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Value-System Segmentation: Exploring the Meaning of LOV

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Human values have been increasingly used as a basis for market segmentation. The list of values (LOV) is one common approach to segmentation: typically, marketers use the top-ranked value to assign consumers to segments. Although it is simple to implement, the top-rank approach to values segmentation conflicts with Rokeach's concept of an ordered value system, in which individual values are organized in the context of an overall hierarchy. This study uses a new measurement model that identifies latent (unobserved) value-system segments derived from a ranking of the LOV items. Higher-order value-system segments reflect the reality that multiple values will affect an individual's behavior. A values map is also constructed, which allows dimensions underlying the value-system segments to be identified. Data from a national survey show that the resulting value-system segments and values map have face validity consistent with the psychological structure of human values recently hypothesized by S. H. Schwartz and W. Bilsky.

The concepts of human values and value systems have been widely used by social scientists to explain a variety of behavioral phenomena, such as charity contributions (Manzer and Miller 1978), mass media usage (Becker and Connor 1981; Rokeach and Ball-Rokeach 1989), religious behavior (Feather 1984), cigarette smoking (Grube et al. 1984), drug addiction (Toler 1975), political inclination (Rokeach 1973; Tetlock 1986), and consumer behavior (Henry 1976; Pitts and Woodside 1983; Vinson and Munson 1976).

Values are cognitive representations of universal human requirements: biological needs, social interactional requirements, and social institutional demands on the individual (Schwartz and Bilsky 1987). A value is "an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence" (Rokeach 1973, p. 5). We use our culturally learned values as standards to determine whether we are as moral and competent as others, to guide our presentations to others, and to help us rationalize beliefs, attitudes, and behaviors that would otherwise be personally or socially unacceptable (Rokeach 1973). A value refers to a single belief that transcends any particular object, in contrast to an attitude, which refers to beliefs regarding a specific object or situation. Values are more stable and occupy a more central position than attitudes, within a person's cognitive system. Therefore, they are determinants of attitudes and behavior and hence provide more stable and inner-oriented understanding of consumers.

One of the most important concepts in Rokeach's theory of human values is that, once a value is learned, it becomes part of a value system in which each value is ordered in priority relative to other values (Rokeach 1973, pp. 9–17). This value system is an important tool that the individual uses for conflict resolution and decision making; since most situations in life will activate more than one value and often involve a conflict between values (such as conflict between striving for salvation and hedonic pleasure), the individual relies on his or her value system to resolve the conflict so that self-esteem can be maintained or enhanced. Therefore, the value system, rather than a single value, should provide a more complete understanding of the motivational forces driving an individual's beliefs, attitudes, and behavior. The impact of a person's values on attitudes and behavior can be evaluated more effectively and reliably with information on the person's whole value system, rather than on a single value (Schwartz and Bilsky 1987).

In the past few years, there has been renewed interest among consumer researchers in the use of human values as the basis for market segmentation. This interest is driven by the view that values are more closely related

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to behavior than are personality traits and that values are less numerous, more central, and more immediately related to motivations than are attitudes (Valette-Florence 1986, 1988).

Many of these value-segmentation studies, however, have relied on a single observation (the highest-ranked value) from each individual to define the segments (Beatty, Kahle, and Homer 1991; Kahle 1983, 1984, 1986; Kahle, Beatty, and Homer 1986; Novak and MacEvoy 1990). Notable exceptions are the studies by Beatty et al. (1985), who use median ranks to split the population into segments, and by Kennedy, Best, and Kahle (1988), who form segments using conjoint analysis.

In this study, we discuss the advantages of identifying value-system segments on the basis of the latent (unobservable) value systems shared by groups of consumers. We also present a mapping procedure that allows the researcher to interpret these value systems at an even higher level of abstraction, thus providing a better understanding of the motivations that drive the beliefs, attitudes, and behavior of each segment.

MEASURING VALUES AND VALUE SYSTEMS

Rokeach's Value Survey (RVS)

The most commonly used instrument for the measurement of values is the RVS, which consists of 18 instrumental values (ideal modes of behavior) and 18 terminal values (ideal end states of existence). Typically, respondents are asked to rank each list of 18 values in order of importance as guiding principles in their lives. Because ranking 18 values is difficult as well as time-consuming, rating scales have been explored as an alternative means of data collection (Alwin and Krosnick 1985; Feather 1975; Moore 1975; Rankin and Grube 1980; Reynolds and Jolly 1980). A detailed discussion of the ranking versus rating scaling debate concerning the RVS can be found in Rankin and Grube (1980), Miethe (1985), Alwin and Krosnick (1985), and Kamakura and Mazzon (1991). Regardless of the scaling debate, the ranking of value descriptions in their order of importance as guiding principles in life is directly supported by the important theoretical concept of a value system, that is, that individuals assign priorities to each value held and use these priorities as standards for conflict resolution and decision making.

The structural relationships among instrumental and terminal values in the RVS have been widely investigated (Braithwaite and Law 1985; Feather and Peay 1975; Jones, Sensenig, and Ashmore 1978; Levy 1986; Rokeach 1973).[1] Recently, Schwartz and Bilsky (1987, 1990) hypothesized a psychological structure of human values (and their descriptions in the RVS) in terms of seven motivational domains:

1. *enjoyment,* which is directly tied to physiological gratification and is translated into socially acceptable terminal values such as *pleasure, a comfortable life,* and *happiness* and the instrumental value of being *cheerful;*
2. *security,* which is directly related to Maslow's (1954) and Williams's (1968) basic need for safety and is translated into terminal values such as *family security, national security,* and *world peace;*
3. *achievement,* which is the basis for social recognition and admiration and is translated on the RVS as the terminal value of *social recognition* and the instrumental value of being *capable* and *ambitious;*
4. *self-direction,* a domain in which values are instrumental in nature (instrumental values: *imaginative, independent, intellectual, logical*) and "refer to reliance on and gratification from one's independent capacities for decision making, creativity, and action" (Schwartz and Bilsky 1987, p. 552);
5. *restrictive conformity,* or values emphasizing conformity to social norms, such as the instrumental values of being *obedient, polite, clean,* and *self-controlled;*
6. *prosocial,* or values expressing a concern for the welfare of others such as the terminal value of *equality* and the instrumental values of being *helpful, forgiving,* and *loving;*
7. *maturity,* or end states of existence that are reached only through "experiencing and coming to terms with life" (Schwartz and Bilsky 1987, p. 553). Although the meaning of maturity may vary across cultures, "it is likely to include wisdom, tolerance, faith in one's convictions, deep emotional relationships, and appreciation for the beauty of creation" (Schwartz and Bilsky 1987, p. 553). The RVS terminal values within this domain are *wisdom, mature love, true friendship,* and *a world of beauty.*

These seven domains are organized by whether they serve individualist (enjoyment, achievement, and self-direction), collectivist/societal (prosocial and restrictive conformity), or mixed (maturity and security) interests. Schwartz and Bilsky (1987, 1990) also hypothesize and provide empirical evidence, in the form of seven cross-cultural replications, that the maturity and enjoyment domains occupy opposite positions in any individual's value system. Thus, individuals who emphasize maturity as the dominant value domain will tend to assign little importance to enjoyment and vice versa. Furthermore, these authors show that the achievement and self-direction domains are contiguous and in direct opposition to security: individuals who value achievement will also hold self-direction as a secondary goal and assign little importance to security.

The List of Values (LOV)

Note that the RVS covers collective and societal domains that might not be of direct interest for consumer

[1] Terminal values and instrumental values will be indicated by italicized words throughout the text.

research. Beatty et al. (1985) suggest that "primarily person-oriented" values are of greater relevance in a consumer-behavior context. Although instrumental and terminal values are linked in means-end applications (Gutman 1982; Reynolds and Gutman 1988), terminal values occupy the dominant role as the position of greatest abstraction in the means-end chain. There is corresponding evidence that the relationship of terminal values to consumer behavior is also at a more abstract level than that of instrumental values. For example, Howard (1977) suggests that terminal values guide product category choice while instrumental values guide choices among brands. And Pitts, Wong, and Whalen (1991) note that instrumental values tend to be used in situation-specific contexts.

The LOV (Kahle 1983) is an abbreviated measurement instrument that only includes terminal values. The LOV provides one solution to the difficulty of ranking 18 values: a reduced list of nine terminal values is used, which considerably simplifies the ranking task. Two of the items in the LOV (terminal values *accomplishment* and *self-respect*) are identical to RVS items; the remaining LOV items either combine several RVS items or generalize a specific RVS item. The RVS items that "did not meet the criterion of generality across all of life's major roles" (Beatty et al. 1985) were eliminated.

The nine LOV items correspond to Schwarz and Bilsky's domains that serve either individual or mixed interests. This is shown in Table 1, which embeds the nine LOV items within Schwarz and Bilsky's framework.

Except for *warm relationships with others,* all nine LOV items clearly belong to a single motivational domain. Kahle (1983, p. 64) indicates that the *warm relationships with others* value corresponds to Rokeach's *true friendship* (close companionship) value and is thus a potential component of the maturity domain. However, we hypothesize that warm relationships might be interpreted differently by different segments of respondents, partially because the LOV items are not followed by item descriptions as the items in Rokeach's scale are. Specifically, while some respondents may think of long-term, enduring, deep emotional relationships, others may interpret warm relationships as close friends with whom one shares excitement in life or as sexual relationships. This hypothesis is supported by the results from Kennedy et al. (1988), who reported a factor analysis in which *warm relationships with others* loaded on the same factor as did *fun and enjoyment in life* and *excitement;* thus, it is a component of the enjoyment domain. The implications are potentially important because, if certain values have multiple interpretations, the classification of individuals into value segments on the basis of the single most important value (e.g., Kahle 1983; Kahle et al. 1986; Novak and MacEvoy, 1990) may be misleading.

TABLE 1

INTERPRETATION OF LOV ITEMS IN TERMS OF MOTIVATIONAL DOMAINS

Motivational domain	LOV item	Interest served
Self-direction	Self-respect; self-fulfillment	Individual
Achievement	Accomplishment; well respected	Individual
Enjoyment	Fun and enjoyment; excitement; warm relationships	Individual
Maturity	Belonging; warm relationships	Mixed
Security	Security	Mixed

Furthermore, using only the top-ranked value as the classification criterion may capitalize on measurement error. Generally, Schwartz and Bilsky (1987) suggest that reformulating values at a higher level of abstraction will allow consumer attitudes and behavior to be explained and predicted more effectively and reliably. Therefore, one would expect that segments defined by value systems rather than a single value will be more reliable and will have greater interpretability, aside from the important fact that their definition is directly consistent with Rokeach's theoretical concept of value systems.

From a different perspective, product attributes have been regarded by some researchers (Bettman and Sujan 1987; Johnson 1984; Park and Smith 1989) as lying along a dimension defined in varying degrees of abstractness. Johnson (1989, p. 599) has recently argued that "it is advantageous to simply view attributes as lying on a continuum from the concrete to the abstract, a continuum that encompasses characteristics, consequences, benefits, and values." He proposes a methodology utilizing additive trees (Sattath and Tversky 1977), which establishes the degree of centrality (e.g., abstractness) of a set of product attributes. Similarly, individual LOV items, when organized in a value system, capture the nature of terminal values at a more abstract level. Because terminal values are, by definition, at the innermost level of abstractness in the means-end chain (Gutman 1982; Reynolds and Gutman 1988), this higher-level reexpression will be more meaningful and stable.

In practice, applications of LOV in values segmentation have dealt with the scale at a relatively concrete level. By "concrete" we mean that the original LOV items are directly used to assign consumers to segments; a more abstract approach would use higher-order constructs underlying the LOV items as the basis for segmentation. Although Kahle et al. (1986, p. 408) acknowledge that "the use of the nominalized highest LOV value rather than the full information available from the rankings probably decreases the power of the LOV items," concrete segmentation has been prevalent in actual applications of the LOV. The most common examples of concrete segmentation are provided by "top

value segmentation," in which segments defined by the most important value are profiled by attitudes, behaviors, and demographics (Kahle 1983, 1984, 1986; Kahle et al. 1986; Novak and MacEvoy 1990; Beatty et al. 1985). An abstract segmentation, on the other hand, is developed by Kennedy et al. (1988). These authors first create a conjoint task based on a Latin-square design of three LOV values in three levels of intensity and then form segments on the basis of the individual part worths estimated from this conjoint experiment.[2]

In the next section, we briefly describe the Kamakura and Mazzon (1991) model, which forms value-system segments in terms of latent discriminal values instead of directly observed rankings or ratings. The model is consistent with Rokeach's theory of value hierarchies and value systems and provides segmentation at a higher level of abstraction (latent value hierarchies). We also develop a mapping procedure that allows the researcher to interpret the value systems within a population at an even higher order of abstractness.

IDENTIFYING AND INTERPRETING VALUE-SYSTEM SEGMENTS

Value-System Segmentation

The measurement methodology to be applied in our empirical analysis of the LOV scale was introduced by Kamakura and Mazzon (1991), who present details about the measurement model and its estimation. This model for the measurement of values and value systems can be viewed as a clusterwise extension of Thurstone's (1927) law of comparative judgment. It assumes that the observed value rankings are error-prone observations of the latent (unobservable) value system of each individual. Individuals belonging to a particular segment share the same value system, which is represented by a set of unobservable utilities, u_{js}, assigned to the $j = 1, 2, \ldots, 9$ value descriptions.

Once the segment sizes and the utilities, $\boldsymbol{u}_s$, are estimated for each segment, s, each individual in the sample is assigned to the S segments according to a posterior Bayesian update, using the segment sizes as priors (see Kamakura and Mazzon 1991). These posterior probabilities lead to overlapping (if desired) segments.

The parameter estimates in $\boldsymbol{u}_s$ represent the worth assigned by members of segment s to each value description. These estimates can be transformed into relative importance weights $w_{js} = \exp(u_{js})/\Sigma_{j'=1,9}\exp(u_{j's})$, which define priorities assigned to each value by members of segment s.

Mapping of Values

The value-system segments identified by Kamakura and Mazzon's model provide within-segment orderings of values. We expect that these orderings will be consistent with the theoretical framework proposed by Schwartz and Bilsky (1987, 1990). That is, the within-segment value rankings are not arbitrary but follow a general theory of the organization of human values. Thus, we can also expect to find stable, higher-order dimensions representing structural characteristics that organize individual human values. In this section we describe a mapping procedure that allows us to capture these more abstract structural characteristics underlying the value-system segments. The relative importance weights for each value description provide the researcher with an objective assessment of the value priorities within each segment. The following mapping procedure combines the results from all S segments. The procedure identifies structural characteristics underlying the within-segment value systems by portraying the relative position of all nine values and of each value-system segment at a higher level of abstractness.

Let us consider the utilities u_{js} for the J value descriptions for a particular segment s. Notice that the relative importances of the J values for segment s are not altered if the utilities are transformed into deviations from the mean within that segment ($u'_{js} = u_{js} - \Sigma_{j'=1,J} \times u_{j's}/J = u_{js} - u_{.s}$).

Let us also transform the utility for each value j into deviations from the mean across segments, $u^*_{js} = u'_{js} - \Sigma_{s'=1,S}\ u_{js'}/S = u_{js} - u_{.s} - u_{j.} + u_{..}$. The resulting "double-centered" utilities are directly related to the ratio between the importance of value j to segment s and the geometric mean (of the importances w_{js} for the same value j) across all segments. Thus, the double-centered utility u^*_{js} indicates the extent by which a value j is more or less important to segment s than to other segments.

Our objective here is to identify the dimensions underlying the value systems for the S segments and to measure the relative priority assigned by each segment to these underlying dimensions. Thus, our goal is to represent the double-centered utilities (u^*_{js}) in a map so that each segment is portrayed as a point in the map and the dimensions of this map are defined in terms of the nine LOV values.

As shown in the Appendix, this map is easily produced with the singular-value decomposition of the $J \times S$ matrix, $\boldsymbol{U}^*$, containing the double-centered utilities (u^*_{js}). This decomposition, as shown in the Appendix, leads to the following relationship:

$$\boldsymbol{U}^* = \boldsymbol{FZ},$$

[2]Abstract segmentation tends to find more prevalent application for the RVS than for the LOV. For example, Pitts and Woodside (1983) applied cluster analysis on transformed RVS rankings, and Kamakura and Mazzon (1991) developed a finite-mixtures model to uncover latent (unobservable) segment-level value systems. Because of the relatively large number of terminal values, top value segmentation using the RVS is obviously problematic.

where $\boldsymbol{Z} = K \times S$ matrix containing the coordinates of the S segments in a K-dimensional space; and $\boldsymbol{F} = J \times K$ matrix containing the weights or loadings of the J values on the K underlying dimensions of the map. These weights define the K-dimensional space in terms of the nine LOV values and allow the researcher to interpret the underlying dimensions of the map as functions of the original LOV values. Therefore, application of this mapping procedure to the output from the Kamakura and Mazzon value-segmentation model will provide a condensed description of the value systems in a sample at an even higher level of abstraction than each individual terminal value. The weights in matrix $\boldsymbol{F}$ will translate the nine LOV (terminal) values into a smaller number of underlying dimensions.

EMPIRICAL APPLICATION

The data used in this empirical application are the same described in Novak and MacEvoy (1990) and are based on a national probability sample of 2,591 adults and an effective sample of 1,406 individuals. The respondents were asked to rank the two most important LOV values (a common practice in applications of this scale) and to rate the importance of all nine values on a nine-point scale. By combining the ranking and rating data, we constructed a partial ranking of LOV values with possible ties. However, the possibility of ties violates the underlying assumptions of the original Kamakura and Mazzon measurement model. Since a large portion of ties in an individual's ranking would reduce the amount of information available for classification into the segments, only individuals with less than four ties in their ranking of LOV values were included in our final sample, leading to a final sample size of 1,331 respondents.[3]

Identifying and Estimating Value Systems

Application of Kamakura and Mazzon's model to this data for up to six segments leads to the following goodness-of-fit results, measured by the Consistent Akaike's Information Criterion (CAIC; Bozdogan 1987).

Number of segments	*CAIC*
One segment	30,808.9
Two segments	30,648.6
Three segments	30,603.6
Four segments	30,549.4
Five segments	30,580.5
Six segments	30,647.9

The four-segment solution was chosen, on the basis of this criterion, leading to segment A with 21.3 percent, segment B with 31.8 percent, segment C with 30.3 percent, and segment D with 16.6 percent of the sample.

The utilities estimated for each segment were transformed into relative importance weights as discussed earlier. These relative importances (displayed in Fig. 1) represent the priority given by the segments to each of the nine LOV values, that is, their value systems.

Interpreting the Value Systems

The four segments can be interpreted using Schwarz and Bilsky's (1987) motivational domains described in Table 1. However, this interpretation is made easier by analyzing the double-centered utilities (listed in Table 2), which reflect the importance given by the segment to each value, relative to all segments.

Segment A is motivated by the security domain. According to Schwarz and Bilsky (1987, p. 554), the security domain is opposite to the achievement and self-direction domains; that is, individuals whose value system emphasizes the security domain tend to give little importance to these two other domains, which seems to be the case for segment A.

The maturity domain (*sense of belonging* and *warm relationships with others*) motivates segment B. This segment appears to interpret warm relationships as deep, emotional relationships. There is some secondary influence of the achievement domain (via *being well respected*) and a disregard for the enjoyment domain (*fun and enjoyment* and *excitement*). This priority pattern once again confirms Schwartz and Bilsky's theoretical structure of value domains, which places maturity in direct opposition to enjoyment.

Although segments A and B appear to be motivated by mixed (individualist and societal and collectivist) interests, segments C and D are motivated by individualist interests. Segment C is motivated by the achievement domain (and secondarily by self-direction), while its emphasis on the security domain and the maturity domain is low, in agreement with Schwartz and Bilsky's hypothesized structure. Finally, segment D is clearly motivated by the enjoyment domain (via *fun and enjoyment, excitement,* and *warm relationships with others*). This segment, when contrasted with segment B, supports our hypothesis that *warm relationships with others* is being interpreted differently by these two segments.

Mapping the Value Systems

Although the relative importances (Fig. 1) and double-centered utilities (Table 2) already provide some useful insights about the value system within each segment, the mapping of values described in the Appendix produces an even richer portrayal of the segmentation results. The matrices $\boldsymbol{F}$ and $\boldsymbol{Z}$, resulting from the sin-

[3]We also adapted the original model, so that the comparisons involving ties would not affect the likelihood function, to prevent any estimation bias.

FIGURE 1

RELATIVE IMPORTANCES FOR THE LOV VALUES

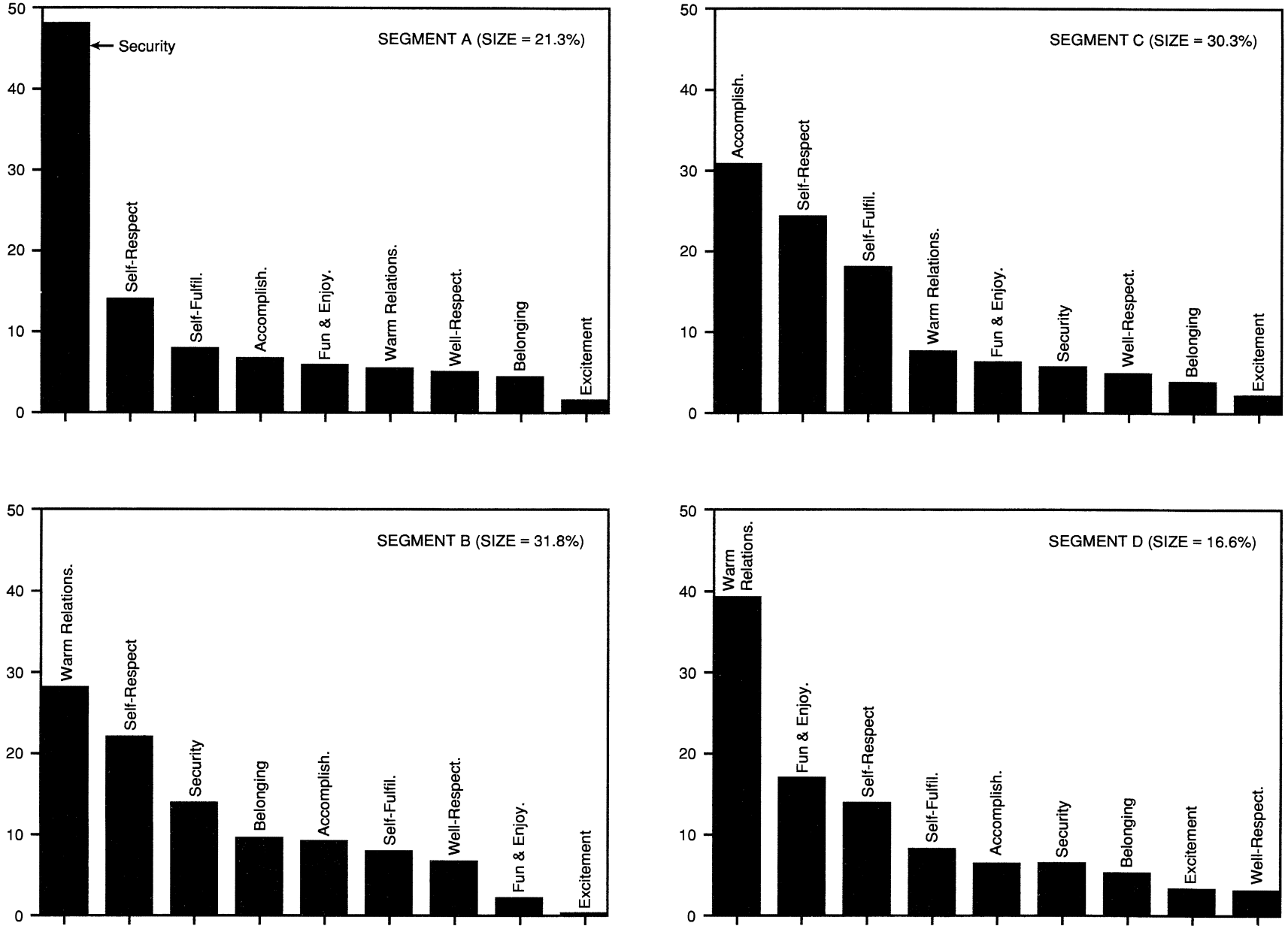


TABLE 2

DOUBLE-CENTERED UTILITIES (u^*_{js})

Domain and values	Value-system segment A	B	C	D
Self-direction:				
Self-respect	−.19	.26	.29	−.36
Self-fulfillment	−.15	−.12	.57	−.30
Achievement:				
Sense of accomplishment	−.40	−.07	1.06	−.60
Being well respected	.15	.49	−.09	−.56
Enjoyment:				
Fun and enjoyment	.02	−.90	−.07	.95
Excitement	.19	−1.30	.33	.77
Enjoyment/maturity:				
Warm relationships	−.95	.74	−.71	.92
Maturity:				
A sense of belonging	−.10	.70	−.51	−.09
Security	1.43	.19	−.88	−.74

TABLE 3

VALUES MAP

Domain, value, and segment	Transformation weight (*F*) Hedonism	Empathy	Achievement
Self-direction:			
Self-respect	−.238	−.053	.513
Self-fulfillment	.133	−.354	.558
Achievement:			
Sense of accomplishment	.153	−.537	1.155
Being well respected	−.739	−.077	.189
Enjoyment:			
Fun and enjoyment	1.140	.038	−.648
Excitement	1.385	−.524	−.510
Enjoyment/maturity:			
Warm relationships	.109	1.663	−.085
Maturity:			
A sense of belonging	−.655	.571	−.072
Security	−1.288	−.726	−1.100
	Segment coordinates (*Z*)		
	Hedonism	Empathy	Achievement
Segment A	−.289	−.579	−.575
Segment B	−.657	.500	.262
Segment C	.337	−.414	.682
Segment D	.609	.493	−.369

gular-value decomposition of the standardized utilities (listed in Table 2) are presented in Table 3.

As explained before, each element z_{sk} of the matrix $\boldsymbol{Z}$ contains the coordinate of segment s along the dimension k in the map. Each element f_{jk} of the matrix $\boldsymbol{F}$, on the other hand, contains the weight used to transform the coordinate of a segment along dimension $\boldsymbol{k}$ into the standardized utility for the LOV value j for that segment. The interpretation of the weights in $\boldsymbol{F}$ is similar to the factor loadings in factor analysis.

Using the transformation weights in Table 3, and the classification of LOV items according to motivational domains in Table 1, dimensions in the map can be related to higher-order value constructs. Table 3 also reorganizes the LOV items by domains. The first dimension of the map, interpreted as hedonism, is highly related to the enjoyment domain and opposite to the security domain. Dimension 2 is highly related to warm relationships with others and a sense of belonging, indicating the maturity domain. However, while some may think of warm relationships with others as long-term, enduring, deep emotional relationships (as one would expect segment B to have interpreted it), others may interpret it as close friends with whom one shares excitement in life or as sexual relationships (the likely interpretation by segment D). Therefore, we label this second dimension as empathy or concern about others. Dimension 3, achievement, has high positive weights for self-direction and achievement and negative weights for the enjoyment and security domains. Note that the security domain is at the extreme negative end of the achievement and hedonism dimensions, in perfect agreement with the hypothesized structural relations between the security, achievement, and enjoyment domains posited by Schwartz and Bilsky (1987, p. 554).

This interpretation of the three underlying dimensions becomes clear with the values map in Figure 2. This map was produced by portraying each row of $\boldsymbol{F}$ as a vector corresponding to a LOV value and each row of $\boldsymbol{Z}$ as a point corresponding to one of the segments. Since we have only four segments, this map perfectly reproduces the standardized utilities in Table 2, as explained in the Appendix.

From Figure 2 one can clearly see that segment C is the most achievement-oriented group in the population, whereas segments A and D are the least concerned about achievement. Segments D and B are the most and least hedonistic of all segments, respectively. Segments D and B also have the highest empathy for others.

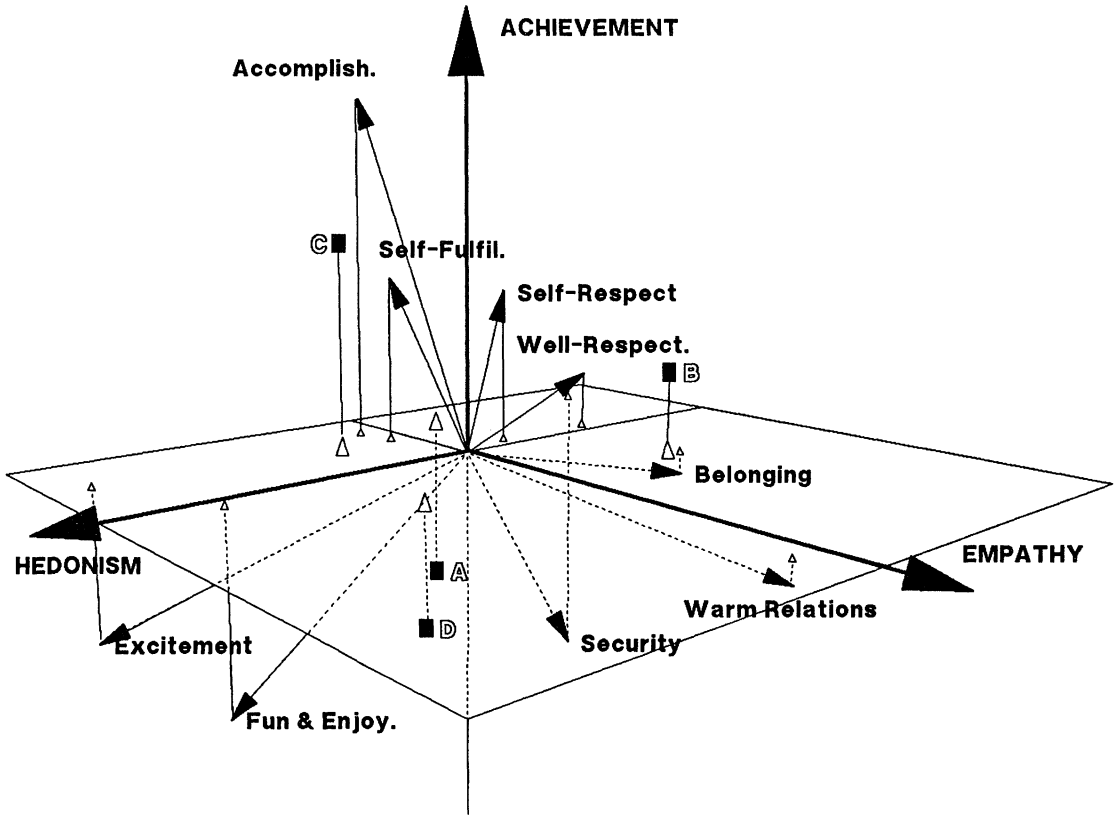
Establishing the Face Validity of the Segment Structure

Although the four segments are distinct from each other at a motivational level, they should not be expected to be different for every measurable attitude or behavior; these segments were formed on the basis of terminal values, one of the most central and stable determinants of attitudes and behavior but also one of the most remote influences on attitudes and behavior, that are likely to be affected by more immediate situational factors (Vallette-Florence 1988). Still, it is possible to set forth some expectations of likely attitudinal and behavioral patterns that each segment will exhibit.

To check the validity of the segmentation results obtained with Kamakura and Mazzon's model, we used

FIGURE 2

VALUES MAP



the segment-membership probabilities computed for each of the 1,331 individuals to explain their answers to 138 questions about their engagement in a wide variety of activities, donation to different organizations, magazine readership, television viewership, and four demographic variables.

The objective of this validity check is not to predict membership or to discriminate among the four segments on the basis of demographics and life-style. Rather, we want to determine whether each segment is more likely than others to engage in the pattern of activities expected on the basis of their value system. Therefore, a separate linear regression was estimated for each of the 142 questions, using the segment memberships as predictors and the answers to the questions as the dependent variable. To circumvent the linear dependence in the segment-membership probabilities, we used a constrained least-squares model (constraining the sum of regression coefficients to zero over the four segments), applied to the mean-centered dependent and independent variables (Stirling 1981).

The results from these linear regressions are summarized in Table 4. Because of space constraints, Table 4 lists only the questions for which at least one of the membership probabilities had a significant (at the .05 level) regression coefficient. These tables display the signs of the significant coefficients and the adjusted R^2 obtained in each linear regression.

While the goodness-of-fit statistics reported in these tables appear smaller than those reported by Kahle et al. (1986), they are of the same order of magnitude as results reported in other values-segmentation studies (Kamakura and Mazzon 1991; Novak and MacEvoy 1990) and in studies that use segmentation based on general customer characteristics (Frank, Massy, and Wind 1972). Furthermore, it has been widely noted (Bass, Tigert, and Lonsdale 1968; Novak and MacEvoy 1990; Rosenthal and Rubin 1979, 1982) that low R^2 values do not imply trivial differences among segment means.

A simple visual analysis of the columns for each segment in Table 4 lends support to the classification obtained with Kamakura and Mazzon's model and to our earlier interpretation of the four segments. For example, segment A's being motivated by security should make this a risk-aversive consumer group. These consumers should not be expected to "lead the pack" in activities or purchase behaviors since they are motivated by maintaining the status quo. They express little concern for self-direction and thus are less likely to engage in

TABLE 4

EXTERNAL VALIDATION OF THE LOV SEGMENTS

Description	Adjusted R^2 (%)	Segment A	B	C	D
Activities:[a]					
Eat white bread	1.91	+			
Attend a church or synagogue social	4.21		+		
Do Bible reading	7.32	−	+	+	−
Handicrafts	5.29		+		−
Eat a flavored gelatin	4.04		+		−
Freeze your own fruit/vegetable	1.85		+		−
Go to church/synagogue service	6.44		+		−
Make cookies or pastries	2.81		+		−
Written to elected official	2.63				
Attend social function for business	3.07	−		+	
Do carpentry	2.70			+	
Eat whole wheat bread	2.23			+	
Cultural/intellectual activities	6.79			+	
Exercise	4.50	−		+	
Attend educational lecture for fun	5.80	−		+	
Drink wine	3.33	−	−	+	+
Eat brown rice	4.00	−		+	+
Browse in a bookstore	4.91	−		+	+
Drink imported beer	10.39	−		+	+
Socializing	2.72				+
Eat in a fast-food restaurant	1.77				+
Play tennis	2.49				+
Ride a bicycle	2.04				+
Wear designer jeans	1.02		−		+
Take an adult class	3.07	−	−		+
Try a new food	3.00	−	−		+
Listen to records	6.13	−			+
Team sports	3.38				
Camping or backpacking	3.84				
Risky sports	3.79		−		+
Drink domestic beer	7.78		−		+
Drink cocktail mixes	2.81		−		+
Go bowling	1.81		−		+
Go to a movie	6.47		−		+
Have an after-dinner drink	3.46		−		+
Have back massage	4.56		−		+
Play poker	1.96		−		+
Use a sauna/hot tub	3.60		−		+
Drink herbal tea	2.40	−			
Eat yogurt	3.58	−			
Give a dinner party	1.58	−			
Phone a relative long distance	1.44	−			
Read a novel	1.63	−			−
Mechanics	3.91		−		−
Hunt or fish	2.27		−		−
Bet on a sporting event	2.22		−		
Can fruit and vegetables	1.47				
Do gardening	1.56				
Drink coffee	2.11				

Description	Adjusted R^2 (%)	Segment A	B	C	D
Donations in the last 12 months:[b]					
Religious groups	5.20		+		−
Public service	1.56		+		−
Environmental/consumer	3.01	−		+	
Educational institutions	2.21	−			
Political party	1.05				−
Health associations	.64				−
Magazine readership:[c]					
Home and Garden	2.72		+		−
Retirement	2.74		+		−
Reader's Digest	2.68		+		−
Business	3.84			+	
Natural history/ethnography	2.40			+	
Literary	2.63			+	
Consumer interest	2.08			+	−
Science/technology	5.36		−	+	
Automotive	3.34		−		
Fishing and hunting	1.81		−		
General sports	3.51		−		
Specific sports	2.19		−		
Mechanics	2.48		−		
Men's	6.22		−		−
Motorcycle	1.23		−		−
TV viewership:[d]					
Quiz and audience	4.32	+		−	
Religious programs	3.83		+		−
"Golden Girls"	2.32		+		
Educational television	2.80			+	−
"Cheers"	1.90				+
"Family Ties"	1.45				+
"Moonlighting"	1.47				+
"Night Court"	1.04				+
"St. Elsewhere"	.52				+
"Who's the Boss"	2.33			−	
Network evening news	2.14				−
Public affairs show	1.24				−
"Meet the Press"	1.61				−
"Murder, She Wrote"	1.65				−
"60 Minutes"	.79				−
Demographics:					
Age (years)	12.00		+		−
Sex (1 = male; 2 = female)	6.40		+	−	
Education (years)	9.90	−		+	
Income ($1,000)	2.20				−

NOTE.—Plus sign indicates that regression coefficient was positive and statistically significant at the 0.05 level; minus sign indicates that regression coefficient was negative and statistically significant.

[a] Coded as 1 = never, 5 = daily.

[b] Coded as 1 = no, 2 = yes.

[c] Coded as 1 = never; 3 = usually.

[d] Coded as 1 = never; 4 = more than twice per week.

activities oriented toward the development of their independent capacities for decision making, creativity, and action (Schwartz and Bilsky 1987). These individuals also exhibit little interest in the achievement domain, indicating that they are less likely to engage in some activities for the sole purpose of gaining recognition and admiration. The results in Table 4 show that members of this segment are indeed less likely to try new modes of behavior (such as drinking wine and imported beer or eating whole-wheat bread and brown rice) and tend to be less interested in cultural and intellectual activities. Members of this segment also tend to have reached lower levels of formal education.

Segment B is motivated by maturity, which relates to "wisdom, tolerance, faith in one's convictions, deep emotional relationships, and appreciation for the beauty of creation" (Schwartz and Bilsky 1987, p. 553). We might expect these individuals to emphasize religious activities, as well as public and social service. Segment B also shows very little regard for enjoyment and is thus less likely to engage in hedonistic behavior. The results in Table 4 show that members of this segment are highly unlikely to enjoy any sports event, to drink alcoholic beverages, or to look for entertainment away from home. These individuals, on the other hand, are more likely than others to attend religious events, to make donations to religious and public service institutions, and to engage in homemaking activities. This segment contains a higher percentage of women and older individuals than other segments do.

Members of segment C, who are motivated by achievement and self-direction, should exhibit a need for competent performance, success, and social recognition. They can be expected to engage in activities and to purchase products that serve as indicators of success for social recognition and admiration and to engage in activities for the enhancement of their intellectual, creative, and logical abilities. Our empirical results confirm that the members of this segment are more likely to be involved in cultural and intellectual activities, compared with other individuals. They are also more likely to have written to an elected official, attended social functions for business purposes, and made donations to environmental or consumer organizations. Members of segment C also eat brown rice and whole-wheat bread and drink wine and imported beer more often than others. They tend to read magazines oriented toward business, consumer interests, natural history and ethnography, literature, and science or technology. In terms of TV programming, these individuals are more likely to watch educational TV, and less likely to watch "lowbrow" programs such as quiz and audience shows. This segment contains more educated individuals and a higher proportion of males.

Segment D's focus on the enjoyment domain suggests that its members would engage in fun-filled, social, sensual, risky, and self-gratifying activities. Our empirical results show that this highly hedonistic segment has younger members with lower incomes than the other segments. Members of this segment are less likely to engage in the home-oriented activities preferred by segment B. Also in contrast to segment B, segment D tends to be highly involved with a wide range of sports and outdoors activities. Relative to the other segments, members of segment D tend to enjoy an active life full of leisure, entertainment, and socializing. Among all four segments, this segment shows the clearest preference for TV shows, favoring "sitcoms" and avoiding religious, educational, and news-oriented shows.

TABLE 5

COMPARISON OF VALUE-SYSTEMS AND TOP-RANK SEGMENTS

	Value system				
Top-rank segment	A	B	C	D	Row total
Accomplishment	18	48	166	11	243
	(7.4)	(19.8)	(68.2)	(4.5)	(18.2)
Well respected	9	31	7	1	48
	(18.8)	(64.6)	(14.6)	(2.1)	(3.6)
Excitement/fun	22	2	17	36	77
	(28.6)	(2.6)	(22.1)	(46.8)	(5.8)
Security	162	77	1	10	250
	(64.8)	(30.8)	(.4)	(4.0)	(18.8)
Self-fulfillment	20	29	74	26	149
	(13.4)	(19.5)	(49.7)	(17.4)	(11.2)
Self-respect	40	120	104	30	294
	(13.6)	(40.8)	(35.4)	(10.2)	(22.1)
Sense of belonging	8	35	4	5	52
	(15.4)	(67.3)	(7.7)	(9.6)	(3.9)
Warm relationships	3	114	18	83	218
	(1.4)	(52.3)	(8.3)	(38.1)	(16.4)
Total	282	456	390	202	1,331

NOTE.—Data in parentheses represent percentage of column total.

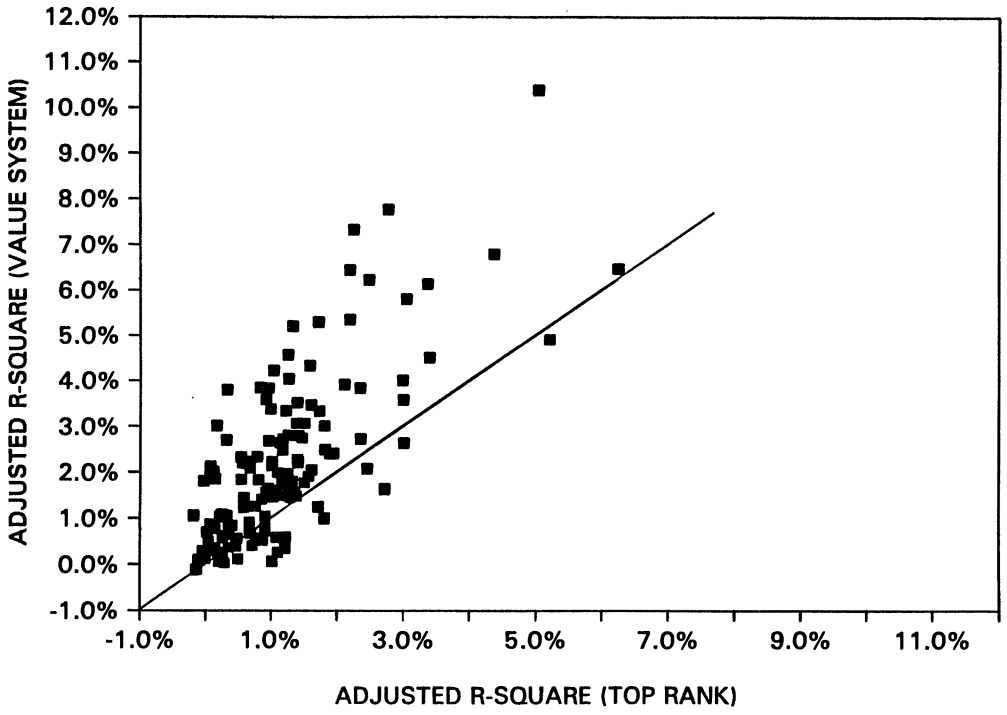
Comparing Value-System Segmentation with Top-Rank Value Segmentation

One important distinction between the value-system segmentation model applied in this study and the top-rank procedure is the number of segments identified in the population. On the basis of the CAIC, Kamakura and Mazzon's model identified four value systems in our sample. The top-rank procedure, on the other hand, would define eight segments by collapsing fun and enjoyment in life with excitement as suggested by Kahle (1983).

A comparison of value systems (by assigning each respondent to the most likely segment) and the top-rank segment is presented in Table 5. On the basis of these results one might argue that the value systems provide richer and more meaningful descriptions of the underlying motivations driving each group of consumers. The top-rank procedure would identify several small (less than 10 percent of the sample) groups, with no

FIGURE 3

COMPARISON OF ADJUSTED R^2 FOR VALUE SYSTEMS VERSUS TOP-RANK SEGMENTS



additional information on their value priorities. Notice, for example, that 16.4 percent of the sample chose warm relationships with others as the most important LOV value. However, some (38.1 percent) of these respondents assigned top priority to this value item as a reflection of their hedonistic motivations (i.e., segment D), whereas others (52.3 percent) were relaying their empathy (i.e., segment B).

Earlier, we suggested that value-system segments should have a stronger relationship to consumer attitudes and behavior than segments based on top-rank value. Using R^2 to make relative comparisons as shown in Kahle et al. (1986) and Novak and MacEvoy (1990), we found that our value-system segments predicted activities and interests consistently better than the segments based on the top-ranked LOV value.

Specifically, we fitted an additional series of linear multiple regression models using the 138 activity and interest questions as dependent variables and segment membership as predictors. Two sets of regressions were estimated with the value-system segmentation and the segmentation based on the top-ranked LOV value. In this series of models, segment membership was coded using dummy variables for the four value-system segments or for the nine top-rank value segments. The value-system segmentation had a larger adjusted R^2 in 115 of the 138 comparisons, with an average adjusted R^2 of 2.21 percent, compared with 1.20 percent for the top-rank procedure. A direct comparison of fit on an item-by-item basis is presented in Figure 3. Because our data contained ties in the value rankings, we expect that applying Kamakura and Mazzon's model to a complete ranking would likely perform even better and that our results represent a lower-bound estimate for value-system segmentation.

CONCLUSIONS

Human values have long been suggested as means for understanding consumers' underlying motivations. This construct has been widely used both as the criterion for market segmentation and as a way of enriching the description of segments defined through other criteria. Human beings, however, hold more than one value, and these values carry different levels of relevance in determining the motivations of each individual person. Therefore, it seems more reasonable to base one's definition of segments or comparison of groups (formed a priori) on this set of values rather than on the single most important value held by each individual. As pointed out by Rokeach (1973), it is very rare that any situation encountered in life will activate a single value. Most situations will involve a conflict among several values to be resolved in accordance to the person's value priorities, or value system.

One of the objectives in this study was to identify the value systems in a sample of consumers. These value systems define enduring subcultures that may exist across sociodemographic classes (Carman 1978). It is important that each value system defines a group of consumers with similar underlying motivations who are more likely than others to engage in a common pattern of beliefs, attitudes, and behavior.

The value-system segments we identified fitted clearly into the theoretical structure proposed by Schwartz and Bilsky (1987, 1990), which was found by these authors to have broad generality across seven disparate cultures. Thus, our value-system segments represent four distinct consumer types embedded in a generalizable value structure.

By forming these segments on the basis of the latent value systems inferred from observed rankings of values, the researcher is likely to obtain a more meaningful and stable segment structure that is less affected by the potential measurement error observed in the single top-ranked value. Furthermore, because the segments are determined at a higher level of abstraction, their underlying motivations are easier to understand via the relative importance given to each value domain. This understanding can be enhanced even more by using the proposed mapping procedure, which will identify the main dimensions underlying the value systems.

Once the motivations that drive each segment are well understood, it becomes easier to make predictions regarding the pattern of beliefs, attitudes, and behavior expected from each segment. One must be aware, however, that values are among the most central determinants of consumer behavior (Carman 1978; Vallette-Florence 1988) and, consequently, are fairly remote from each particular decision made by the consumer, which is also affected by many other more immediate (but also less stable) environmental influences, such as price, sales promotions, exposure to advertising messages, and so on.

Consequently, it is unlikely that the market for any particular product can be segmented on the basis of the value systems alone. Other more immediate influences, such as product attributes, product benefits, and consumer preferences, must also be taken into account. Means-end chains (Gutman 1982) offer one approach to integrating attributes, benefits, and values; many researchers (e.g., Reynolds and Gutman 1988; Valette-Florence and Rapacchi 1991) suggest that market segments should be identified on the basis of similarity of means-end chains for a specific laddering application. Value-system segments, identified outside of a specific laddering context, would facilitate the validation of means-end segments generated from a given laddering task.

APPENDIX

Singular Value Decomposition of the Standardized Utilities

Let $\boldsymbol{U}^*$ be a $J \times S$ matrix containing the standardized utilities for the J values and S segments. These standardized utilities, u^*_{js}, as discussed in the text, are directly related to the ratio between the importance of value j to segment s and the (geometric) mean importance for that value across all segments. Our objective is to represent these standardized utilities in a K-dimensional map, so that

$$\boldsymbol{U}^* = \boldsymbol{FZ}, \tag{A1}$$

where $\boldsymbol{Z}$ is a $K \times S$ matrix containing the coordinates for the S segments in the K-dimensional space and $\boldsymbol{F}$ is a $J \times K$ matrix containing the weights on each dimension, to be used for reproducing the original standardized utilities for each segment. The weights in $\boldsymbol{F}$ and coordinates in $\boldsymbol{Z}$ can be directly obtained from the eigenvalue decomposition of $\boldsymbol{A} = \boldsymbol{U}^*\boldsymbol{U}^{*\prime}$, so that (see Green 1978, pp. 473–487)

$$\boldsymbol{F} = \boldsymbol{TD}^{1/2} \tag{A2}$$

and

$$\boldsymbol{Z}' = \boldsymbol{U}^{*\prime}\boldsymbol{TD}^{-1/2}(\boldsymbol{T}'\boldsymbol{T})^{-1}, \tag{A3}$$

where $\boldsymbol{T} = J \times K$ matrix containing the first K eigenvectors of $\boldsymbol{A}$ and $\boldsymbol{D} = K \times K$ diagonal matrix with the first K eigenvalues.

The number of dimensions, K, to be used in the values map can be specified by applying the "elbow rule" commonly used in factor analytical models, with the eigenvalues as the criterion. However, notice that the final solution in our empirical analysis contains only four segments, and, therefore, matrix $\boldsymbol{A} = \boldsymbol{U}^*\boldsymbol{U}^{*\prime}$ has a rank of 3. Consequently, the original standardized utilities in our empirical application will be perfectly reproduced by a three-dimensional map, leading to a complete representation of the value-structure of each segment, relative to the geometric mean across all segments.

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