

# Segmentation of Czech consumers as for their relationship to organic foods

JAN KOUDELKA

*University of Economics and Management, Prague, Czech Republic*

**Abstract:** Products of organic agriculture have gained a significant attention among consumers. It creates a visible impact also on the products of conventional agriculture. This leads to the necessity to apply target marketing at the food resp. organic food markets. The objective of this article is to explore the possible approaches to the process of market segmentation at these consumer markets. The data of the Market & Media & Lifestyle were used. Variables of food consumer behaviour and lifestyle were especially selected. Three lines of market segmentation were inferred from the basic conceptual approaches: a priori segmentation, post hoc segmentation and forward segmentation. The data were analysed in several steps using multidimensional analyses. The results indicate a different marketing potential of the investigated approaches. A priori segmentation seems to be more proper for the purpose of the sales management. A broadly based post hoc segmentation should be useful when the concept of marketing communication is to be created. The elaborated forward segmentation approach will take place when the marketing strategy is evaluated.

**Key words:** approaches to market segmentation, consumer behaviour, food market, target marketing

Organic foods are viewed as the products of organic agriculture that means the products of specific agricultural production. This specific production is closely linked to the consumer perception and it is considered by the consumers in their food behaviour and their buying decision process. It is necessary to evaluate not only the overall market potential and its dynamics but what is also very important is to explore whether different market segments exist and if yes, then to detect them.

This information is certainly of basic importance for the organic food producers. However, because the organic food phenomenon creates strong-consumer trends which influence the consumer view of food generally (Kesic and Piri-Rajh 2003; Akridge and Reimer 2007) it concerns other food producers too. And, therefore, they surely form one serious input of marketing situation analysis. This leads to the necessity to project general marketing principles of the market segmentation process into its modification of the applied target marketing-at the food resp. organic food markets.

We use the commonly accepted logical line of target marketing in which the market segmentation stands for the first stage, market targeting for the second stage and market positioning for the third one (Kotler and Keller 2006). From this point of view, the absolute significance of market segmentation process at the first stage is evident. The level of its proper elaboration undermines the success of

all target marketing activities (Gillian 2011). And if we think about food marketing and organic food marketing, this basic principle is completely valid in this market area as well.

So, that is why our attention concentrates on the first stage of target marketing. We will follow the process viewing market segmentation. In other words, we will explore the possible ways how to recognize market segments. The differences among consumers in their relations to organic foods and foods, the differences in eating habits and eating behaviour generally will be evaluated so that the resulting groups of consumers will meet two basic conditions of market segmentation: (a) segment homogeneity (the consumers in the segment are similar as much as possible in their behaviour towards organic foods) and (b) segment heterogeneity (contrary, the segments are as different as possible in their behaviour towards organic foods).

The application of the market segmentation process requires four steps (1) to define the market space in which market segments should be discovered, (2) to find the important market segmentation variables, (3) to select and combine the variables to discover the segment membership and (4) to elaborate the profiles of the discovered market segments to enrich their portraits with both other relations to product and consumer characteristics.

In the first step, it is recommended to specify the market space where the market segments should be

discovered into dimensions: the product category, the type of needs, geographic dimensions and the type of users (Mercer 1992; McCarthy and Perreault 1994).

As for the second step, it seems to be useful to divide all possible segmentation variables into two broad groups. The group of dependent/explained segmentation variables (in other words, the variables expressing the consumer behaviour towards the given product) and the independent (explaining) descriptive variables (in other words, the characteristics of consumers, such as the demographics, geographic characteristics, psychographics and so on) (Wind 1978). The basic line of the grouping of segmentation variables is based on the possibility that independent variables can change the level of dependent variables. The task of the second step is to find which variables differentiate among consumers and which descriptive variable influence the dependent variables at a higher level. From our point of view, the role of market segmentation in target marketing is expressed very well in this way. Studying the dependent variants more carefully, two types of them emerge. The first type is formed by the dependent variables which can be used to explain why consumers use the given products/product categories (reasons, needs, benefits, attitudes and preferences, occasions (Haley 1985; Venkatesakumar et al. 2008; Press and Simms 2010). The second type enhances the dependent variables which measure how the product/product category is used: user status, intensity of using, brand knowledge and brand locality, the proneness to new product in the sense of the diffusion curve (Rogers and Shoemaker 1971), ways of the product usage (Koudelka 2005).

The set of descriptive variables that may explain the values of dependent variables also consists of two groups: traditional and untraditional (psychographic) (Frank et al. 1972). The traditional variables which have got their overall term/name due to the fact that they are almost visible, in many cases they are measurable and they are coming first to mind in decisions of marketing managers. Usually such types of variables the demographic and geographic characteristics of consumers, are taken into account and sometimes also the ethnography is added. Much less attention in the marketing literature is devoted to the physiognomic variables. Nevertheless, this criterion could be closely connected to the organic food behaviour. The so-called non-traditional variables (Yankelovich 1964) reflect the influence of the lifestyle and personality as strong predispositions of the consumer behaviour. Sometimes the social class enriches this area by its psychographic potential and it is mentioned in the range of the psychographic variables, too (Kotler 1988).

However, one more group of the segmentation variables exists and it has a great marketing impact. It could be called 'the variables of reaction to the other marketing tools'. These variables are useful in developing the segments' profiles so that they can offer the orientation to form the marketing approach to select the targeted segments. Sometimes these developing variables can become dependent variables. For example, in the case of the media marketing or retailer marketing and their exploitation in the shopper typology (Shopper typology 2012) or the bias to sales promotion (Miller 1997). In the case of organic foods, for example, it is possible to consider such shift in the connection between the organic foods and farmer markets.

Although the importance of segmentation variables in the differentiation among consumers is known, the market segments still have not been discovered. It is necessary to find which combination of variables is going to be chosen (Brunner and Siegrist 2011; Shahroudi et al. 2011). Several conceptual approaches can be considered to fulfil this task. It is possible that only one, usually the most important variable is selected to identify the market segment membership of the individual consumers, typically e.g. the rate of the product usage. Such approach, which is called a priori segmentation (Wind 1978), enables to achieve the state in which every consumer belongs to one of the segments. A special case of a priori segmentation occurs when we select only one variable to identify the segment membership, but despite it the number of segments and their frames remain unclear. Typically, this is the case of the benefit segmentation variable if the scale is used for every benefit.

When no a priori decision about one leading variable is made and the relations among the more important variables are evaluated to form the segments, such approach is called the post hoc segmentation (Wind 1978; Venkatesakumar et al. 2008).

In both a priori segmentation and post hoc segmentation, one substantial question appears: Should the dependent variables or the independent ones be used at first? In the line of the marketing concept and strategy, it is logical to employ the dependent variables to identify market segments because they express the basic reason of target marketing. Consumers behave differently to a product and the evaluation of these differences leads to a different marketing way how to differently satisfy various consumers. The approach in which dependent variables are used to find the segments is called the forward segmentation (Antonides and Raaij 1998). This concept brings the advantage of homogeneity due to the consumer

product relations in the segments. But unfortunately, the homogeneity as for descriptive variables is lesser and it causes troubles in forming, for example, the medial strategy as medial planning deals much with the demo- and geographic. This problem can lead to the opposite solution of the dilemma: the segments are formed on the base of descriptive variables (age, gender, family life circle, social stratification race and so on). This approach could be named as the backward segmentation (Antonides and Raaij 1998). Its advantage lies in its practical contribution e.g. in the eyes of the medial planning, geographical distribution. On the other side, it often suffers from the product behaviour heterogeneity. Finally, the combination of the forward and backward segmentation can be used: the market segments are identified with the help of both product related behaviour variables and descriptive variables (Kesic and Piri-Rajh 2003).

When the market segments are defined and every explored unit (consumer) of the segmented market is assigned to one of the segments (or in the case of fusion segmentation to even several segments), the last step of the market segmentation process can begin. A proper development of the segment profile is very urgent for following the stages of target marketing – that is, selecting the target segments and deciding on their market positioning. The knowledge of further segments' features such as the medial behaviour and shopping behaviour is substantial for marketing decisions.

Methodically, in the process of market segmentation, various methods can be used. Basically, it is possible to classify them according to their role in the process and to distinguish between the data gathering methods and of data analysis and interpretation.

As for the data gathering, both the secondary and primary research is commonly applied. The same special area refers to the syndicated data. As for the data analysis methods, the choice of the method depends, besides other conditions, on the character of the analysed data (Akridge et al. 2007). The range from the contingency analysis as a relatively simple entry method to the more sophisticated methods such as the factor analysis (Myers 1996) can be taken into account. When discovering market segments, the sequential or plural approach seems to be useful (Wedel and Kamakura 2001; Brunner and Siegrist 2011). The sequential approach uses the tree methods or in its simple form, it could be based on the cross tabs fragmentation. The methods of cluster analysis represent the possibilities of the plural approach. The contingency analysis, the discriminant analysis, the correspondence analysis, the multidimensional scaling and the tree analysis are analytical tools

which can be used in the last stage when the segment profiles are developing. Wedel and Kamakura offer a very useful comparison of these methods for various conditions (Wedel and Kamakura 2001).

When the market segmentation process fulfils its objective, the serious marketing decision takes place: to select target segments and to form the ways of market positioning (Macdonald and Dunbar 1995). However, also during the market segmentation several marketing decisions are to be made, for example, defining the dimensions of the segmented market or the decision about the number of clusters/segments in the cluster analysis.

As it is the major topic of this article, it deals especially with the market segmentation consumers' relations to organic foods. Furthermore, all of the above mentioned conceptual approaches to the segmentation and methodical possibilities refer to this topic.

## METHODS AND RESULTS

When segmenting consumers according to the relation to organic foods, it was necessary to decide which product category would be considered in defining segmented market. That is if only organic foods or foods at all. The broader perspective was chosen with the respect to interdependency on both views. The whole Czech Republic was selected as the geography dimension with regard to the possible geographic differences in the perception of organic foods among consumers. As for the type of users, it was decided that the research would not be restricted only to the organic food users because the non-users mean a possible further marketing potential for organic products and on the other hand, the influence of other relations to healthy foods which omit the organic characteristic could enhance the interesting marketing inspiration in food industry. Nevertheless, some restriction in defining the segmented market refers to the age of consumers ranging from 12 to 80 years as the sample of the project MML-TGI (see below) applies to this limitation due to practical reasons.

For the investigation of the marketing segments the data of the project Market Media Lifestyle were used. The Market Media Lifestyle – TGI (MML-TGI) is a continual research project in which the data are collected from January to December every year. It is a Czech application of the international project TGI (Target Group Index) that is realized in 67 countries around the world. In the Czech and Slovak Republic, it is the research agency Median

that is realizing it on the base of the licence from the Kantar group (Median 2012). The company Median was so kind and provided the databases of the years 2000, 2004–2009 for the purpose of this article and the author is very grateful for such an opportunity.

The project investigates the consumer behaviour (more than 200 categories of consumer goods and about 3000 brands), the medial behaviour of consumers (more than 400 media – TV, radio, newspapers and magazines) and the lifestyle features of consumers (about 700 lifestyle statements). As for the market segmentation objectives, it is important that also many demographic, geographic, socio-economic descriptive variables at both personal and household level are input into the research design. The project uses a specially customized questionnaire for the Czech Republic composed from several broad sections. For the data collection, the representative random sampling is used and annually it gets data from 15 thousand respondents at least.

For the segmentation purpose, especially the variables from the consumer behaviour, lifestyle and personal/household sections were selected. The chosen consumer behaviour variables referred to the user data of various food consumption, attention to the unhealthy food ingredients (such as cholesterol, calories, fats), purchase of several categories of organic foods. The relations of consumers to healthy eating, eating habits, preference of some foods, meals were selected from the lifestyle sections. As for the relation between ecology, organic agriculture and organic foods, the ecologic lifestyle section was taken into account, too. Also other questions relevant to health were evaluated in the market segmentation process. The data were analyzed in several steps with the use of the time row analyses, the contingency analyses, the factor analyses, the cluster analyse, the MCART analyses and the multidimensional scaling.

At first, the central statement of relation to organic foods was analyzed in the time series analysis. Then the segmentation importance of variables was explored by the contingency analysis with the use of sign schemes,  $\chi^2/df$  ratio, Cramer V, statistical significance and factor analyses with the Varimax rotation method (due to its interpretation advantage). In the process of the segment identification, the cluster analysis was used. With regard to the great sample size, the K-means clustering method was applied. In the step of the segment profile development, the contingency analysis was used with the help of the MCART analysis, in the case of the descriptive profiling and multidimensional scaling and the correspondence analysis for interpretation of segment profiles were applied too.

## Solution 1: A priori segmentation

At first, the differences in descriptive variables among consumers were explored by the central statement of purchase preferences to organic foods. In the logic of the approaches to market segmentation, it could be classified as a priori segmentation. In that sense, each category of agreement with the statement “I prefer ‘healthy’/organic products when purchasing” represents a market segment. This led to five a priori discovered market segments:

Eager fans of organic foods (grade of agreement – definitely yes). In 2009, this segment comprised 3.6% of the population from 12 to 80 years. In 2008, it was 4.1%, in 2007 5.5%, in 2006 5.6% – the visible decline of the segment size is observed.

Mild supporters (grade of agreement – rather yes). In 2009 Mild supporters constituted 12.7% of the population. In 2008, it was 14.5%, in 2007 16.0%, in 2006 16.2%. The size of this segment declined in time, too.

Undeciders (grade of agreement – nor yes, nor no). In 2009 Undeciders formed 29.7% of the population. In 2008, it was 31.5%, in 2007 30.9%, in 2006 31.5%. A slight declining tendency can be observable also in the size of this third and “neutral” segment.

Mild defenders (grade of agreement – rather not). In the population, this segment with relatively more cautious consumers in their relation to organic products gathered 26.2% in 2009. In 2008, it was 26.4%, in 2007 27.6%, in 2006 27.7%. The size of segment is relatively stable in time with a slight indication of a small but steady decline.

Organic food opposers (grade of agreement – definitely not). Consumers in this segment show a distant attitude to organic foods. They represented 28.4% of the population in 2009. In 2008, it was 23.5%, in 2007 19.9%, in 2006 19,0%. The segment of Organic food opposers is the only segment whose size is remarkably rising, the rise is steady and relatively strong.

The look at these findings indicates several comments. The majority of the population did not prefer organic foods/products. The biggest segment are the consumers with a neutral “nor nor” attitude what could suggest a certain potential for the future in the overall observed tendency. However, quite strong negative attitudes are connected with the second biggest segment. Generally, the decline of preferences to organic foods in the period 2006–2009 is apparent.

To evaluate the importance of these independent variables, the sign schemes, affinity indexes, the ratio  $\chi^2/df$  and the Cramer V were used. In the case of the Cramer V, it was necessary to take the influence of the large size of the sample (around 15 thousands)

Table 1. Contingency relations of the selected descriptive variables – 1<sup>st</sup> solution ( $N = 15\ 052$ )

Variable	$\chi^2/df$	Cramer's V
Gender	85	0.15
Age	5.6	0.05
Education	11.5	0.06
Classification SEL	16.1	0.07
Family life circle	5.6	0.06
Professional status	5.2	0.05
Profession	5.7	0.06
Net monthly personal income	4.4	0.07
Respondent has been studying currently	5.9	0.04
ABCDE classification	6.8	0.06
Type of flat	9.5	0.06
Region	11.7	0.1
Size of residence	13.3	0.06
Net monthly household income	7.2	0.08
Household structure	5.5	0.06
Marital status	7.9	0.04

Source: Data from the MML-TGI ČR 2004; 1–4 quarter, connected (05. 01. 2009–06. 12. 2009)

into account. That is why the values of this coefficient are relatively very low, so no absolute values but the distances among them were interpreted most of all.

Besides descriptive variables, also the media neutral quintiles were added to the development of segment profiles as an illustration of the possible role of the variables of reactions to marketing tools.

In this way, the following demographic/geographic profiles of segments were developed:

**Eager fans of organic foods:** in comparison with the whole sample (population), women consumers with the high school or university education appear more frequently in the segment. The first (highest) level of the SEL stratification range<sup>1</sup> is more common than in the population. Also the flat ownership, living in the Region of Southern Bohemia or in the Zlin region, the monthly personal income from 40 to 50 000 CZK, the household monthly income 100 000 CZK and higher are more frequent in this segment. As for the media advertising behaviour, they pay more attention to the outdoor and cinema advertising in comparison with the majority of the population.

**Mild supporters:** again more often women, consumers in their middle age – especially from 30 to 40, people with the university education, first SEL degree, couples under 35 with children. More frequently, also employees or housewives, Prague or the Zlin region inhabitants. As for the media types, people in this segment more often pay attention to advertising in magazines and radio.

**Undeciders:** once again women and consumers with the university education, more often consumers from the class A of the ABCDE (socio economic household classification of the ESOMAR adapted to Czech conditions), house owners, once again consumers from the Zlin region, nuclear families with children.

**Mild defenders:** more often men, consumers of the SEL grade 2 and also 1, people with the net personal income from 12.5 to 15 000 CZK, with own house. Consumers of this segment live more often in places with the population under 1 thousand inhabitants and in the households with two people.

**Organic food opposers:** more often men, seniors, people with the grammar school education, retirees or unemployed people, the third or the fourth level of the SEL and E1 of the ABCDE. They more often live in blocks of flats, in the Highland region, in cities with 20 thousand inhabitants and more. Their monthly personal income is in the range 12.5–15 000 CZK. They are also divorced more often. Consumers in this segment pay less attention to advertising in most media types (magazine, outdoor, cinema) but on the contrary more frequently on TV.

From the overall point of view, the relations of segment membership to all investigated personal and household demographic and geographic variables were statistically significant, but if we look at the intensity of contingency relations, the results show a somewhat various potential of the variables in question (Table 1). Meanwhile, it is not much surprising, that gender shows the strongest contingency with attitude to organic foods, relatively strong relations to region and size of residence were not expected. Age is not as important as education. It is also remarkable that the connection between the segment membership and the SEL classification is more intensive.

If we look at the differences created by the attention paid to advertising in various media types, a higher differential potential refers to advertising in magazines, outdoor advertising and TV shots. On the contrary, it is relatively low in the case of daily newspapers and internet.

<sup>1</sup>SEL Socio Economic Level – TGI GLOBAL SEL is the typology of the TGI used in all countries, where the project is realised. It is based on the personal use/property – the same 13 variables in each global TGI country. Available at [http://www.tgi.co.za/demo\\_sels.htm](http://www.tgi.co.za/demo_sels.htm) (accessed September 2012).

What is important is that when these relations were explored in the years 2004–2008, the findings of the contingency intensity of the investigated variables were similar which indicates the stability of the observed relations in time.

## **Solution 2: Broad post hoc segmentation**

The post hoc segmentation approach was applied as the next step. The range of variables related to the food consumption behaviour, to the healthy way of life and to the consumer ecologic behaviour (due to the ecological aspect of organic foods – organic agriculture) was used as a segmentation base (variables used to discover segments). The set of variables was formed by 47 variables of the personal and family food consumption, 9 variables of the meal ingredients consumption, 13 variables of the consumption of sweets, 7 variables of the organic food consumption, one variable of the healthy meal behaviour/ approach, 29 lifestyle variables related to meals and finally 13 lifestyle variables of the relation to ecology. All variables were recoded for the purpose of the following analysis so that the comparable scale orientation was attained. Due to the fact that the a priori segmentation showed relatively stable relations in time, the data of 2009 were analysed.

Then the factor analysis was used to indicate the correlations among the recoded variables and to find the common variable directions. The data were standardized in this process and for the factor extraction, the principal component analysis was applied. Only the factors with the eigenvalue higher than 1 were elaborated in the further process which resulted in extraction of 25 factors. Due to the non-responses of some respondents, the factor scores were counted in the case of 10 880 respondents.

These factors served as input variables in the following cluster analysis, so the segmentation base was formed by 25 factors/variables. With regard to the still very big sample size, the K-means cluster method was used. Gradually several outputs for various numbers of clusters were tested with the beginning at number 4 clusters. The solution with six clusters seemed to be relatively the most useful. Even though the size of the clusters was unbalanced, especially because of segment 1 which was almost six times smaller than the biggest one. Nevertheless, the size of the remaining clusters was not so different from one another.

The last step of profiling the segments was realised by the means of the contingency analysis by the cross tabulating cluster membership with both independent and dependent variables. Methodically, the sign

schemes were employed to highlight the category differences among the segments at level 3+.

Also the value orientation of segments was investigated. For this purpose, a special factor analysis of 27 terminal variables of the MML-TGI value system (each scored on 9 point scale of personal importance by respondents) was used. Four factors with the eigenvalue higher than 1 were extracted and subsequently rotated by the Varimax method. They were interpreted as: right life, materialism, intellect and privacy. Due to the need of the cross tabulation with the discovered segments, a subsequent special cluster analysis took place. It led to five clusters. The first cluster was characterised by the intellectual factor (spirit life, culture), the second cluster by materialism (e.g. possession of a car, nice holiday, personal attractiveness), the third cluster by right life (peace, have children, be healthy, freedom), the fourth cluster by material values and privacy (time for self, privacy) and the fifth cluster by right life and privacy. When profiling the segments by the contingency analysis, it was investigated at what contingency intensity this value clusters appear in the given segment.

*1. segment:* The smallest segment representing 3.0% of the consumers. In this segment, stronger users than in the population were detected as for e.g. potatoes, white bread, margarines. In the contrary the, non-users of e.g. cornflakes, beef meat, cocoa, frozen foods, fishes, soy, boxes of chocolates were more common in this segment.

- Consumers in this segment more often never purchase any sort of organic or healthy products, they are more frequently resistant to organic foods and devote no attention to unhealthy ingredients in foods.
- In this segment, it is more common to like both the Czech and exotic cuisine very much. They do not belong to the proponents of the right regime, healthy menus. More often, they stand for the traditional attitudes towards meals and they are not fans of the ready-to-eat foods. They talk about food only with few people, with friends, family.
- Consumers in this segment are more often the members of the third value cluster of right life and the fourth materialism/privacy cluster.
- As for the traditional descriptive variables, the following categories are more frequent than in the total population: senior age from 70 to 80, personal income from 4000 to 40 000 CZK, retirees, unemployed.

*2. segment (21.5%):* They more often consume e.g. brown bread, butter, milk, fruits and vegetable, nuts. On the other side, there are relatively more often the

non-users of e.g. white bread veal meat, yoghurts, frozen foods, soya, box of chocolates.

- They more often think they are overweight and they are currently trying to reduce their weight although they declare that in their household they eat adequately and rather healthily. They also more often admit serious health troubles. They talk food with many people.
- They do not ever buy organic products, and that more often than the rest of population. As for the unhealthy food ingredients, they more often reduce the high content of sugar, calories, cholesterol, fats.
- They more often stress the principles of healthy nourishment. They more often do not look for new food products.
- They more often think that foods are too expensive and prefer Czech products.
- As for the value orientation, the occurrence of the third value cluster (right life values) and the fifth cluster (right life values and privacy) are more prominent in comparison with population. This segment is the only one of all segments in which the consumers, more frequently than the total population, consider the problems of agriculture as the most serious of all current society problems.
- More frequent descriptive categories: age groups 40 years and higher, couples above 55, living in the block of flats, B category of the ABCDE socio economic stratification.

*3. segment (20.1%):* More frequent behaviour refers to:

- Strong consumers of e.g. cakes and sweets, white bread, butter, milk, vegetables, pork meat, oils. On the other hand more frequently the non-users of e.g. cornflakes, brown bread, frozen foods, soya, chocolates.
- No preferences to organic products of any sort, although neutral attitudes to organic foods.
- Preference of traditional Czech meals, sweets, dislike of exotic meals, vegetables. On the contrary, also the belief of the adequate a rather healthy nourishment in their families.
- The first value cluster: intellectual values.
- Demographic and geographic categories: age 60 years and more, basic education, personal income from 6 to 12 500 CZK, couples or singles above 55 years, the SEL grade 4 (the lowest), the class E1 in ABCDE. Own house.

*4. segment (16.2%):* More frequent behaviour refers to:

- Talking about food with various people.
- Strong consumers of e.g. brown bread and brown baked goods, cornflakes, poultry, yoghurts, fruit and

vegetables, fishes, soya, cheese. On the contrary, more frequently the non-users of white bread.

- Purchasing all sorts of organic and healthy foods regularly or occasionally. Positive attitudes to organic foods.
- Likes: exotic meals, vegetable meals, vegetarian meals. Dislikes: ready-to-cook meals.
- They think that they eat very healthily; they are open to the food innovations. They seem to be opinion leaders as for home meals.
- Purchasing high quality products and willing to pay more for them.
- Value orientation: material intellect values, values of ecology. They stress the ecological problems.
- More often women (59%), young people from 20 to 40, high school or university education, personal income from 17 500 to 50 000 CZK a month, managerial position or in household too, the SEL 1 – the highest or 2, A or C1 in the ABCDE classification, full nests from I to III in the FLC (Family Life Circle). Own flat, the Southern Bohemia, Liberec, Olomouc, Zlin region, towns with 5 thousand to 100 thousand inhabitants.

*5. segment (15.5%):* More frequent behaviour:

- High consumption of e.g. ready-to-make foods, instant soups, soya, veal meat, custard. Non-users of e.g. poultry, smoked foods, yoghurts, milk, eggs, fresh fruits and vegetable.
- Although they do not purchase any organic products they have neutral or slightly positive attitudes to organic products.
- No attention paid to unhealthy food additives. They like exotic specialities very much. They think that they do not eat much and that they eat healthily. They are not so strict regarding the rules of proper nutrition. More often, they do not think the prices of foods are high.
- Value orientation: first value cluster (intellectual values).
- More often men (56.4%), young consumers from 12 to 30 years of age, SEL 4, in the ABCDE class D and E2 but A too. Own house, rented accommodation, residence up to 5 thousand inhabitants, singles or childless couples.

*6. segment (23.8%):* More frequent behaviour:

- They think that they have overweight that they eat too much at home and they do not eat much healthily. They seem to be the potential opinion leaders regarding home meals.
- Strong consumption of e.g. cakes and sweet baked foods, cornflakes, poultry, white bread, yoghurts, jams, butter, fresh fruits, fish, rice, pork meat, may-

- onnaise, candies. Non-users of brown baked goods, mutton, veal meat, soya.
- Not purchasing organic products but if the term organic is not used, meals with healthy additives and a healthy variant of products are purchased regularly or occasionally. Their attitude to organic foods is rather sceptical.
- Likes: the traditional Czech cuisine, sweets. Dislikes: exotic specialities, vegetables.
- They do not intent to eat less even though they would like to change the structure of their meals.
- Value orientation: combination of materialism, privacy and right life. Another segment that considers ecological problems as the most important in the world.
- 12–40 years of age, grammar school, grade 2 or 3 in the SEL, E1 in the ABCDE, living in tenement house, size of residence from 5 to 100 thousand inhabitants.

### Solution 3: Variables related to meals

The former approach introduced simultaneously many variables into the post hoc segmentation process. Even though the data were standardized and only the scale variables form the inputs (no binary variables), both the various number of scale grades in various variables and the wide range of variables could undermine the interpretation possibilities of results. The other explored solution used variables related mostly to meals. The condition of the same

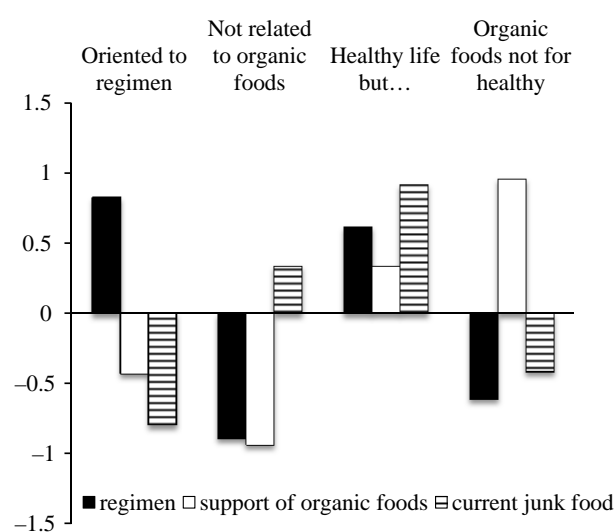


Figure 1. General cluster orientation – 4. solution (N = 15 052)

Source: Data from the MML-TGI ČR 2004; 1–4 quarter, connected (05. 01. 2009–06. 12. 2009)

scale structure was taken into account. The following analytical step consisted of the exploitation of variables set created by 29 lifestyle statements of the food sector. But after the factor and cluster analysis, the clusters did not appear to be homogenous enough during the organic food segmentation process.

### Solution 4: Forward segmentation – variables related to healthy nourishment and organic foods

Subsequently, a further narrowing of the input variable set was applied. Only 14 lifestyle statements closely related to organic foods and healthy nutrition were selected. Three factors with the eigenvalue above 1 were extracted by the process of factor analysis with the Varimax rotation. The first direction referred to the regimen, the second to the support of organic foods and the third one to the current junk food. Series of the following cluster analyses led to the relatively most proper solution when the number of four clusters was used as a parameter (Figure 1). Even though some interpretation problems emerged at the first glance, as in the third and the fourth segment, these contradictions are explainable as it will be demonstrated during the segment profiling.

The comparison with the 2<sup>nd</sup> solution indicates a much more balanced size of segments. Furthermore, 92% of the explored population represented by sample of age 12–80 were included into one of the discovered segments, while in the 2<sup>nd</sup> solution 31% had to be left out of the analyses due to missing values resulting from the respondents' omissions.

Contingency analysis was used to develop the segment profiles. The most outstanding variable categories with the statistical significance at 99% level (in sign schema 3+ or and 3–) in given segment in comparison with the whole sample were explored especially. The factor and cluster analysis were employed once again to put the value orientation into the segment profile. In this way, the following segment profiles were obtained.

#### Segment Oriented to regimen (25.5%)

The segment is named according to its magnificent prone to the regimen, healthy nourishment which is much more frequent among consumers in this segment. They consider their meal structure as being well balanced.

They are outstanding consumers of e.g. cornflakes, yoghurts, poultry, fishes, fruit and vegetable. On the other hand, they belong much more often to the non-



users of frozen meals, instant soups and surprisingly also of soya.

They buy organic foods and healthy foods excluding organic meat. They consider organic meals as tasty but they do not think it is proper to pay more for them.

They are more frequently motivated to healthy nutrition for children in the family. Nevertheless, they appreciate the taste of the meal. They avoid unhealthy content of foods.

Weight: Not overweight, not trying to reduce their weight.

They suppose they eat appropriately in their household. They like cooking. Potential opinion leaders regarding the household meals.

They are interested in cooking, nature and gardening, healthcare.

Attitudes to purchasing: Buying premium products and quality products but also bargain packages. Preference of Czech products. Reading information on packaging.

Ecology: Obvious ecologic behaviour. They appreciate the ethical behaviour of companies.

Values: value cluster 2 (both materialistic and intellectual value orientation) and cluster 5 (right life and privacy values).

Demography and geography: prevalently women (62%), university education, the TGI SEL 1, own house, the Liberec, Olomouc and Southern Moravia region. Smaller residences form 1 to 5 thousand inhabitants, more frequently than in the rest of the population singles or incomplete families. The MCART analysis indicated the region, gender and family life circle as the strongest differentiating dimension.

#### *Segment Not related to organic foods (23.5%)*

More frequent features refer to the following topics:

The behaviour features: Proper nutrition not so important. A less positive approach to organic products. They consider their dishes unhealthy and their structure of meal as unbalanced but they do not try to follow the rules of proper nutrition. They do not control the nutritional value of meals, do not look for the low-fat/sugar variants of foods and drinks.

Strong consumers of e.g. white bread, pork, sauces, chips. On the other side, non-users of e.g. cornflakes, yoghurts, raw vegetables, brown bread, soya, nuts, raisins.

Relation to organic products: Much more frequently not purchasing organic products of any sort. Detachment attitudes to organic products.

They do not try to avoid unhealthy elements in foods. They do not try new food products and they

do not use any special equipment when cooking. The prices of food seem to be too high to them.

Even though they think they are overweight and they eat too much at home, they are not trying to reduce their weight.

Relation to eating: great importance of taste, they like unhealthy meals, they are not fussy. They accept ready-prepared dishes, the traditional Czech cuisine is liked very much, contrary to exotic meals.

Ecology: Half-hearted relation to ecology. Not trying to restrict their behaviour with regard of ecology, not prone to recycling. No influence of the corporate social responsibility.

Values: right life, materialism, privacy.

Other selected lifestyle features: Little trust in the homeopathy medicine. Low sport activities or physical exercises.

Demography and geography: Prevalently men (66.2%), grammar school education (70.4%), net personal income from 20 000 to 25 000, the SEL grade 3, the ABCDE class E1-3, living in house of flat, metropolis residences 100 thousand inhabitants and more, single households are more frequent than in the rest of the population, too. Stronger differentiation of the descriptive variables by the MCART: gender, region, type of flat, at a lower level of the FLC (Family Life Circle) and the ABCDE classification.

#### *Segment Healthy life but ... (25.2%)*

More frequent features:

They are trying to eat healthily but on the other side, due to various circumstances, they have to save on food. This basic ambivalence is reflected in the features of this segment.

Strong users of e.g. cornflakes, yoghurts, butter, milk, fruit and vegetables, sauces, ketchup, instant soups, brown bread but also chocolates.

They buy regularly or occasionally organic foods and healthy/light variants of food products. However, their attitude to organic products is quite ambivalent: they think it makes sense to pay more for organic products. On the other hand, they agree organic products are not as tasty as the classical foods.

Proper nutrition is important. Motivated by the necessity of healthy nutrition for their children. They avoid the unhealthy content of foods.

Weight: They have the feeling of overweight. Wish to reduce their weight.

Relation to eating: Trying to eat healthily. However, they also try to eat quickly and they often eat snacks. They like cooking and they use special kitchen utensils and electric appliances. They are open to new food products. They talk about home-made meals with

many people and belong to the potential opinion leaders in this area. They like both the traditional Czech cuisine and exotic foods.

They are interested in cooking, nature and gardening, healthcare.

Attitude to purchasing: They think prices of food are too high. They prefer branded goods, premium products, quality. However, they are influenced by bargains and prefer Czech producers. They read the texts on packages and they like shopping. They are influenced by the experts and celebrities, too.

Ecology: They are ecologically oriented, they aim at recycling. However, on the other hand, they more frequently share the opinion that too much attention is devoted to the ecology and environment. They appreciate activities of the corporate social responsibility.

Values: resonance of intellectual and material values.

Other selected lifestyle features: They trust homeopathic medicine. Sport activities at least once a week.

Demography and geography: slightly prevalent women (56%), late middle age from 40 to 60, the SEL grade 1, own flat, the Karlovy Vary, Pardubice, Olomouc region, small or medium size residence type 1 to 20 thousand inhabitants.

The MCART shows as strong differentiating descriptive variables region (out of Prague), family life circle and flat type. At quite a lower level age and income, too.

#### *Segment Organic foods not for healthy (25.7%)*

More frequent behaviour:

Healthy nutrition is not so important for them but they are open to organic foods.

More frequently than in the total population, strong users of e.g. mushrooms, frozen meals, instant soups, puddings, soya. More often non-users of e.g. eggs, cream, cheese, margarine, jam, oils, pasta, potatoes, poultry, beef and pork meat, fresh fruit and vegetables, rice.

Relation to organic products: Occasionally purchasing organic meat and other organic products. Their overall attitude towards organic products is relatively positive. They think that it is worth paying more for organic products. On the other side, they are not at all alert to unhealthy elements in food.

A proper nutrition is less important to them; they consider their food neither unhealthy nor healthy, even though they do not consider their meal structure balanced.

They are not fussy about meals and taste is not the most important thing for them. On one side, they do not follow the rules of a proper diet, on the other side, they do not eat unhealthy meals. They are tolerant to

ready-to-cook meals. The traditional Czech cuisine is less popular among them.

Weight: They state they are not overweight and they do not try to reduce their weight. Their opinion is that they eat only a little at home.

Attitudes to purchasing: They do not think food is expensive. Quality is less important. A lower preference of premium products, a low preference of Czech goods. They do not seek bargains.

Ecology: Relatively indifferent attitudes to ecology and to the corporate social responsibility. Weak attitude to recycling.

Values: The first value cluster – intellectual values.

Other selected lifestyle features: Sport activities once a week, minimally. They trust homeopathic medicine.

Demography and geography: very low gender difference (men 51.7%), the SEL grade 4, married under 35 with children, own house, or rented accommodation, the Central Bohemia region, Hradec Kralove, Pardubice region, Highland region, residence with under 5 thousand inhabitants. The MCART analysis stressed as differentiating descriptive variables region, the SEL typology, the FLC, at lower levels income and the ABCD classification too.

## CONCLUSION

Evaluation of the results is connected with several discussion moments. In the overall view, the assumptions about the differences among consumers in their relation to organic foods and about the underlining of their demographic, socioeconomic and at surprisingly high level geographic characteristics were confirmed. Moreover, an obvious connection to the value orientation was proved. Significant connections between the meal structure and organic foods or conventional foods were discovered.

Three lines of market segmentation were inferred from the basic conceptual approaches. The first approach was based on the a priori segmentation principle when the attitude to prefer an organic product purchase was used as a segmentation variable. At first another variable – the rate of organic food purchasing seemed to be more appropriate. However, when it was analyzed according to the data, it resulted in discovering a small group of consumers with a relatively good homogeneity, while the vast majority of consumers was left out, which seemed very non-homogeneous from the marketing point of view.

The second approach followed the principles of the backward segmentation and it exploited the segmentation base which consisted of a broad spectrum of

segmentation variables of a rather explanatory descriptive character. Due to this, a wide variable space of the close relation to organic products somehow disappeared. Besides it, a high number of variables led to significant lowering of the applied sample size because of the rising occurrence of the user missing values (up to one third that means the level of one big segment or two smaller ones).

The fourth elaborated solution (the third solution was not further elaborated with regard to its drawbacks) put a relatively strong impact on the forward segmentation. It revealed a managerially useful number of four segments, relatively balanced in their size. On the other side, the segment homogeneity of descriptive variables was lower.

The discussion that compared the approaches used led to the engagement of the multidimensional scaling and the correspondence analysis. The multidimensional scaling that was based on the value variables (that to a certain extent form one direction of the consumer predisposition for organic products) and indicated the value similarity of the first and fourth solution and, on the contrary, a great dissimilarity of the second solution. This outcome is in accordance with the wide space of the segmentation base. But when the set of variables of the purchasing rate of organic and healthy products was applied in the multidimensional line, the segments of the second solution appeared close to the average (cross centre) of the population, in other words, with an obviously lower differentiation potential. On the other hand, the positions of the a priori segments in this mul-

tidimensional scaling map are very different. This fact proves that the higher is the share of dependent variables in the segmentation base, the stronger is its heterogeneity potential in the product relations among the segments.

When the multidimensional scaling was based on the general food behaviour statements, once again the differences among the segments were obviously smaller in the second solution (even, the segments 1 and 5 were situated almost in the same map position). A priori segments were distributed relatively regularly in the map quadrants. The fourth solution offered also a very good segment heterogeneity dispersion (Figure 2) but the segment points noticeably differ from the a priori segments points. In this sense, the fourth solution enhances the advantages of both the second solutions and the a priori segmentation.

The correspondence analysis of the second and fourth segment solutions indicated small distances among the membership in segments Not related to organic foods (the 4<sup>th</sup> solution), 6 (the 2<sup>nd</sup> sol.) and men. A similarly small distance appeared in the case of the segment Organic foods not for health (the 4<sup>th</sup> sol.) and the segment 2 (the 2<sup>nd</sup> sol.) and women. The segments 1, 3 and 5 (the 2<sup>nd</sup> sol.) appeared in a relatively close distance. In the results of the correspondence analysis, the positions of the segment Oriented to regimen (the 4<sup>th</sup> sol.) were relatively distant and isolated.

When the a priori segments of the first solution were input in the correspondence analysis too, the Eager fans of organic foods and the Mild support-

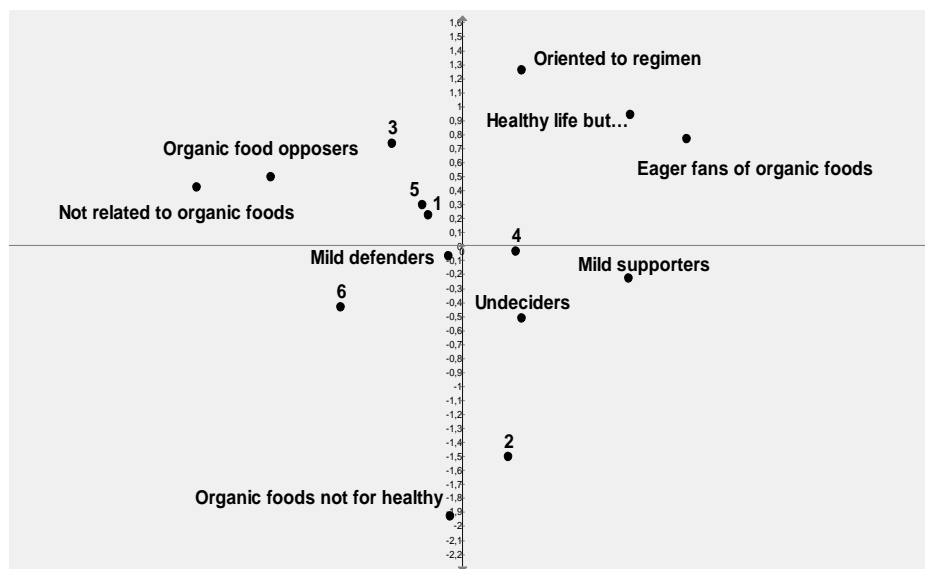


Figure 2. Similarities among the explored approaches in multidimensional scaling according to the meal lifestyle statements ( $N = 15\ 052$ )

Source: Data from the MML-TGI ČR 2004; 1–4 quarter, connected (05. 01. 2009–06. 12. 2009)

ers (the 1<sup>st</sup> sol.) appeared near the segment 4 (the 2<sup>nd</sup> sol.) and the segment Organic foods not for health (the 4<sup>th</sup> sol.). Besides it, the Eager fans of organic foods (the 1<sup>st</sup> sol.) were also not far from the segment Oriented to regimen (the 4<sup>th</sup> sol.). The segment Mild defenders and the segment Organic food opposers (the 1<sup>st</sup> sol.) were relatively nearer the segments 1, 2 and 3 (the 2<sup>nd</sup> sol.).

These irregularities indicate a different marketing potential of the given investigated solutions. As for the application, the relative simplicity of application is the advantage of the first solution. It is close to the standard behavioural segmentations with one central behaviour variable. This solution seems to be proper for the orientation of the sales management. The second solution with its broadly based segmentation base due to the enhancement of many variables of different life styles should be useful when the concept of marketing communication is to be created.

The last elaborated solution (the 4<sup>th</sup>) will take place especially when the main line of marketing strategy is evaluated (the possibilities of target marketing) due to its concentrated approach that simultaneously enhances the more serious variables in the segmentation base which reflects the core relations to organic/conventional foods.

Also some other notes should be taken into account.

Firstly, when discussing the results, it is necessary to stress that the results refer to the relation to organic products both of the users (or even only of the purchasers of organic products) and the non-users.

In this sense, it is possible to make a comparison with the research which investigated only the consumers who purchase organic products. The surveys of Kuntohorská that explored the consumers who buy organic foods discovered that organic product purchasing is a kind of behaviour which forms one very large and relatively homogenous market segment (Conscious, 50%) and several other small segments (Friendly Hedonics, Socially Responsible, Not engaged) (Kuntohorská 2012). These discovered segments show some similarities to the solutions discussed above. However, one great difference remains. Each member of these segments purchases organic products and the strata of non-purchasers (but potential purchasers) is omitted. Besides that, the organic product purchasing and consuming are not the same variables.

Because the second solution was based on the relatively broad approach which used the variables of the relation to food in general, to environment and others (119 variables at all), the comparison with the outputs of the research project exploring the complex views on the lifestyle of consumers, such

as the project "Lifestyle" of the agency TNS-AISA, could be discussed. It is possible to detect some resonances with this lifestyles typology. As for the years 2012/2010/2007, it refers to the observable relations between the organic product positive and eco-positive segments and the life style. It corresponds to the TNS-AISA founding, although the real approach of this lifestyle type to organic product is presented only implicitly. To the same extent, it could be used also in the case of the type Friendly (TNS-AISA 2007, 2010, 2012). If we apply the comparison with the result of the former Lifestyle Waves, this reflection could be seen also in the case of the types The Fighters, The Powerful, Carefree, the Unrestrained, the Staying in Control, the Good Fellows (TNS-AISA 2005). There exist some ambivalences with regard to meals in these lifestyle types but a similar ambivalence refers to the segments of the above stated solutions.

The discovered ambivalences in the segments' profiles reveal other useful findings. The variable orientation can significantly differ from the unified interrelated organic food consumer picture. In fact, the bias to organic products is not always connected with the desire for healthy life or ecological life. The same is true for the opposite point of view regarding the conventional food products.

This discussion view may draw attention to a new potential consumer trend of the apprehension to organic products and the expert voices arising in the media can also be noticed in this sense (Petr 2012). That means other almost inverse directions of exploiting the investigated segment solutions.

What should be also taken into account is the character of the input data. Although they are collected at the highest professional level, they are still based on conscious verbal declarations of the respondents, so that the self-projection could occur to some extent. However, because especially the relative relations (not absolute values) are explored, this possibility should not influence the results more seriously.

Finally, a certain problematic moment refers to the fact that the discussed results are based on the data which are not very up-to-date – they are two years old in comparison with the up-to-date commercial offers of data (data of 2011). That is caused by the fact that the agency could not offer newer data for the given purposes. Nevertheless, two circumstances which make this drawback less important could be pointed out. Firstly, especially the relations among the variables and the methodical possibilities were explored. Secondly, the analyses based on the data of the former years 2004–2008 showed similar differences among consumers in their relations to organic products. The following research based on the data

of 2010 is being prepared and it will estimate the further stability of the segmentation process.

## REFERENCES

- Akridge J., Foltz J., Reimer A. (2007): Market segmentation: making it work in your world. *Feed and Grain*, October/November: 40–48.
- Akridge J., Reimer A. (2007): Segmentation to the farm gate. *AgriMarketing*, July/August: 24.
- Antonides G., van Raaij W.F. (1998): *Consumer Behaviour – A European Perspective*. Wiley, Chichester; ISBN 0-471-97513-3.
- Brunner T.A., Siegrist M. (2011): A consumer-oriented segmentation study in the Swiss wine market. *British Food Journal*, 113: 353–373.
- Frank R.E., Massy W.F., Wind Y. (1972): *Market Segmentation*. Prentice Hall, Englewood Cliffs, New Jersey; ISBN 0-13-557579-6.
- Gillian M. (2011): The importance of marketing segmentation. *American Journal of Business Education*, 4: 15–18.
- Haley R.J. (1985): *Developing Effective Communication Strategy – A Benefit Segmentation Approach*. Wiley, New York; ISBN 0-471-81262-5.
- Kesic T., Piri-Rajh S. (2003): Market segmentation on the basis of food-related lifestyles of Croatian families. *British Food Journal*, 105: 162–174.
- Kotler P. (1988): *Marketing Management: Analysis, Planning, Implementation and Control*. Prentice Hall, New Jersey; ISBN 0-13-556150-7.
- Kotler P., Keller K.L. (2006): *Marketing Management*. Prentice Hall, Upper Saddle River; ISBN 978-0131457577.
- Koudelka J. (2005): *Segmentujeme spotřební trhy. (Segmenting Consumer Markets.)* Professional Publishing, Prague; ISBN 80-86419-76-2.
- Kutnohorská O. (2012): *Spotřební chování na trhu biopotravin v České republice. (Consumer behaviour at Czech organic food market.)* VŠCHT, Praha
- LifeStyle 2007, 2010, 2012, (2007, 2010, 2012). TNS-AISA, Praha. Available at [www.tns-aisa.cz](http://www.tns-aisa.cz) (accessed December 2012).
- Lifestyle typology 2005 (2005). TNS-AISA, Praha.
- Macdonald M., Dunbar I. (1995): *Market Segmentation*. Macmillan, Houndmills; ISBN 0750659815.
- McCarthy J., Perreault W.D. (1994): *Essentials of Marketing*. Irwin, Burr Ridge; ISBN 0-256-12746-8.
- MEDIAN (2012): *Market Media Lifestyle (MML-TGI)*. MEDIAN, Praha. Available at [www.median.cz](http://www.median.cz) (accessed September 2012).
- Mercer D. (1992): *Marketing*. Blackwell, Oxford; ISBN 0-631-17631-4.
- Miller R. (1997): Does everyone have a price. *Marketing*, 24 April: 30–33.
- Myers J.H. (1996): *Segmentation and Positioning for Strategic Marketing Decisions*. American Marketing Association, Chicago; ISBN 0877572593.
- Petr J. (2012): Král Bio je nahý. (Organic king is naked.) Available at [www.lidovsky.cz](http://www.lidovsky.cz) (accessed October 2012).
- Press J., Simms Ch. (2010): Segmenting cosmetic procedures markets using benefit segmentation: A study of the market for tooth whitening services in the United Kingdom. *Journal of Medical Marketing*, 10: 183–198.
- Rogers E.M., Shoemaker F. (1971): *Communication of Innovations*. Free Press, New York.
- Shahroudi K., Biabani S., Zebardast S., Yazdani A. (2011): Variable selection in clustering for market segmentation using genetic algorithms. *Interdisciplinary Journal of Contemporary Research in Business*, 3: 333–341.
- Shopper typology (2012). Incoma, Praha. Available at [www.incoma.cz](http://www.incoma.cz) (accessed January 2013).
- Venkatesakumar R., Ramakumar D., Thillalirajan P. (2008): Problem recognition styles and attributes evaluation – an approach to market segmentation. *ASBM Journal of Management*, 1: 128–138.
- Wedel M., Kamakura W.A. (2001): *Market Segmentation, Conceptual and Methodological Foundations*. Kluwer Academic Publisher, Norwell; ISBN 0-7923-8635-3.
- Wind Y. (1978): Issues and advances in segmentation research. *Journal of Marketing Research*, 15: 317–337.
- Yankelovich D. (1964): New criteria for market segmentation. *Harvard Business Review*, 42: 83–90.

Received: 4<sup>th</sup> February 2013

Accepted: 28<sup>th</sup> March 2013

---

### Contact address:

Jan Koudelka, University of Economics and Management (VŠEM), Nárožní 2600/9a, 158 00 Prague 5, Czech Republic  
e-mail: [jan.koudelka@vsem.cz](mailto:jan.koudelka@vsem.cz)

---