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Behavioural Differences among Educated Young Consumers in the Czech Republic: The Case of Organic Cheese Consumption

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ABSTRACT

This study aims to identify behavioural differences between consumers who are driven by different sets of attitudes toward information related to food in their purchasing, including consumers who display rational behaviour. Although this study investigated "spill over" changes in attitude or behaviour (e.g. the use of information about food ingredients), the survey data were used to calculate the probability of behavioural differences between consumers. The survey involving 909 respondents from chosen Czech universities. Data were analysed by Multi Correspondence Analysis to investigate the association between several attitudes towards information on labelling, and consumer behaviour. In the second step, the ordered probit model probability of consumer behaviour was processed. There are two clusters of consumers: The first consumer segment was called "rationality involvement consumer". They have a certain tendency to need to know what a product contains, the nutritional value of a product, and how to maintain the biological value of a product. The second consumer segment was called "non-rationality involvement consumer". They have a certain tendency to not need to know what a product contains, the nutrition value of product, or how to maintain the biological value of a product.

Keywords*:sustainability; consumer behaviour; organic product; consumer attitudes; cheese*

1 Introduction

Intensive agriculture and industrial food production affect land resources, water resources, agriculture and biodiversity as much as climate change does (Bezirtzoglou *et al.,* 2011; Hatfield *et al.,* 2011). New sustainable food systems, such as the integration of human activities into ecosystems (MacArthur, 2012; Borello *et al.,* 2017) and farming methods, are becoming more important (Borello et al., 2017). Organic agriculture is a 'growing' phenomenon in the EU and around the world. Particularly in the Czech Republic, the total land area cultivated using some form of organic farming has increased over the last few years (Ministry of Agriculture of the Czech Republic, 2016). Czech organic farming began developing in 1990. From 1990 to 2015, organically farmed land increased from 480 hectares to 494 661 hectares (Ministry of Agriculture of the Czech Republic, 2016).

On the other hand, the average annual per-capita expenditure on organic foods remains below 200 CZK (in 2015), and the share of organic food in overall food and drink consumption has only reached 0.72% (Ministry of Agriculture of the Czech Republic, 2016). Small volumes of organic foods are sold through public catering facilities, but this number is still low, at just 3%. However, the demand for organic food is still in the initial stages. Organic food has many different terms, such as biological, ecological, natural, free of pesticides, free of antibiotics, and environmentally-friendly products (de Carvalho et al., 2015; Hughner et al., 2007). Most other studies have stated that consumers believe that organic foods have a different composition and a different nutritional value than conventional foods (Lee et al., 2015). However, many consumers do not care about these different values of organic food in the Czech Republic. They do not check to see what composition is stated on the labelling (Velčovská and Sadílek, 2014, Lee et al., 2015; Hrubá, 2016). Nevertheless, consumers in the Czech Republic have a growing interest in farming practices and related animal welfare standards (Janssen et al.,_2012). Currently, due to human health risks linked with meat consumption, animal welfare for most consumers means safer and healthier food (Harper et al., 2002; Martelli, 2009). Based on this, studying consumer behaviour towards attitudes related to food issues becomes of primary importance in this study.

This study aims to identify behavioural differences between consumers who are driven by different sets of attitudes toward information related to food in their purchasing, including consumers who display rational behaviour. Although this study investigated "spill over" changes in attitude or behaviour (e.g. the use of information about food ingredients), the survey data were used to calculate the probability of behavioural differences between consumers. This may be relevant when an organic market is just starting out and hopes to achieve more maturity and should be of the utmost importance for investors when making long-term investments.

2 Literature review

A changed attitude is the key to a deeper and longer-lasting form of social influence, as has been shown in many research reports (Ajzen, 2001; Albarracin, D. and Shavitt, 2018; Eagly and Chaiken, 1998; Petty et al., 1997; Wood, 2000). Uncertainty and the perceived difficulty of evaluating quality should increase consumers' use of extrinsic quality cues (Bredahl, 2001; Verbeke, 2005; Zeithaml, 1988).

Nowadays, quality is the core of agricultural sustainability in the human mind, usually followed by direct sales. Howard and Sheth (1969) stated that extensive problem-solving influences responsive behaviour. A general assumption is that consumers' buying motives are influenced, to a large extent, by a product's characteristics. As expressed by Levitt (1980), a consumer "attaches value to a product in proportion to its perceived ability to help solve his problems or meet his needs".

In this context, most studies are concentrated on sustainable food consumption (Vermeir and Verbeke, 2008, Carvalho et al., 2015). According to these studies, there is no general sustainable food label available, but rather certification schemes that focus on the environmental, social and ethical aspects of food production (eco, organic, etc.). In summary, those studies support the notion that consumers tend to associate these kinds of more sustainable food products with health benefits, environmental benefits or increased fairness towards food producers (von Meyer-Höfer et al., 2015).

To better understand sustainable food consumption, Thøgersen (2010), Thøgersen et al. (2017) and Luhman et al. (2016) explained that sustainable food consumption depends heavily on political regulation, including legal definitions and standards, financial support to farmers, and a national labelling system. Macro factors such as the food culture and the culture's level of post-materialism and concern for the environment play an additional role. Both factors – structural and macro – are more important than individual-level attitudinal variables. Unlike product-specific attitudes or preferences, lifestyle is

concerned with the more general and more observable characteristics of consumers, which helps practitioners develop communication strategies (Wells, 1975) as well as a labelling system.

Over the last decade, there has been an increasing demand for artisanal and home-made cheeses manufactured according to traditional procedures strictly linked to the territory and characterized by unique features that make them worthy of being protected and distinguished from similar products produced on an industrial scale. This consumer trend has led to a great deal of interest in the definition of cheese safety, quality and typical characteristics, as well as in the establishment of objective and verifiable variables to qualitatively and quantitatively evaluate the intrinsic features of cheese (Aquilanti et al., 2013).

The quality of cheese involves many parameters, from compositional, functional, nutritional, sensory and safety aspects, to convenience, processing and economic factors. The definition of quality can therefore differ depending upon the importance and relative contribution of each parameter to a producer- or consumer-based approach to quality (Bremner, 2000). Any aspect can be viewed as playing a single, but important role in the whole collection of food quality parameters (O´Riordan and Delahunty, 2003). An important tool for cheese manufacturers is their willing to manage and communicate the significantly higher quality of their products.

The EU cheese market is the largest in the world. Cheese has provided much better export opportunities than any other dairy product, as the willingness to pay for quality European cheeses has always been high. However, the cheese market has changed in recent years due to developments in the EU, along with global trends. Competition within the EU market is heating up because the market has become more saturated, and the remaining growth will only be captured by players that have more to offer than just volume and price. Customers are only willing to pay suppliers who have something unique to offer. However, since the EU cheese market already offers a sophisticated and diverse product range, there is no reason to expect revolutionary developments in cheese innovation, and it appears that most options for changing the product itself have already been exhausted. Therefore, cheese producers need to reconsider their traditional business models and develop new strategies for targeting further growth and profitability, e.g., incorporating new areas of growth, either in new geographic areas or in value-added services in the retail market. Improving the level of added value in the retail market may result in new traits in the product itself (TheDairySite, 2011).

Segmentation can also be used to examine the attitudes and motivations of specific consumers, rather than just learn how an “average” consumer thinks and behaves. This paper segments food consumers, including consumers who display rational behaviour, based on behavioural differences in their purchasing that are driven by different sets of attitudes toward information related to food.

3 Methods

3.1 Data sources

The data used in this paper are from a survey conducted in the Czech Republic involving 909 students enrolled in universities in Prague, České Budějovice, and Brno. Specifically, a questionnaire was collected at the universities. The respondents were students: 330 from the University of Czech Life Sciences in Prague, 300 from the University of South Bohemia in České Budějovice, 340 from the Mendel University in Brno, and 200 from Masaryk University. Only part of the responses was used for the purpose of the survey. All respondents were responsible for the purchase of cheese (first question on the survey). The sample is not statistically representative of younger and better-educated students among the Czech population. More than 909 questionnaires were used for the model. Of the 909 young people pursuing higher education in the 19–35 age group, 595 were female (65%). The data were collected using an ad hoc questionnaire developed in a survey conducted by the Consumer Interest Alliance Inc. (2007). These variables and model used previously e.g. Verbeke and Ward (2006) in their study called “Consumer interest in information cues denoting quality, traceability and origin: An application of ordered probit models to beef labels”. The previous studies where variables were used are referred below: Only a summary of the methods is provided, since the full study methodology was reported by Hrubá (2014) and Hrubá (2016). Data collection was carried out from November 2010 to February 2011. Students answered a questionnaire on attitudes toward information in general, intention to use information, and behavioural control. Young people may perceive problematic issues related to food differently from older generations. The number of university students in the Czech Republic is constantly increasing, and in 2010 it reached almost 400,000 (CSU, 2010). Data were analysed in the statistical program STATA.

3.2 Analysis

As a first step in the survey design, we selected food information on the label aimed at capturing the main issues related to food; those explanatory variables were used in previous studies related to this issue (Consumer Interest Alliance Inc., 2007; Verbeke and Ward, 2006) and It is mandatory to provide explanatory information on the labelling are mandatory (European Regulation (EU) No 1169/2011) (i) and, second, how label information affects intentions to buy new products (ii). Next, we collected information related to the analysis of new institutional economics of transaction cost economics about control behaviour (iii), specifically:

(i) For me, product information is of great importance, importance or is unimportant; Attitudes towards information: producer, name of the product, product ingredients, quantity – by weight/volume, nutritional facts, safe food-handling, origin of milk, website link, date of production, allergen, brand;

(ii) I search for desirable information before deciding to buy a new product;*

(iii) I check what composition is stated on the label.*

* The interviewee was asked to state his/her level of behavioural intention with each statement, using a frequency from every time, sometimes, occasionally, to never (see Table 1 for summary statistics of the variables).

Table 1.
Summary statistics of each variable

Description of variables	%			
How important do you rate the following information on Edam?	**Unimportant**	**Important**	**Very important**	
Producer	36	50	14	
Common name of product	30	40	30	
Product ingredients	21	47	32	
Quantity (by weight/volume)	29	42	29	
Nutrition facts (e.g. salt)	39	43	18	
Safe-food handling	37	43	20	
Origin of milk	41	39	20	
Website link	86	12	2	
Date of production	10	27	63	
Allergen (healthy)	53	22	25	
When choosing a new cheese product, do you…	**Never**	**Rarely**	**Sometimes**	**Always**
… find the desired information on the product label under normal circumstances?	13	17	35	35
… check information about product ingredients before buying?	22	30	33	15

Source: author's own research

To reduce the number of variables to be implemented in the econometric model (presented below), Multi Correspondence Analysis (MCA) was used to create factors from seven variables (beside the variables related to intention and consumer behaviour, these include information that has a significant impact on the control behaviour: checking information before buying). According to Panagiotakos et al. (2004), that decomposition of the categorical data is obtained to study their "structure". MCA was used to investigate the association between several attitudes towards information on labelling and consumer behaviour.

Consequently, this data analysis characterizes consumer differences. In the next step, an ordered probit model was used to identify the probability of consumers' behaviour related to food, according to their lifestyle. Ordered probit regressions were used to explore the associations between behavioral patterns, beliefs and attitudes concerning food information. This allows for an examination of the marginal impact of variables on the probability of using the desired information. This approach was used previously by Verbeke and Ward (2003), Verbeke and Ward (2006); Zepeda, L., & Li, J. (2007).

The actual equation:

$$BEHi = f (M., Attitude) \quad (1)$$

Where BEHi is behaviour represented by the frequency with which an individual checks information about ingredients. The exogenous variable M is represented by the frequency of using desirable information about food before buying a new product, namely: product ingredients; nutritional facts; food handling, brand.

4 Results

4.1 Differences in segments

To identify the quality of organic food products compared to conventional foods, it is critical to read information on food labels.

The aim of the MCA is, on the one hand, to describe the behavioural differences between respondents in terms of their attitudes towards information and, on the other hand, to see if this characterization has any relationship with the controlling behaviour "check what ingredients are stated on the label". A clear pattern can be seen in that higher/low attitude toward information and higher/low intention of Behaviour are clustered together, whereas the question Behaviour is formulated differently (agree rarely, sometimes) and is clustered together with Attitudinal (agree important). The MCA includes the following variables: Brand; Nutrition facts; Product ingredients; Safe food-handling; Allergen (Burt´s Table, see Table 2). The MCA with the Burt matrix and adjustments explains at least 81% of the total inertia in the first two dimensions. As we can see, the profiles of consumers with awareness of very much/not much information about food (groups 1 and 3) are quite different, as was expected. The presence of very important attitudes towards nutrition as well as *components*, *safe food-handling*, *brand* and always check *information about composition* before buying seems to characterize the consumers group (group 1), since the distances in the factorial design are smaller than the other variables. On the other hand, subjects in the non-rational involvement consumer (group 3) are characterized by the low awareness of those *information about food* as well as the *behavioural patterns* of never check *information about composition* before buying a new type of cheese. Detailed information are provided in Table 2.

According to the results of the MCA, on the left side (represented by the first dimension) we can observe those people who feel it is very important to have information related to composition information, how to maintain the biological value of food, the nutritional value of food, as well as brand; they pay attention to the ingredients before buying food. On the opposite side, we can also observe those people who do not feel that this information is important, and the tendency is to never check ingredients. Furthermore, the two dimensions were mostly affected by the frequency of the control behaviour and the attitude towards information. Within both dimensions, we can also observe on the negative side those people holding a less important attitude towards related issues; they tend to sometimes or occasionally check the ingredients of food on the label. In addition, we identified their key categories of food lifestyle behaviour that are associated with product attributes.

The first consumer segment was called **"rationality involvement consumer"**. They have a certain tendency to need to know what a product contains, the nutritional value of a product, and how to maintain the biological value of a product.

The second consumer segment was called **"non-rationality involvement consumer"**. They have a certain tendency to not need to know what a product contains, the nutrition value of product, or how to maintain the biological value of a product.

Table 2.
MCA Results on FRL, normalize (principal)

Description of variables		**Dimension 1**			**Dimension 2**		
Categories		Coord	Sqorr	Contrib	Coord	Sqorr	Contrib
Check information about composition before buying?	Never	0.306	0.762	0.043	0.293	0.243	0.131
	Rarely	0.098	0.645	0.006	-0.031	0.011	0.002
	Sometimes	-0.076	0.314	0.004	-0.135	0.627	0.076
	Always	-0.499	0.851	0.075	0.043	0.024	0.008
Brand	Unimportant	0.171	0.914	0.030	0.008	0.002	0.000
	Important	-1.135	0.790	0.014	-0.039	0.061	0.007
	Very important	-0.306	0.854	0.021	0.100	0.090	0.014
Nutrition facts (e.g. salt)	Unimportant	0.414	0.989	0.134	0.011	0.001	0.001
	Important	-0.153	0.565	0.021	-0.108	0.315	0.060
	Very important	-0.517	0.820	0.098	0.236	0.215	0.120
Product ingredients	Unimportant	0.594	0.923	0.148	0.113	0.038	0.031
	Important	0.036	0.041	0.001	-0.141	0.821	0.111
	Very important	-0.430	0.884	0.122	0.133	0.110	0.068
Safe-food handling	Unimportant	0.349	0.910	0.092	0.025	0.005	0.003
	Important	-0.131	0.655	0.015	-0.073	0.217	0.027
	Very important	-0.372	0.853	0.056	0.112	0.086	0.030
Allergen (healthy) f safety	Unimportant	0.225	0.897	0.055	-0.011	0.002	0.001
	Important	-0.210	0.719	0.020	-0.100	0.160	0.026
	Very important	-0.302	0.780	0.045	0.112	0.117	0.037

Note: Accounts for the most inertia (70%), followed by the second dimension (11%); this table shows how one unit of mass is distributed across the cells. Source: author's own research

In the summary, the results of the MCA indicate that the respondents can be divided into those who care about information when they buy a new product; those who do not care; and the rest, who care sometimes or occasionally (see Table 2). The respondents who are positive towards information and solving problematic issues related to food also often study the information about food ingredients on the label. Other respondents are mostly involved in solving problematic issues through information, but not regularly. The result is that their association with product attributes is important, but they are not often interested in the product quality according to the information on the label. They mostly purchase a new product without knowledge about its ingredients. The negative or indifferent segments of the population are not as interested in food information and have a relatively low likelihood of supporting organic products through checking ingredients about food. We expect the attitudes and behavioural intentions to vary between the different consumer behaviours, and therefore we investigated the relationship between the probabilities of belonging to a specific segment.

4.2 Attitudinal differences between the consumer and the probability of behaviour

The results of the ordered model using only the probability of belonging to the consumer behaviour (see equation (1) in the Analysis section) are presented in Table 3. The estimates cover the segments with specific trends of consumer behaviour, and to illustrate the effect of the estimated probability of their behaviour, the results in Table 4 present the estimated behaviour in the three categories of food lifestyle behaviour related to food. The positive attitudes of the first segment of consumers also have significant positive trends in their differentiated organic and conventional products. The trend is strongest for the "rationality-involvement consumer", who also had the highest awareness about global issues related to food (51% always check information about ingredients and 35% sometimes do, see Table 4). A negative or indifferent attitude towards issues related to food information is also typical of "non-rationality-involvement" consumers and is responsible for the non-competitiveness of organic products on the market (77% never check information about ingredients and 18.5% occasionally do). Table 4 shows not only the estimated probability of using information about ingredients in the product, but also the changes in behaviour if a consumer changes their attitude related to an issue related to food (the estimated opportunity for organic products through different composition would be 51% rather than 0.1%).

Table 3.
Ordered probit estimates – check information before buying

Attribute of product	Coefficient	p-Value
Producer	-0.026	0.703
Common name of product	0.022	0.656
Product ingredients	0.340	0.000
Quantity (by weight/volume)	0.008	0.865
Nutrition facts (e.g. salt)	0.255	0.000
Safe-food handling	0.095	0.097
Origin of milk	0.026	0.650
Website link	-0.033	0.719
Date of production	-0.482	0.416
Allergen (healthy)	-0.072	0.149
Brand	0.127	0.053
find desirable information on labelling	0.53	0.000

Note: Multiple regression analysis with Attitudes toward information and a moderator variable predicting consumer behaviour (checking ingredients of a product) (see equations (4) in the "Ordered probit model" section), *p<0.1; **p<0.05; *** p<0.01. Source: author's own research

Table 4.
Probability of checking ingredients before buying a product based on the ordered probit probabilities (frequency of behaviour is always, sometimes, occasionally, never)

Probability of checking ingredients before buying product	Rationality involvement consumer	Indifferent	Non-rationality involvement consumer
Always	51 %	4.02 %	0.1 %
Sometimes	38 %	25.9 %	3.6 %
Occasionally	9.2 %	38.8 %	18.5 %
Never	1.1 %	31.2 %	77 %

Note: Characteristics of a consumer who is a "rationality-involvement consumer": Firstly, they have a higher degree value towards attitudes to attributes with a connection to a labelling cue, namely: nutritional, ingredient, brand of product; secondly, they have a tendency or attitude, or lifestyle related to food is to search desirable information on labelling. In contrast, a "non-rationality-involvement consumer" has the opposite characteristics, and lastly the "indifferent consumer" has an important feeling about attributes, with a connection to a labelling cue, as mentioned above. Source: author's own research

The positive coefficient of attitudes towards information related to nutrient value and issues associated with the biological value of food shows that consumers are more likely to behave carefully in purchasing a new product.

Finally, the higher the percentage of consumers who tend to solve problematic issues related to food through the attributes, the higher the probability of studying the different compositions of foods, such as organics or conventional. Changing awareness associated with that information is one of the ways that consumers modify their behaviour after using clear information about component.

5 Discussion

The aim of this study was, in general, to investigate how consumer lifestyles related to food would affect consumer behaviour if they checked the composition on the label before buying. To test the hypothesis of a link between attitudes towards information about a product or food-related lifestyle and consumer behaviour, we interviewed 909 students in the Czech Republic.

In this study, we present a combined analysis of categorical data, using multiple correspondence analysis and ordered probit regression.

It is widely accepted that by the application of multi-correspondence analysis it could be possible to visualize the associations between attitude and consumer behaviour. Moreover, the graphical interpretation of the data, which shows approximations of log-multiplicative parameters, could be a useful tool in consumer behavioural research. Finally, interpreting the results from a consumer attitude and behavioural perspective, we could find associations between the investigated variables and, consequently, design their strategy in the food industry in a more efficacious way. For example, according to the results of the MCA, on the left side (represented by the first dimension) we can observe those

people who feel it is very important to have information related to composition information, how to maintain the biological value of food, nutritional value of food, as well as brand; they pay attention to the ingredients before buying food. On the opposite side, we can also observe those people who do not feel that this information is important, and the tendency is to never check ingredients. This analysis also shows clear information and the consumer vision of food security.

The results on development in the analysis in this paper for the different consumer behaviours emphasizes that the increase in responsible consumer behaviour has been driven by the three positive consumer attitudes toward nutrition (Glanz, Basil et al., 1998), ingredients of the products, and using the desirable information of foods on the label; the negative attitudes of these variables have a relatively low level of opportunities for recognition of the different nutritional and biological values of organic food (Francis, 1979; Rozin et al., 1999). The topic of consumers' choice behaviour in connection with a new food quality construct built mainly on credence attributes needs a renewed attention (Del Giudice et al., 2018). Secondly, the information about nutritional components relates to most consumer information about animal welfare and safety, because they found a different quality of livestock. The literature on consumer attitudes and perception are referred to as perceptions of good health; nutrients are more important in the purchase of organic food (Tregear et al., 1994, Zanoli and Naspetti, 2002). Moreover, the information about nutritional components is related to animal welfare and should be used by respondents as a key indicator of food quality, food safety and the humane treatment of livestock (Mintel, 2003; Soil Association, 2000; Torjusen et al., 2001; Harper and Makatouni, 2002).

Organic foods are generally perceived as more nutritious (Mitsostergios and Skiadas, 1994), as well as healthier, safer and environmentally friendly (Teng and Wang, 2013). Von Ahesleben (1997) claims that information revealed on food labels is critical for consumers to identify the quality of organic products. For a consumer, the information may be even more important in organic purchasing decisions than in conventional ones. Moreover, empirical evidence indicates that purchase-related data, but not product-specific data about consumers, should be basically suitable for detecting long-term trends in consumer markets (Bredhal, 2001). In the analysis, we identify those attributes that influence behaviour in the context of organic food consumption.

Although the demand for organic food is still only in its infancy in the Czech Republic, this is an opportunity for the development of both the production and consumption of organic products. Many surveys have identified a positive trend in demand, confirming the growth (Fitzpatric, 2002). In Europe, it has been estimated that sales of organic food will grow steadily (FIBL, 2017).

6 Conclusion

In our empirical strategy, we also decided on the question related to checking what composition is stated on the label. This paper explores the link between attitudes and behaviour, and suggests strategies to better understand the effect of information on consumer behaviour.

Lifestyle is concerned with the more general and more observable characteristics of consumers. This suggest that food consumers are segmented based on their behavioural differences, which are driven by different sets of attitudes in their purchasing toward information related to food, including consumers who display rational behaviour. Uncertainty and perceived difficulty in evaluating quality should increase consumers' usage of extrinsic quality cues. This is useful knowledge for companies, especially cheese manufactures wanting to build a market for sustainable products of a significantly higher quality in emerging economies, as well as a labelling system. The EU cheese market, in particular, is the largest in the world.

This is a clear indication that consumers need clear product information for quality perception. Once again, if young people think about global issues related to food and the environment, it should be possible to achieve sustainable agriculture (everywhere).

We also acknowledge many limitations in our study. First, this research is limited to the consumer market that has developed in the Czech Republic, where consumers have specific socio-demographic and economic characteristics. However, younger consumers have been found to hold more positive attitudes toward organically grown food (Magnusson et al., 2001).

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References

Ajzen, I. (2001). Nature and operation of attitudes. *Annual Review of Psychology*, **52**: 27-58.

Albarracin, D., Shavitt, S. (2018). Attitudes and Attitude Change. *Annual Review of Psychology*, **69** (1): 299–327.

Aquilanti, L., Santarelli, S., Babini, V., Osimani, A., and Clementi, F. (2013). Quality evaluation and discrimination of semi-hard and hard cheeses from the Marche region (Central Italy) using chemometric tools. *International Dairy Journal*, **29**: 42-52.

Bezirtzoglou, Ch., Dekas, K., and Charvalos, E. (2011). Climate changes, environment and infection: facts, scenarios and growing awareness from the public health community within Europe". Anaerobe, **17** (6): 337-340.

Borrello, M., Caracciolo, F., Lombardi, A., Pascucci, S., and Cembalo, L. (2017). Consumers' Perspective on Circular Economy Strategy for Reducing Food Waste. *Sustainability*, **9** (1): 141.

Bredahl, L. (2001). Determinants of Consumer Attitudes and Purchase Intentions with Regard to Genetically Modified Food – Results of a Cross-National Survey. *Journal of Consumer Policy*, **1**(4): 23-61.

Bremner, H. A. (2000). Towards practical definition of quality for food science. *Critical Reviews in Food Science and Nutrition*, **40**: 83-90.

Consumer Interest Alliance (1997). Report on focus group study of cheese standards and consumer interest. available at: http://ciai.ca/ website_reports/Cheese_full07.pdf (accessed 10 April 2017).

de Carvalho, B. L., de Fátima Salgueiro, M., and Rita, P. (2015). Consumer Sustainability Consciousness: A five-dimensional construct. *Ecological indicators*, **58**: 402-410.

Del Giudice, T., Cavallo, C., and Vecchio, R. (2018). Credence Attributes, Consumers Trust and Sensory Expectations in Modern Food Market: Is there a Need to Redefine their Role? *International Journal on Food System Dynamics*, **9** (4): 307-313.

Eagly, A., H., Chaiken, S. (1993). The psychology of attitues. For Worth, TX: Harcourt Brace Jovanovich.

European Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers, amending Regulations (EC) No 1924/2006 and (EC) No 1925/2006 of the European Parliament and of the Council, and repealing Commission Directive 87/250/EEC, Council Directive 90/496/EEC, Commission Directive 1999/10/EC, Directive 2000/13/EC of the European Parliament and of the Council, Commission Directives 2002/67/EC and 2008/5/EC and Commission Regulation (EC) No 608/2004, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011R1169 (accessed 26 November 2019).

FIBL (Research Institute of Organic Agriculture) (2017). The World of Organic Agriculture 2017", available at.: http://www.organic-world.net/yearbook/yearbook-2017/contents.html (accessed 10 April 2017).

Francis, F. J. (1979). Consumer confusion. *Journal of Food Protection*, **42**: 679–682.

Glanz, K., Basil, M., Maibach, E., Goldberg, J., and Snyder, D. (1998). Why Americans eat what they do: taste, nutrition, cost, convenience, and weight control concerns as influences on food consumption. *Journal of American Dietary Association*, **98** (10): 1118-26.

Harper, G. C., Makatouni A. (2002) Consumer perception of organic food production and farm animal welfare. *British Food Journal*, **104** (3-5): 287-299.

Hatfield, J. L.; Boote, K. J.; Kimball, B. A.; Ziska, L. H.; Izaurralde, R. C.; Ort, D.; Thomson, A. M., and Wolfe, D. (2011). Climate Impacts on Agriculture: Implications for Crop Production. *Agronomy Journal*, **103**: 351–370.

Hrubá, R. (2014). Food and nutrient security: Model of decision making under information uncertainty. In: *IMPROFORUM International Scientific Conference*, 2014, November **6 - 7**, 2014, České Budějovice: 173-178.

Hrubá, R. (2016). The Perception of Information by Economic Agents on the Dairy Market. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis,* **64** (5): 1709-1715.

Hrubá, R. (2016). Behavior of agents at food market, especially asymmetric information on the Dairy Market. *Journal of Applied Economics & Business Research*, **6**(1).

Janssen, M., Hamm, U. (2012). The mandatory EU logo for organic food: consumer perceptions. *British Food Journal*, **114** (3): 335-352.

Lee, H.J., Yun, Z.S. (2015). Consumers' perceptions of organic food attributes and cognitive and affective attitudes as determinants of their purchase intentions toward organic food. *Food Quality and Preference*, **39** (9): 259–267.

Luhmann, H., Schaper, C., and Theuvsen, L. (2016). Future-oriented dairy farmers' willingness to participate in a sustainability standard: Evidence from an empirical study in Germany. *International Journal on Food System Dynamic,* **7** (3): 243-257.

MacArthur, E. (2013). Towards the circular economy. Ellen MacArthur Foundation.

Magnusson, M.K., Arvola, A., Hursti, U.K.K., Aberg. L., and Sjoden, P.O. (2001). Attitudes towards organic foods among Swedish consumers. *British Food Journal* , **104** (3): 209-227.

Martelli, G. (2009). Consumers´perception of farm animal welfare: an Italian and European perspective. Italian *Journal of Animal Science*, **8** (1): 31-41.

Ministry of Agriculture in the Czech Republic. (2016). Yearbook 2015, Organic Farming in the Czech Republic. Ministerstvo zemědělství: Prague 2016.

O´Riordan, P. J., Delahunty, C. M. (2003). Characterisation of commercial Cheddar cheese flavour. 1: traditional and electronic nose approach to quality assessment and market classification. *International Dairy Journal*, **13** (5): 355-370.

Panagiotakos, D. B., Pitsavos, C. (2004). Interpretation of epidemiological data using multiple correspondence analysis and log-linear models. *Journal of Data Science*, **2** (1): 75-86.

Rozin, P., Fischler, C., Imada, S., Sarubin, A., and Wrzesniewski, A. (1999.) Attitude to food and the role of food in life in the USA, Japan, Flemish Belgium and France: possible implications for the diet-health debate. *Appetite*, **33** (2): 163–180.

Teng, C. C., Wang, Y. M. (2015). Decisional factors driving organic food consumption: generation of consumer purchase intentions. *British Food Journal*, **117** (3): 1066-1081.

TheDairySite (2011). European Cheese Market. TheDairySite – Dairy Cattle Health, Welfare and Diseases News, 2000 - 2014. Available at: http://www.thedairysite.com/articles/2875/european-cheese-market Accessed on 10th July 2018).

Thøgersen, J. (2010). Country differences in sustainable consumption: The case of organic food. *Journal of Macromarketing*, **30** (2): 171-185.

Thøgersen, J.; Pedersen, S.; Paternoga, M.; et al. (2017). Consumer buying motives and attitudes towards organic food in two emerging markets: China and Brazil. *British Food Journal*, **119** (3): 389-414.

Torjusen, H., Lieblein, G., Wandel, M., and Francis, C. A. (2001). Food System Orientation and Quality Perception among Consumers and Producers of Organic Food in Hedmark County, Norway. *Food Quality and Preference*, **12** (3): 207-216.

Tregear, A., Dent. J. B, and McGregor, M. (1994). The demand for organically - grown produce. *British Food Journal*, **96** (4): 21-25.

Velčovská, S., Sadílek, T. (2014). The System of the Geographical Indication – Important Component of the Politics of the Consumers' Protection in European Union. *Amfiteatru Economic*, **16** (35): 228-242.

Verbeke, W., Ward, R. W. (2003). Importance of EU label requirements: an application of ordered probit models to Belgium beef labels. In *200*3 American Agricultural Economics Association Annual Meeting (AAEA 2003).

Verbeke, W., Ward, R. W. (2006). Consumer interest in information cues denoting quality, traceability and origin: An application of ordered probit models to beef labels. *Food quality and preference*, **17**(6): 453-467.

Vermeir, I., Verbeke, W. (2008). Sustainable food consumption among young adults in Belgium: Theory of planned behaviour and the role of confidence and values. *Ecological economics*, **64** (3): 542-553.

Wells, W. D. (1975). Psychographics: A critical review. *Journal of Marketing*, **12** (2): 196-213.

Zepeda, L., Li, J. (2007). Characteristics of organic food shoppers. *Journal of Agricultural and Applied Economics*, **39**(1): 17-28.