

Brand Assortment and Consumer Brand Choice

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How do consumers select brands? The author reports on a study in which a new approach to brand choice behavior was tested and shows how it can improve understanding of consumers' decision processes.

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BRAND loyalty is one of the most heavily researched areas of consumer behavior, but about which very little is positively known. Even though a variety of definitions of brand loyalty have been used in research, it is virtually impossible to single out the brand loyal consumer in a group of consumers.¹ He is neither unique in his personal characteristics nor does he respond differently than other consumers to stimuli originating in the marketing system. The paucity of conclusive and consistent evidence regarding the brand choice process can be attributed either to the incompleteness of search for causative factors and the lack of adequate measuring techniques, or to the lack of a solid, unified, conceptual formulation. The first alternative seems highly improbable, particularly in view of the extensive research conducted so far.² The second alternative, on the other hand, cannot be dismissed quite as easily, especially with regard to frequently purchased products.

The most common approach to the study of brand choice consists of the application of the brand-loyalty concept. This presents several logical and methodological problems. First, brand choice does not lend itself to the unidimensional treatment implied by brand loyalty, i.e., assuming that consumers' principal objective is to remain loyal to a particular brand. The few attempts to deal with this problem raise severe methodological questions, ultimately detracting from the usefulness of the results.³ Second, brand-loyalty models, as a group, focus on the choice process' output rather than on the process itself. When brand choice is treated as a homeostatic mechanism,⁴ no allowance is being made for the con-

¹ For a detailed review see James F. Engel, David T. Kollat, and Roger D. Blackwell, *Consumer Behavior* (New York: Holt, Rinehart and Winston, Inc., 1968), Chapter 26.

² Same reference as footnote 1, and Jagdish N. Sheth, "A Review of Buyer Behavior," *Management Science*, Vol. 13 (August, 1967), pp. B-718-786.

³ Two studies that have recognized varying degrees of brand loyalty are: Ross M. Cunningham, "Brand Loyalty—What, Where, How Much?" *Harvard Business Review*, Vol. 34 (January-February, 1956), pp. 116-128, and George Brown, "Brand Loyalty—Fact or Fiction?" *Advertising Age*, Vol. 23 (June 19, 1952), pp. 53-55; (June 30, 1952), pp. 45-47; (July 14, 1952), pp. 54-56; (July 28, 1952), pp. 46-48; (August 11, 1952), pp. 56-58; (September 1, 1952), pp. 80-82; (October 6, 1952), pp. 82-86; (December 1, 1952), pp. 76-79; Vol. 24 (January 26, 1953), pp. 75-76.

⁴ Bruce Gunn, "Applying a Systems Perspective to Marketing Motivation," *British Journal of Marketing*, Vol. 3 (Spring, 1969), p. 29.

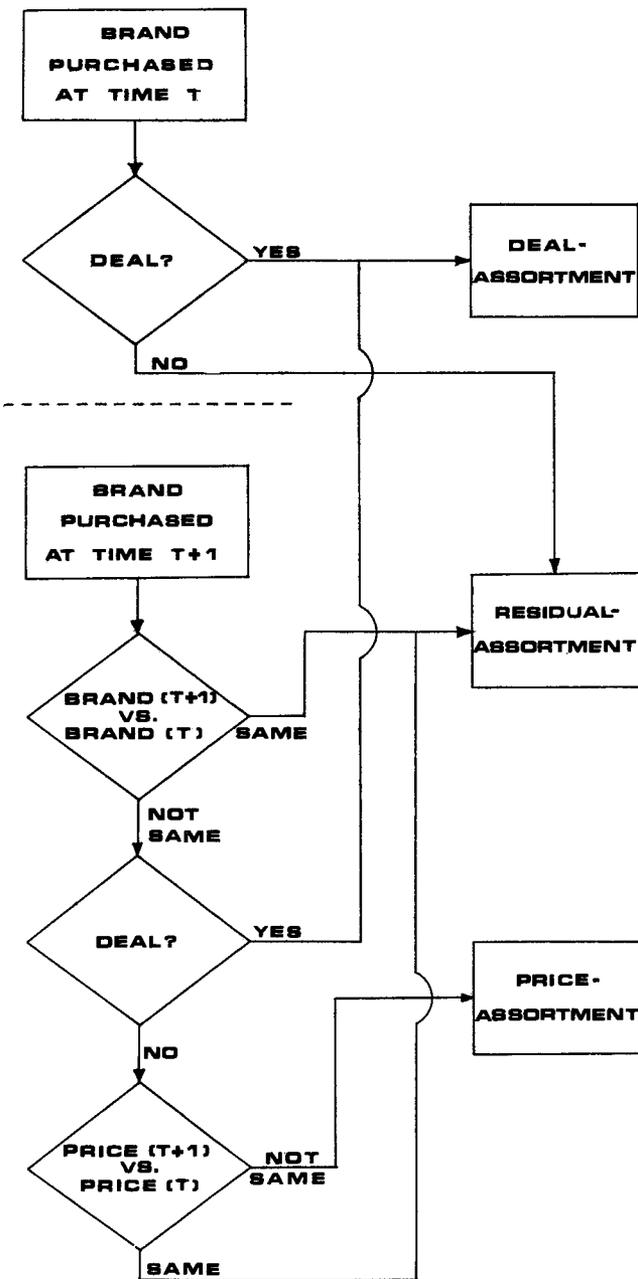


FIGURE 1. Determination of residual-, price-, and deal-assortments.

sumer's desire to achieve, adjust, and, in general, to adapt,⁵ whereas in reality consumers are continuously searching to that end. This search behavior is brought about by changing expected behavior patterns and the constant change in interbrand competition. The interaction of these forces may lead the consumer to a state of equilibrium, which will be only temporary. There is no assurance that once the equilibrium is disturbed the consumer will not have in fact shifted the equilibrium's coordinates entirely upon returning to another steady state. Third, whether brand loyalty is studied within a

⁵ Harry Helson, *Adaptation Level Theory* (New York: Harper & Row, 1964), p. 49.

deterministic or stochastic frame of reference, there still remains the problem of arbitrary aggregation. A method should be found whereby consumers could be meaningfully classified into groups that would represent particular characteristics of their brand choice processes as accurately as possible, so that interhousehold and interproduct comparisons could be made.

This article reports on an exploratory study of brand-choice behavior utilizing a model that attempts to solve some, and, it is hoped, all of these problems.

Brand Purchase Patterns

In order to give proper weight to the interbrand variability inherent in the acquisition of frequently purchased goods by consumers over time, a model was devised whose principal unit of analysis was termed *brand assortment*. Brand assortment is operationally defined as the set of unique brands purchased by a household in a specific product category over a 20-week period. The choice of 20 weeks as the base period was influenced by several considerations: (1) to allow for a purchase pattern to stabilize, at least temporarily; (2) to minimize possible interproduct fluctuations due to varying usage rates; i.e., to cover sufficient repurchase observations in products as diverse as soap bars and frozen fish sticks; and (3) to minimize interhousehold variations in the households' purchase patterns prior to the study over which the researcher has no control. The study spans a 100-week period. Consequently, five 20-week periods are examined and compared for each household with regard to a number of variables.

The main concern of this study is to investigate to what extent the five assortments thus constructed exhibit stability. A household's brand-purchase pattern is said to be stable if the brand composition of the five assortments, i.e., quantities purchased of each brand, exhibits a significant Kendall coefficient of concordance (at $\alpha = .05$). The coefficient is computed by transforming the raw data, i.e., quantities purchased of brand *i* in time period *j*, into ranks in each 20-week assortment. Brand assortment,

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TABLE 1
INCIDENCE OF ASSORTMENT STABILITY IN NINE PRODUCTS

Product Category	Percent Households							
	Brand Assortment Stable (1)	Residual Assortment Stable (2)	Column (2) — Column (1) (3)	Price Assortment Stable (4)	Column (4) — Column (1) (5)	Deal Assortment Stable (6)	Purchasing Zero Brands on Deal (7)	Number of Households (8)
Vegetable Shortening	33*	46	13	51	18	32	53	422
Frozen Fish Sticks	40	50	10	48	8	4	96	194
Floor Wax and Polish	45	57	12	55	10	17	82	259
Cooking Oils	34	43	9	44	10	12	85	506
Frozen Dinners	17	28	11	32	15	2	96	252
Cleansing Tissue	28	35	7	29	1	21	78	553
Margarine	33	39	6	27	-6	26	49	580
Frozen Vegetables	30	29	-1	27	-3	8	92	557
Toilet Soap	20	26	6	28	8	30	18	660

*The percentage of all households reporting buying vegetable shortening that have five sets of brands purchased in five 20-week periods where the rank-order of quantities purchased of those brands does not vary significantly from set to set. Significance refers to Kendall coefficient of concordance tested at $\alpha = .05$.

unlike other indexes of brand-choice behavior such as the most favored brand or repurchase probability, is considerably less restrictive insofar as it allows behavior to fluctuate within some well-defined boundaries as long as the rank ordering of brands is not altered drastically.

The study focuses on the effects of marketing system variables on buyer behavior. Ideally, all the relevant facets of marketing strategy should be investigated, particularly those pertaining to inter-brand competition and their effect on brand switching; however, the lack of data makes it impossible. Brand switching within assortments is considered here only in relation to price competition and store differentiation. Brand assortments are decomposed for this purpose into price, deal, and residual assortments, where the first two are strictly switching assortments (between two consecutive purchases).

Figure 1 outlines the procedure employed in constructing these assortments. The time basis, i.e., 20-week periods, does not change. For example, if at time t brand A was purchased and at $t + 1$ brand B was purchased at a lower unit price, then brand B is included in the price assortment. If at time $t + 2$ brand B is purchased again, it is recorded in the residual assortment. Consequently, the residual assortment consists of quantities of unique brands where no purchase-to-purchase switching has occurred. It is, therefore, quite possible that the residual and price assortments will include the same nominal brands. They differ, however, in that the price assortment will indicate differences among households insofar as their brand switching is as-

sociated with paying lower unit prices. The three subassortments are mutually exclusive and collectively exhaustive subsets of the "brand assortment" set.

The purchase-pattern model is next applied to stores shopped by the household; i.e., quantities of brands purchased in various stores. Also in this case stability of assortment is tested. Household store and brand assortments are further examined in terms of the number of items in the assortment; e.g., store assortment and brand assortment size.

The data base for the study consists of records of *The Chicago Tribune* panel for 1960-1961 in nine product categories. Only households that were panel members for the duration of the study were investigated in each product category. Their numbers are given in Table 1, column 8. Each record contains product and brand specifications, date of purchase, store, deal and type of deal if applicable, quantity purchased, and price paid.

Analysis and Discussion

Brand Assortments

As Table 1, column 1, indicates, between 17% and 45% of the sample's households exhibit brand-assortment stability; i.e., the five brand assortments, covering 100 weeks, are significantly similar. On the average, 31% of the households have stable brand assortments over the nine product categories. The percentage of households exhibiting stability is generally higher in subassortments, except for deal assortments where the low incidence of dealing in most of the products studied precludes drawing any

TABLE 2
AVERAGE NUMBER OF BRANDS IN VARIOUS ASSORTMENTS

Product Category	Assortment Size (Number of Brands)		
	Brand Assortment	Residual Assortment	Price Assortment
Vegetable Shortening	2.6	1.5	1.4
Frozen Fish Sticks	2.3	1.5	1.3
Floor Wax and Polish	1.9	1.0	1.0
Cooking Oils	2.5	1.8	1.4
Frozen Dinners	4.1	2.8	2.0
Cleansing Tissue	3.9	2.6	2.4
Margarine	5.3	2.5	2.9
Frozen Vegetables	5.5	3.7	3.7
Toilet Soap	5.5	2.9	2.5

conclusions. These results—with the exception of frozen vegetables and margarine—indicate that breaking up the brand assortment has the effect of showing that some households whose brand assortment was previously classified as nonstable have stable price and residual assortments (columns 3 and 5). One might expect residual assortments to show higher stability than brand assortments because they were analytically created by “cleaning up” the latter of brand switching. Since price assortments turn out the same way, it might be expected that buyers, when they switch brands to take advantage of price differentials, would oscillate among a large number of brands thus reducing regularity in the purchase pattern. Neither of these expectations materializes in this case. As Table 2 indicates, the sample mean number of brands in price assortments is in fact much smaller than in brand or residual assortments, with the exception of margarine and frozen vegetables. It is difficult to say at this point whether this is a demand phenomenon—i.e., consumers have a stable set of brands to which they switch in order to take advantage of price differentials—or a supply phenomenon. Whatever the case, the large percentage of households that maintain stable price assortments suggest that those families do not only take advantage of occasional price manipulations effected by the marketing system, but they are also able to identify those brands which are generally less expensive than the brands they regularly buy. When these families switch brands, they are not primarily enticed by temporary price cuts. Thus, consumers appear capable of dividing brand offerings into separate groups according to price, and of switching from one group to the other without great difficulty. It would appear, therefore, that promotional price cuts are relatively ineffective for 27% to 55% of the sample households, depending on the product.

TABLE 3
ASSORTMENT SIZE STATISTICS

Product Category	Correlation ^a between Assortment Size and:		
	Brand-Assortment Stability	Price-Assortment Stability	Residual-Assortment Stability
Vegetable Shortening	-.69	-.48	-.57
Frozen Fish Sticks	-.89	-.28	-.61
Floor Wax and Polish	-.95	-.08	-.17
Cooking Oils	-.66	-.56	-.65
Frozen Dinners	-.50	-.59	-.56
Cleansing Tissue	-.42	-.59	-.65
Margarine	-.34	-.53	-.48
Frozen Vegetables	-.19	-.32	-.28
Toilet Soap	-.28	-.61	-.54

^aExpressed in Kendall's Tau rank correlation coefficient values. All coefficients are significant at $\alpha = .001$.

Brand-assortment Size

Whenever brand-choice processes are investigated in a time perspective, it always shows that consumers rarely limit their choices to only one brand. The size of the brand assortment—and its subassortments—is, therefore, considered next.

It is not surprising to find variations in assortment size among products (Table 2). These reflect differences in use, the importance of taste-sampling, brand offerings, and so on. Nevertheless, the data in Table 2 reveal an interesting feature of the brand-choice process, namely that there is very little difference between the size of the residual and the price assortment. This tends to reinforce the earlier conclusion regarding the limited number of brands on which consumers usually rely when switching brands to take advantage of lower prices.

A significant and consistent result—with respect to the variety of assortment types and product categories—is obtained in Table 3, namely that nonstable assortments are associated with large assortment size and vice versa.

Store Assortment

A characteristic of the modern consumer which is least disputed is that she usually shops at more than one store.⁶ This study not only reaffirms this phenomenon (Table 4, column 1), but it also shows that between 52% and 74% of households have nonstable store assortments (column 2); i.e., the stores at which they shop vary significantly among the five time periods studied. However, we are more

⁶ See Market Research Corporation of America, *How People Shop for Food* (New York: Market Research Corporation of America), n.d., and Ben L. Schapker, “Behavior Patterns of Supermarket Shoppers,” *JOURNAL OF MARKETING*, Vol. 30 (October, 1966), pp. 46-49.

TABLE 4
STORE-ASSORTMENT STATISTICS

Product Category	Sample Mean Store-Assortment Size (1)	Percentage of Stable Store-Assortment Households (2)	Correlation between Brand-Assortment Stability and: ^a		Correlation between Store-Assortment Size and: ^a		
			Store-Assortment Stability (3)	Store-Assortment Size (4)	Brand-Assortment Size (5)	Price-Assortment Stability (6)	Mean Price Reduction (7)
Vegetable Shortening	2.54	26	.19 ^a	-.23 ^a	.29 ^a	-.09 ^b	.14 ^a
Frozen Fish Sticks	2.09	47	.73 ^a	-.75 ^a	.64 ^a	-.35 ^a	.13 ^b
Floor Wax and Polish	1.85	48	.45 ^a	-.49 ^a	.36 ^a	-.07 ^c	.12 ^b
Cooking Oils	2.36	38	.35 ^a	-.33 ^a	.37 ^a	-.21 ^a	.13 ^a
Frozen Dinners	2.32	38	.38 ^a	-.36 ^a	.50 ^a	-.36 ^a	.11 ^b
Cleansing Tissue	3.60	29	.32 ^a	-.21 ^a	.46 ^a	-.33 ^a	.06 ^c
Margarine	3.77	46	.27 ^a	-.04	.41 ^a	-.22 ^a	.09 ^a
Frozen Vegetables	3.34	42	.56 ^a	-.17 ^a	.57 ^a	-.24 ^a	.05 ^c
Toilet Soap	3.76	30	.17 ^a	-.02	.28 ^a	-.15 ^a	.09 ^a

^a $\alpha = .001$

^b $\alpha = .010$

^c $\alpha = .050$

^aExpressed in Kendall's Tau rank correlation coefficient values.

concerned with its relationship to the other facets of the brand-choice process. For example, households that have stable brand assortments also have stable store assortments of relatively small size (columns 3 and 4). Moreover, the larger the size of the brand assortment, the larger the number of stores shopped (column 5). Column 6 indicates that stability of price assortment is associated with shopping at few stores in all product categories. Some indication—although not statistically strong—exists that the larger number of stores shopped the higher the mean price reduction buyers take when switching brands due to price differential (column 7). This last result sheds an interesting light on consumers' shopping strategies and emphasizes the need to study this phenomenon much more systematically.⁷

Heavy Buying

The dichotomous classification of consumers into heavy and light buyers is an accepted practice in consumer research.⁸ Current empirical evidence fails to support a hypothesis associating quantity purchased with brand loyalty.⁹ Do heavy and light

buyers differ with respect to their assortment stability and other assortment features? In essence the question is whether these two groups employ different purchasing strategies to meet their respective needs, which are supposedly dissimilar.

Households were classified into light and heavy buyers in each product category using the sample mean quantity purchased during the duration of the study as a criterion. The data indicate that the percentage of heavy buyers varies only slightly among products (range: 31%—39%; mean: 34.5%). Table 5 shows that heavy buying is generally associated with nonstable assortments (brand, price, and residual assortments). The low values of the phi coefficients—regardless of the persistence of negativity across products—preclude drawing definite conclusions. In addition, light buyers have generally smaller brand assortments than heavy buyers (Table 6).

One may speculate that heavy buyers' shopping strategies differ from that of light buyers in that the formers' goal of meeting a higher demand overshadows any latent choice stability motive that may exist. This "speculation" is empirically supported by the relationship between heavy buying and store selection (Table 7). Heavy buying is associated in five of the nine products with nonstable store assortments and with a larger set of stores shopped, than light buying regardless of the product. If we are indeed confronted with two distinct shopping strategies, it would be interesting to find out how heavy and light buyers fare with regard to their respective total outlays.

Pricing Activity

The marketing system may affect consumer brand choice by its price structure; i.e., the position occu-

⁷ See for instance James M. Carman, "Some Insights into Reasonable Grocery Shopping Strategies," *JOURNAL OF MARKETING*, Vol. 33 (October, 1969), pp. 69-72.

⁸ See Dik Warren Twedt, "How Important to Marketing Strategy Is the 'Heavy User'?" *JOURNAL OF MARKETING*, Vol. 28 (January, 1964), pp. 71-72.

⁹ Ross M. Cunningham, "Brand Loyalty—What, Where, How Much?" *Harvard Business Review*, Vol. 34 (January-February, 1956), pp. 116-128; James U. Farley, "Brand Loyalty and the Economics of Information," *Journal of Business*, Vol. 37 (October, 1964), pp. 370-381; Ronald E. Frank and Harper W. Boyd, Jr., "Are Private-Brand-Prone Food Customers Really Different?" *Journal of Advertising Research*, Vol. 5 (December, 1965), pp. 27-35.

TABLE 5
ASSOCIATION BETWEEN HEAVY BUYING AND VARIOUS ASSORTMENT STABILITY MEASURES

Product Category	Percent Heavy Buyer Households	Brand-Assortment Stability		Price-Assortment Stability		Residual-Assortment Stability	
		Chi-Square	Phi ^a Coefficient	Chi-Square	Phi Coefficient	Chi-Square	Phi Coefficient
Vegetable Shortening	34	1.23	-.06	10.39 ^b	-.16	14.73	-.19
Frozen Fish Sticks	31	10.29 ^b	-.23	0.74	-.06	11.03 ^a	-.24
Floor Wax and Polish	33	9.18 ^b	-.51	0.74	-.05	0.60	-.05
Cooking Oils	35	4.81 ^c	-.10	29.27 ^a	-.24	18.81 ^a	-.19
Frozen Dinners	32	15.05 ^a	-.24	41.43 ^a	-.01	27.77 ^a	-.33
Cleansing Tissue	33	13.87 ^a	-.15	0.59	-.03	0.74	-.03
Margarine	36	28.67 ^a	.22	0.11	.02	6.82 ^b	-.11
Frozen Vegetables	38	38.43 ^a	.20	7.19 ^b	.11	15.06 ^a	.16
Toilet Soap	39	25.81 ^a	.26	6.37 ^c	-.10	1.67	-.05

^a $\alpha = .001$

^b $\alpha = .010$

^c $\alpha = .050$

^aFor a discussion of the phi coefficient as a measurement of the correlation between two ordered attributes, see William L. Hays, *Statistics for Psychologists* (New York: Holt, Rinehart, and Winston, 1963), pp. 604-606.

TABLE 6
HEAVY BUYING AND BRAND-ASSORTMENT SIZE

Product Category	Correlation ^a between Heavy Buying and Brand-Assortment Size
Vegetable Shortening	.46 ^b
Frozen Fish Sticks	.46
Floor Wax and Polish	.28
Cooking Oils	.45
Frozen Dinners	.72
Cleansing Tissue	.46
Margarine	.45
Frozen Vegetables	.54
Toilet Soap	.41

^aExpressed in Kendall's Tau rank correlation coefficient values.

^bAll coefficients significant at $\alpha = .001$.

pied by a particular brand relative to other brands in the same product category on a price continuum. An individual marketer may further affect brand choice through purposeful actions, such as dealing and pricing.

The most serious limitation of this study is its reliance on consumer-based data so that there is no knowledge of actions taken by agents of the marketing system. This limitation is overcome in part by means of "mean price reduction." This variable answers the question: "What price reduction, on the average, for the 100-week period, does it take to cause brand switching in a product category for a particular household?" Table 8, column 1, indicates that products vary only slightly with regard to mean price reduction. That is, when the sampled households' brand switching purchases that were determined to be associated with a lower price having been paid are compared to the price paid on the

TABLE 7
HEAVY BUYING AND STORE SELECTION

Product Category	Correlation ^c between Heavy Buying and:	
	Store-Assortment Size	Store-Assortment Stability
Vegetable Shortening	.35 ^a	-.10 ^a
Frozen Fish Sticks	.36 ^a	-.02
Floor Wax and Polish	.38 ^a	-.23 ^a
Cooking Oils	.43 ^a	-.06 ^b
Frozen Dinners	.49 ^a	-.21 ^a
Cleansing Tissue	.35 ^a	.22 ^a
Margarine	.35 ^a	.26 ^a
Frozen Vegetables	.38 ^a	.25 ^a
Toilet Soap	.33 ^a	.19 ^a

^a $\alpha = .001$

^b $\alpha = .050$

^cExpressed in Kendall's Tau rank correlation coefficient values.

immediately preceding purchase, the average price reduction taken by households ranges between 18% and 30% among the nine products studied. Therefore, price differentials offered by firms either promotionally or on a more stable basis might be of dubious effect if they fall below this range and might be unnecessarily costly if they are above it.

A comparison of individual households with the sample mean price reduction yields the results in Table 8, column 2, showing that slightly more than one-third of the households fall in the above-average category in most product groups. However, being higher-than-average is not strongly associated with stability characteristics of either the brand or price assortment (columns 3 and 4). The presence of negativity in the last relationship indicates that

TABLE 8
MEAN PRICE REDUCTION STATISTICS

Product Category	Product Mean Price Reduction (1)	High Mean Price Reduction Households [%] (2)	Correlation between High Mean Price Reduction and: ^d	
			Brand- Assortment Stability (3)	Price- Assortment Stability (4)
Vegetable Shortening	.22	.35	.24 ^a	-.08 ^c
Frozen Fish Sticks	.18	.31	.06	-.15 ^a
Floor Wax and Polish	.28	.31	.15 ^a	-.28 ^a
Cooking Oils	.24	.34	.15 ^a	-.16 ^a
Frozen Dinners	.23	.35	.06	-.22 ^a
Cleansing Tissue	.22	.40	.08 ^b	-.09 ^a
Margarine	.25	.40	.20 ^a	-.10 ^a
Frozen Vegetables	.25	.40	.07 ^b	-.01
Toilet Soap	.30	.42	.09 ^a	-.07 ^b

^a $\alpha = .001$

^b $\alpha = .010$

^c $\alpha = .050$

^dExpressed in Kendall's Tau rank correlation coefficient values.

there is a stable direction of association common to all the products studied. This suggests that in order to take advantage of high price reductions one must search beyond the limits of one's normal price assortment.

Conclusions

This study has investigated brand-choice behavior via a model designed to test the stability of choice—of brands and stores—over time. The emphasis has been on the ways brand choice is affected by the interface of the consumer-marketing system with respect to price variations without considering at all variables that describe consumer characteristics; e.g., socioeconomic, demographic, and personality

variables. The results indicate the existence of significant relationships among the variables studied. The approach used here deserves further development so that the analyst may go beyond classification and into establishing causal relationships and predictive instruments. Furthermore, more systematic, and less exploratory, research should be able to include a larger number of variables.

The results indicate that there are several types of brand-choice strategies. At this stage it might be premature to draw any far-reaching conclusions, but additional work with the model should give the marketing executive new and useful insights into market segmentation criteria.

MARKETING MEMO

A View of Consumer Behavior . . . The Existential Man . . .

In summary, consumer behavior might very well be viewed within the framework of heuristic problem solving. The consumer's behavior is goal directed and, therefore, purposive. His goal is often non-specific; he is open to recommendation and suggestion; thus learning and communication are important means for helping the consumer in his propiarte striving consumer behavior. The consumer cannot be controlled or manipulated in any mechanistic sense. Consumer behavior is largely directed along the lines of search and discovery; therefore his behavior is *heuristic*. Inasmuch as it is heuristic, he develops certain rules of thumb which he utilizes as guidelines to shape and structure his behavior. The existential consumer learns to rely on dependable modes of reducing tensions, but he is constantly sloughing off old habits and taking risks in searching out new means of problem solving and becoming.

—Rom J. Markin, "Consumer Motivation and Behavior: Essence vs. Existence," *Business and Society*, Vol. 10 (Spring, 1970), pp. 30-36, at p. 36.