



# Is geographic segmentation suitable for marketing studies? An investigation applied to Brazil

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## Abstract

**Purpose:** This paper investigates if geographic market segmentation is sufficient to overarch cultural specificities of each Federal Unit (FU) of Brazil.

**Method:** The Brazilian FUs were clustered, considering the human values and the social axioms, in order to verify their similarity to the five official geopolitical regions' structure of Brazil. It consisted in an online survey (N=1,385), using a non-probabilistic snowball sampling within the FUs. The analysis involved non-metric multidimensional scaling (MDS), with the dimensions of human values and social axioms by FU (N=27).

**Main results:** The results are highly valuable and allow researchers and managers to confirm that regionalized marketing strategies are not adequate and might lead to wrong marketing strategies, considering the cultural differences among Brazilian FUs. By examining the MDS results, it becomes clear that Brazil's cultural similarities among FUs are not consistent to geographic regions' segmentation.

**Relevance/Originality:** The comparison of two market segmentation types: geographical and cultural. This comparison showed the Brazilian FUs clustered differently when considering cultural aspects in comparison to geographical divisions. Therefore, the present research becomes relevant in the Brazilian segmentation studies by empirically showing that cultural and geographical segmentation must be considered separately when developing marketing strategies.

**Theoretical/Methodological contributions:** Theoretical contributions involve advances in cultural mapping in the individual level, and empirical contribution about the effectiveness of cultural constructs as consumers' differentiation device.

**Keywords:** market segmentation; human values; social axioms; subcultures.

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## Introduction

Market segmentation, although being originally developed in economics theory (Claycamp & Massy, 1968), is a highly-approached theme in marketing studies, being one with the most scientific and methodological advances in the field (Kamakura & Wedel, 1999). Introduced in marketing studies by Smith (1956) almost six decades ago, market segmentation keeps bringing practical and theoretical production in literature. This reality is likely driven by technological advances, by information technologies, and by the appearance of a new consumer in the XXI century: the global consumer, who, whilst in the face of an increasing demand for homogenization of worldwide, also presents his/her specificities in wishes and needs simultaneously (Hassan, Craft, & Kortam, 2003; Gammoh, Koh, & Okoroafo, 2011; Maison, 2014; Budeva & Mullen, 2014; Iversen, Hem, & Mehmetoglu, 2015). Identifying groups with similar needs, wishes and behaviors meet the purposes of improving the profitability of marketing efforts by adjusting brands, products and services to these factors (Daghfous, Petrof, & Pons, 2015; Kamakura & Russel, 1989; Long & Schiffman, 2000).

The identification of market segments is organized by criteria and variables (the segmentation bases), which differs by the nature of the variable, and of the measure process (Kamakura & Russel, 1989). Socioeconomic status and cultural characteristics, as well as values, personality patterns, life styles and geographic localization, are examples of such segmentation bases. Those characteristics, classified as general ones, are independent of products, specific services and circumstances (Oliveira-Brochado & Martins, 2008).

Regarding the geographic segmentation, as noticed by Hawkins, Roupe and Coney (1981), the identification of markets based on their spatial location may become a useful tool when considering that the geographical regions may reflect the configuration of subcultures, or groups of people that share certain behavior patterns and other characteristics, not shared by most members of a mainstream, dominant culture, as stated by Sulaiman, Mat and Ghani (2014). In other terms, the geographic segmentation has significant worth if it is somehow related to a cultural or belief-based segmentation, in order to really segment similar people (Govind, Chatterjee, & Mittal, 2017).

Hawkins, Roupe and Coney's (1981) base the necessity, therefore, of studies that address this kind of comparison.

The segmentation of Brazilian consumers based on the geographical criterion is a common practice (Souza & Freitas, 2016), and may become an input for regionalized marketing strategies. This approach commonly and traditionally partitions the country into five geographical regions, reflecting the official geopolitical ones: North (N), Northeast (NE), Centre-West (CW), Southeast (SE), and South (S). Yet, recent studies in Brazil, based on basic human values (Torres, Porto, Vargas and Fischer, 2015) and cultural human values (Hofstede, Hilal, Malvezzi, Tanure, & Vinken, 2010), indicate that the segmentation based on these five geopolitical regions may be incomplete, when considering the cultural specificities of each Brazilian federal unit (FU) or State, creating a necessity of studies about the validity of the geographic segmentation in Brazilian context.

Thus, this paper aimed to analyze if the geographic market segmentation, largely applied in Brazil, is sufficient to overarch the cultural specificities of each Brazilian federal unit (FU). Therefore, considering the constructs of individual human values (Schwartz, 1992) and social axioms (Leung et al., 2002), the objective of this study is to verify how the 27 Brazilian FUs can be clustered and whether such clusters are similar or not to the five official geopolitical regions structure of the country.

Furthermore, the present study brings relevant contributions to the theory of market segmentation, shedding light on differences among individuals' resident in Brazilian regions, segmented by FUs. Also, an approach that uses national subcultures as well as psychological variables as a consumer's differentiation tool (Davis, Wang & Lindrige, 2008) is still a practically unexplored one in the literature, both in Brazil (Barbosa, Dias & Walchhutter, 2015) and emerging markets in general (Kivenzor, 2015, Govind, Chatterjee, & Mittal, 2017). Based on this matter, this paper investigates tries to fill this gap related to the lack of studies about psychological segmentation.

The same is true for theoretical-methodological approaches that use human values as a concept and criteria for investigation (Strehlau, Claro, & Laban-Neto, 2010). As pointed by Sun, D'Alessandro, Johnson and Winzar (2014), cultural researches need new measures and debates based on what is best in which context. The usage of both human values and social axioms,

therefore, must be tested as segmentation tools to analyze and test them as significant tools. This gap is also bigger when addressing countries with a small amount of literature regarding the theme (Barbosa, Dias & Walchhutter, 2015). This study offers empirical evidence to fill in both cited literature gaps.

We offer a brief discussion about segmentation concepts and the theoretical foundation of geographic segmentation. Following is an application of social beliefs as a resource of consumer's behavior orientation, through the constructs of human values and social axioms. Then, there are described the methods and techniques used in the research conducted with college and universities students from the 27 Brazilian FUs. Lastly, the results, discussion, final considerations, and limitations are presented.

## **Market Segmentation**

The market segmentation concept has its roots on the economic theory, which establishes that a firm can maximize its profitability by selling homogeneous products in a market characterized by a heterogeneous demand (Claycamp & Massy, 1968). Thus, the imperfect competition is the scenario that provides the conditions for the emergence of the concept (Moraes & Mattar, 2014; Oliveira-Brochado & Martins, 2008). Smith (1956) introduced the concept in marketing literature. In his seminal paper, a classic to marketing field, the author defines that segmenting a market consists in viewing a heterogeneous market as a few smaller homogeneous markets, in response to differing product preferences among important market segments.

The segmentation basis uses several categories from which it is possible to divide the consumers' market in more homogenous groups (Kamakura & Russel, 1989). The market's geographic division in smaller regions configures as one of these segmentation bases. Gentry, Tansuhaj, Manzer, and John (1988) highlight the work of Hawkins, Roupe and Coney (1981) as one of the most expressive arguments in the consumers' behavior field to justify a segmentation originated on such base. Hawkins, Roupe and Coney (1981) proposed a model of geographic influence on the consumers' behavior, supported in the existence of geographical subcultures, which are a part of the country whose residents share patterns of behavior that are distinct from

those of the remainder of the country (p. 713). This definition agrees with the studies of Boisnier and Chatman (2002), Laroche, Papadopoulos, Heslop and Bergeron (2003), and Segabinazzi (2015), in the sense that, for a group to be considered as a subculture, it must own a set of norms and beliefs shared among its members.

In the model proposed by Hawkins, Roupe and Coney (1981), the consumption pattern is a result of the life style predominant in a region. This style, in turn, receives direct influence from values, motivations and dominant preferences structures. Those structures result from the indirect influence of the region's physical characteristics such as weather, topography and natural resources, and direct influence of the human and historical structures, such as dynamic politics, economy, laws and religions (Berry, 1997). Although these dynamics can directly influence the individual values, motivations and preferences structure, the region's historic trajectory promotes a common motivational structure among members, who may share it in different degrees. The authors also discuss the migration factor, suggesting that although individuals from different subcultures can establish their roots in other localities after an acculturation period, they tend to adapt themselves to the group pattern where they were inserted.

Therefore, the geographic segmentation base is justified by the common motivational structure, which reflects in the common patterns of behavior and consumption through the adequacy to a predominant life style. As pointed by the model proposed by Hawkins, Roupe and Coney (1981), the geographic segmentation is valid once cultural differences are noticed in different areas. Therefore, these cultural differences might be addressed in segmentation studies, and from there the identification of geographic clusters should be analyzed.

Walter (1976) also highlights that the implicit values in a culture affect the behavioral motivation, which partially defines the selection criteria utilized by consumers. This corroborates with Gentry et al. (1988), who indicate that variations among a region's cultural values give good reason for differences in marketing variables. Thus, the central research question under study in this paper is whether individuals living in the FUs of each of the five Brazilian regions would present similar values and beliefs among themselves.

Other authors discuss the question about the cultural values shared within regions, and its behavioral patterns. For instance, Kahle (1986) states that the geographic segmentation may partially reflect the preposition about the existence of geographic regions with different values.

Smith and Schwartz (1997) and Kamakura and Mazzon (1991) complement this argument, suggesting that values can be used to differentiate culture and subculture groups that emerged from humans' communities in response to specific experiences. That agrees with the proposition by Leung et al. (2002), to whom the social axioms offer an alternative in the comprehension of the influence that culture has on social behavior. Thereby, the geographic and cultural segmentation bases seem to share some similarities. Several studies focus on the identification of cultural differences in geographic regions based on the beliefs endorsed by individuals living in such regions (Gentry et al., 1988; Kahle, 1986). Personal values as segmentation base has also been pointed out in the literature (Boote, 1981; Kahle, Liu, & Watkins, 1992; Leon & Selmer, 1994; Wiedmann, Hennings, & Siebels, 2009), and is presented as a relevant way to cluster consumers by their cultural differences.

Human values (Schwartz, 1992, 2012) and social axioms (Leung et al., 2002) are among the constructs capable to access cultural variations from the individual level perspective. Leung and Zhou (2008) comment on the capacity of these constructs in describing cultural influences on attitudes and behaviors. The authors also highlight that human values and social axioms were designed to explain general psychological processes and are suitable for investigations related to preferences and behaviors differences through many cultural borders. The selection of these constructs validates the generalist segmentation concept and seems to be adequate in providing comparisons between subcultures' social beliefs. Moreover, they show applicability to the market segmentation. In other words, a segmentation structured with these constructs could enlighten differences or similarities of preferences and behaviors among individuals from the same subculture.

## Basic human values and social axioms

Values reflect abstract goals that transcend specific situations, vary in importance, and guide evaluations and behavior of individuals and groups (Schwartz & Bilsky, 1987, Schwartz, 1992). Values reflect preferences for what ideally ought to be. The theory of basic values (Schwartz, 1992) identifies key categories of values that reflect basic requirements of human existence. These values are organized around a circular continuum according to the conflict and compatibility among the motivations they express (Schwartz, 1992; Schwartz et al., 2012).

According to Schwartz (2005), the main values' characteristics are identified in the values theory, which is based in five premises: (a) values are like beliefs, linked to emotions and not to cold and objective ideas; (b) values are motivational constructs, related to personal objectives; (c) values are like abstract objectives, more embracing than specific situations or actions; (d) values serve as criteria or patterns that guide the selection and evaluation of actions, decisions, politics and people; and (e) values are ordered by people according to personal significance and meanings, in a hierarchical way.

In a research conducted with 64271 people, Schwartz (2005) tried to identify how the prioritization of individual values affects social experiences, behavioral orientations and individual actions. The Schwartz (1992) model associates values as underlying motivations. Thus, the presented values structure can also be considered as a human motivational structure (Tamayo & Porto, 2009). Schwartz (1992) identified ten motivational types that predict behavior, later (Schwartz et al., 2012) refined into nineteen types. The theory of basic values has highlighted the four higher order categories of values (Schwartz, 1992; Schwartz et al., 2012). First, values that concern self-transcendence reflect a motivation to connect with others and transcend selfish concerns. These values include universalism and benevolence. Second, values that concern self-enhancement reflect a motivation to promote self-interests, even at the expense of others. These values include achievement and power. Third, values that concern openness to change reflect a general motivation to explore, discover, and approach novelty. These values include self-direction, stimulation, and hedonism. Fourth, values that concern conservation reflect a motivation to

preserve and protect the status quo. These values include security, tradition, conformity, humility, and face.

These ten motivational types are organized in a continuum with two bipolar dimensions: openness to change vs. conservation and self-transcendence vs. self-enhancement. The dimensions identified by Schwartz (1992) relate in a complement or conflict way, since the pursuit for certain values can reflect consonantly or against other values.

Therefore, the dimension openness to change opposes to conservation as the dimension self-transcendence to self-enhancement. The first one orders values as the personal tendency to think independently (self-direction, stimulation, hedonism) against stability and preservation (conformity, tradition, security). The second one orders values linked to development and wellbeing, collectively (universalism, benevolence) or individually (hedonism, achievement, power).

In the analyzed relations – the two bipolar dimensions described above – the decisions, choices and behaviors that belong to one category would compromise behaviors of other categories, considering the theoretical opposition between them. On the other hand, the motivational types are organized in the dimensions in a way that their adjacent relations mean compatibility in the search for these values. E.g., power and security are adjacent types, and they are compatible emphasizing the social superiority and esteem (Schwartz, 1992). These relations were already tested and proven worldwide (Steinmetz, Isidor, & Baeuerle, 2012).

The Schwartz's values theory has been through a refinement process (Schwartz, Cieciuch, Vecchione, Davidov, Fischer, et al., 2012), which is in verification phase, comparing to the tested worldwide former instrument, and shows promising results. In Brazil, the application of the new theory initiates its first results (Vecchione, Schwartz, Caprara, Schoen, Cieciuch, et al., 2015; Torres, Schwartz & Nascimento, 2016), but further studies, mainly in the marketing area, still need to be concluded, specially values-based segmentation ones.

Beside human values, social axioms can also evaluate social behavior (Smith, Bond, & Kâğitçibaşı, 2006). Although they are distinct constructs, there is some interpolation between them (Narasimhan, Bhaskar, & Prakhya, 2010). Leung and Bond (2004) highlight the difficulty in explain the relationship between the constructs. Although there is several empirical researches

correlating them (Leung et al., 2007), the authors emphasize the difficulty of elucidating the connection between them and propose the possibility that the constructs can interact to influence behavior.

Leung and Zhou (2008) understand values as objectives and principles that guide people lives. Social axioms, on the other hand, are representations, schemes about the social life. In other words, human values guide behavior and actions in the means that they define what to do, and social axioms are like a map that people have about a social world, making this belief help in the effective resolution of a diary life. Moreover, according to the authors, values are more prescriptive, and social axioms are more descriptive.

Leung et al. (2002) developed the social axiom construct by seeking a way to evaluate cultural variations that values analysis could not detected and would allow the triangulation of results based in the values analyses. The axiom denomination created by the authors uses the mathematic concept that individuals endorse beliefs that can guide human behavior in many situations.

To Leung et al. (2002), this construct is understood as beliefs that people have about the world, and how people observe the world's operation. Thus, social axioms are general beliefs with a high level of abstraction related to social behavior, in a variety of actors and circumstances (Bond et al., 2004). The beliefs are the perception of a relation between two objects or concepts (Leung et al., 2002). Although the perception of a relation between objects and concepts is general, the authors add that the meaning and the strength of the relation may vary among individuals.

Social axioms are important tools to the individuals' beliefs system and are capable of facilitate the relation among them (Leung et al., 2007; Leung, Lam, Bond, Conway, Gornick, et al., 2012). In an empirical research held with 358 people, there were five dimensions of social axioms identified by Leung et al. (2002): (a) cynicism – a negativist vision of human nature and social events; (b) social complexity – based on the premise that there are countless solutions to social matters and the result of events is uncertain; (c) spirituality – the vision that religious practice have positive influences in the world, with the belief in the existence of a higher existence; (d) reward for application – the conviction the effort, knowledge and careful planning will take to positive results; and (e) fate control – the belief that life's events are predetermined, with ways to alter it.

Few studies in literature seek to use the two cited cultural constructs as segmentation base in marketing literature, especially social axioms. Kamakura and Novak (1992) and Kamakura and Mazzon (1991) were the first to address the issue of personal values as segmentation tools and concluded that human and personal values have great segmentation capacity, and more studies should address the issue.

Iversen, Hem and Mehmetoglu (2015) addressed the value-based segmentation to the tourism behavior, through a survey conducted online with Norwegian consumers that counted with 1546 observations. The authors concluded that values are a significant segmentation tool, as it provided deep insights in the understanding of segments. These findings support the idea that cultural constructs, such as human values and social axioms, might be a useful tool to segment markets. A similar study was conducted by Choi, Heo and Law (2015) in the Chinese market, bringing similar conclusions.

As stated previously in literature, values can be used as useful segmentation tools to achieve a better understanding of consumers and their preferences and goals (Choi, Heo & Law, 2015; Iversen, Hem & Mehmetoglu, 2015; Kamakura & Novak, 1992; Sun, D'Alessandro, Johnson & Winzar, 2014). Although its utilization in segmentation literature is embracing, the usage of social axioms to this end is rare. Stankov and Saucier (2015) stated the capacity of the construct to address comparisons between different cultures and subcultures, strengthening the idea of its usage to segment consumers. Nevertheless, no segmentation study using social axiom was found in the literature, evidencing the need of studies like the present research.

Studies involving the constructs of human values, social axioms and market segmentation are also unusual in Brazilian literature. A research that stands out was conducted by Strehlau et al. (2010) in four Brazilian cities: Belém, Porto Alegre, Salvador and São Paulo. It aimed to identify differences between values endorsed by individuals from each city, assuming firms should adequate their products to the specific characteristics of each city. To verify those differences, the authors applied the terminal and instrumental values of Rokeach (1973) in a qualitative approach, using both documental analysis and focus groups. The authors found that some values, such as independence and responsibility, were endorsed in all the four cities. However, some values, especially the instrumental ones, presented strong variations among the cities. This result suggests

that values endorsement might vary depending on the location in the country. The study also shows a common structure of values in all four studied cities, like responsibility and independence. As the authors state, although the cities belong in the same country, they have their differences regarding their values, and these necessities do not follow the geographic division of the Brazilian FUs, evidencing the needs of more studies about the theme.

Moreover, depending on the subcultural differences on country, (Aichner, Coletti, Forza, Perkman, & Trentin, 2016; Laroche et al., 2003) according to Strehlau et al. (2010), these motivational behavioral differences have implication in the elaboration of marketing and segmentation strategies. In addition, the authors pointed out the necessity of enlarge the number of studies of this kind to other Brazilian cities, using other methods that allow a better comprehension of subcultural differences.

Finally, following the ideas based on the findings of the study conducted by Strehlau et al. (2010) and the necessity of value-base studies in emerging markets (Kivenzor, 2015), it is relevant to investigate if the Brazilian geographic segmentation by region is appropriate, considering the values and social beliefs endorsed by individuals from the FUs of each geographic region.

## Method

A survey was administered on the Internet on college and university students from all FUs across Brazil, with a non-probabilistic, single wave, snowball sampling. After screening data, 3,185 valid cases were obtained from the 27 Brazilian FU (26 States and the Federal District). The average age of respondents was 23.1 years old (SD=7.4), 55.8% were female and 45.8% from the Class B SES, according to Brazilian Standard Economic Classification Criterion (Abep, 2015). By geographic region, most of the participants lived in the South (33%) and Southeast (28.4%) regions. The other regions contributed with 19.3% (Centre-West), 16.7% (Northeast), and 2.6% (North).

The instrument was self-administered, presented in Portuguese with two measurement scales (Schwartz Values Survey – SVS and the Social Axioms Survey – SAS) and social economic status questions. To minimize the bias of the respondent, none of the questions were mandatory, avoiding forced answers. The first scale presented in the questionnaire was the

SVS questionnaire (Tamayo & Schwartz, 1993; Porto, 2005) with 61 items in a Likert-like scale, ranging from 1=unimportant to 7=very important. As presented by Gouveia, Martínez, Meira, and Milfont (2001), with the application of confirmatory factor analysis for SVS in Brazil, the alphas of the ten-dimensions structure of SVS are in average .60, varying from .37 (universalism) to .76 (stimulation). Such values are considered to reach the reliability standards in literature regarding psychosocial variables in cultural studies, especially human values instruments (Torres, Schwartz & Nascimento, 2016; Carraciolo et al., 2016).

The second measure presented was the SAS (Leung et al., 2002), adapted to Portuguese after back-translation procedure (Brislin, 1970) and semantic validation (Pasquali, 1999), with 61 items in a seven points Likert-like scale, ranging from 1= strongly disagree to 7=strongly agree. Finally, the SES questions regarding participants' demographic characteristics were posed, such as: gender, FU of residence, age, and income.

The instrument was sent by email to managers of Colleges and Universities across the country. The original, and last available, database of emails was the Higher Education Courses Registration databank (e-MEC, 2014), provided by the National Institute of Educational Studies and Research, an agency of Brazilian Ministry of Education, containing the contact of managers of all classroom courses in Brazil. To preserve the principle of anonymity of respondents, course coordinators were invited to send the Internet link of the survey to at least ten students enrolled in higher education under their responsibility.

Data collection was managed for forty consecutive days, with students responding the online questionnaire. As a result of the online data gathering procedure, complete responses were received simultaneously from different FUs, with some FUs registering a larger amount of responses than others, in different times of the data collection. It is also important to notice that the database's observations were not respondents themselves, but their FUs of residence. The aggregation of individuals' responses into cultural units was conducted following Berry's (2002) instructions of aggregation for cross-cultural analysis from data at the individual level. Typically, researchers have used aggregation of individual responses to characterize cultures. As noticed elsewhere, this type of aggregated "data affords an opportunity to predict the types of socialization practices to be expected at particular locations" (Smith, 2002, p. 4).

## Results and discussion

To achieve the study objective of verifying how Brazilian FUs could be clustered and if the clusters found are like the five geographical regions structure, it was applied the technic of non-metric multidimensional scaling (MDS), that uses the proximity between any type of object as input (Kruskal & Wish, 1978). The MDS visual representation shows a proximity matrix, assigning coordinates that represent relative distances in a reduced perceptual map, usually two-dimensional, among objects (Allik & McCrae, 2004). Thus, the applicability of this technique regarding data exploration and objects similarity was the reason for its choice.

The unit measure, as clarified initially, was the FU. Individuals were classified by FU and treated together as unit, by the average of their respective scores of human values motivational types and social axioms dimensions, following the orientations of cultural analysis for these constructs (Leung et al., 2012; Schwartz, 2009). However, the 27 units' sample was reduced to 24, because the states of Roraima, Amapá and Rondônia, presented less than 15 individual cases and were excluded to avoid any sample bias. The conduction of FUs proximities analyses happened according to Schwartz's (2005, p. 8) understanding: the higher the conceptual similarity between two items, the closer should be their locations in the multidimensional space.

For the MDS technique application, the 10 motivational types were summarized in the four bipolar values dimensions, defined by Schwartz (1992) and endorsed by the theory refinement (Schwartz et al., 2012): 'conservation' and 'openness to change' values, and 'self-enhancement' and 'self-transcendence' values, establishing a simpler way to see the construct (Schwartz, 2012). The five dimensions' structure of social axioms were preserved: cynicism, social complexity, spirituality, reward for application, and fate control.

The similarity analyses including the 24 valid unities were conducted with standardized data for: (a) human values only, (b) social axioms only, and (c) both human values (HV) and social axioms (SA). The arrange (c) were applied to verify if the two constructs together could explain, in a better way, the similarity among the FUs.

Figure 1 presents the perceptual map of human values by FU. The closest FUs endorse with similar intensity the same human values dimensions. It is possible to visualize two aggregate groups, the first one composed by the FUs: CE, PI, RS, SC, MA, DF and RJ, and the second one by SP, BA, PR, SE, MG and GO. The AC and MS states also featured great similarity with each other and are very close in the perceptual map. According to Borg and Groenen (2005), aggregated points that form a dense cloud surrounded by emptiness are configured as clusters. Thus, three clusters can be pointed in Figure 1.

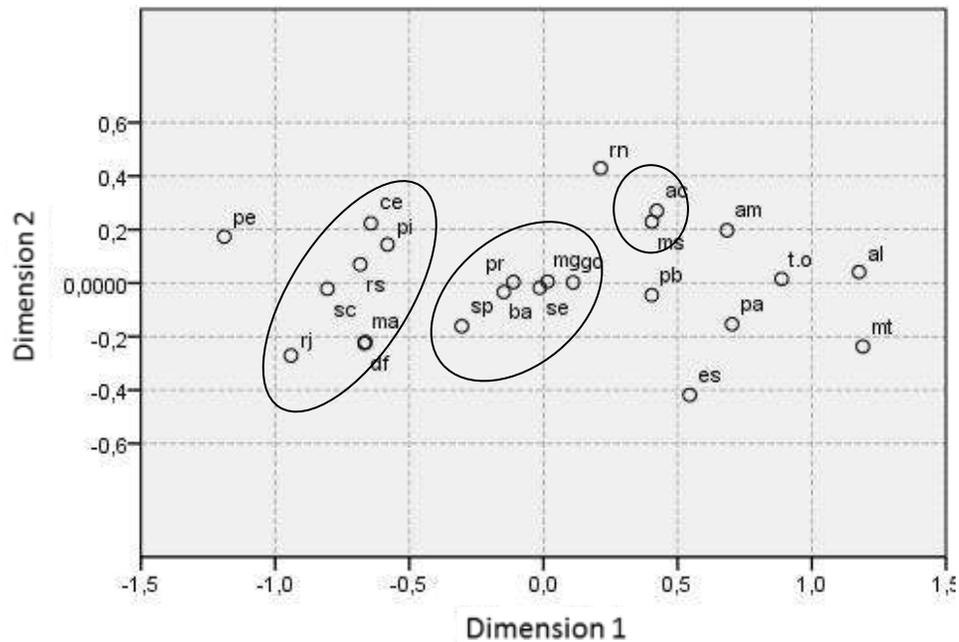


Figure 1. *Perceptual map of the four second order human values per FU*  
 Note. Results from the non-metric multidimensional scaling applied to human values.

Analyzing the FUs proximity concerning Schwartz human values and observing the clusters formation, it becomes evident the human values' endorsement differences between the federal unities. Although the perceptual map dimensions are arbitrary, it is important to notice that the FUs organization is dispersed through the x-axis, and several ones do not agglomerate. The distinct agglomerations in the map represent similarities and dissimilarities among values dimensions and,

therefore, there is no similarity between the values endorsed by individuals in those states. States from the same region do not agglomerate considering social beliefs endorsed by its individuals. According to Hawkins, Roupe and Coney (1981), the predominance of certain life style in a region is the result of direct influences from the structure of values, motivations and preferences, and from the historic and human structure, added to the indirect influence of physical characteristics from the region. In this sense, there is indicatives showing that the Brazilian regions, as defined, do not seem to reflect a homogeneous life style, appointing to eventual differences in the values structure in geographic locations more specific than the Brazilian regions. Concerning the Brazilian territorial extension, it is plausible to think that federal unities are objects of historical and cultural differences, and that, in the same geographic region (North, Northeast, Centre-West, South and Southeast), may exist local specificities and beliefs subsystems that justify a more accurate segmentation.

In the same direction, based on the declaration from Kahle (1986) that purposes the existence of geographic regions that differ on values, there are notes that enable the possibility of FUs to be identified as subcultures, as they endorsed different values. This vision corroborates with Smith and Schwartz's (1997) proposition that predominant values in a society may be the central element of a culture and can differentiate cultures and subcultures. This result offers relevant implications to the traditional practice of Brazilian market segmentation. This matter was subject of Walter's (1976) paper, by arguing that implicit values in a culture affect partially in the definition of the consumers' choice criteria. Thereby, consumers that reside in states from different regions could present similar decisions patterns. Gentry et al. (1981) note that marketing variables must suffer changes to follow cultural differences and similarities. That way, the adoption of a marketing program adapted to Brazilian regions shows possibly inadequate, as states from different regions agglomerate in clusters similar in human values and, consequently, could share common consumption decision patterns.

The Figure 2 presents the multidimensional plan to the (b) variables. The similarity analyses of the federal unities, considering the five social axioms factors, confirmed the results found in the (a) group and corroborates to the identification of differences among individuals that compose the Brazilian FUs. Although the state grouped more loosely than group (a), the regions' density

analyses shows differences in the same way. Based on social axioms, some states appear isolated and stand out from the others in both dimensions.

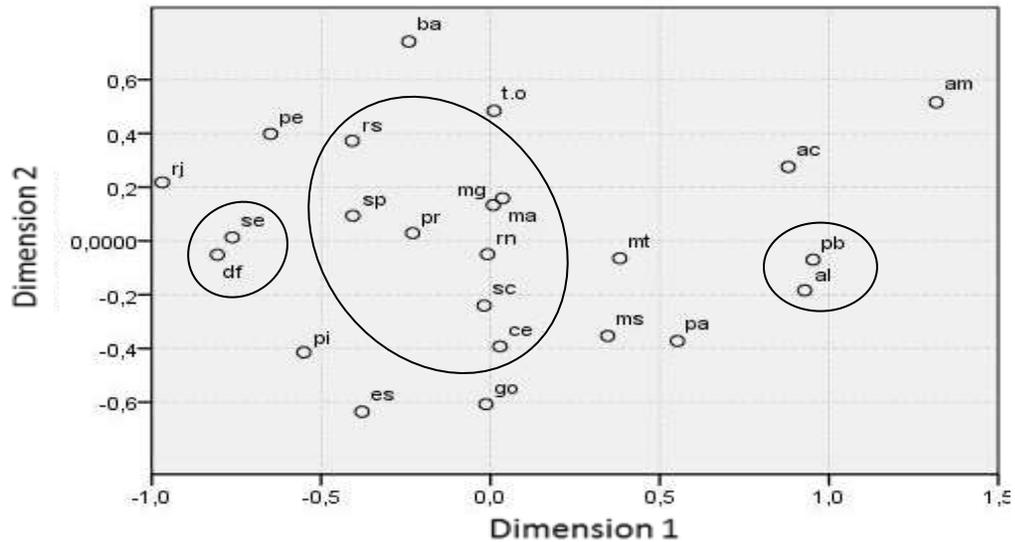


Figure 2.

*Multidimensional plan of the five social axioms factors*

*Note.* Results from the non-metric multidimensional scaling applied to social axioms.

The MDS representation in Figure 2 allows inferring that, in individual level, the Brazilian states' residents show distinct social life schemes in this sample. That way, individuals that reside in states from different regions share beliefs that guide their behaviors in several situations. This result implies the existence of groups formed by residents of different FUs that share similar ways of understanding the world's operation. These findings point that there are possibilities of new markets' opening to products already consolidated in other markets. As the identification of the high acceptance to a marketing solution consumers' beliefs profile becomes possible, professionals can focus the marketing extension efforts on new consumer markets that share beliefs and descriptive devices of the world with the current clients, expanding the acceptance and success chances in that new market.

The multidimensional plan for the social axioms and human values variables together (c), illustrated in Figure 3, shows that the two constructs measure different perceptions, corroborating

with Leung and Zhou's (2008), when the authors say that the use of one or another seems more prudent in the identification of social beliefs differences endorsed by individuals.

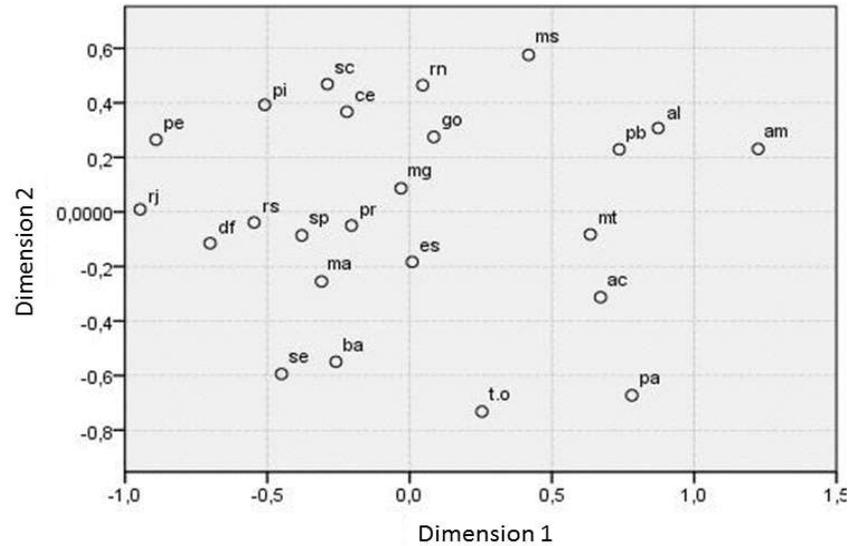


Figure 3. *Multidimensional plan of the five social axioms factors and the four human values second order dimensions*  
 Note. Results from the non-metric multidimensional scaling applied to human values and social axioms together.

The three arrangements show that there might be cultural differences among the Brazilian states, in relation to the individual differences noted with respect to social beliefs. The Brazilian market segmentation by geographic regions, as the model proposed by Hawkins et al. (1981) and highly adopted since then, do not seem to be the better option. Since individual differences existed in the human values and social axioms constructs among the FUs that belong to a same region, denoting that the justification of consumers' geographic agglomeration due to similar values and social axioms seems inadequate. In other words, the geographic division by regions, as observed in the practices in the Brazilian markets, do not reflect possible geographic subcultures in the country. The federal unities of Brazilian regions show themselves mixed, which can indicate that social beliefs differences occur in the state level, and not in regions level.

The results also suggest that, instead of the Brazilian regions, the Brazilian federal unities could compose subcultures, as a group must have a set of shared norms and beliefs, as identified in this study, to become a subculture (Boisnier & Chatman, 2002).

The analysis of (a) and (b) visual representation allows other inferences. It is noticed a visual agglomeration in the horizontal axis of the states that compose the North region (AC, AM, PA, TO). The Southeast region (ES, MG, RJ, SP) presents a similar agglomeration pattern, but in a vertical axis. The Northeast region FUs presented themselves in a diffuse way among the states from other regions, showing more similarities with states that belong to other regions than with themselves. The Center-West region also presents itself in a disperse, horizontally way among all the groups, and the South region's states concentrated in the negative side of the horizontal dimension. These two regions show similar characteristics to the Northeast region concerning the similarity with other regions' states. It is important to highlight that, in the analysis of the two constructs, separately and conjunctly, only two pairs of FUs kept close: DF and RJ, as SP and PR. This result may indicate that these states form a cluster with very similar cultures.

The results found in this paper corroborate with the findings of Strehlau et al. (2010) and Torres et al. (2015) and reinforce the evidences that Brazilian states present values and beliefs (social axioms) specificities, and its individuals should not be considered as homogeneous behavior consumers by geographic region, considering the social and consumption relations matters. This also suggests the existence of subcultures among Brazilian FUs instead of regions.

### **Conclusions and limitations**

The results here represented have an important contribution, since the adoption of market segmentation based on Brazilian regions was not suitable considering social beliefs. In other words, the distinction of market segments in a geographic way does not confirm itself based on values and social axioms, suggesting then that the localities involved present cultural differences.

It is also important to clarify that the objective of this study was not to statistically analyze the cultural differences of Brazil's each FU, but to compare the geographical clusters with the cultural ones. This analysis showed that the geographic segmentation does not correspond to

culture segments. In view of the study's objective, no data table or statistical analysis was conducted, with the MDS being used not as a statistical output, but as a perceptual map itself. Statistical analysis of cultural differences between Brazilian FUs might be a future research agenda.

Although college students may not be a representative sample of a culture (Allik & McCrae, 2004), and variables as age could influence the prioritization of certain values (Schwartz, 2009), the results found in this paper, even they are initial, allow researchers and managers to confirm that regionalized marketing strategies are not adequate. Since human and consumer behavior suffers influence of social beliefs, observed by the social axioms and human values constructs, and that they grouped despite of the regions studied, it becomes clear that not all states from a same region share the same beliefs as others. This paper alerts to the possibility of existence of better-adjusted geographic segmentation in Brazil in comparison to the division by regions, and, considering the specific cultural characteristics, it alerts to the fact that the federal unities (FUs) might constitute subcultures.

This implication becomes evident by noticing the states from the Northeast, Centre-West and South regions, which have more similarities with states from other regions than with themselves. Besides market segmentation, the identification of states that share values can be useful in buying related processes. Values influence attitudes towards the consumer's choice criteria, as the brand perception, and impact in all consumption process. Identifying social beliefs differences among Brazilian states becomes relevant for more assertive marketing program formulation.

Among other theoretical contributions found in this paper, stands out some of them: the advance in the cultural mapping by the comparative analysis in individual level in Brazilian regions; the empirical contribution about the effectiveness of cultural constructs as consumers' differentiation device, theme considered as unexplored by Davis et al. (2008). This study also offers to the field new theoretical-methodological approaches about human values, filling gaps in the literature that were appointed by Strehlau et al. (2010) and Torres et al. (2015).

More theoretical advances provided by this study were the advance in the segmentation theory, especially in Brazilian context, as it shows the need to treat each FU as a unique subculture, and not as a part of a generalized geographic region. As the results showed in the MDS analysis, the cultural segmentation based on both human values and social axioms behaved differently from

the traditional geographic segmentation, showing that, in future research, scientists might take into account the differences among FUs, and not analyze them all together in one geographic cluster.

This understanding gives social scientists a better perspective on the Brazilian segmentation process and theory, contributing to them in the understanding of the country and its population. In summary, the theoretical contributions found in this research points to another perspective in countries' segmentation studies, showing, in a first level analysis, that the FUs should not be clustered geographically in studies that seek to understand its population's cultural or psychosocial differences.

This paper has some limitations considering its analysis level and its technique choice. The individual analysis level differs from the cultural one (Fischer & Poortinga, 2012), and does not permit the conclusion that federal unities constitute subcultures in the Brazilian market, but it suggests that this constitution might exist. The multidimensional scaling technique, although being adequate to data exploitation, does not permit to detect if the patterns found are stable (Borg & Groenen, 2005). Moreover, Malhotra, Argawal and Peterson (1996, p.31) criticized the utilization of standardized data, affirming that statistics based on unstandardized data are preferred based on arguments of comparability across cultures. There are limitations in the multidimensional plan analysis that did not use the regionalization technique, where are defined regions that present proximities and, by the same time, differ from the other elements that do not compose it. There was also a sample limitation, considering its composition, exclusively college students, preventing results generalizations. Lastly, a sample restraint can be related to respondents from capital cities and countryside cities being analyzed together by FU, without any differentiation even in big states.

As recommendations for future studies, highlights the need of deepening of the analysis to identify regions, involving discussions about the consonances and differences among states. The sample extension to other profiles aiming the results confirmation is also a recommendation. In addition, the utilization of the MDS together with other data analysis methods and techniques that identify differences among federal unities, allowing the determination of a segmentation base of the Brazilian consumer based on his social beliefs. The determination of the better applicability of the human values and social axioms constructs, considering the study characteristics, the extension and complexity of the instruments is another point of interest. Other recommendations are the

reapplication of the study to the cultural level of analysis, and the test of another MDS models besides the two-dimensional one for verification of the better adjustment. Lastly, the application of the Schwartz et al. (2012) human values refined theory in new studies, aiming the identification its adequacy to the cultural reality of the Brazilian federal unities.

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