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Market Segmentation Based on Consumers' Cognitive-Motivational Structures

Introduction

The purpose of market segmentation is to distinguish, in a heterogeneous market, the number of homogeneous groups of customers (market segments) with similar needs and preferences. It is hoped that this internal homogeneity of segments can enable marketing managers to target those markets with the same product mix under the assumption that they will reveal uniform and stable responses to a particular set of marketing variables. Moreover, it should be possible to target such segments via available promotional media and distribution outlets (Hoek, Gendall, & Esslemont, 1998). Obviously, these market segments do not physically *exist* in the marketplace. In other words, they do not constitute real chunks of the market that *naturally* occur within a population of consumers. Rather, market segments are the result of analyses that are performed by marketing managers who decide to *view/understand/perceive* the market in a way that – in their judgment − will help them develop strategies that better meet consumer needs while maximising the firm's expected profit (Wedel & Kakamura, 2002). Depending on the purpose of a segmentation study, the very same population of consumers may reveal different segments to different marketers. Thus, because market segments are subjective outcomes of marketing managers' perceptions, rather than objective entities that naturally exist in the marketplace, they may be placed on a continuum that ranges between two extremes: one-to-one marketing and mass marketing. In disaggregate (one-to-one) marketing, firms first develop a limited number of strategies for various market segments and then personalise some components of the marketing mixes down to each member of these target segments (Wedel & Kakamura, 2002). The customisation of the marketing mix elements is possible thanks to new information technologies. In aggregate (mass) marketing, companies try to standardise as many marketing mix components as possible (e.g., the product) and customise only those components that vary across consumer populations (e.g., communications and distribution). Therefore, market segmentation, in a classical sense, is located somewhere between these two extremes.

The concept of market segmentation has been enthusiastically accepted and adopted by marketers since its first introduction by Smith (1956). In the eyes of marketing practitioners, segmentation has allowed them to fully (or at least better) understand the market and predict consumer behaviour accurately as well as increase their chances of detecting and exploiting new marketing opportunities. Two traditional approaches to segmentation are

a priori and *post hoc* methods[1]. These methods differ with respect to the selection of an appropriate base; *a priori* (pre-determined) methods require the analyst to select the base for segmentation prior to analysis (e.g., geographic or demographic measures of consumers) and *post hoc* (market-defined) methods form the base following the analysis (e.g., benefits sought, psychographics/lifestyles, product usage habits and patterns, image, loyalty, situation context, socio-styles, etc.). Although both approaches are popular among marketing researchers, *post hoc* market segmentation seems to be gaining the upper hand (Kakamura & Mazzon, 1991; Botschen, Thelen, & Pieters, 1999; ter Hofstede, Steenkamp, & Wedel, 1999; Carrillat, Riggle, Locander, Gebhardt, & Lee, 2009). For example, Hoek, Gendall, and Esslemont (1998) noted that, although *a priori* methods allow managers to obtain segments where members have similar ages or incomes, there is no guarantee that they will respond in the same way to various market stimuli. Groups with similar wants, needs, attitudes, or usage habits can be better identified via *post hoc* methods. Recently, Carrillat *et al.* (2009) proposed a method of cognitive segmentation, which offers a certain compromise between *a priori* and *post hoc* approaches. However, in the author's view, this proposal is closer to a *post hoc* rather than *a priori* method as it taps directly into consumers' cognitive contents and structures, which can be identified only *after* analysis.

There are a number of techniques that can provide insight into customers' thoughts (Carrilat *et al.*, 2009), including free-response perceptual mapping (Boivin, 1986), means-end chains (Gutman, 1982; Reynolds & Gutman, 1988), the ZMET (Zaltman Metaphor Elicitation Technique; Zaltman, 1997), or BCM (Brand Concept Maps; John, Loken, Kim, & Monga, 2006) and, therefore, are useful in *post hoc* approaches.

Means-end chain-based approaches to market segmentation

In this paper, we will only focus on means-end chains and analyse whether this technique can be adequate for market segmentation purposes. Means-end chains are grounded in means-end chain (MEC) theory (Newell & Simon, 1972; Gutman, 1982) that was developed to better understand how consumers link attributes (A) of products with particular consequences (C) and how these consequences satisfy personal values (V). Means-end chains are the associations held in the mind of consumer between the As, Cs, and Vs. Further, these chains are often seen as a representation of the basic drives that motivate consumer behaviours and are measured by a semi-qualitative technique called laddering (Reynolds & Gutman, 1988). Numerous studies have shown that techniques based on MEC theory are suitable for a wide range of marketing applications, such as benefit segmentation, market segmentation, promotion of products and development of advertising strategies, analysis of consumer goals and customer expectations, product knowledge and comprehension, international marketing, analysis of consumer perceptions of various products, etc. A comprehensive history of the MEC approach and its applications can be found in Olson and Reynolds (2001) and in Kąciak (2011). Recently, Grunert (2010) outlined a list of goals for

[1] A somewhat similar division of approaches to market segmentation has been proposed by Allenby *et al.* (2002). They call it *ex ante* and *ex post* market segmentation research.

MEC-based research that could establish means-end chains as a useful concept in consumer behaviour studies.

Laddering, SIM, and HVM

Laddering is performed either as soft laddering (conventional, one-on-one, usually tape-recorded, semi-structured interviews), where the natural flow of speech of the respondent is restricted as little as possible, or as hard laddering (usually questionnaire-based), which forces the respondent to produce ladders in a pre-determined sequence (Grunert & Grunert, 1995).

Individual ladders can be aggregated across all respondents and be presented in the form of a summary implication matrix or *SIM* (Reynolds & Gutman, 1988). The elements of a *SIM* represent the number of times each category (attribute, consequences, or value) leads (directly or indirectly) to another category. The most popular method for analysing laddering data, beyond question, is the hierarchical value map (*HVM*; Reynolds & Gutman, 1988). The *HVM* graphically displays the data that is contained in the *SIM* in the form of means-end chains and illustrates the associations in the consumers' minds between the product characteristics, resulting consequences, and personal values.

The role of personal values in market segmentation

The usefulness of MEC-based approaches to market segmentation is their emphasis on the importance of personal values (e.g., *RSV* [Rokeach Value Survey]; Rokeach, 1973; *LOV* [List of Values]; Kahle, 1983; or *SVD* [Schwartz's Value Domain]; Schwartz, 1992) in explaining consumer behaviour. Recognition of the importance of these values is in line with the widely accepted philosophy that any marketing research should stem from a consideration of the consumer's viewpoint (Carrillat *et al.*, 2009). Personal values provide a powerful explanation of human behaviour because they are remarkably stable over time (Kakamura & Mazzon, 1991) and, therefore, are very useful in market segmentation. Indeed, one requirement of successful market segmentation is that the resulting segments are stable over time in terms of consumer preferences. The *a priori* methods of segmentation, based on demographic or geographic criteria, most likely will not provide such stability. Conversely, in view of the aforementioned stability of personal values, market segmentation that is based on such values is more likely to produce segments that will remain stable at least over some reasonable time period. Thus, *post hoc* segmentation methods, especially those based on means-end structures that involve personal values, seem to be better equipped to derive stable segments over time. Despite the obvious importance of such approaches to market segmentation, disagreement remains concerning the most suitable procedure to use in any given situation, which provides little guidance to those researchers who undertake *post hoc* segmentation studies. Therefore, the purpose of this paper is to present MEC-based approaches to market segmentation that have, to date, been proposed in the literature and outline new solutions.

Criteria for proper market segmentation

Researchers and practitioners agree that proper market segmentation should yield segments that are (1) *measurable* (i.e., it must be possible to determine the values of the variables used for segmentation with justifiable efforts), (2) *accessible* by communication and distribution channels (i.e., it must be possible to identify the members of the segment), (3) *substantial/sizeable* enough to be profitable (i.e., to justify the resources required to target them), (4) *differential/distinguishable* (i.e., different in their responses to different marketing mixes to justify separate offerings; difference is what truly defines the segment), and (5) s*table/durable* (i.e., do not change too quickly over time). With a few notable exceptions that will be described later (e.g., ter Hofstede, Steenkamp, & Wedel, 1999; Grunert & Valli, 2001; Kąciak, 2011), none of the methods proposed in the literature has satisfied the above five conditions for proper market segmentation.

Interpretation of the dominant means-end chains in the HVM

Proposals concerning MEC-based analyses of consumer behaviours most often suggest the following pattern:

1) Construction of a hierarchical value map (*HVM*) that is based on the summary implication matrix (*SIM*).
2) Elicitation and interpretation of dominant means-end chains (models of consumers' cognitive structures) in the *HVM*.

Obviously, the above described approach does not yield market segments; rather, it is useful for designing communication strategies for specific target markets. Below, we present studies that have used the above pattern (1)-(2) for analysis of consumer behaviour.

Mentzer, Rutner, and Matsuno (1997) presented a *HVM* that described how logistics customers perceive the services they receive. In this map, attributes of logistics service − *timeliness*, *availability*, *product quality*, *credibility*, *follow-up effort*, *order count*, *system support*, *system expertise* − were linked to an ultimate value, *responsibility to stakeholders*, via a number of benefits including *delivery effectiveness*, *cost saving*, *good communication*, and *trust*.

Thompson and Chen (1998) used a means-end approach to assess the role of personal values in the domain of store image by exploring women's perceptions of fashion store images. In the resulting *HVM*, they distinguished two dominant chains for female fashion shoppers: one with a functional orientation that linked *reputation*, *quality*, and *durability* via *not wasting money*, *spending money wisely*, and *experiencing a nice feeling*, with personal values of *enjoyment/happiness* and *quality of life*. The second chain revealed a hedonic orientation that was associated with the same personal values and the consequences of *self-expressiveness* and *enhancing appearance*. Thompson and Chen further suggested that perceptions of store image should be examined with MEC-based techniques separately for various age groups and other socio-economic factors in order to appeal to specific market segments.

Gengler, Mulvey, and Oglethorpe (1999) used *HVM*s to better understand the personal beliefs that motivate mothers to continue breastfeeding. They found three different means-

end chains (patterns) that represented different motivations for choosing breastfeeding over bottlefeeding: *the child's physical health*, *bonding with the child*, and *the mother's convenience*. In the case of mothers who stopped breastfeeding, two patterns emerged: *the mother's well-being* (e.g., physical discomfort, perceived lack of external support, desire/need to return to work, and the generally demanding nature of being the child's only source of nutrition) and *the child's well-being* (e.g., children being uncooperative or losing interest, mainly due to age, which resulted in the mother's desire to give her child more independence).

Klenosky (2002) demonstrated the use of *HVM*s in a study of students' destination choices during spring break. The most dominant set of meanings revealed a means-end chain that connected two attributes of a vacation destination − *beaches and warm climate* − through resulting consequences (*get sun tan* and *look good/healthy*) with the personal value of *self-esteem*. These attributes and consequences were also associated through another consequence, *date more,* with values such as *fun* and *enjoyment*.

Urala and Lähteenmäki (2003) examined the reasons consumers give for either choosing or not choosing functional foods (e.g., yogurt, spread, juice, carbonated soft drinks, sweets, and ice cream). They found clear differences between the means-end chains that described the reasons for choosing the above six product categories.

Guenzi and Troilo (2006) found four dominant means-end chains in their study of components that described marketing-sales integration within an organisation. The first dominant chain connected a number of communication-related attributes via consequences linked consecutively in a sequence *confrontation → better market knowledge → broader perspective → better decisions*, with an ultimate value company *success*. The second chain depicted a link of the same set of attributes with the same ultimate value; however, via somewhat different consequences: *sharing strategies and plans*, *consistency and synergies*, and *better decisions*. The last two chains resulted in two additional values: *customer satisfaction* (preceded by consequences such as *understanding* and *helping the counterpart solve problems*) and *employee satisfaction* that results from consequences such as *collaboration*, *commitment*, *motivation*, and *positive climate*.

Reppel, Szmigin, and Gruber (2006) created a picture of customers' means-end structures with regard to the iPod digital music player. The *HVM* generated from the data they collected via online chats depicted links between product attributes (e.g., *control elements*, *storage capacity*, *sound quality*, *design*, *image*), resulting consequences (e.g., *speed*, *reliability*, *relaxation*, *feel good*, etc.), and personal values such as *ability to concentrate on other things*, *comfort*, *security*, *beauty*, and *individuality*.

Kuisma, Laukkanen, and Hiltunen (2007) mapped reasons for resistance to Internet banking in Finland. Their findings suggested that several attributes (*lack of computer*, *routine usage of ATM rather than the Internet*, *lack of information*, *absence of an official receipt*, *Internet surroundings*, *absence of bar code reader*, *changeable passwords*, *unclear proceedings at the monitor*) seem to be the main causes for resistance to Internet banking. These attributes were eventually linked to personal values such as *economy*, *safety*, *control*, *efficiency*, *convenience*, and *general resistance to change*.

Lind (2007) investigated whether consumers in Swedish supermarkets were more interested in some types of labelled pork than others. The resulting *HVM*s clearly differed

among four types of pork (imported, unbranded, branded, locally and organically produced). The *HVM* of imported pork showed that *price* (*saving money*) was the most important reason for choosing that pork. Additionally, there were no personal values present in this *HVM*. In the case of the unbranded pork (cut in the store and not branded in any way except for the country of origin − a legal requirement in Sweden), three separate means-end chains were revealed: the first was associated with *price* and *a convenient package size*, the second was *a good taste* with the personal value of *hedonism* (enjoying the food), and the third emphasised the importance of the *domestic* (Swedish) *origin of the product* in association with the personal values of *security* and *health*. For branded pork, the most important attribute was *domestic origin*, which was believed to imply *good quality* and *health*. Finally, buyers of locally-organically produced pork perceived *the organic production* to be the most important quality linked to *good taste* and *animal welfare*.

Gruber, Reppel, Szmigin, and Voss (2008) studied the expectations and preferences of complaining customers. Results revealed that such customers wanted employee contact to be *genuinely friendly*, *courteous*, and *honest*. Employees should also be *active listeners* and *competent*. These attributes were associated in the *HVM* with consequences such as *take someone seriously*, *solve the problem*, and *save time*, and then with the personal values of *self-esteem*, *well-being*, *justice, satisfaction*, and *security*.

Post hoc profiling of the dominant chains in the HVMs

The above described procedure of merely eliciting and interpreting the dominant means-end chains in the *HVM*s has been extended in some studies by an additional step:

3) a *post hoc* profiling of the chains with consumer characteristics.

For example, Hermann, Huber, and Braunstein (2000) presented a study conducted for the German Rail to develop products and services, which included customer expectations in regard to the InterCity link between Frankfurt and Paris. Four different passenger types were defined based on mapped means-end chains: pleasure (zest for life) seekers, price-conscious travellers, adventurous, and business passengers. Additional sociodemographic data were taken into account to further describe the above four types of customers. In another MEC-based study by Boecker, Hartl, and Nocella (2008) in Germany, mothers with at least one child under 18-year-old who was living at home stated their purchase intentions for non-GM (genetically modified) and GM varieties of yogurt. Three segments of mothers were subsequently distinguished: non-buyers, maybe-buyers, and likely-buyers of GM yogurt.

Obviously, even enhancing the above defined sequence of steps (1)-(2) with step (3) still would not produce properly defined market segments. Rather, this enhancement only indicates which means-end chains are dominant in the *HVM* (thus could be considered important clusters of elements in the consumer cognitive-motivational structures) as well as identify which consumer characteristics are prevalent. Knowledge of such dominant chains is admittedly useful in the market segmentation process; however, is not sufficient, because we do not know which members of the population could physically be assigned to them. We only know it is very likely that there is a market segment that could be assigned to a given means-

end chain (steps 1 and 2) with given consumer characteristics (step 3). With this approach, however, we have no way of finding such a segment.

HVMs for predetermined groups of consumers

To overcome the above inability of matching dominant mens-end chains with a subgroup (segment) of a population, the following approach has been used in many studies:

- First, a market was divided into subgroups of consumers based on criteria that were not related to the elements of consumer cognitive structures (e.g., based on socio-demographic or geographic characteristics) − *a priori* market segmentation.
- Second, the corresponding *HVM*s were drawn, interpreted, and compared, separately, for each of the subgroups of consumers.

Reynolds and Rochon (1991) applied the means-end methodology to the development of advertising strategy. They restricted their analysis to former male professional athletes in the 20-30 years of age category.

Grunert (1995) presented *HVM*s that were obtained during a study on how regular and non-regular buyers of organic food products perceive organic breed. Regular buyers of organic foods pay attention mainly to two attributes of such products, *special production methods* and *ingredients of organic breeds*, which are linked in their *HVM* to *health* (a personal value). On the other hand, non-regular buyers of organic foods focus on some sensory characteristics of the product (*taste*, *consistency*, and *closeness to nature*) which, in turn, are associated in their cognitive structures with another personal value, *well-being*.

The subjects of a study reported by Bottschen and Hemetsberger (1998) were Austrian, German, and Italian customers of a high quality clothing manufacturer. Based on laddering interviews, separate *HVM*s were obtained for a subsample of customers in each of the three countries. Findings revealed certain means-end chains that were common to the three nations; for example, associating the attributes of *quality, appearance, warmth, durability*, and *price* with consequences of *coordinates well* and *comfortable clothing*, which led directly to the personal values of *satisfaction* and *harmony with self*. Conversely, there were many chains unique to each country. For example, the Italians linked *Austrian product* with *memories* and *satisfaction*; whereas, the Austrians linked the same attribute with *national pride, quality, durability*, and then *satisfaction*.

Nielsen, Bech-Larsen, and Grunert (1998) showed *HVM*s that described cross-country (Denmark, England, France) differences in the knowledge structure of consumers in regard to vegetable oil. The researchers found that although most elements of consumer cognitive-motivational structures could be found in all three countries, there were certain notable differences among them. For example, at the attribute level, *country of origin* was an attribute most often mentioned by Danish consumers; whereas, *odour* and *reminds me of sun, summer, south* were important mostly to French respondents. Among consequences, *family eating together* was perceived as important mostly by Danish consumers, while *protect identity, culture, and food tradition* was almost exclusively a French value.

The goal of the Kohler and Junker's (2000) study was to explain consumer behaviour towards animal welfare. The *HVM*s were obtained separately for each age category (25-39

and 40-60 years) and for two social classes, based on net household income, occupation, and formal education of the chief household wage earner.

Miele and Parisi (2000) conducted laddering interviews in Florence (Italy) with regard to consumers attitudes toward animal welfare. Specifically, they produced separate *HVM*s for each socio-demographic category in the sample and found that the level of formal education and pet ownership were the only socio-demographic variables that discriminated consumers on the issue of animal welfare.

Makatouni (2002) employed *HVM*s to explore beliefs and attitudes of both organic and non-organic food buyers in the UK and detect their impact on purchasing behaviour. She found that this group of British consumers perceived organic food as a means of achieving personal values such as *the health factor* for either themselves or their families, *protection of the environment*, and *animal welfare*.

Vannoppen, Verbeke, and Huylenbroeck (2002) analyzed consumer motivations for buying "integrated production" (IP) certified and labelled apples. Their research methodology was based on MEC theory, with data collected via personal laddering interviews in Belgium. The IP labels (also called eco-labels) were broadly defined as a voluntary seal of approval on products that certified that they were environmentally friendly. Further, they created separate *HVM*s for purchasing IP-apples from supermarkets and farm shops.

Fotopoulos, Krystallis, and Ness (2003) studied the Greek wine market with an emphasis on wines that were produced from organically grown grapes. They first discriminated between organic food buyers and non-buyers, and then developed their *HVM*s.

Baker, Thompson, and Engelken (2004) explored the reasons why attitudes of consumers in the UK and Germany toward organic foods have been so different from each other. In the resulting *HVM*s, within the UK group, there was a notable absence of any connection between the organic food and the environment. Even the genetic modification of produce was linked to health rather than the environment. Furthermore, although there were similarities between the two groups regarding values of *health, well-being*, and *the enjoyment of life*, product attributes that were linked to these values were completely different: *healthiness* and *food not genetically modified* in the UK, and *taste* and *quality* in Germany.

Skytte and Bove (2004) used a means-end chain approach to buying pork and fish products in Denmark and Germany. The researchers' goal was to obtain knowledge about the cognitive structure upon which buying decisions are based. As the result, they obtained separate *HVM*s for Danish and German retail buyers of pork and fish products. Results revealed which product attributes, consequences, and personal values related to buying pork and fish products were important to retail buyers in these two countries.

White and Kokotsaki (2004) examined the consumption of Indian foods among groups of English and Indian people who live in the UK. They obtained two separate *HVM*s − one for English and one for Indian consumers. Findings revealed that the hedonistic values *health* and *enjoyment* were the most important for both groups; however, English respondents also valued *social life, adventure*, and *savings*, while Indian consumers listed *culture, continuity*, and *religion* as important personal values that guided their food choices.

Costa, Schoolmeester, Dekker, and Jongen (2007) used MEC theory and laddering interviews to conduct an analysis of motives behind the choice of meal solutions of consumers

in Denmark. They suggested that meal-oriented means-end chains should be obtained separately for various consumer segments.

De Ferran and Grunert (2007) used a laddering methodology to examine the motives and values that underlay purchasing decisions of French fairtrade coffee buyers. Specifically, they divided their sample into two groups − those who bought the product in specialised stores (SS) and those who bought in classical supermarkets (SM). De Ferran and Grunert found that SS fairtrade coffee purchasers were concerned with the organic nature of the product and its effects on the environment. On the other hand, the SM purchasers worried about producer welfare and their own satisfaction. The researchers also suggested that additional insights might be gained if personal characteristics of SS and SM shoppers (e.g., their expertise, involvement) were analysed.

Ares, Gimenez, and Gambaro (2008) studied consumer perceptions of conventional and functional yogurts using a laddering technique. First, they identified two groups of consumers with different attitudes toward health and nutrition. Specifically, one group included consumers who were worried about maintaining their health, had a more balanced diet, and were more willing to consume healthy products than were consumers in the second group. Members of the first group (mostly females with mean age of app. 40 years) chose, more frequently, low-fat yogurt; whereas consumers in the second group (52% men and 48% women; app. 30 years of age) chose, more frequently, regular plain yogurt. Following this analysis, *HVM*s were used to understand the reasons behind the consumers' choices and the researchers identified relevant values for consumers and associations between the values and the products' attributes. For example, *pleasure* was mentioned more frequently by consumers in the second group as a reason for choosing regular yogurt and not choosing low calorie yogurt.

Van Rijswijk, Frewer, Menozzi, and Faioli (2008) applied means-end chain laddering to investigate consumer perceptions of the so-called traceability of the products related to the origin of the product, its quality and safety, with the aim of increasing transparency throughout the food chain. The *HVM*s were obtained separately for consumers in four countries (Germany, France, Italy, and Spain). In Germany, consumers associated the origin of food with different methods of transportation, which, in turn, was important to them because of their concerns about the environment. For French consumers, the most important links were those between quality label, quality and taste, and safety and health. Italian consumers revealed a strong link between product origin, control and security, while Spanish consumers showed associations between control and quality, taste, and pleasure as well as quality, trust, calmness, control, and health.

Barrena and Sanchez (2009a) investigated the consumption decision structure of beef products based on MEC theory. They segmented a sample of consumers into three predetermined groups according to their beef consumption frequency: (1) less than once a week, (2) once a week, and (3) more than once a week. Each group was described in advance in terms of sociodemographics and beef consumption attitudes. After the groups were characterised, *HVM*s were drawn for each. The results showed that the less frequent beef consumers paid greater attention to the product's freshness and the fact that it is a natural, unprocessed food, which they associated with good value for the money. On the other hand, the high frequency consumers linked freshness to a healthy food rather than value for the money.

Barrena and Sanchez (2009b) conducted laddering interviews to examine the effects of wine consumption on emotions. The sample was split into three age groups (18-35, 36-49, and over 50). Separate *HVM*s were subsequently obtained for each of the three groups. The researchers found that wine does have an emotional component that varies according to the consumer's age. For example, members of the younger groups attached greater importance to the type of wine they consumed and its prestige value, factors that − in their view − helped enhance their cultural identity and social status. The oldest group, on the other hand, had a strong perception of wine as a social catalyst, which helped them to interact socially and remember old good times and traditions.

Obviously, the above described approaches still do not yield market segments that meet all the aforementioned five criteria of the proper market segmentation. Admittedly, they can be considered measurable (criterion 1), accessible by communication and distribution channels (criterion 2), and substantial/sizeable (criterion 3). However, because they were distinguished by the researchers *a priori* (based on usually quite arbitrary consumer characteristics) rather than *post hoc* (based on the elements of the consumers' cognitive-motivational structures), there is no guarantee that the groups would differ in their responses to different marketing mixes (criterion 4) nor whether they would be stable (criterion 5).

Other approaches to market segmentation

In some studies, *HVM*s were constructed separately for each personal value − an element of the consumer's cognitive-motivational structure. For example, Mitchell and Harris (2005) used means-end chain analysis to explore how grocery customers associate store attributes with the consequences of not having these attributes and motives for seeking them. They found that shoppers' motives are linked to four main risk-related dimensions (personal values): physical risk (being less healthy, feeling less safe, and feeling sick), financial risk (getting less for my money, wasting money, less money for other activities), time and convenience risk (less discretionary time, spending more time on shopping overall, less time for other activities), and psychosocial risk (don't learn much, lower social status, reduces feeling of association, feel less inclined to be sociable, poorer self-image). A *HVM* was constructed for each of the above risk dimensions. This approach does not produce market segments but can be useful in designing advertising campaigns.

Bottschen, Thelen, and Pieters (1999) applied cluster analysis to laddering data comprised only of attributes and then repeated the analysis for the associated consequences. The procedure produced two sets of clusters, one based exclusively on the product's attributes and the other based on perceived consequences (benefits). Since they did not analyze, simultaneously, all three elements (attributes, consequences, and personal values) of the consumer cognitive-motivational structures, their approach did not meet the criteria for proper market segmentation.

An interesting method of market segmentation that is based on personal values was also presented by Kakamura and Mazon (1991). However, they did not base it on MEC elements, rather on the Rokeach's system (*RSV*) of personal values (Rokeach, 1973). Similar approaches were used by Madrigal and Kahle (1994) who used a list of personal values

(*LOV*) that were proposed by Kahle (1983), and Novak and MacEvoy (1990), who enhanced the *LOV* list with *VALS* typology.

The closest to meeting all five criteria was the market segmentation method proposed by ter Hofstede, Steenkamp, and Wedel (1999). They identified cross-national market segments based on MEC theory; however, the measurement technique used was not a traditional laddering procedure but a so-called association pattern technique (APT; ter Hofstede, Audenaert, Steenkamp, & Wedel, 1998). The APT differed from laddering in that the laddering categories (attributes, consequences, and values) were predetermined by the researchers and then presented to the respondents. The respondent was then required to indicate which attributes related to which consequences. Following, in a separate exercise, the respondents were required to indicate which consequences were linked to which values. Ter Hofstede *et al.* (1998) showed that attribute-consequence and consequence-value links are independent of each other, which validates the use of APT. However, because the task of linking attributes, consequences, and values is divided in the APT into two separate phases and laddering categories are predetermined by the researcher rather than by the respondents, it is the author's view that APT cannot be considered as a purely MEC-based technique. To obtain means-end map segments, based on the APT data, ter Hofstede, Steenkamp, and Wedel (1999) calculated the probabilities that a respondent would choose a link between an attribute and consequence or between a consequence and value and then used the strengths of these links as the basis for segmentation. A similar approach to market segmentation was also proposed by Grunert and Valli (2001) who used APT data to derive European-wide consumer segments for two product categories, beef and yogurt, and developed new segment-specific product concepts.

A MEC-based multifaceted market segmentation procedure

Recently, a comprehensive procedure based on MEC-laddering data that met all five criteria for proper market segmentation was proposed by Kąciak (2011). For the sake of space, this is only briefly described in the current paper. The procedure consists of six steps.

In the first step, a multidimensional scaling method (MDS) is applied to the *SIM* extended by characteristics of consumers. Because the elements of *SIM* can be treated as proximities (similarities) between different laddering categories (the larger the element in a *SIM*, the closer the two corresponding categories), the use of the MDS is a natural choice for this type of data. As a result, one obtains clusters of elements of consumer cognitive-motivational structures that are supplemented with consumer characteristics.

In the second step, a special matrix of the consumers is created and, in step three, it is scaled with a non-linear canonical correlation analysis (NCCA; Luijtens, Symons, and Vuylsteke-Wauters, 1994).

In the fourth step, the coordinates of consumers, as determined by the NCCA, are subjected to a cluster analysis and subgroups of consumers, with similar elements of cognitive-motivational structures and characteristics (e.g., socio-demographics), are derived.

These subgroups are then profiled in step five and interpreted in step six. Specifically, the clusters of variables that are obtained in step one are used as a reference point and, thus,

market segments that meet all five criteria are derived. Finally, Kąciak (2011) further proposed a method of checking the stability of such market segments.

Implications and conclusion

The difficulties surrounding market segmentation, in general, regardless of the approach used, have been succinctly outlined by Hoek, Gendall, and Esslemont (1998). These authors cautioned that the commonly used segmentation techniques involve a number of subjective decisions that may affect the outcome of an analysis. They further claimed that confidence in the reality of segments determined by a given procedure could increase if the solution could be shown to be robust. The presentation in this paper focused on approaches to market segmentation that are based exclusively on means-end chain structures. We claim here that consumers' wants and needs or, more generally, their cognitive structures (e.g., associations between product attributes and the resulting consequences linked to personal values) may serve better as a basis for market segmentation. We also posit that the desired robustness of the segments may be achieved via *post hoc* market segmentation techniques, which allow marketers to tap directly into consumer cognitive-motivational structures. We further show that only a few proposals could be considered as yielding satisfactory solutions in terms of proper market segmentation based on MEC theory. However, the divergence of the methods described in this paper shows that there is no agreement among researchers as to the best way of segmenting the market based on elements of consumer cognitive motivational structures. Obviously, there are many more approaches to market segmentation other than MEC-based data (see for example, Snellman, 2000; Higgs & Ringer, 2007); however, their presentation is beyond the scope of this paper.

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Summary

The article is devoted to the subject matter of means-end chain-based approaches to market segmentation, which are critically viewed from the perspective of their ability to yield properly defined market segments. There are emphasised in it these approaches, grounded in the means-end chain (MEC) theory that was developed to better understand how consumers link attributes of products with particular consequences and how these consequences satisfy personal values. The author's whole deliberations confirm that the means-end chains are often seen as a representation of the basic drives that motivate consumer behaviour.

Key words: consumer, market segmentation, means-end chains, cognitive-motivational structures