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Consumer segmentation based on commitment to local products in Hungary

Local products and short supply chains play an important role in national economies, as well as in creating a sustainable economy and society. In our research, we examined Hungarian consumer attitudes using a model related to the consumption of local products. The model analyses the reasons for buying or not buying local products. To explore consumer attitudes, we launched a nationally representative consumer survey of 500 people. The data obtained were analysed by factor and cluster analysis, which led to well-separated consumer segments being identified. The main arguments in favour of buying local products were a sense of security (local character) stemming from the knowledge of a product's origin, a belief in their health properties, and support for local communities. We were able to identify three factors by factor analysis. These are External and Internal Product Features, Purchasing Benefits from Emotional Commitment, and Support for Local Producers and Local Merchants. Four clusters were identified along the factors: Emotional (36.5%), Local Patriots (15.0%), Passive (21.2%), and Conscious (27.3%). Each segment can be targeted with different marketing messages. The Conscious can be influenced with more rational messages, the Local Patriots and the Emotional with more emotional messages. The primary target group for local products is the Conscious, to whom the Local Patriots and the Emotional can be added. It is also possible to target the three groups through certain messages. However, Passives are difficult to address because their behaviour is characterised by a high degree of disinterest.

Keywords: local product, distribution, short supply chain (SSC), short food supply chain (SFSC), preferences, local sustainability
JEL classification: Q13

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Introduction

All around the world an appreciation of local products and short supply chains has been brought about by various factors (like increasing ethnocentrism, ethical behaviour, sustainability, local producer support, and the special circumstances of a pandemic situation). In some areas, this has been justified not only by the support provided for the local economy, but also by the cessation of international trade, which has resulted in the transformation and rethinking of food supply chains (Fei *et al.*, 2020; Hailu, 2020; Enthoven and Van den Broeck, 2021). On the consumer side, the issue of food safety has also emerged as a reason (Coluccia *et al.*, 2021; Pakravan-Charvadeh *et al.*, 2021; Kovács *et al.*, 2022). However, consumer patterns and cultural habits have been relatively rearranged since the Covid-19 pandemic, as attitudes towards local products now resemble what they were before, and perhaps have even become strengthened (Nagy-Pető *et al.*, 2023).

The economic and social impact of short supply chains is discussed in detail in the international literature. Although short supply chains do not have a uniformly accepted name and definition, perhaps the essence of the concept is best expressed by Renting *et al.* (2003): a short supply chain is a system in which market players are in direct contact with each other or are directly involved in food supply, production, processing, distribution, and consumption. It also follows that the short supply chain is also closely related to the concept of local products. In some research, these two concepts are considered synonymous, but this is not correct (Enthoven and Van den Broeck, 2021). Although the concept of a local product is also not subject to a strict definition, since it may vary according to regional,

climatic or population characteristics, its main feature is the sale of the product in a short supply chain, i.e. minimising the distance between consumer and producer (Peters *et al.*, 2008; Granvik *et al.*, 2012). In most cases, consumers and retailers consider local products to be those made within narrower borders than the country border, such as the regional, or most often the county, border (Brian, 2012). In addition, local products and the short supply chain have become important buzzwords in international studies on sustainable food supply chains (Granvik *et al.*, 2012; Barska and Wojciechowsky-Solis, 2020; Enthoven and Van den Broeck, 2021).

In the case of short supply chains, proximity typically justifies the use of the term (Pearson *et al.*, 2011), which, however, can be interpreted from several perspectives. One is geographical, which is relative – especially for different consumers or different nations or cultures – so, for example, for a US citizen a local product may originate from within 40 km or from a particular state (Pirog and Rasmussen, 2008). Official legal regulations are more permissive for American products, and depending on the territory of the state, they can come from up to 644 km away, if they are made in the given state (Benedek and Balázs, 2014). According to Hungarian regulations, a product originating from somewhere not more than 40 km away or within a county border is allowed to keep the local name (with the exception of sales in Budapest, where any local product in Hungary can retain its local status) (Act 2005 / CLXIV and 4/2010 / VII. Decree 5 of Hungary; Benedek and Balázs, 2014). The other approach is the small social distance, i.e. the direct sales framework (Benedek and Balázs, 2014), in which the number of actors in the sales chain is low or there is no intermediary between the producer and the

consumer (zero level channel). Small farm size, environmentally conscious production, and organic farming can be typical (even without certification, because consumers do not demand this due to the direct connection with the product). The third perspective is environmental proximity, which reduces the environmental burden of transportation and warehousing, thus making short supply chains more sustainable compared to traditional trade (Benedek and Balázs, 2014; De Fazio, 2016). Some forms of short supply chains in Hungary look back to old traditions, such as producers' markets or direct sales.

Many types of short supply chains exist and are constantly evolving along consumer needs, and they can be grouped according to three sales systems and perceptions. These are direct sales (zero-level channel), community marketing-based sales, and the extended supply chain (Renting *et al.*, 2003; Benedek and Balázs, 2014). These can be found all over the world, from personal sales, through hub systems, to trademark systems.

In most countries, local products have become increasingly popular over the past decade. This is also confirmed by individual country studies (Granvik *et al.*, 2012; Jensen *et al.*, 2019; Wunsch, 2020). According to international surveys by Wunsch (2019), the proportion of those who prefer local products is 79% in Romania, 71% in Sweden, 70% in Italy, and 69% in Hungary. Of the 11 countries surveyed, Britain and Belgium "bring up the rear", with both countries registering 51%. A Danish study identified two consumer groups that are strongly committed to buying local products, accounting for 38% of the sample studied (Jensen *et al.*, 2019).

Reasons for favouring local products include good quality (Megicks *et al.*, 2012) like freshness and taste (Penney and Prior, 2014; Skallerud and Wien, 2019), avoidance of food-borne disease, food safety, positive added value and the possibility of environmental protection (Megicks *et al.*, 2012). On the other hand, we can see ethics as a key driver (Megicks *et al.*, 2012) in the sense that consumers aim to support local producers, retailers, culture and economies (social responsibility) (Carrington *et al.*, 2010; Megicks *et al.*, 2012; Penney and Prior, 2014; Birch and Memery, 2020), therefore, it has a societal benefit as well (Birch *et al.*, 2018). Ethical shopping is based on conscious and planned decisions, where, in addition to individual interests, the interests and values of the public also play a decisive role (Megicks *et al.*, 2008; Birch *et al.*, 2018), which, in addition to local economy support, aid animal and human welfare or fair prices (Birch *et al.*, 2018; Dahlhausen *et al.*, 2018). The close relationship between ethical duty and self-identification is a key factor here, as a given ethical issue becomes part of the personality and can strongly influence purchasing decisions (Shaw *et al.*, 2000). This is all the more important because although ethical issues related to food have received a lot of attention in recent years, the experience is that a positive consumer attitude towards local products does not necessarily lead to actual conscious shopping, i.e. an attitude-behaviour gap is observed (Carrington *et al.*, 2010; Penney and Prior, 2014).

In addition, in several research studies a relationship was found between the preference for organic, fresh, and premium

foods (Miroso and Lawson, 2012; Hempel and Hamm, 2016), health awareness, conscious shopping in general, and local product preference (Miroso and Lawson, 2012).

The consumer community which is most receptive to local products are young-middle-aged (30-40 years old), well-educated people with a good financial background (Mintel, 2008; De Schutter, 2017; Enthoven and Van den Broeck, 2021). However, for Henseleit *et al.*, (2007) in their German study, these demographic characteristics were not relevant; instead, in this context the influence of cognitive and normative factors was found to be stronger.

The willingness to pay a premium for local products varies by research and country. While in some studies a willingness to pay a premium appears (Shahbandeh, 2020), in other studies price is the most important deterrent (Henseleit *et al.*, 2007; Megicks *et al.*, 2012). Difficult availability and narrow product mix have been identified as additional barriers (Megicks *et al.*, 2012). In addition, there is the "one-stop-shop" phenomenon among urban consumers (Penney and Prior, 2014), since shopping at a supermarket is more convenient than visiting a range of outlets to find the local products (Penney and Prior, 2014).

Although many factors appear to be barriers to buying local products, it is worth emphasising that in addition to rational arguments for ethics and social responsibility, local product purchasing also has an emotional and entertainment aspect. The purchase itself, in addition to its basic function, carries these elements (non-functional outcomes) (Megicks *et al.*, 2012), so in addition to buying a local product in supermarkets, it is worth highlighting sourcing in producer markets, which are now becoming fashionable, with many benefits for consumers (Woodruffe-Burton and Wakenshaw, 2011), including the opportunity to form relationships with producers and farmers which can increase interpersonal engagement with stakeholders on the market (Penney and Prior, 2014). Even if the increase in the number of producer markets does not confirm this (Coppola, 2020; Engelmann, 2020), we can still refer to the popularity of this form of sales in the media (as recreation, fashion, awareness, status consumption). In Hungary, the operation of producer markets takes place in a strict, legally regulated form, which is justified by the fact that their number has increased significantly since 2012 and further growth is expected in the future.

Another trend in relation to local products and services is the importance of online evaluation (Kurnia *et al.*, 2018) before and after shopping. Feedback has a major impact on the perception of local businesses' products and services (Bright Ideas, 2020). Related to this is the demand for online local product purchases, which has been further strengthened by the epidemic (Balogh-Kardos and Gál, 2022). According to predictions, for example, consumers in Poland will do 40% (compared to the current 7%) of their food shopping online by 2026 (Barska and Wojciechowska-Solis, 2020). This is also confirmed by the survey by Nielsen (2019) conducted at an international level.

Based on this background, this paper examines Hungarian consumer attitudes using a model related to the consumption of local products analysing the reasons for buying or not buying them.

Methodology

Sampling method

Data collection was carried out in 2019 by means of personal interviews, with interviews conducted at the respondents' homes. The primary research was based on a national questionnaire-based survey representative of gender (Chi-square (χ^2) (1) = 1.477; probability value (p) = 0.224) and age group (χ^2 (2) = 5.241; p = 0.263). In the sampling process, representativeness was also ensured for regions (χ^2 (6) = 0,607; p = 0.996) and settlement types (χ^2 (2) = 1,149; p = 0.563), so their structure perfectly matched the quota set in advance by the Hungarian National Statistical Office (quota sampling). In the assigned settlements, a random walking method was used to ensure total randomness in selection. The essence of the method is that each interviewer was given a randomly selected starting address in the given settlement. From the starting address, in ascending order by house number, the interviewers began the questioning at the third house on the same side of the street, and then, if they

were done there, they continued at the next third house. During the compilation of the sampling plan, it was also ensured that the interviewers should not differentiate between questioning in a district with detached houses or in a district with blocks of flats. Among the residents of the household visited, the appropriate person for the interview was selected by using the so-called birthday key method. Hence, from among the residents of the households visited, those participants whose birthday was the closest to the date of the survey were selected for the interview. With this method, randomness was ensured only in each stratum. In Hungary the number of people in the age group examined is approximately 8 million (Hungarian Central Statistical Office, 2019a), and with a 95% confidence level and a 5% margin of error (on the basis of Gill and Johnson, 2010), the required sample size is 385 respondents. Consequently, the sample size (500 persons) was appropriate for reaching the research objectives. Table 1 shows the percentage distribution of the socio-demographic groups of the individuals involved in the survey and the population composition according to the previously mentioned four factors.

Table 1: Distribution of the sample according to the most important background variables (N=500) and population composition according to representative variables.

Label	Sample Distribution		Population Distribution ¹
	Count	%	%
Male	235	47.0	47.8
Female	265	53.0	52.2
16–29 years	96	19.2	18.3
30–39 years	83	16.6	16.0
40–49 years	93	18.5	19.6
50–59 years	73	14.7	15.1
60+ years	155	31.0	31.0
Budapest	90	18.0	17.9
Other town	275	55.0	52.6
Village	135	27.0	29.5
Western Transdanubia	51	10.2	10.1
Central Transdanubia	54	10.8	10.8
Southern Transdanubia	46	9.2	9.0
Northern Great Plain	74	14.8	14.8
Central Hungary	152	30.4	31.0
Northern Hungary	58	11.6	11.5
Southern Great Plain	65	13.0	12.8
Primary school	64	12.9	
Vocational school	154	30.7	
High school	202	40.5	
Higher education	80	15.9	
Can live on it very well and can also save	35	7.0	
Can live on it but can save little	175	35.0	
Just enough to live on but cannot save	241	48.2	
Sometimes cannot make ends meet	22	4.4	
Have regular financial problems	1	0.2	
Not known/No answer	26	5.2	

Source of data: Hungarian Central Statistical Office (2019a; 2019b)

Structure of the questionnaire

The questionnaire of the attitude survey we conducted was based on the work of Megicks *et al.* (2012). Megicks *et al.* (2012) developed a series of statements based on focus group research that were validated during a large-sample questionnaire survey and then formed into factors (Figure 1) and clusters.

In our questionnaire, we first asked who buys a local product (403 people, 80.6%) and who does not (97 people, 19.4%). Subsequently, we formulated two question blocks based on the validated statement series of Megicks *et al.* (2012) for local product buyers (18 statements) and non-local product buyers (11 statements). The statements were evaluated on a Likert scale of 1 to 5 in each case by the respondents, where 1 means 'do not agree at all', and 5 means 'strongly agree'. At the end of the questionnaire, the socio-demographic background variables were added: gender, age, education, subjective sense of income, type of settlement, and region.

Methods used

To attain the research objectives, multivariate statistical tools were primarily used. First, exploratory factor analysis (EFA) was performed on the model. Although Megicks *et al.* (2012) examined the inhibitors of purchasing local products as well, in this study only the reasons could be examined by factor analysis because of the low number of non-buyers in the sample. The aim of the EFA was to explore whether the pre-hypothesised factor structure appeared in our sample and whether we were able to measure the desired attitudes (factors that can be defined as latent variables). Then, we examined the reliability of the scales within the measurement model of the revealed latent variables using the Cronbach's alpha index and the composite reliability index plus omega. The reliability test was followed by a confirmatory factor analysis (CFA). The purpose of the CFA was to prove the convergent validity, i.e., whether our empirical model fits the assumed model. Discriminant validity was tested according to the Fornell–Larcker criterion. For further examination, data reduction by principal component analysis (PCA) was

performed separately on the latent variables to obtain latent variables free of cross-loadings.

The segmentation was performed by cluster analysis, which consisted of two main steps: first, the number of clusters/segments was determined by hierarchical cluster analysis, and then the cluster analysis was carried out using the K-means method, in which the cluster means were determined by the applied program. Before the cluster analysis nearest neighbour method was used to detect any outliers. As a result, we concluded that we should not exclude any respondent from further examination. After this we applied hierarchical cluster analysis with Ward's method and squared Euclidean distance to determine the number of clusters. Several possible solutions were run with hierarchical cluster analysis, where the number of clusters were determined by the dendrogram. This confirmed our prior estimation of the number of clusters (i.e. four). To find the best clusters (where the coefficient of variation is low) we developed another solution with K-means clustering, but in this case the number of clusters has already been set and the determination of cluster centres has been left to the algorithm. Finally, we accepted this solution. To validate the results of K-means clustering, i.e., whether the clusters are significantly different from each other, we analysed the clusters along each dimension (factor) by ANOVA. To further examine the clusters, cross-tabulation analysis and simple hypothesis tests were applied.

For CFA, v3.5.0. of R Statistics in the RStudio editor was used (The R Foundation, Vienna, Austria), and all additional tests were performed in v23.0. of IBM SPSS Statistics (Armonk, New York, USA).

Results

Reasons for buying local products

First, we will outline the basic statistical indicators of each statement. The reasons for choosing local products are illustrated in Table 2. According to the results, the three most supported reasons are origin identification, health, and support for local producers. While the mode is always 5 for the



Figure 1: Validated factors.

Source: Authors' own creation, based on Megicks *et al.* (2012)

first 11 statements (there is great agreement on these factors), the heterogeneity increases for the other statements. For the consumers surveyed, ethical behaviour is a less relevant factor when buying local food; however, respondents consider this statement rather to be true for themselves (Skewness: -0.365). This means that ethics is present in the ranks of factors that influence purchasing. At the same time, the feeling of nostalgia affects consumers' local product buying habits to an even lesser extent. Respondents identified least of all with the fun of local product shopping and the feeling of guilt. The mode in these cases was 1.

Reasons for not buying local products

Consistent with the research conducted by Megicks *et al.* (2012), we analysed the reasons for rejecting local products by non-customers (97 people, 19.4%) (Table 3). The main reasons for rejection are perceived extra time and energy, excessive travel, difficult availability, and the inconvenience of shopping. Among the reasons for not buying, the high

price level was only ranked sixth. Less relevant rejection criteria than those listed are incomplete promotion of local products, deficiencies in labelling, scarcity of product range, and deficiencies in pricing. The mode is in all cases 1, i.e. the refusal to buy local products can in most cases be caused not by particular factors but by basic aversion or disinterest.

Factor analysis

In the next step, an EFA was performed on attitude statements of reasons for buying local products. In doing so, some statements appeared in several factors, so they were removed from the analysis. These were items of knowledge of origin, naturalness, and reduction of transport distance.

Factor analysis was used to distinguish three reliable (KMO MSA = 0.89; Bartlett: Sig: $p < 0.001$; Cronbach's Alpha = 0.876) and well-defined dimensions (Table 4). In the case of the first factor, the product characteristics include not only the content properties, but also the external properties and environmental friendliness. In the case of the second

Table 2: Reasons for buying local products (N=403).

Attitude statements	Statistical indicator				
	Mean	Median	Mode	Std. Deviation	Skewness
I buy local produce because I know where it comes from.	4.55	5.00	5	0.724	-1.871
I buy local produce because it is wholesome.	4.22	5.00	5	1.023	-1.634
I buy local produce because it supports local producers.	4.20	4.00	5	0.968	-1.273
I buy local produce because I can buy the amount I want.	4.18	5.00	5	1.080	-1.451
I buy local produce because the shopping experience is satisfying.	4.16	4.00	5	1.051	-1.430
I buy local produce because it is natural.	4.16	4.00	5	1.075	-1.562
I buy local produce because it is free from preservatives.	4.12	5.00	5	1.187	-1.502
I buy local produce because it reduces food miles.	4.07	4.00	5	1.118	-1.246
I buy local produce because it supports local retailers.	4.06	4.00	5	1.081	-1.149
I buy local produce because it has a good appearance.	3.82	4.00	5	1.205	-0.938
I buy local produce because it is free from chemicals	3.76	4.00	5	1.256	-0.959
I buy local produce because it is environmentally friendly.	3.76	4.00	4	1.232	-1.094
I buy local produce because it lasts longer.	3.68	4.00	5	1.268	-0.800
I buy local produce because it is ethical.	3.30	3.00	3	1.337	-0.365
I buy local produce because shopping for it brings back memories of the past.	3.30	3.00	4	1.388	-0.385
I buy local produce because it is nostalgic.	3.05	3.00	3	1.410	-0.157
I buy local produce because shopping for it is fun.	2.78	3.00	1	1.460	0.141
I buy local produce because I feel guilty if I do not.	2.24	2.00	1	1.446	0.748

Source: Authors' own composition

Table 3: Reasons for not buying local products among those who reject them (N=97).

Attitude statements	Statistical indicator				
	Mean	Median	Mode	Std. Deviation	Skewness
I don't buy local produce because to do so is time consuming.	2.75	3.00	1	1.792	0.047
I don't buy local produce because it requires extra effort.	2.64	2.00	1	1.809	0.134
I don't buy local produce because I have to travel farther to do so.	2.62	3.00	1	1.704	0.107
I don't buy local produce because it is not readily available.	2.60	3.00	1	1.766	0.119
I don't buy local produce because it is inconvenient.	2.54	2.00	1	1.714	0.199
I don't buy local produce because it is expensive.	2.50	3.00	1	1.725	0.196
I don't buy local produce because it is not well promoted.	2.43	2.00	1	1.753	0.361
I don't buy local produce because food produced elsewhere is sometimes better.	2.13	2.00	1	1.481	0.645
I don't buy local produce because it is not well labelled.	2.12	1.00	1	1.587	0.705
I don't buy local produce because the range of products is limited.	2.10	2.00	1	1.487	0.620
I don't buy local produce because the price is not always clear.	2.07	1.00	1	1.602	0.771

Source: Authors' own composition

factor, it is primarily traditional character and nostalgia which appear, coupled with ethics and the entertaining nature of shopping, thus showing emotional commitment. The third factor is clearly aimed at strengthening local interests and the local economy, i.e. supporting local producers and local traders is the main motivation.

Examination of the Applicability of the Model

In the suitability studies of the model, we set up three criteria: reliability, fit, and difference validity (Hair *et al.*, 2010). All three eligibility criteria were tested for the items and latent variables provided by the EFA.

The reliability of the variables included in the study was assessed using three indicators: Cronbach's alpha, McDonald's omega (calculated by maximum likelihood method), and the composite reliability index (Hair *et al.*, 2010).

A common feature of all the indicators used is that the acceptance range is above 0.6 and the examined items are considered reliable above 0.8 (Table 5).

Then, CFA analysis can be used to test whether our model fits the presupposed structure (Brown, 2006; Harrington, 2009). In the present case, the *a priori* structure was given by the literature and the results of the EFA. According to the results of the CFA, it can be stated that our model, with the 14 measurement variables, is suitable for further studies in terms of its factor structure. In the analysis, the only concession we made was that we allowed covariance between the measurement variables belonging to the given latent variable in the model. The results of the CFA are summarised in Table 6, including the acceptance range for each indicator.

The difference validity test was performed according to the Fornell–Larcker criterion. According to this, the correlation coefficient between the latent variables of the model

Table 4: Results of exploratory factor analysis.

Attitude statements	Factors		
	External and internal product features	Purchasing benefits from emotional commitment	Support for local producers, local traders
I buy local produce because it is free from preservatives.	0.760		
I buy local produce because it is free from chemicals.	0.718		
I buy local produce because it is wholesome.	0.686		
I buy local produce because it is environmentally friendly.	0.639		
I buy local produce because it has a good appearance.	0.567		
I buy local produce because it lasts longer.	0.557		
I buy local produce because I can buy the amount I want.	0.514		
I buy local produce because it is nostalgic.		0.867	
I buy local produce because shopping for it brings back memories of the past.		0.819	
I buy local produce because shopping for it is fun.		0.777	
I buy local produce because I feel guilty if I do not.		0.659	
I buy local produce because it is ethical.		0.554	
I buy local produce because it supports local retailers.			0.915
I buy local produce because it supports local producers.			0.817
Variance explained (%)	38.668	15.346	11.369
Cronbach's coefficient alpha	0.846	0.875	0.887

Notes: Extraction Method: Maximum Likelihood. Rotation Method: Varimax with Kaiser Normalization. KMO MSA=0.890, Total variance explained=65.383%.
Source: Authors' own composition

Table 5: Reliability indicators of the scales used.

Latent Variable / Reliability Index	Cronbach's alpha	McDonald's omega	Composite Reliability (CR)
External and internal product features	0.838	0.848	0.827
Purchase benefits from emotional commitment	0.876	0.874	0.858
Support for local producers, local traders	0.889	- ¹	0.858

Note: ¹ Cannot be calculated due to the low number of items.
Source: Authors' own composition

Table 6: Summary of the results of the CFA.

Indicator	Acceptance range	Empirical results
CMIN/df	between [2;3]	2.440
CFI	>0.9	0.952
GFI	>0.9	0.935
AGFI	>0.9	0.883
RMSEA	<0.07	0.069
SRMR	<0.08	0.055
NFI	>0.9	0.935
NNFI (TLI)	>0.9	0.925

Source: Authors' own composition based on Hooper *et al.* (2008)

must be less than the square root of the AVE index of the given latent variable (reversing the criterion: the coefficient of determination between the latent variables of the model must be greater than the AVE index of the given latent variable) (Fornell and Larcker, 1981). Table 7 shows the latent variables of the studied model; for the sake of illustration, the names of the latent variables are indicated by letters (A, B and C) in the columns. The second column of the table contains the AVE index of the latent variables, while the third, fourth, and fifth columns contain the correlation coefficients between the latent variables, with the exception that the diagonal contains the square root of the AVE index of each latent variable. Based on the table and the tests, the difference validity can be determined, and the model is suitable for further tests based on the Fornell–Larcker criterion.

Market segmentation

To create market segments we applied cluster analysis, which resulted in four distinct clusters. Then, we analysed the clusters along each dimension (factor) by ANOVA (Figure 2). The values illustrate the distance from the mean for each factor by cluster. The significance level was $p < 0.001$ in all cases.

The first of these factors, the importance of product characteristics, appears in all segments except the second cluster, but is most marked in the fourth group. Emotional engagement is paramount only for the first group, while support for local producers and traders is essential for the first, second, and fourth clusters. The first cluster is the group that

most professes ethnocentric values. Compared to the average, the perceived ingredients and the eco-friendly nature of the product are more important to them, but nostalgia and emotional influence are also important (Emotional). In the second segment, support for the local economy is dominant, the cluster is less identified with the other values, and, indeed, this group is more likely than average to reject these values (Local Patriots). The third group appears to be the most passive; they do not have a significant, above-average positive commitment to any factor (Passive). Members of the fourth cluster primarily make their purchases because of the positive qualities of local food and to support the local community. This group is closest to health-conscious and sustainable thinking (Conscious).

After studying the dimensions, each cluster was also examined along the background variables and a significant relationship was found with four demographic and one psychographic variables (Table 8).

The first cluster accounts for 36.48% of the sample. They are mostly characterized by a middle-income situation, live in the Northern and Southern Great Plain regions, and include one third of the pensioners. This also explains their sensitivity to nostalgia for local products. Those in the second cluster for the most part consider their income to be good, while most economically inactive people belong to this group (primarily expectant mothers). The segment has the highest proportion of those who are mostly uninterested in local products. Of the four clusters, this is the smallest segment (14.96%). The members of the third cluster (21.26%) typically live in Central Hungary and Transdanubia and mainly

Table 7: Examination of the difference validity.

Factors	AVE	A	B	C
External and internal product characteristics (A)	0.409	0.640		
Purchase Benefits from Emotional Commitment (B)	0.553	0.364	0.744	
Support for local producers, local traders (C)	0.752	0.404	0.331	0.867

Source: Authors' own composition

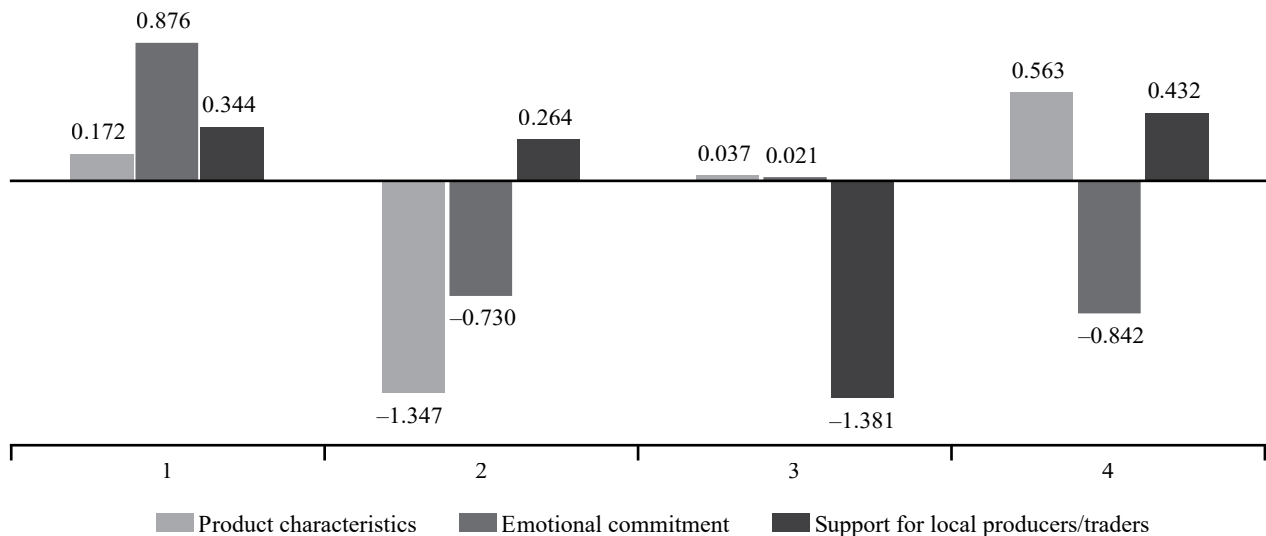


Figure 2: Presentation of each cluster based on differences according to factors.

Notes: Method: ANOVA, Sig: $p < 0.001$.

Source: Authors' own composition

Table 8: Presentation of clusters alongside background variables (%).

Demographic background variables		Cluster Proportions				Total	Sig. (p)
		1	2	3	4		
Proportion of clusters in the sample			36.48	14.96	21.26	27.30	100
Regions	Central Hungary		26.6	38.6	39.5	23.1	30.2
	Central Transdanubia		8.6	7.0	22.2	9.6	11.5
	Western Transdanubia		7.2	14.0	<i>1.2</i>	14.4	8.9
	Southern Transdanubia		5.0	17.5	4.9	15.4	9.7
	Northern Hungary		<i>7.9</i>	3.5	19.8	21.2	13.4
	Northern Great Plain		20.9	14.0	<i>4.9</i>	12.5	14.2
	Southern Great Plain		23.7	5.3	7.4	3.8	12.1
Type of settlement	capital		15.1	22.8	18.5	14.4	16.8
	metropolitan county		28.1	22.8	22.2	<i>15.4</i>	22.6
	City		30.9	36.8	42.0	26.9	33.1
	village, small settlement		25.9	17.5	<i>17.3</i>	43.3	27.6
Subjective income	He/she/they make(s) a very good living and can put some aside		7.5	9.3	5.2	10.9	8.2
	He/she/they make(s) a living but can only put a little aside		30.1	46.3	31.2	41.6	35.9
	He/she/they make(s) just about enough to live on and cannot put anything aside		60.2	35.2	62.3	<i>39.6</i>	51.2
	Sometimes there is not enough to live on		2.3	9.3	1.3%	7.9	4.7
Current legal status, main occupation	active physical worker		38.8	33.3	39.5	39.4	38.3
	active mental worker		23.0	29.8	35.8	29.8	28.6
	on maternity leave, otherwise inactive		2.2	12.3	2.5	9.6	5.8
	pensioner		30.2	19.3	18.5	20.2	23.4
	student		5.8	5.3	3.7	1.0	3.9
Psychographic variable							
Commitment to buying Hungarian food	Mostly not committed		6.6	21.1	6.3	8.7	9.3
	Committed, but also not committed		26.3	22.8%	34.2	20.2	25.7
	Mostly committed		52.6	43.9%	46.8	46.2	48.3
	Very committed		14.6	12.3%	12.7	25.0	16.7

Notes: In bold: adjusted residual > 2.00, italics: adjusted residual < -2.00.

Source: Authors' own composition

in towns; they are characterized by a better-than-average financial situation. Those in the fourth cluster make up just over a quarter of the sample (27.3%). Typically, the inhabitants of villages are over-represented as are those living in Western and Southern Transdanubia and Northern Hungary. They are the most committed to buying local produce, with nearly three-quarters belonging to this circle.

Discussion

According to our results, the three most supported reasons for choosing local products are origin identification, health, and support for local producers, which are in line with previously reported research results (Carrington *et al.*, 2010; Megicks *et al.*, 2012; Miroso and Lawson, 2012). Among consumer expectations, when considering consumer decision-making regarding local products it is important

to highlight the following keywords: quality, safety, trust, and ethics, and (local) sustainability (Megicks *et al.*, 2012; Giampietri *et al.*, 2018). The segments most committed to local products, both in terms of awareness and the purchase of local products, are middle-aged, well-off people.

We found some similarities with the results of Megicks *et al.* (2012), although there are also differences due to different survey dates and cultural differences. The segregation of factors shows similarities with Megicks *et al.* (2012), but the statements were arranged side by side differently. They were able to create a separate factor in their research along with the following ethical values: being environmentally friendly, supportive of the local community, social justice, and human and animal rights. In our study, however, intrinsic quality and ethical sustainability are not separated, i.e. in the case of the Hungarian population they are more closely related than in the survey conducted in the United Kingdom. Moreover, in contrast to the results of Megicks

et al. (2012), for the consumers surveyed in Hungary, ethical behaviour was found to be a less relevant – although positive – factor when buying local food. These findings are not surprising, since ethical consumption studies show serious cultural differences between countries, i.e. various values and beliefs are prevalent, and different nations focus on different aspects in their consumer decisions (Kushwah *et al.*, 2019). As a result of the inseparability of intrinsic quality and ethical sustainability values in our study, it was necessary to name a new dimension, so the clusters based on the identified factors also show a different picture. Overall, however, the basic dimensions differentiate segments well along their attitudes toward local products. The emergence of both rational and emotional arguments and their usefulness as a basis for segmentation confirmed another similarity to be found between Megicks *et al.* (2012) and our research. A further difference between the two studies, however, is that we were unable to create factors along the grounds of non-choice. Nonetheless, we still obtained useful information, as the survey of non-customers of the local product revealed that most of them did not reject these products because of a single barrier which was known from the literature, such as price or availability (Henseleit *et al.*, 2007; Megicks *et al.*, 2012; Shahbandeh, 2020), but in a more complex way, with several factors together being responsible for the disinterest.

Conclusions

Based on our research results, it can be stated that the most decisive argument in favour of buying local products is the sense of security (local character) arising from the knowledge of origin, the belief in their health-protecting properties, and the support of the local community. After a thorough examination of the clusters formed, a group of emotionally committed individuals was identified, most of whom were members of the older age group. They were accompanied by supporters of the local economy and passive consumers, among whom there is no unambiguous commitment. The Conscious consider the role of both external and internal (perceived or real) characteristics of local products to be equally important, as well as the support the purchase provides for the local economy. Based on the above, it can be concluded that there are also two groups that can be effectively addressed with appropriate (emotional or rational) messages, and who can be potential consumers of local products. The proportion of the two groups makes up nearly half of the sample. However, it is also worth bearing in mind that the interest varies from region to region due to the different cultural customs of different geographical areas.

Trademarks and certifications can also help make local products more popular but creating them alone is not enough. Building trust and increasing sensitivity to local products requires adequate quality assurance, food safety, better quality, and today, certified environmentally friendly production, as well as compliance with animal welfare standards. These contribute most to the creation of a positive image, trust, and a well-communicable presentation (Szakály *et al.*, 2010). For non-buyers of local products, it is not the expenditure of

time or energy, or possibly the scarcity of supply, that plays the main role in the rejection, but the high degree of disinterest in local products.

Recognising the attractiveness and perceived or real positive qualities and values of local products along consumer attitudes can help to shape the appropriate market strategy of state decision-making, community agricultural marketing organisations, and entrepreneurs.

As to the limitations, the survey was conducted in 2019, but many changes have taken place in consumer behaviour since then. Consumer behaviour was affected by the Covid-19 epidemic and has also been impacted significantly by the current war situation in our neighbour Ukraine, which led to an increase in prices. Interest in short supply chains has in any case increased, which has also affected the frequency and quantity of purchases of Hungarian products.

Abbreviations

AGFI Adjusted Goodness of Fit Index
 AVE Average Variance Extracted
 CMIN/DF minimum discrepancy, divided by its degrees of freedom
 CFA Confirmatory Factor Analysis
 CFI Comparative Fit Index
 EFA Exploratory Factor Analysis
 GFI Goodness of Fit Index
 NFI Normed Fit Index
 NNFI Non-Normed Fit Index
 PCA Principal Component Analysis
 RMSEA Root Mean Square Error of Approximation
 SRMR Standardised Root Mean Square Residual
 TLI Tucker–Lewis Index

References

- Balogh-Kardos, V. and Gál, T. (2022): Az online vásárlási szokások vizsgálata a generációk szempontjából. *Studia Mundi – Economica*, **9** (2), 11. <https://doi.org/10.18531/Studia.Mundi.2022.09.02.1-11>.
- Barska, A. and Wojciechowska-Solis, J. (2020): E-consumers and local food products: A perspective for developing online shopping for local goods in Poland. *Sustainability*, **12** (12), 4958. <https://doi.org/10.3390/su12124958>
- Benedek, Zs. and Balázs, B. (2014): A rövid ellátási láncok szocioökonómiai hatásai. *Külgazdaság*, **58** (5-6), 100–120.
- Birch, D. and Memery, J. (2020): Tourists, Local Food and the Intention-behaviour Gap. *Journal of Hospitality and Tourism Management*, **43**, 53–61. <https://doi.org/10.1016/j.jhtm.2020.02.006>
- Birch, D., Memery, J. and Kanakaratne, M.D.S. (2018): The mindful consumer: Balancing egoistic and altruistic motivations to purchase local food. *Journal of Retailing and Consumer Services*, **40**, 221–228. <https://doi.org/10.1016/j.jretconser.2017.10.013>
- Bright Ideas (2020): Local Consumer Review Survey 2020. Available at: <https://www.brightlocal.com/research/local-consumer-review-survey> (Accessed on 10 January 2021).
- Brown, T.A. (2006): *Confirmatory factor analysis for applied research*. Guilford, New York.
- Carrington, M.J., Neville, B.A. and Whitwell, G.J. (2010): Why ethical consumers don't walk their talk: Towards a framework

- for understanding the gap between the ethical purchase intentions and actual buying behaviour of ethically minded consumers. *Journal Business Ethics*, **97**, 139–158.
<https://doi.org/10.1007/s10551-010-0501-6>
- Coluccia, B., Agnusdei, G.P., Miglietta, P.P. and De Leo, F. (2021): Effects of COVID-19 on the Italian agri-food supply and value chains. *Food Control*, **123**, 107839.
<https://doi.org/10.1016/j.foodcont.2020.107839>
- Coppola, D. (2020): Percentage change of the turnover of the farm shops and farmers market Flanders 2019. Available at: <https://www.statista.com/statistics/729250/percentage-change-turnover-farm-shops-and-farmers-market-belgium> (Accessed on 10 Jan 2021).
- Dahlhausen, J.L., Rungie, C. and Roosen, J. (2018): Value of Labeling Credence Attributes-common Structures and Individual Preferences. *Agricultural Economics*, **49** (6), 741–751.
<https://doi.org/10.1111/agec.12456>
- De Fazio, M. (2016): Agriculture and sustainability of the welfare: The role of the short supply chain. *Agriculture and Agricultural Science Procedia*, **8**, 461–466.
<https://doi.org/10.1016/j.aaspro.2016.02.044>
- De Schutter, O. (2017): The political economy of food systems reform. *European Review of Agricultural Economics*, **44** (4), 705–731. <https://doi.org/10.1093/erae/jbx009>
- Engelmann, J. (2020): Sales value of farmer’s markets in Japan fy 2013–2018. Available at: <https://www.statista.com/statistics/1179443/japan-farmer-s-markets-sales-value> (Accessed on 10 Jan 2021).
- Enthoven, L. and Van den Broeck, G. (2021): Local food systems: Reviewing two decades of research. *Agricultural Systems*, **193**, 103226. <https://doi.org/10.1016/j.agsy.2021.103226>
- Fei, S., Ni, J. and Santini, G. (2020): Local food systems and COVID-19: an insight from China. *Resources, Conservation and Recycling*, **162**, 105022.
<https://doi.org/10.1016/j.resconrec.2020.105022>
- Fornell, C. and Larcker, F.D. (1981): Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, **18** (1), 39–50.
<https://doi.org/10.1177/002224378101800104>
- Giampietri, E., Verneau, F., Del Giudice, T., Carfora, V. and Finco, A. (2018): A theory of planned behaviour perspective for investigating the role of trust in consumer purchasing decision related to short food supply chains. *Food Quality and Preference*, **64**, 160–166. <https://doi.org/10.1016/j.foodqual.2017.09.012>
- Gill, J., Johnson, P. and Clark, M. (2010): *Research Methods for Managers*. SAGE Publications, Washington DC.
- Granvik, M. (2012): The Localisation of Food Systems – An Emerging Issue for Swedish Municipal Authorities. *International Planning Studies*, **17** (2), 113–124.
<https://doi.org/10.1080/13563475.2012.672796>
- Hailu, G. (2020). Economic Thoughts on COVID-19 for Canadian Food Processors. *Canadian Journal of Agricultural Economics*, **68**, 163–169. <https://doi.org/10.1111/cjag.12241>
- Hair, J., Black, W., Babin, B. and Anderson, R. (2010): *Multivariate data analysis*. Prentice-Hall, Upper Saddle River.
- Harrington, D. (2009): *Confirmatory factor analysis*. Oxford University Press, New York.
- Hempel, C. and Hamm, U. (2016) How important is local food to organic-minded consumers? *Appetite*, **96**, 309–318.
<https://doi.org/10.1016/j.appet.2015.09.036>
- Henseleit, M., Kubitzki, S. and Teuber, R. (2007): Determinants of Consumer Preferences for Regional Food. Contributed paper prepared for presentation at the 105th EAAE Seminar “International Marketing and International Trade of Quality Food Products”, Bologna, Italy, 8–10 March 2007.
- Hooper, D., Coughlan, J. and Mullen, M. (2008): Structural Equation Modelling: Guidelines for Determining Model Fit. *Electronic Journal of Business Research Methods*, **6** (1), 53–60.
<http://doi.org/10.21427/D7CF7R>
- Hungarian Central Statistical Office (2019a): Tables (STADAT) – Time series of annual data – Population, vital events/1.2.Population by type of settlement, 1 January (1980–2019), 1.3.Population by sex and age, 1 January (1980–2019). Available at: http://www.ksh.hu/stadat_annual_1 (Accessed on 15 November 2019).
- Hungarian Central Statistical Office (2019b): Tables (STADAT) – Time series of annual, regional statistics – Population, vital events/6.1.1.Resident population by sex, 1 January (2001–2018). Available at: http://www.ksh.hu/stadat_annual_6_1 (Accessed on 15 November 2019).
- Jensen, J.D., Christensen, T., Denver, S., Ditlevsen, K., Lassen, J. and Teuber, R. (2019): Heterogeneity in consumers’ perceptions and demand for local (organic) food products. *Food Quality and Preference*, **73**, 255–265.
<https://doi.org/10.1016/j.foodqual.2018.11.002>
- Kovács, I., Balázsné Lendvai, M. and Beke, J. (2022): The Importance of Food Attributes and Motivational Factors for Purchasing Local Food Products: Segmentation of Young Local Food Consumers in Hungary. *Sustainability*, **14** (6), 3224.
<https://doi.org/10.3390/su14063224>
- Kurnia, S., Rahim, M., Hill, S., Larsen, K., Braun, P., Samson, D. and Singh, P. (2018): Supporting regional food supply chains with an e-commerce application, 209–227. In: Choudrie, J., Tsatsou, P. and Kurnia, S. (eds.) *Social inclusion an usability of ICT-enabled services*. Routledge, New York.
- Kushwah, S., Dhir, A. and Sagar, M. (2019): Ethical consumption intentions and choice behavior towards organic food. Moderation role of buying and environmental concerns. *Journal of Cleaner Production*, **236**, 117519.
<https://doi.org/10.1016/j.jclepro.2019.06.350>
- Megicks, P., Memery, J. and Williams, J. (2008): Influences on ethical and socially responsible grocery shopping: evidence from the UK grocery sector. *Journal of Marketing Management*, **24** (5–6), 637–659. <https://doi.org/10.1362/026725708X326039>
- Megicks, P., Memery, J. and Angell, R.J. (2012): Understanding local food shopping: Unpacking the ethical dimension. *Journal of Marketing Management*, **28** (3–4), 264–289.
<https://doi.org/10.1080/0267257X.2012.658838>
- Mintel (2008): *Locally sourced food – UK*. Mintel International Group, London. Available at: <https://reports.mintel.com/display/280202/#> (Accessed on 4 January 2021).
- Mirosa, M. and Lawson, R. (2012): Revealing the lifestyles of local food consumers. *British Food Journal*, **114** (6), 816–825.
<https://doi.org/10.1108/00070701211234345>
- Nagy-Pető T.D., Szakály, Z. and Kiss, V.Á. (2023): A helyi termékkel kapcsolatos fogyasztói elvárások összehasonlító vizsgálata. *Marketing és Menedzsment*, **57** (1), 49–57.
<http://doi.org/10.15170/MM.2023.57.01.05>

- Nielsen (2019): Future Opportunities in FMCG E-Commerce. Available at: <https://www.nielsen.com/ssa/en/insights/report/2018/future-opportunities-in-fmcg-ecommerce/> (Accessed on 31 July 2019).
- Pakravan-Charvadeh, M.R., Mohammadi-Nasrabadi, F., Gholamrezai, S., Vatanparast, H., Flora, C. and Nabavi-Pelesarai, A. (2021): The short-term effects of COVID-19 outbreak on dietary diversity and food security status of Iranian households (A case study in Tehran province). *Journal of Cleaner Production*, **281**, 124537. <https://doi.org/10.1016/j.jclepro.2020.124537>
- Pearson, D., Henryks, J., Trott, A., Jones, P., Parker, G., Dumaresq, D. and Dyball, R. (2011): Local food: Understanding consumer motivations in innovative retail formats. *British Food Journal*, **113** (7), 886–899. <https://doi.org/10.1108/00070701111148414>
- Penney, U. and Prior, C. (2014): Exploring the urban consumer's perception of local food. *International Journal of Retail & Distribution Management*, **42** (7), 580–594. <https://doi.org/10.1108/IJRDM-09-2012-0077>
- Peters, C.J., Bills, N.L., Wilkins, J.L. and Fick, G.W. (2008): Foodshed Analysis and Its Relevance to Sustainability. *Renewable Agriculture and Food Systems*, **24** (1), 1–7. <https://doi.org/10.1017/S1742170508002433>
- Pirog, R. and Rasmussen, R. (2008): Food, fuel and the future: Consumer perceptions of local food, food safety and climate change in the context of rising prices. Leopold Center For Sustainable Agriculture, U.S.A.
- Renting, H., Marsden, T.K. and Banks, J. (2003): Understanding alternative food networks: exploring the role of short food supply chains in rural development. *Environment and Planning A*, **35** (3), 393–412. <https://doi.org/10.1068/a3510>
- Shahbandeh, M. (2020): Consumer willingness to pay for locally grown fresh produce in Canada 2020. Available at: <https://www.statista.com/statistics/1188589/consumer-willingness-to-pay-premium-for-local-produce-canada/> (Accessed on 12 December 2020).
- Shaw, D., Shui, E., and Clarke, I. (2000): The contribution of ethical obligation and self-identity to the theory of planned behaviour: an exploration of ethical consumers. *Journal of Marketing Management*, **16** (8), 879–894. <https://doi.org/10.1362/026725700784683672>
- Skallerud, K. and Wien, A.H. (2019): Preference for Local Food as a Matter of Helping Behaviour: Insights from Norway. *Journal of Rural Studies*, **67**, 79–88. <https://doi.org/10.1016/j.jrurstud.2019.02.020>
- Szakály, Z., Pallóné Kisérdi, I. and Nábrádi, A. (2010): Marketing a hagyományos és a tájjellegű élelmiszerek piacán. Kaposvári Egyetem, Kaposvár.
- Woodruffe-Burton, H. and Wakenshaw, S. (2011): Revisiting experiential values of shopping: Consumers' self and identity. *Marketing Intelligence & Planning*, **29** (1), 69–85. <https://doi.org/10.1108/02634501111102760>
- Wunsch, N.G. (2019): Share of respondents who prefer to eat locally-produced food in selected European countries as of September 2018. Available at: <https://www.statista.com/statistics/988047/respondents-who-prefer-to-eat-local-produce-in-selected-european-countries> (Accessed on 12 January 2021).
- Wunsch, N.G. (2020): Most important foods to buy local according to U.S. consumers in 2019. Available at: <https://www.statista.com/statistics/1008618/consumer-important-foods-to-buy-local-us/> (Accessed on 12 January 2021).