

Values, Utility, and Ownership: Modeling the Relationships for Consumer Durables

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A conceptual model is developed that describes the relationships among consumer values, utility, and ownership of durables. These relationships are tested empirically using data on a variety of discretionary durables collected from a sample of 735 adults. Results support the model structure and suggest that augmenting the List of Values (Kahle 1983) with a measure of materialism improves prediction of value-related consumer behavior.

INTRODUCTION

Despite the focus in consumer research on nondurable brand choice, the important choices consumers and households make (in dollars and effort expended) are more likely to be among items from different product and service classes. Before they get to the brand choice problem, consumers must face the task of allocating their budgets among a large, heterogeneous set of products and services. What determines this allocation? Standard microeconomic theory suggests two variables: (1) the size of the consumer's budget, and (2) the utilities of the available items adjusted by their prices. The focus of this study is on understanding the relationships among consumer values, utility, and ownership of discretionary durables.

Most individual choice models apply to choice within a product class, so the focus is on attributes shared by the items being compared. When

consumers choose among durable classes, they must make comparisons among dissimilar products that cannot be compared on objective or concrete attributes. It has been proposed that these choices are the result of comparisons made at more abstract levels, and involve evaluating products on the basis of their ability to satisfy underlying consumer values (Corfman 1991; Johnson 1984, 1988).

Although there is research that demonstrates relationships between values and consumer behavior (e.g., Scott and Lamont 1973; Vinson and Munson 1976), empirical studies have not developed and tested broad theoretical structures for the relationships among values, utility, and ownership across product classes. This study proposes a conceptual model of consumer durable ownership that incorporates the effects of utility, time in the market for durables, and budget on ownership, and the effects of values and past ownership on utility. Implications of the model are tested and supported using data on consumer values and discretionary durables collected by questionnaire from 735 subjects.

The next section is a review of research related to durable purchasing and consumer values. Then a conceptual model of the relationships among values, utility, and durable ownership is proposed with related hypotheses. A test of model implications is described and the results are reported. In the final section, implications of our results are discussed and suggestions made for future research.

Background

Two streams of research are important background for this study. The first is work in marketing and economics on patterns of consumer durable ownership. The second is research in psychology, sociology, and marketing on the role of values in consumption.

Ownership of Consumer Durables

Much of the research on consumer durables purchasing is concerned with inferring acquisition priority from ownership or purchase intentions data. Most of these studies estimate priority patterns from ownership data (Clarke and Soutar 1982; Dickson, Lusch, and Wilkie 1983; Kasulis, Lusch, and Stafford 1979; McFall 1969; Paroush 1965; Pyatt 1964). They do not collect order-of-acquisition data, but assume that if we examine possession across a population we are observing consumers at a sufficient number of different stages in the acquisition process that we can infer the order in which the population acquired these durables.

Although many of these studies recognize that an individual household's

durable ownership is likely to depend on such factors as income, wealth, social class, family size, duration of marriage, and willingness to use credit (Hebden and Pickering 1974; Paroush 1965), they still assume that the population is relatively homogeneous with respect to acquisition priority. A few differences in acquisition order have been observed. For example, Pyatt (1964) and Hebden and Pickering (1974) found differences across social classes and Kasulis et al. (1979) and Clarke and Soutar (1982) found differences between homeowners and renters.

Hauser and Urban (1982, 1985) propose that consumers use value priority or net value priority to choose the order in which to purchase durables up to a budget cutoff. They estimate utilities for durables under consideration using four utility-related measures, adjust them for prices, and compare the resulting rank ordering to the consumer's stated buying priorities. These models describe how consumers might combine preferences, price information, and budget constraints to make purchase decisions, but they do not address the formation of the underlying utilities.

Other related research addresses the effects of a wife's employment on household durable and service expenditures (Bellante and Foster 1984; Reilly 1982; Strober 1977; Weinberg and Winer 1983). These studies have also examined the effects of such factors as income, race, education, stage in family life cycle, homeownership, and having recently moved.

The Role of Values

The study of human values has long occupied philosophers, but in recent years theorists and researchers in many of the social sciences have focused on how values influence behavior. Values have been shown to relate to a wide variety of behaviors including choice of occupation (Rosenberg 1957), management behavior (England 1967), cigarette smoking (Grube et al. 1984), political attitudes (Levine 1960; Searing 1979), and choice of friends (Williams 1959). Much of the existing empirical work examines effects of single values, rather than the effects of value systems (notable exceptions being Homer and Kahle 1987, and Kahle, Beatty, and Homer 1986). Studies of the relationships between values and consumption behavior include several on automobile purchasing (Henry 1976; Scott and Lamont 1973; Vinson, Scott, and Lamont 1977; Vinson and Munson 1976) and others on the choice of leisure activities (Beatty et al. 1985; Jackson 1973), the effects and consequences of media usage (Becker and Conner 1981; Ball-Rokeach, Rokeach, and Grube 1984), natural food shopping (Homer and Kahle 1987), and clothing attributes (Prakash 1984).

A number of studies focus on methods for measuring values (Kahle,

Beatty, and Homer 1986; Reynolds and Jolly 1980; Thurstone 1954). The three approaches that are currently most widely used are Rokeach's (1973) Value Survey, Values and Life Styles (Mitchell 1983), and the List of Values (Kahle 1983). Classifications from all three methods have been shown to relate to customer attitudes, beliefs, preferences, and behaviors (e.g., Kahle et al. 1986, Vinson and Munson 1976), although the relationships between these classifications and durable acquisition have not explicitly been studied.

The List of Values (LOV), which is employed in this study, was developed at the University of Michigan Survey Research Center (Kahle 1983) and is based on values research by Feather (1975), Maslow (1954), and Rokeach (1973) and social adaptation theory (Kahle 1983). With this method subjects evaluate the relative importance of nine values. This approach to measuring values is simple to use and a study by Kahle et al. (1986) suggests that this system may relate more closely than VALS to a number of consumer behaviors. Novak and MacEvoy (1990) demonstrate that LOV and VALS (which is more complex) explain a similar amount of values-related behavior.

Another stream of values-related research concerns means-ends chains. This research focuses on the relationships among concrete product attributes, abstract attributes, consequences, and values (Gutman 1982; Olson and Reynolds 1983; Reynolds and Gutman 1984). Howard's (1977) means-end chain model proposes that consumers have hierarchical evaluative structures corresponding to their semantic and memory structures. At each level of these structures there are values that generate that level's choice criteria. He makes Rokeach's (1973) distinction between instrumental and terminal values and associates them with choice at the brand and product class levels, respectively. Applications of means-end chain models have tended to be to single nondurable product classes and have been concerned primarily with understanding consumers' cognitive structures for product-related knowledge, rather than predicting choice and understanding the broader relationships among values, utility, and ownership across products.

THEORY AND HYPOTHESES

Kahle (1983) views the primary function of social cognition, of which values are one type, as adaptation. Values provide a foundation and standard for behavior and are most relevant in societal, role, and psychological adaptation. This can involve adaptation of the person to the environment, as when a person who values acceptance is surrounded by vegetarians and

declines meat, or it can involve adaptation of the environment to the person, as when a person who values prestige joins a country club or purchases an expensive European automobile. Acquisition of durables is one way in which consumers adapt the environment to their values.

There are two important differences between the durable choice process and the nondurable choice process. First, durables typically have significantly higher prices than nondurables. Most consumers have budget constraints that require tradeoffs be made when purchases of high-priced items are considered. (Budgets rarely force consumers to choose among toothpaste, milk, and socks.) The full set of these tradeoffs produces a prioritizing of items. The second difference is in the role consumer values play in choosing among products from different product classes. Due to the impossibility of comparing heterogeneous items on concrete product attributes, it has been observed that consumers use more abstract "attributes" to make their choices (Bettman and Sujan 1987; Corfman 1991; Johnson 1984, 1988). These abstract product attributes express an item's ability to satisfy consumer values. In this spirit, a consumer might decide whether to purchase an air conditioner or a painting based on whether comfort or beauty is the more important value.

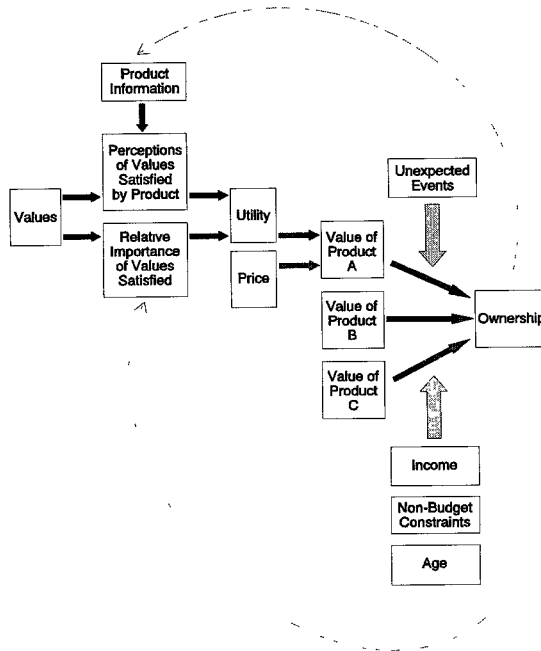
Conceptual Model

Figure 1 depicts a conceptual model of durable ownership. The model describes ownership of a particular durable as a result of a prioritizing of alternatives according to their utilities adjusted by price and unexpected events that occur to disturb the priority. Ownership is also determined by income, other constraints such as space and rules (e.g., prohibitions against pets and washing machines in some apartments), and the consumer's age, which affects the amount of time the consumer has had the opportunity to acquire durables. Like Hauser and Urban (1985), we propose that consumers allocate their budgets to these items in order of utility adjusted for price as long as the adjusted utility of the next item is greater than some cutoff which represents the benefit of spending an additional dollar on nondurables. However, our model is *not* a model of how consumers decide which durable to acquire on a given purchase occasion, but a representation of the factors determining whether it is one of the durables they possess at a given point in time. This model is a summary of the results of a complex set of processes.

Analogous to multiattribute choice models, in this model consumers' utilities for durables are a function of their perceptions of the values satisfied by the product and the relative importance of those values. For

FIGURE 1

Conceptual Model of Durable Ownership



example, a consumer might perceive that a wide-screen television provides fun, yet opt for an air conditioner because comfort is relatively more important. A more general value like materialism raises the utility of all possessions relative to savings or investment. Belk (1985) discusses the importance of materialism to consumer behavior and defines materialism as “the importance a consumer attaches to worldly possessions” (Belk 1984). While Belk focuses on three traits related to materialism (possessiveness, nongenerosity, and envy), we take a broader view and consider evidence that owning things in general provides satisfaction. The emphasis here is on “more is better,” rather than on the nature of consumers’ involvement with possessions.

Perceptions of values satisfied by a product are determined in part by the product information possessed by consumers. The most potent source of information is probably experience resulting from ownership (the feedback loop). A person who has never owned a personal computer, for example, is likely to have different perceptions of the product’s ability to satisfy

important values (e.g., efficiency and convenience) than someone who has already incorporated one into his or her lifestyle. The new awareness resulting from the ownership experience can lead to dramatic changes in the utility a consumer associates with a product. We will examine the effect of experience explicitly in our analysis. Other sources of product information that might have important effects on perceptions of values satisfied include advertising, consumer publications, and word of mouth.

The consumer's values also affect perceptions. This occurs when values highlight product features that might otherwise be ignored or when they bias perceptions of an important attribute. For example, a consumer who values safety very highly may view microwave ovens as less safe than someone with moderate concern.

The relative importance of values *satisfied* by the product under consideration is a function of consumer values and the set of products owned. A consumer's value system provides a prioritizing of the subset of the consumer's values relevant to a given product evaluation. This is the link between values and the relative importance of values satisfied. This priority is also affected by products owned. Ownership of substitutes, complements, and the product itself reduces or enhances the importance of values satisfied by the product due to satiation and augmentation of a value. For example, a consumer may value fitness highly, yet because she owns a rowing machine she may not feel the need to own an exercise bicycle as well. On the other hand, this consumer may feel that ownership of a fur coat necessitates ownership of a burglar alarm, a complement. (Note that the Alternatives in Figure 1 can be the same product with different marginal utilities; this is due to the fact that once one is acquired, the relative importance of the values satisfied by another is lower.) This part of the model captures "portfolio" considerations; possessions often need to fit together.

The implications of this conceptual model are numerous and testing it completely is not within the scope of this paper. Our more modest goal is to demonstrate the importance of values in utility formation and their consequent impact on ownership. To this end, we will examine the subset of the relationships in the conceptual model that are implied by the following structural model:

$$\begin{aligned} \text{Ownership} &= f(\text{Utility, Income, Age}) & (1) \\ \text{Utility} &= f(\text{Consumer Values, Ownership}) & (2) \end{aligned}$$

METHOD

Data for this study were collected by using a self-administered survey. Subjects were recruited in person and by mail on an intercept basis. The

majority of the sample came from the Northeast. The 735 subjects who completed questionnaires provided reasonable spreads in terms of age (from under 30 to over 60), income (from less than \$6,000 to more than \$100,000), family size (from 2 to more than 5 members), population density of residence area (rural, small town, suburban, and urban), and education (elementary school only to graduate degrees), and the aggregate distribution closely matched that of the US population on these variables.

The stimuli were discretionary durable products. Five broad categories were included: home entertainment, sports and exercise, pets, convenience, and luxury. The particular products chosen from each category were selected as items among which variation in ownership and utility could be expected. As they were not chosen to demonstrate all the values that can be satisfied by durables, some values may seem to play a less important role in the utility of durables simply because we did not include the products to which those values relate. For example, since a diamond engagement ring was not included, the apparent importance of values such as warm relations with others may be reduced.

Respondents were first asked to indicate whether they owned each of 29 products (e.g., microwave oven, skis, 35mm camera, piano). Subjects were also asked how important it was to them to own each of the products (on a six-point Likert-type scale) under the assumption that they "had nothing at all and were starting from scratch to acquire possessions." These data were used as measures of utility in the analyses. The condition that subjects should respond as if they owned nothing controlled for the effects of substitutes and complements in their utility assessments and prevented conditional responses. (In pretests, which simply asked subjects for their estimates of utility, some subjects gave unconditional responses, i.e., assumed they did not own the items, and others gave conditional responses, i.e., gave the marginal utility for a new or second item when they already owned one.) Subjects in the main study indicated they were comfortable with the chosen measure.

Subjects also answered a number of questions regarding their values. These questions included Kahle's (1983) nine-item LOV scale (rated on six-point scales to reflect their relative importance), and two items relating to materialism. The LOV items reflect discriminating values that aid consumers in the prioritization and selection of products for acquisition. Materialism does not discriminate among products, but raises the utility of all material possessions. Existing scales relating to materialism do not address the broad concept (more is better) that is our concern (Belk 1985; Campbell 1969; Tashchian, Slama, and Tashchian 1984; Yamauchi and Templer 1982). Moschis and Churchill (1978) come closer with their scale, which

includes attitudes toward possessions and money. The indicators used here for Materialism were the importance of “owning things” and “wealth.” Wealth was included on the basis that wealth is usually valued for its ability to provide material possessions. Subjects also provided some basic demographic information, including income and age, which were used as indicators of budget and time in the market for durables.¹

ANALYSIS

The analysis was conducted in three phases. First, alternative values representations were compared on their ability to predict Utility in equation (1) of the model. Second, a two-equation structural model of Ownership and Utility was estimated for each of the products. Finally, to test the reasonableness of our model structure, a series of nested models was estimated and our specification was compared with alternative specifications on predictive ability.

Values

A factor analysis was performed on the nine LOV items to determine whether a more parsimonious representation of a consumer’s value system would be as effective. The eigenvalues of the first three factors were 3.70, 1.20, and .99. A rotated two-factor solution accounted for 54 percent of the variance. Fun and excitement loaded on the second factor and the remaining seven items loaded on the first. A rotated three-factor solution had more intuitive appeal and was used here. This solution explained 64 percent of the variance and produced the following groupings.²

Social values: Security, sense of belonging, being well-respected

Self-oriented values: Self-respect, sense of accomplishment, self-fulfillment

Stimulation: Fun and enjoyment, excitement

Indices were created by calculating the means of the items that loaded on each factor. The Cronbach alphas of the resulting indices were .72, .74, and .75, respectively. The ninth LOV item, “warm relationships with

¹ Income and amount spent on durables in the last six months were highly correlated ($r = .92$) in a pretest conducted on a convenience sample of 20 consumers.

² Although .5 was used as the factor loading cut-off, all of these items loaded at greater than .7 on their respective factors.

others," which did not load on any of the three factors, was used as a fourth variable in subsequent analyses.

The Materialism variable was the average of the "owning things" and "wealth" items. These items were correlated at .50. The LOV index with which Materialism was most highly correlated was Self-oriented. This correlation was significant ($p < .001$), but low ($r = .19$), suggesting that Materialism contained additional information.

To determine which values representation best predicted Utility, equation (2) was estimated alone using each of the following sets of variables for values: (1) the nine LOV items alone, (2) the nine LOV items with the addition of Materialism, (3) the four indices resulting from factor analysis of the LOV items, and (4) the four indices from the LOV factor analysis with the addition of Materialism. These models were estimated using OLS for each of the 29 products. The average (across the 29 products) adjusted R^2 s for these models were as follows:

Four LOV indices	.21
Nine LOV variables	.21
Four LOV indices plus Materialism	.22
Nine LOV variables plus Materialism	.23

Interestingly, the nine LOV variables and four LOV factors predicted Utility equally well. F -tests were used to assess the contribution of Materialism to prediction of Utility in combination with each of the two LOV representations. These tests revealed that the contribution of Materialism was significant in both cases ($p < .001$). As the marginal improvement in R^2 with the use of all nine LOV scales (vs. the four indices) did not, in our opinion, offset the sacrifice in parsimony, the four LOV indices plus Materialism were used in our analysis of the structural model.

Estimation of the structural model. As the model in equations (1) and (2) is nonrecursive, use of OLS for estimation would have produced biased and inconsistent parameter estimates. These equations satisfy the necessary and sufficient rank condition for identification and are, in fact, overidentified. Therefore, the model was estimated for each of the 29 products using two-stage least squares. (The model was also estimated using three-stage least squares. It produced results essentially equivalent to the two-stage estimates). The results appear in Tables 1 and 2.

In the ownership equations, Utility was positively related to Ownership for all products and significantly related for 19 products (66 percent). The nonsignificance of this variable in 10 cases is surprising and may be explained by the interference of unexpected events and nonbudget con-

TABLE 1

Ownership Equation Coefficients

	Utility	Income	Age
Piano	.10	.21 ^b	.14 ^b
Microwave oven	.26 ^c	.27 ^a	.01
Cat	.81 ^a	.07 ^b	.01
Dog	.31	.02	.11 ^a
Car	.64 ^a	.16 ^a	.07 ^b
Video cassette recorder	.27 ^b	.23 ^a	.00
Sofa bed	.65 ^c	.13 ^a	.03
Personal computer	.31	.14 ^a	-.01
Copying machine	.73 ^b	.13 ^a	-.02
Fur coat	.62 ^a	.09 ^a	.05
Window air conditioner	.14	.06 ^c	.07 ^c
Downhill skis	.51 ^a	.10 ^a	-.03
Cross-country skis	.28	.11 ^a	.00
Weight-lifting equipment	.75 ^a	.10 ^a	.08 ^c
Sailboat	.58 ^a	.10 ^b	.02
Art work	.21	.22 ^a	.06
Sports car	.50 ^a	.12 ^a	.04
Dishwasher	.12	.38 ^a	.10 ^a
Compact disc player	.53 ^a	.09 ^b	.03
Answering machine	.60 ^a	.16 ^a	-.05
Color television	.46 ^a	.18 ^a	.07 ^b
Wide-screen television	.30 ^b	.06 ^c	-.01
Vacation home	.41 ^a	.11 ^a	.09 ^b
Van	.45	.08 ^b	.00
Food processor	.32	.24 ^a	.08 ^b
Burglar alarm	.26 ^b	.07 ^b	.12 ^a
35 mm camera	.17	.23 ^a	-.08 ^b
Video recorder	.49 ^a	.09 ^b	.03
Exercise bike	.52 ^a	.15 ^a	.09 ^a

^a = $p \leq .01$
^b = $p \leq .05$
^c = $p \leq .10$

straints, which are not necessarily related to the importance of owning the item. For example, it may be that some people for whom pianos do not have high utility inherited them, or that some people who would like to own a piano do not have room in their homes. Possession of substitutes may also explain why, in some cases, products that were rated as being important to own were not owned. An analysis of groups of similar products was performed to reduce these effects and the results are reported later.

Income was positively and significantly related to Ownership for all but one of the 29 products. The low cost of acquiring many kinds of dog may explain the nonsignificance of income for that product. Income had the largest impact on ownership of dishwashers and microwave ovens. Age was significantly and positively related to ownership of 11 products and negatively related to ownership of a 35 mm camera ($p < .05$). This suggests a lifestyle difference associated with younger subjects that is unrelated to time in the market for durables.

The utility equation produced several interesting results. First, Ownership positively and significantly affected the utility of 20 of the 29 products, suggesting that experience had an important effect on utility. The largest effects were for personal computer and fur coat, the benefits of which might well be better appreciated with the experience of ownership. Materialism was significant and positively related to Utility in 23 cases. Materialism had its strongest effects for color televisions and video cassette recorders and negative (although insignificant) effects for cats, dogs, and cross-country skis. Social was significant in seven cases, Self-oriented in three, Excitement in 13, and Warm Relations in only one. Interestingly, with the exception of burglar alarms, Social was negatively related to Utility wherever it was significant, whereas Self-oriented and Excitement were positively related to Utility wherever they were significant.

Product groups. As mentioned earlier, ownership or nonownership of a single item may be due to unexpected events, such as gift-giving and loss, and nonbudget constraints, which may not be related to the importance of owning the item. Further, products which are considered substitutes (e.g., cat vs. dog, wide-screen vs. 19" color televisions) may not both be owned, despite the fact that it is probably the same set of values that leads to the judgment that each is important to own. In order to reduce the noise introduced by unexpected events, nonbudget constraints, and selection from among substitutes, the products were grouped into homogeneous categories for further analysis. A set of four judges performed a categorization task that produced the same five sets of products that were used to structure the stimulus selection. Nine items that the judges could not clas-

TABLE 2

Utility Equation Coefficients

	Ownership	Social	Self-Oriented	Stimulation	Warm Relations	Materialism
Piano	.80 ^a	-.01	.07 ^c	-.01	.02	.06 ^c
Microwave oven	.52 ^a	.03	.02	.05	-.03	.14 ^a
Cat	-.12 ^a	.07	-.03	.04	.06	-.17
Dog	.07	.02	-.04	.13 ^a	.03	-.01
Car	.54 ^a	.05	.01	-.03	.01	.08 ^b
Video cassette recorder	.32 ^b	-.01	-.01	.11 ^a	.02	.22 ^a
Sofa bed	.07	-.03	.04	-.02	.03	.08 ^c
Personal computer	.87 ^a	-.11 ^b	.06	.04	.04	.07 ^c
Copying machine	.34	.02	.03	.05	-.01	.02
Fur coat	.86 ^a	-.02	-.05	.05	.00	.13 ^a
Window air conditioner	.39	.05	.02	.04	-.02	.11 ^a
Downhill skis	.79 ^a	-.07 ^c	.02	.11 ^a	-.05	.10 ^a
Cross-country skis	.34	-.07 ^c	.06	.09 ^b	.03	-.04

Weight-lifting equipment	.39	-.11 ^b	.02	.15 ^a	-.05	.08 ^c
Sailboat	.72 ^a	-.05	-.03	.11 ^a	.02	.01
Art work	.64 ^a	-.12 ^a	.07 ^c	.06 ^c	.07 ^c	.06 ^c
Sports car	.62 ^a	-.06	-.02	.10 ^b	-.05	.17 ^a
Dishwasher	.71 ^a	.03	.04	.04	.04	.14 ^a
Compact disc player	.59 ^b	-.10 ^b	.04	.12 ^a	.05	.10 ^b
Answering machine	.59 ^a	-.05	.07	.05	.02	.09 ^a
Color television	.29 ^b	.05	.01	.07 ^c	.02	.25 ^a
Wide-screen television	.75	-.01	-.06	.09 ^b	.01	.16 ^b
Vacation home	.72 ^a	.00	.02	.11 ^a	.01	.09 ^b
Van	.83 ^a	.03	.01	.00	.04	.06
Food processor	.24 ^b	.01	.08 ^c	.02	.05	.07 ^c
Burglar alarm	.64 ^a	.17 ^a	.03	.02	-.01	.10 ^a
35 mm camera	.45 ^a	-.05	.05	.07 ^c	.03	.06 ^c
Video recorder	.72 ^a	.02	.03	.03	.01	.11 ^a
Exercise bike	.17	.05	.05	.00	-.03	.17 ^a

^a = $p \leq .01$

^b = $p \leq .05$

^c = $p \leq .10$

sify with either confidence or consistency were omitted. The five groups were: (1) home entertainment (video cassette recorder, compact disc player, color television, wide-screen television), (2) sports and exercise (downhill and cross-country skis, sailboat, weight-lifting equipment, exercise bicycle), (3) pets (cat, dog), (4) convenience (microwave oven, car, copying machine, dishwasher, telephone answering machine, food processor), and (5) luxury (piano, fur coat, original art work).

The Ownership variable for each product group was the total number of products owned in the product group.³ The Utility variable was the mean importance of the items in each group. Model estimation results are given in Table 3.

Looking first at the Ownership equation, Utility was significant for all five product groups. Income was significant for all groups except pets, reflecting the earlier results for dogs alone and, perhaps, a cost factor. Older consumers tended to own more pets and more luxury items ($p < .001$).

In the Utility equation, Materialism was significant for all five product groups. Pets was the only product group for which Ownership was not significant, suggesting that subjects in our study felt the same way about owning cats and dogs before and after acquiring them. Social values had a negative effect on the utility of sports and exercise products and (marginally) luxury products. This makes sense when one considers the relatively solitary (e.g., lifting weights, sailing, playing the piano) or self-centered (e.g., wearing a fur coat, enjoying art) nature of the activities implied by the products in these groups. Self-oriented was significant for only the convenience products. Perhaps those to whom self-fulfillment and accomplishment are more important placed a higher utility on products that allow them to concentrate on activities that make their lives richer (rather than washing dishes and coping with missed phone calls). Excitement contributed to the importance of owning home entertainment products, sports and exercise products, and pets. Presumably, convenience and luxury products satisfy more sedate values.

Check on Model Specification

The model states that values affect Utility directly and Ownership indirectly, while Age and Income affect Ownership directly and Utility only

³ A dummy variable formulation of this variable was also used, which represented whether a subject owned one or more of the items or none of them. Model estimation results were virtually identical when this version was used, implying that the effect of substitution within each set was not strong.

TABLE 3
Product Groups: Standardized Coefficients

Ownership Equation		Dependent Variable			
Independent Variables	Home Entertainment	Sports and Exercise	Pets	Convenience	Luxury
Utility	.45 ^a	.52 ^a	.42 ^b	.24 ^b	.38 ^a
Income	.25 ^a	.22 ^a	.04	.44 ^a	.23 ^a
Age	.04	.04	.10 ^a	.04	.11 ^a

Utility Equation		Dependent Variable			
Independent Variables	Home Entertainment	Sports and Exercise	Pets	Convenience	Luxury
Ownership	.28 ^b	.34 ^a	.02	.41 ^a	.77 ^a
Social	-.07	-.10 ^b	.06	.02	-.07 ^c
Self-oriented	.00	.01	-.04	.07 ^c	.04
Stimulation	.15 ^a	.17 ^a	.11 ^a	.05	.05
Warm Relations	.03	-.02	.05	.03	.04
Materialism	.24 ^a	.12 ^a	-.10 ^b	.18 ^a	.12 ^a

^a = $p \leq .01$
^b = $p \leq .05$
^c = $p \leq .10$

indirectly (through Ownership). In order to test the reasonableness of these assumptions, a series of nested models was estimated and our specification was compared with alternative specifications in terms of predictive ability. The tests reported here suggest that our model specification is appropriate.

Ownership. For each product, Ownership was regressed against Age, Income, and values both separately and jointly (using OLS). The average R^2 when Age and Income were used alone was .05 for the 29 individual products and .11 for the five product groups. When values were the only independent variables, average R^2 s were .02 and .01, respectively. Utility used alone produced average R^2 s of .20 and .21. Adding Age and Income to Utility raised the average R^2 s to .23 and .28, significant improvements over Utility alone ($p < .001$). By contrast, the addition of values to Utility increased the average R^2 s only slightly to .21 and .22, which were statistically insignificant improvements. Thus, values give no evidence of affecting Ownership directly.

Utility. To test whether the effects of Age and Income on Utility were indirect (through Ownership), as indicated in the model, the Utility equation was estimated both with and without these variables. When Age and Income were added to values and Ownership, average R^2 s rose significantly, but very little, from 0.23 and 0.26 to 0.24 and 0.27. Thus, Age and Income did not appear to have a major direct effect on Utility.

The Role of Complements and Substitutes

The analysis to this point has ignored or attempted to control for the role of complements and substitutes. To assess the importance of complements and substitutes in our data we calculated the partial correlations among ownership for the various products by removing the impact of values, Income, and Age (via regression) and correlating the residuals. Of the 406 possible pairs, only eight (0.5%) had partial correlations exceeding .2:

Color television, VCR	.33
Car, Dishwasher	.30
Microwave oven, Car	.29
Microwave oven, VCR	.28
Microwave oven, Dishwasher	.27
Video recorder, VCR	.25
Color television, Car	.23
Downhill skis, Cross-country skis	.21

Of these eight, four make sense as complements and support the product groupings discussed earlier: color television, VCR; microwave oven, dish-

washer; video recorder, VCR; downhill skis, cross-country skis. Of the other pairs, three involve a car, which may be a surrogate for living in a suburban or rural area and, thus, having a larger home in which to collect things. The remaining pair (microwave oven, VCR) may indicate a fascination with high-tech gadgets or may simply be a chance finding.

These results suggest that the impact of complementarity and substitutability was relatively modest here (the biggest negative correlation was $-.13$). We re-estimated the color television ownership equation adding VCR ownership (since it represented the largest correlation) and found the results essentially unchanged.

SUMMARY AND CONCLUSIONS

The results of our investigation are encouraging. Consumer values and the experience of ownership affect utility directly, while utility, time, and income affect ownership directly. The most important values to consumers' utility for the durables in this study were social values, stimulation, and materialism. Specifically, consumers who valued security, respect, and a sense of belonging (social values) had greater utility for sports, exercise, and luxury products. Those who valued fun and excitement (stimulation) had greater utility for home entertainment products, sports and exercise products, and pets. Self-oriented values and warm relations with others had smaller effects. While discriminating values (those included in the LOV scale) affected the utility of smaller sets of products, materialism significantly increased the utility of 79 percent of the durables studied here. These patterns became even clearer when groups of related products were examined.

The LOV scale appears to perform as well in this context when reduced from nine to four factors. The results of this study also demonstrate that the addition of materialism to the LOV scale improves its ability to predict utility for consumer durables sufficiently to justify its inclusion.

This study has a number of limitations. First, although the subjects represented a broad range of demographic profiles, this was a convenience sample, limiting generalizability. Second, as their effects were small in our study, we did not incorporate the role of substitutes and complements into our model tests. Nevertheless, this is a rich area for future investigation. Third, although "importance of owning" in the context described to the subjects appeared to capture their utility for durables, other indicators of utility should be examined. Finally, as our results indicate that materialism plays an important role in durable utility, other measures of materialism might also be explored.

Future research might proceed in a number of directions. Other aspects of the conceptual model and the implied processes could be tested. For example, in the spirit of the research on multiattribute consumer choice models it would be interesting to investigate models that represent how consumers combine their perceptions of values satisfied by a product with the relative importance of those values to arrive at an assessment of utility. Also, the role of social desirability as an influence on utility would be an interesting area of study, particularly in the cases of conspicuous consumption and environmentally sensitive goods. Finally, as the assortment of durables owned appears to reveal important information on a consumer's values, it might be interesting to compare segmentation schemes based on durable ownership patterns with those based on consumer values.

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