables (in this case, according to Equation 5), and measurement equation(s): the latent variable(s) are connected with the indicator(s), which are meant to measure the given attitude(s) (in this case, according to Equation 6) (Bolduc et al., 2008; Mariel et al., 2015).

Figure 2. Standard choice modelling approach

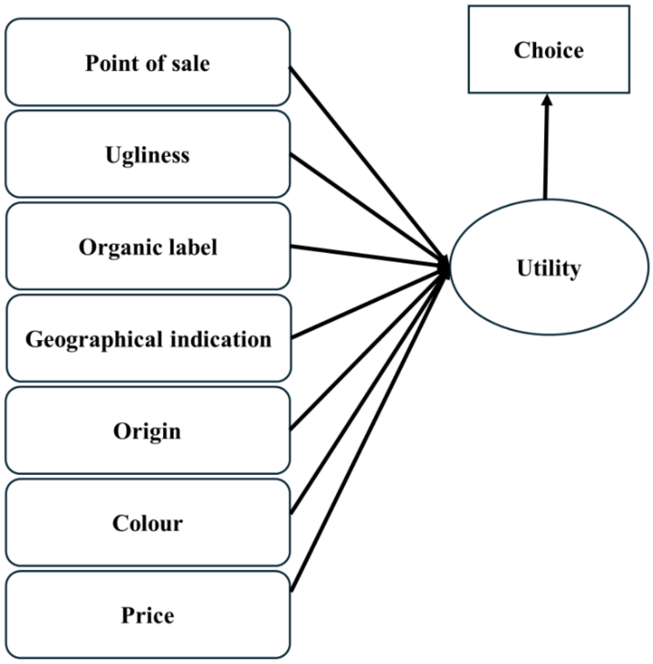
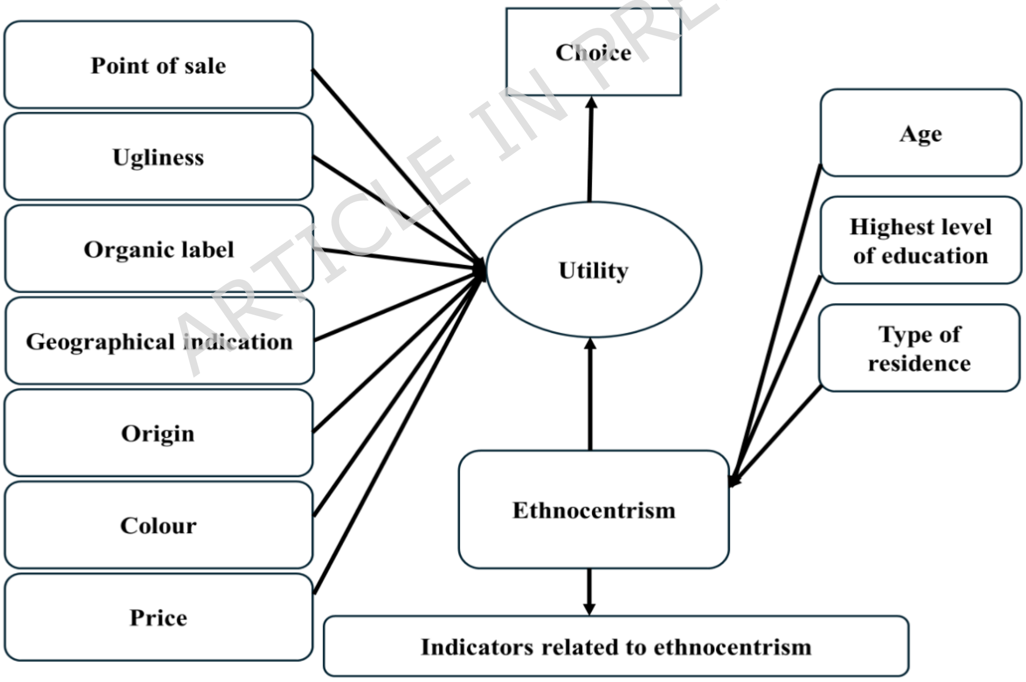


Figure 3. Hybrid choice-modelling approach



$$\beta_{Farmers'market,n_{Point\ of\ sale_{New\ term}}} = \beta_{Farmers'market,n_{Point\ of\ sale}} + \lambda LV_n, \tag{4}$$

where λ is a coefficient representing the interaction effect of the latent variable of FM and ethnocentrism.

$$LV_n = \gamma_{Age_{Level\,1}} Age_{Level\,1_n} + \gamma_{Age_{Level\,2}} Age_{Level\,2_n} + \gamma_{Age_{Level\,3}} Age_{Level\,3_n} + \gamma_{Age_{Level\,4}} Age_{Level\,4_n} + \gamma_{Age_{Level\,5}} Age_{Level\,5_n} + \gamma_{Education_{Lower\ secondary}} Education_{Lower\ secondary_n} + + \tag{5}$$

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$$\gamma_{Education_{Upper\ secondary}} Education_{Upper\ secondary_n} + + \gamma_{Residence_{Village}} Residence_{Village_n} + + \gamma_{Residence_{Town}} Residence_{Town_n} + \eta_n,$$

where γ is the parameter vector of the explanatory variable of the structural model, and η_n is the random term.

$$ME_{k,n} = \zeta_k LV_n + \sigma_{k,n}, \quad (7)$$

where ζ_k denotes the estimated coefficient for the latent variable in the case of the kth statement, while $\sigma_{k,n}$ denotes the random term of the measurement model.

To measure the latent variable (ethnocentrism), Shimp and Sharma's (1987) Consumers' Ethnocentric Tendencies Scale (CETSCALE) with 17 statements was applied (Appendix 1), using the original 7-point Likert scale (1 – 'strongly disagree' to 7 – 'strongly agree'). Since there are statements based on a Likert scale, the measurement equations were built using an ordered structure (Daly et al., 2012), i.e. for each statement, the threshold parameter of l-1 (where l denotes the number/level of the categories of the statements) was estimated.

The Ngene 1.2 software was used to design the D-efficient experimental design, and the Apollo package of the R program was used to perform the model estimations (Choicemetrics, 2018; Hess & Palma, 2019; Hess & Palma, 2021; R Core Team, 2024).

4. Results

4.1. Results of RPL model estimation

Table 3 presents the findings from the estimation of the RPL model along with the hybrid model that incorporates a latent variable representing consumer ethnocentrism, disaggregated by country. Across all three countries, purchasing from FMs was significantly preferred compared to greengrocers, reinforcing the popularity of short food supply chains. In contrast, supermarkets generally did not have a significant impact, with a notable exception in Hungary, where they were slightly less preferred than greengrocers ($p < 0.10$). This suggests a consistent consumer inclination toward direct, trust-based purchasing environments such as FMs. The visual appearance of apples influenced consumer choices in Hungary and Italy: perfect apples were significantly preferred over fully imperfect ones ($p < 0.01$), and in Hungary, even slightly imperfect apples received positive evaluations. However, in the UK, appearance had no significant effect, indicating greater consumer tolerance towards imperfect products.

The presence of the EU organic label reased preference in Italy and the UK ($p < 0.05$), but had no significant effect in Hungary, which may reflect differences in organic market development or consumer trust. In contrast, the GI label was valued in all three countries, confirming its role as a credible indicator of product authenticity and regional identity. As expected, origin strongly influenced consumer choices. In each country, local and national apples were preferred over imported ones, reflecting a widespread tendency toward locality. The strong and consistent preference for local apples confirms the importance of geographic proximity in purchasing decisions. The colour of apples had limited impact on consumer preference: neither red, green, or yellow compared to a mix of colours. No strong patterns emerged in the UK or Italy. In Hungary, however, red apples were significantly more preferred and yellow apples less preferred than mixed-colour variants, suggesting culturally specific colour preferences. In all three countries, as expected, price increases led to decreased preference. This confirms price as a robust decision-making factor.

Moreover, the hybrid choice model revealed that ethnocentrism had a significant effect only in Hungary, where more ethnocentric individuals showed a stronger preference for FMs over greengrocers ($\lambda = 0.23$, $p < 0.01$). No such interaction was observed in the UK or Italy, suggesting that the role of consumer ethnocentrism in shaping retail preference is context-dependent.

Table 3. Preference-space estimates according to RPL and HRPL specifications

Attributes and Model Details	United Kingdom		Hungary		Italy	
	RPL	HRPL	RPL	HRPL	RPL	HRPL
	Coeff.					
ASC no choice	**-4.16*** (0.65)**	**-4.07*** (0.21)**	**-2.67*** (0.23)**	**-2.58*** (0.15)**	**-3.68*** (0.30)**	**-3.53*** (0.18)**
Farmers' market	**0.42*** (0.10)**	**0.40*** (0.06)**	**0.53*** (0.08)**	**0.44*** (0.13)**	**0.33*** (0.11)**	**0.31*** (0.07)**
Farmers' market (S.D.)	**0.80*** (0.20)**	**0.72*** (0.10)**	**0.79*** (0.14)**	**0.68*** (0.16)**	**-0.83*** (0.10)**	**-0.65*** (0.15)**
Supermarket	0.01 (0.05)	-0.01 (0.07)	-0.10 (0.28)	**-0.11* (0.08)**	-0.02 (0.21)	0.02 (0.08)
Supermarket (S.D.)	-0.54 (0.46)	**0.48*** (0.18)**	**-0.78*** (0.13)**	**0.68*** (0.16)**	**-0.85*** (0.13)**	-0.46 (0.38)
Perfect	0.03 (0.13)	0.01 (0.12)	0.64 (0.57)	**0.66*** (0.12)**	**0.29*** (0.08)**	**0.27*** (0.11)**
Perfect (S.D.)	**1.46*** (0.14)**	**1.35*** (0.13)**	**-1.65*** (0.28)**	**-1.57*** (0.13)**	**-1.35*** (0.13)**	**-1.18*** (0.12)**
Slightly perfect	0.10 (0.09)	0.07 (0.07)	**0.26*** (0.10)**	**0.26*** (0.07)**	0.04 (0.97)	-0.01 (0.07)
Slightly perfect (S.D.)	-0.12 (11.93)	0.12 (0.13)	-0.06 (0.15)	**0.29** (0.15)**	<0.01 (0.03)	0.10 (0.16)
Organic	**0.11** (0.06)**	**0.12** (0.05)**	-0.06 (0.26)	-0.06 (0.05)	**0.32*** (0.06)**	**0.32*** (0.06)**
Organic (S.D.)	**0.64*** (0.10)**	**0.48*** (0.14)**	**-0.64*** (0.10)**	**-0.67*** (0.10)**	**-0.98*** (0.11)**	**-0.82*** (0.10)**
GI	**0.28*** (0.07)**	**0.26*** (0.05)**	**0.51** (0.24)**	**0.50*** (0.06)**	**0.58*** (0.10)**	**0.52*** (0.06)**
GI (S.D.)	-0.20 (0.36)	-0.20 (0.24)	**0.61*** (0.16)**	**0.54*** (0.10)**	**-0.67*** (0.09)**	**-0.59*** (0.10)**
Local	**0.47*** (0.15)**	**0.45*** (0.08)**	**0.57* (0.40)**	**0.54*** (0.08)**	**0.58*** (0.09)**	**0.58*** (0.09)**
Local (S.D.)	**-0.41*** (0.12)**	**-0.42*** (0.10)**	-0.40 (0.65)	**-0.48*** (0.10)**	**0.26** (0.15)**	0.01 (0.77)
National	0.20 (0.21)	**0.19** (0.10)**	0.36 (0.56)	**0.33*** (0.09)**	**0.38*** (0.06)**	**0.38*** (0.10)**
National (S.D.)	0.11 (2.01)	**-0.20* (0.15)**	**-0.10** (0.05)**	-0.02 (0.13)	-0.07 (1.32)	0.12 (0.26)
Red	0.07 (0.06)	0.07 (0.05)	0.24 (0.48)	**0.24*** (0.06)**	-0.07 (0.06)	-0.07 (0.05)
Red (S.D.)	**0.44*** -(0.13)**	**0.43*** (0.11)**	**0.29* (0.19)**	-0.06 (0.33)	**-0.34*** (0.14)**	0.16 (0.15)
Green	0.05 (0.97)	0.04 (0.07)	-0.06 (1.02)	-0.05 (0.08)	0.04 (0.04)	0.04 (0.07)
Green (S.D.)	0.38 (0.48)	**0.40** (0.23)**	-0.32 (2.28)	0.07 (0.35)	0.04 (1.05)	-0.11 (0.86)
Yellow	-0.05 (0.06)	-0.05 (0.08)	-0.19 (0.18)	**-0.18** (0.09)**	<0.01 (0.09)	0.05 (0.09)
Yellow (S.D.)	0.18	0.05	**-0.65***	**-0.49***	**-0.85***	**-0.74***

	(0.36)	(0.23)	**(0.18)**	**(0.18)**	**(0.19)**	**(0.19)**
Price	**0.94*** (0.10)**	**0.88*** (0.05)**	**0.38*** (0.05)**	**0.37*** (0.03)**	**1.21*** (0.09)**	**1.27*** (0.09)**
Price (S.D.)	**1.02*** (0.16)**	**0.95*** (0.09)**	**0.37*** (0.06)**	**0.33*** (0.05)**	**1.10*** (0.10)**	**1.42*** (0.16)**
Λ (ethnocentrism – "farmers' market)	-	-0.02 (0.06)	-	**0.23*** (0.07)**	-	0.05 (0.07)
Observations	4800		4912		4800	
Pseudo R^2	0.25	0.24	0.22	0.22	0.23	0.22
Log-likelihood (0) (for choice model)	-6654.21	-6654.21	-6809.48	-6809.48	-6654.21	-6654.21
Log-likelihood (final) (for choice model)	-5017.88	-5024.12	-5319.08	-5324.57	-5139.84	-5157.30
AIC	10085.76	40649.44	10688.15	41417.92	10329.67	39358.52
BIC	10247.67	41646.80	10850.64	42418.83	10491.58	40355.88

Note: The robust standard errors are shown in parentheses below the parameter estimates; S.D. denotes the standard deviations; ASC represents the alternative-specific constant; ASC choice, Greengrocer, Fully imperfect, No organic label, No geographical indication, Imported, Mix of colour used to define the base level in the estimates; ***, **, * indicate statistical significance at the 1%, 5% and 10% levels, respectively; λ denotes the effect of the latent variable in the choice model. AIC denotes the Akaike Information Criterion; BIC denotes the Bayesian Information Criterion.

4.2. Structural and measurement model estimates for latent variable models

Table 4 focuses on the coefficitent for structural equation by country. Different socio-demographic variables explain the level of ethnocentrism in each national context. In the UK, younger age groups were significantly less ethnocentric compared to the oldest group (over 65), suggesting a generational shift toward more globalized consumer values. In Hungary, the effect of education dominates; thus, compared to graduates (higher education), those with lower education are significantly more ethnocentric. Furthermore, a significant impact can also be observed for Hungarians in terms of place of residence, which indicates that ethnocentrism is significantly less characteristic of those living in villages than those living in big(ger) cities. In Italy, respondents in the age category 18-24 are significantly less and those in the age category of 55-64 significantly more ethnocentric than respondents over 65. Additionally, residents of medium/large towns were less ethnocentric than those in big cities, potentially reflecting a different relationship with local identity.

Table 4. Estimated coefficients of the structural equation of the hybrid model structure

Structural equation parameters	United Kingdom	Hungary	Italy
	Coeff.		
$\gamma_{Age_{Level\ 1}}$	**-0.25** (0.13)**	-0.34 (0.49)	**-0.59* (0.40)**
$\gamma_{Age_{Level\ 2}}$	**-0.23** (0.13)**	0.09 (0.50)	-0.26 (0.35)
$\gamma_{Age_{Level\ 3}}$	**-0.36* (0.24)**	0.35 (0.51)	0.03 (0.36)
$\gamma_{Age_{Level\ 4}}$	**-0.36*** (0.10)**	0.15 (0.54)	0.06 (0.26)
$\gamma_{Age_{Level\ 5}}$	-0.10 (0.10)	-0.17 (0.51)	**0.37** (0.21)**

$\gamma_{Education_{Lower\ secondary}}$	-0.04 (0.10)	**1.02***** **(0.14)**	0.29 (0.26)
$\gamma_{Education_{Upper\ secondary}}$	0.07 (0.09)	**0.36***** **(0.08)**	0.24 (0.20)
$\gamma_{Residence_{Village}}$	-0.08 (0.10)	**-0.22**** **(0.13)**	-0.25 (0.20)
$\gamma_{Residence_{Town}}$	0.08 (0.10)	-0.23 (0.20)	**-0.27*** **(0.19)**

Note: The robust standard errors are shown in parentheses below the parameter estimates. ***, **, * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

In the next step, the coefficients of the measurement equations of the hybrid structure are presented and broken down by country (Table 5). In this table, only the values of the ζ coefficients estimated and inferred from latent variables for the examined statements are presented, and the threshold parameters are shown in Appendix 2. In all three countries, the coefficients are positive and statistically significant, suggesting that higher levels of the latent variable were associated with stronger agreement with ethnocentric statements.. The stongest effect of the latent were observed for Statement 7, Statement 10 and Statement 17 (see Appendix 1).

Table 5. Estimated coefficients of the measurement equation of the hybrid model structure

Measurement equation parameters	**United Kingdom**	**Hungary**	**Italy**
	Coeff.		
ζ_{k1}	0.95*** (0.09)	0.93*** (0.08)	0.95*** (0.08)
ζ_{k2}	0.80*** (0.08)	0.86*** (0.08)	0.78*** (0.08)
ζ_{k3}	0.62*** (0.07)	0.71*** (0.07)	0.96*** (0.07)
ζ_{k4}	0.94*** (0.08)	1.15*** (0.08)	1.00*** (0.08)
ζ_{k5}	1.57*** (0.13)	1.97*** (0.14)	1.30*** (0.11)
ζ_{k6}	1.73*** (0.16)	1.75*** (0.14)	1.53*** (0.11)
ζ_{k7}	**1.78***** (0.15)	**2.21***** (0.16)	**1.96***** (0.15)
ζ_{k8}	1.53*** (0.12)	1.78*** (0.13)	1.66*** (0.11)
ζ_{k9}	1.33***	1.71***	1.18***

	(0.11)	(0.12)	(0.08)
ζ_{k10}	1.53*** (0.13)	1.26*** (0.10)	1.36*** (0.10)
ζ_{k11}	**1.81***** (0.15)	**2.28***** (0.16)	**1.87***** (0.14)
ζ_{k12}	1.53*** (0.13)	1.82*** (0.12)	1.50*** (0.11)
ζ_{k13}	1.11*** (0.09)	1.57*** (0.11)	1.27*** (0.09)
ζ_{k14}	1.38*** (0.14)	1.73*** (0.16)	1.06*** (0.10)
ζ_{k15}	1.39*** (0.12)	1.74*** (0.12)	1.23*** (0.10)
ζ_{k16}	1.21*** (0.12)	1.24*** (0.09)	1.33*** (0.10)
ζ_{k17}	**1.89***** (0.17)	**2.27***** (0.16)	1.31*** (0.12)

Note: The 17 statements can be found in Appendix 1. The robust standard errors are shown in parentheses below the parameter estimates. ***, **, * indicate statistical significance at the 1%, 5% and 10% levels, respectively. The parameters of the three highest-scoring and most influential statements are highlighted in bold.

5. Discussion

The research highlights how cultural factors and local preferences shape purchasing choices, particularly concerning food products like apples. To facilitate interpretation, the discussion are presented in accordance with the four proposed hypotheses. Each subsection explicitly indicates whether the findings support or reject the respective four hypothesis.

Hypothesis 1 predicted that consumers show a stronger preference for FMs compared to other types of points of sale. According to the results, consumers in all three countries significantly prefer FMs as points of sale to greengrocers and supermarkets. Based on the literature (Bellemare & Nguyen, 2018; Larimore, 2018), consumers often choose to purchase fresh produce or support the local economy or farmers through FMs. However, supermarkets or greengrocers may be preferred for reasons of convenience or lower prices (Maró, Balogh, et al., 2023; Platania et al., 2015). Moreover, in Hungary, there are many product categories (e.g., fruits and vegetables) for which greengrocers are preferred over supermarkets (Szegedyné Fricz et al., 2020), but supermarkets and discount stores are clearly the most popular shopping locations among Hungarians (Huszka et al., 2022). According to the these, Hypothesis 1 was fully confirmed, as consumers in all three countries preferred FMs over supermarkets and greengrocers in the context of apple purhases.

Hypothesis 2 proposed that consumers have the strongest preference for apples that are visually perfect, locally produced, and carry organic or geographical indication labels. Regarding the perfection of apples, the more perfect an apple looks, the more it is preferred by consumers (except for in the UK, where this had no significant effect). The visual appeal of fruits and vegetables is often seen as a direct indicator of freshness, quality or taste; thus, consumers are more likely to choose visually flawless produce (George, 2010; White et al., 2016). Moreover, based on the results in Hungary, slightly imperfect apples are still viewed more favourably than fully imperfect ones; thus, consumers may tolerate minor imperfections, which may be linked to the growing trend of sustainability (Vermeir et al., 2023). An average consumer does not buy a suboptimal product in a supermarket or in a greengrocer. Furthermore, if the price of an optimal and suboptimal product is the same, consumers choose the optimal one (Kyutoku et al., 2018). In contrast, in the UK, there is a growing awareness of visual food imperfections, which is supported by various marketing campaigns (Shao et al., 2020; Xu et al., 2021). In addition, the colour of apples is usually unimportant to the consumers of this survey. According to the literature, this phenomenon is also divisive, as in some cases, the colour of the apple is relevant and may be associated with a price premium (Ceschi et al., 2018; Moser & Raffaelli, 2012), although some studies suggest that this is not the decisive attribute in a decision-making situation (Carew & Smith, 2004).

Additionally, British and Italian consumers may be more influenced by factors other than product appearance, such as labelling or origin. The existence of the organic label increases the preference for the product in the UK and Italy, and the existence of the GI label is important in all investigated countries. This reflects varying levels of consumer awareness and trust in organic certifications (Török et al., 2019; Török et al., 2020). In Italy and in the UK (Ceschi et al.; Kowalska et al., 2021; Moser & Raffaelli, 2012), there is a trend toward organic movements, rising consumer awareness and demand for sustainable and eco-friendly products. In Hungary, organic certification is less influential in shaping consumer preferences due to the lower awareness and access to organic products. Furthermore, organic products are often perceived as more expensive, and price sensitivity is particularly crucial in the Hungarian market (Nagy-Pércsi & Fogarassy, 2019; Török et al., 2019), although it should be noted that price also plays an important role for consumers in the other two countries. In contrast, the GI label represents additional value to the consumers of all three countries due to its connection with regional identity and quality, which is completely consistent with previous studies (Cei et al., 2018; Maró, Balogh, et al., 2023). Thus, GI label no longer only represents added value for higher value-added foodstuffs and beverages (Santeramo & Lamonaca, 2020), but increasingly for fresh products such as apples.

Similar to the GI label, local and national products are preferred over imported ones. This is also in parallel with the respondents of many studies (Ceschi et al., 2018; Denver & Jensen, 2014), who prefers more locally and domestically produced products. Additionally, consumers often associate local products with cultural identity and authenticity (Bernabéu et al., 2013; Fernández-Ferrín et al., 2018), making them more attractive than imported alternatives. These ethnocentric tendencies appear in all three countries, suggesting a shared positive evaluation of locality and domestic origin. These behaviours highlight a deep-seated trust in and connection to local production systems, reinforcing the importance of emphasising provenance in marketing strategies. Based on the above, Hypothesis 2 was partially confirmed. Consumers consistently favored locally produced and GI-labelled apples; visual perfection was preferred in Hungary and Italy. Organic certification had a significant impact in the UK and Italy, but not in Hungary.

Hypothesis 3 predicted that as the level of ethnocentrism rises, the preference for FMs increases relative to other points of sale. The results only showed significant effects in Hungary, as the level of ethnocentrism increases, the importance of the place of purchase (FM) is emphasised, with ethnocentrism becoming an increasingly important factor regarding SFSCs (Hanus, 2020; Wojciechowska-Solis, 2022). Thus, Hypothesis 3 was partially confirmed: the interaction between ethnocentrism and preference for FMs was significant only in Hungary, suggesting it context-dependency.

Hypothesis 4 expected that the heterogeneity in ethnocentrism levels would be explained by sociodemographic variables. The results of this study also highlights how ethnocentrism is shaped by various sociodemographic factors. In the UK and Italy, in line with the literature (Balabanis et al., 2001; Josiassen et al., 2011; Maró, Balogh, et al., 2023), older individuals are more likely to hold ethnocentric views than younger people. This generational divide could be because the younger generations tend to grow up in a more diverse environment due to globalisation, education, and social media. Furthermore, concerning place of residence, Italians living in medium/large towns (or villages) are less ethnocentric than those in big cities, a finding that aligns with the pattern observed in Hungary. This trend is somewhat counterintuitive, as urban areas are generally more diverse and globalised, which might be expected to reduce ethnocentrism. Additionally, the literature (Czine et al., 2024; Olšavský et al., 2022) has shown that ethnocentrism is stronger among consumers living in villages or smaller towns. The result may be explained by the fact that nowadays, residents of larger cities face greater pressure from globalisation, competition for labour, or migration; thus, they develop more protectionist or exclusionary attitudes. Last, in Hungary, the effect of education also dominates. People with lower education have significantly stronger ethnocentric tendencies. Those with less education might have had less exposure to diverse perspectives (Maró, Balogh, et al., 2023; Shan Ding, 2017). Thus, Hypothesis 4 was supported in all three countries, since gender, education level, and place of residence were significant predictors of consumer ethnocentrism, although the specific effects varied by country.

6. Conclusion

6.1. Summary of the analysis

This research focuses on British, Hungarian, and Italian consumers and highlights how local preferences and cultural factors, mainly ethnocentric tendencies, shape purchasing choices, particularly concerning food products like apples. The study reveals many similarities and some differences among the three countries, i.e., concerning consumer attitudes towards local, national, and imported products, as well as the importance of appearance, price, and labelling. The differences across these three countries suggest that ethnocentrism is influenced by specific national characteristics, shaped by demographic factors. This highlights the importance of understanding ethnocentrism within each country's unique socio-political and historical context.

6.2. Theoretical and practical implications

Based on the above findings, there are some theoretical and practical implications. Consumer ethnocentrism affects purchasing decisions, even in FMs, suggesting that ethnocentrism continues to play a role even in a globalised marketplace, and this must be considered both from a decision-making and a producer point of view. Furthermore, in the investigated countries, focusing on fruit purchasing, FMs are the most popular point of sale. These trends highlight the role of SFSCs, as consumers increasingly value locally sourced, sustainable, and fresher products. Moreover, this suggests that consumers view these markets not only as food sources but also as avenues for supporting local producers and economies and reducing environmental impacts. Farmers and local food producers can capitalise on this by emphasising the domestic and local origins of their products, so marketing strategies should focus on these attributes. Highlighting the environmental benefits and economic advantages of supporting local producers or markets can enhance consumer loyalty and, thus, lead to additional purchases.

Labelling schemes, like the EU's GI or organic labels, can also support these efforts by helping consumers identify and express their preference for local products and make more informed decisions. Furthermore, the preference for SFSCs – in this case, for FMs – indicates a demand for transparent and trust-based supply chains where consumers can feel confident about the origin and quality (e.g., through labelling) of their food. Decision- and policymakers that promote local food markets and support SFSCs could enhance food security and strengthen local economies. Supporting policies could include subsidies for local farmers, help with entering the market, tax incentives for businesses that use local produce or a local product trademark, or infrastructure and regulatory investment in local food markets (e.g., organising markets). Organisations (e.g., companies or retailers) that are heavily dependent on imported or national (of unspecified origin) goods may need to modify their strategies to address the increasing preference for local products. These entities could consider diversifying their product range to include more local products or developing partnerships with domestic farmers. This would not only align with the preferences of ethnocentric (and non-ethnocentric) consumers but also help firms reduce logistical and transportation costs and environmental impact.

6.3. Limitations and further research

There are some limitations of this study. It focuses on consumers from three countries within a specific context (SFSCs and apples). Consumer behaviour and ethnocentrism might differ for other countries. Therefore, the results cannot be generalised more broadly. The focus on FMs and certain product types may restrict the findings' applicability to other food varieties or different supply chains. Future research should consider testing the model in higher-involvement categories (e.g., wine or processed foods), to explore the extent to which product type moderates the effect of ethnocentrism and point-of-sale preferences. Moreover, several authors (see e.g., Sharma, 2015; Siamagka & Balabanis, 2015) have already argued that consumer ethnocentrism is not one-dimensional, and there is already evidence of its multidimensional structure; thus, the current study might not fully capture the complexity of ethnocentric tendencies. Further studies could investigate how consumer ethnocentrism varies across different product categories and/or include countries with emerging markets. Moreover, a future extension of this model could integrate complementary attitudinal constructs, such as cosmopolitanism or susceptibility to normative influence, to better contextualize the role of consumer ethnocentrism. Additionally, suggesting specific lines for future research, including potential methodologies such as longitudinal designs, experimental manipulations, or mixed-method approaches, would also be valuable to deepen the understanding of how ethnocentrism interacts with consumer behaviour in diverse market contexts.

Declerations

Ethical approval: The Authors state that the manuscript obtained ethics approval of the Ethical Committee of the Corvinus University of Budapest (KRH/261/2023). This study was conducted in full accordance with the ethical principles outlined in the Declaration of Helsinki, and complied with the ethical standards of the Hungarian Academy of Sciences and the General Data Protection Regulation (GDPR).

Consent to participate: All participants were adults aged 18 years and above, and were fully informed about the purpose of the study before providing their consent to the market research company.

Consent for Publication: Not applicable.

Conflicts of Interest: The authors declare no conflicts of interest.

Data Availability Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request produced or examine.

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Appendices

Appendix 1. 17 statements from Shimp and Sharma's CETSCALE tailored to the research

Statements
1. British/Hungarian/Italian people should always buy British/Hungarian/Italian-made products instead of imports.
2. Only those products that are unavailable in the United Kingdom/Hungary/Italy should be imported.
3. By purchasing British/Hungarian/Italian products, we can protect British/Hungarian/Italian jobs.
4. I prefer British/Hungarian/Italian products above all.
5. Purchasing foreign-made products is un-British/Hungarian/Italian.
6. It is not right to purchase foreign products because it puts British/Hungarian/Italian people out of jobs.
7. A real British/Hungarian/Italian should always buy British/Hungarian/Italian-made products.
8. We should purchase products manufactured in Hungry instead of letting other countries get rich from us.
9. It is always best to purchase British/Hungarian/Italian products.
10. There should be very little trading or purchasing of goods from other countries unless out of necessity.
11. British/Hungarian/Italian people should not buy foreign products because this hurts British/Hungarian/Italian businesses and causes unemployment.
12. Curbs should be put on all imports.
13. It may cost me in the long run, but I prefer to support British/Hungarian/Italian products.
14. Foreigners should not be allowed to put their products on our market.
15. Foreign products should be taxed heavily to reduce their entry into the United Kingdom/Hungarian/Italian.
16. We should buy from foreign countries only those products that we cannot obtain within our own country.
17. British/Hungarian/Italian consumers who purchase products made in other countries are responsible for putting their fellow British/Hungarian/Italian people out of work.

Appendix 2 Estimated coefficients of the measurement equation of the hybrid model structure (threshold parameters)

Measurement equation parameters	United Kingdom	Hungary	Italy
	Coeff.		
$\tau_{k1,1}$	-2.30*** (0.17)	-2.02*** (0.44)	-2.99*** (0.35)

$\tau_{k1,2}$	-1.53*** (0.14)	-1.40*** (0.43)	-2.19*** (0.30)
$\tau_{k1,3}$	-1.02*** (0.14)	-0.93** (0.43)	-1.62*** (0.29)
$\tau_{k1,4}$	-0.33*** (0.13)	-0.16 (0.42)	-0.89*** (0.28)
$\tau_{k1,5}$	0.60*** (0.13)	0.51 (0.43)	0.22 (0.28)
$\tau_{k1,6}$	1.47*** (0.14)	1.32*** (0.43)	0.98*** (0.28)
$\tau_{k2,1}$	-2.59*** (0.16)	-2.10*** (0.40)	-2.59*** (0.28)
$\tau_{k2,2}$	-1.93*** (0.13)	-1.54*** (0.40)	-1.95*** (0.25)
$\tau_{k2,3}$	-1.32*** (0.12)	-1.04*** (0.40)	-1.42*** (0.24)
$\tau_{k2,4}$	-0.65*** (0.11)	-0.45 (0.40)	-0.71*** (0.24)
$\tau_{k2,5}$	0.16* (0.11)	0.16 (0.40)	0.23 (0.23)
$\tau_{k2,6}$	1.13*** (0.12)	1.13*** (0.40)	1.11*** (0.24)
$\tau_{k3,1}$	-2.84*** (0.18)	-2.41*** (0.35)	-3.25*** (0.37)
$\tau_{k3,2}$	-2.29*** (0.15)	-1.98*** (0.34)	-2.55*** (0.31)
$\tau_{k3,3}$	-1.84*** (0.12)	-1.40*** (0.33)	-1.99*** (0.30)
$\tau_{k3,4}$	-1.05*** (0.10)	-0.73** (0.33)	-1.16*** (0.29)
$\tau_{k3,5}$	-0.20** (0.09)	-0.04 (0.33)	-0.10 (0.28)
$\tau_{k3,6}$	0.65*** (0.10)	0.81*** (0.33)	0.87*** (0.28)
$\tau_{k4,1}$	-2.75*** (0.19)	-2.02*** (0.53)	-3.44*** (0.37)
$\tau_{k4,2}$	-2.13*** (0.16)	-1.50*** (0.52)	-2.84*** (0.35)

$\tau_{k4,3}$	-1.65*** (0.14)	-1.02** (0.52)	-2.16*** (0.32)
$\tau_{k4,4}$	-0.38*** (0.13)	-0.30 (0.52)	-1.08*** (0.30)
$\tau_{k4,5}$	0.23** (0.13)	0.55 (0.52)	-0.16 (0.29)
$\tau_{k4,6}$	1.17*** (0.14)	1.52*** (0.52)	0.87*** (0.29)
$\tau_{k5,1}$	-2.44*** (0.23)	-1.09 (0.90)	-2.36*** (0.40)
$\tau_{k5,2}$	-1.57*** (0.20)	-0.02 (0.89)	-1.56*** (0.39)
$\tau_{k5,3}$	-0.74*** (0.20)	0.57 (0.89)	-0.92*** (0.38)
$\tau_{k5,4}$	0.47*** (0.20)	1.59** (0.87)	0.24 (0.38)
$\tau_{k5,5}$	1.25*** (0.20)	2.48*** (0.85)	1.04*** (0.39)
$\tau_{k5,6}$	2.34*** (0.22)	3.55*** (0.86)	2.15*** (0.39)
$\tau_{k6,1}$	-2.99*** (0.28)	-1.41** (0.79)	-2.83*** (0.49)
$\tau_{k6,2}$	-1.99*** (0.24)	-0.59 (0.79)	-2.07*** (0.46)
$\tau_{k6,3}$	-1.01*** (0.22)	0.19 (0.79)	-1.27*** (0.45)
$\tau_{k6,4}$	0.22 (0.21)	1.18* (0.80)	-0.11 (0.45)
$\tau_{k6,5}$	1.05*** (0.22)	2.00*** (0.81)	1.09*** (0.45)
$\tau_{k6,6}$	2.19*** (0.25)	3.06*** (0.83)	2.35*** (0.45)
$\tau_{k7,1}$	-2.55*** (0.26)	-0.56 (1.01)	-3.25*** (0.57)
$\tau_{k7,2}$	-1.58*** (0.24)	0.32 (1.00)	-2.39*** (0.57)
$\tau_{k7,3}$	-0.78*** (0.23)	0.86 (1.00)	-1.60*** (0.57)

$\tau_{k7,4}$	0.35* (0.22)	1.68** (0.99)	-0.36 (0.57)
$\tau_{k7,5}$	1.30*** (0.22)	2.66*** (0.98)	0.90* (0.58)
$\tau_{k7,6}$	2.42*** (0.25)	3.81*** (1.00)	2.13*** (0.59)
$\tau_{k8,1}$	-2.99*** (0.24)	-1.93*** (0.81)	-3.71*** (0.51)
$\tau_{k8,2}$	-2.30*** (0.22)	-1.07* (0.81)	-2.54*** (0.51)
$\tau_{k8,3}$	-1.54*** (0.20)	-0.38 (0.81)	-2.00*** (0.50)
$\tau_{k8,4}$	-0.44** (0.19)	0.53 (0.81)	-0.63* (0.49)
$\tau_{k8,5}$	0.56*** (0.19)	1.51** (0.81)	0.69* (0.48)
$\tau_{k8,6}$	1.82*** (0.21)	2.73*** (0.82)	1.86*** (0.49)
$\tau_{k9,1}$	-3.27*** (0.25)	-1.87*** (0.77)	-3.19*** (0.40)
$\tau_{k9,2}$	-2.25*** (0.20)	-1.00* (0.78)	-2.57*** (0.38)
$\tau_{k9,3}$	-1.67*** (0.18)	-0.35 (0.78)	-1.81*** (0.36)
$\tau_{k9,4}$	-0.61*** (0.17)	0.67 (0.78)	-0.92*** (0.35)
$\tau_{k9,5}$	0.40*** (0.17)	1.57** (0.79)	0.13 (0.35)
$\tau_{k9,6}$	1.60*** (0.19)	2.75*** (0.80)	1.18*** (0.34)
$\tau_{k10,1}$	-2.88*** (0.25)	-2.05*** (0.58)	-2.82*** (0.41)
$\tau_{k10,2}$	-2.02*** (0.21)	-1.56*** (0.58)	-2.17*** (0.41)
$\tau_{k10,3}$	-1.15*** (0.20)	-0.89** (0.58)	-1.54*** (0.40)
$\tau_{k10,4}$	-0.13 (0.19)	0.04 (0.57)	-0.42 (0.40)

$\tau_{k10,5}$	0.83*** (0.19)	0.95** (0.57)	0.71** (0.40)
$\tau_{k10,6}$	2.18*** (0.22)	1.97*** (0.58)	1.99*** (0.41)
$\tau_{k11,1}$	-2.81*** (0.28)	-1.47* (1.04)	-3.32*** (0.55)
$\tau_{k11,2}$	-1.97*** (0.25)	-0.37 (1.03)	-2.45*** (0.54)
$\tau_{k11,3}$	-0.94*** (0.23)	0.29 (1.04)	-1.42*** (0.54)
$\tau_{k11,4}$	0.30* (0.23)	1.45* (1.04)	-0.18 (0.55)
$\tau_{k11,5}$	1.27*** (0.23)	2.63*** (1.04)	1.09** (0.56)
$\tau_{k11,6}$	2.81*** (0.27)	4.00*** (1.06)	2.33*** (0.57)
$\tau_{k12,1}$	-2.41*** (0.22)	-0.71 (0.84)	-2.64*** (0.46)
$\tau_{k12,2}$	-1.45*** (0.20)	0.21 (0.82)	-2.00*** (0.45)
$\tau_{k12,3}$	-0.83*** (0.19)	0.78 (0.82)	-1.14*** (0.44)
$\tau_{k12,4}$	0.38** (0.19)	1.51** (0.81	0.01 (0.44)
$\tau_{k12,5}$	1.23*** (0.20)	2.21*** (0.80)	1.04*** (0.44)
$\tau_{k12,6}$	2.41*** (0.22)	3.34*** (0.80)	2.33*** (0.45)
$\tau_{k13,1}$	-2.70*** (0.21)	-1.58** (0.73)	-3.03*** (0.41)
$\tau_{k13,2}$	-1.98*** (0.17)	-0.86 (0.72)	-2.60*** (0.39)
$\tau_{k13,3}$	-1.40*** (0.16)	-0.25 (0.71)	-1.86*** (0.38)
$\tau_{k13,4}$	-0.32** (0.15)	0.76 (0.71)	-0.74** (0.37)
$\tau_{k13,5}$	0.70*** (0.15)	1.72*** (0.70)	0.58* (0.37)

$\tau_{k13,6}$	1.78*** (0.16)	2.60*** (0.70)	1.75*** (0.38)
$\tau_{k14,1}$	-1.53*** (0.19)	-0.73 (0.78)	-1.75*** (0.31)
$\tau_{k14,2}$	-0.76*** (0.18)	0.24 (0.79)	-1.06*** (0.31)
$\tau_{k14,3}$	0.01 (0.18)	0.86 (0.79)	-0.46* (0.31)
$\tau_{k14,4}$	0.89*** (0.18)	1.60** (0.79)	0.52** (0.31)
$\tau_{k14,5}$	1.35*** (0.18)	2.36*** (0.80)	1.12*** (0.32)
$\tau_{k14,6}$	2.42*** (0.22)	3.23*** (0.83)	2.24*** (0.34)
$\tau_{k15,1}$	-2.06*** (0.20)	-1.12* (0.79)	-2.16*** (0.37)
$\tau_{k15,2}$	-1.28*** (0.18)	-0.35 (0.79)	-1.53*** (0.36)
$\tau_{k15,3}$	-0.62*** (0.18)	0.24 (0.79)	-0.81** (0.36)
$\tau_{k15,4}$	0.36** (0.17)	1.13* (0.80)	0.20 (0.36)
$\tau_{k15,5}$	1.10*** (0.18)	2.02*** (0.79)	1.22*** (0.36)
$\tau_{k15,6}$	2.13*** (0.20)	3.09*** (0.80)	2.21*** (0.37)
$\tau_{k16,1}$	-2.77*** (0.21)	-1.75*** (0.57)	-3.07*** (0.41)
$\tau_{k16,2}$	-2.00*** (0.18)	-1.16** (0.57)	-2.39*** (0.40)
$\tau_{k16,3}$	-1.35*** (0.17)	-0.58 (0.57)	-1.69*** (0.38)
$\tau_{k16,4}$	-0.35** (0.15)	0.17 (0.57)	-0.53* (0.39)
$\tau_{k16,5}$	0.56*** (0.15)	0.95** (0.58)	0.64* (0.39)
$\tau_{k16,6}$	1.47*** (0.17)	1.79*** (0.58)	1.63*** (0.40)

$\tau_{k17,1}$	-2.40*** (0.27)	-0.66 (1.03)	-2.25*** (0.42)
$\tau_{k17,2}$	-1.48*** (0.25)	0.25 (1.03)	-1.50*** (0.41)
$\tau_{k17,3}$	-0.78*** (0.24)	0.80 (1.03)	-0.83** (0.39)
$\tau_{k17,4}$	0.49** (0.23)	1.86** (1.03)	0.15 (0.39)
$\tau_{k17,5}$	1.27*** (0.23)	2.80*** (1.04)	1.06*** (0.39)
$\tau_{k17,6}$	2.38*** (0.25)	3.87*** (1.07)	2.07*** (0.38)

Note: The robust standard errors are shown in parentheses below the parameter estimates. ***, **, * indicate statistical significance at the 1%, 5% and 10% levels, respectively.