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Deal Proneness and Heavy Usage: Merging Two Market Segmentation Criteria

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INTRODUCTION

The widespread acceptance of the marketing concept over the past several decades has generated an energetic search for effective market segmentation criteria. Once the market is defined in a manner which is relevant to the product, the logic goes, all kinds of strategies (price, product, distribution, promotion) can be more easily determined, since they are functions of the consumers' characteristics and behavior. Keith (1960) likened the advent of the marketing concept to that of Copernicus' theory concerning the motion of the planets around the sun. Once the basic premise is accepted, then all else falls easily into place. Similarly, once the market is adequately defined in terms of consumer characteristics, the seller can use a rifle, rather than a shotgun, approach in order to reach his markets.

The task of spelling out the details still remains, and considerable research is being conducted in order to improve segmentation techniques. Kotler (1976) provides a comprehensive list of bases for segmentation. This list includes segmentation by geographic, demographic, psychographic, benefit, volume, market factor, and product space criteria. The last three criteria are the more recent and possibly the more sophisticated. From a

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technical standpoint Frank, Massy and Wind (1972) outlined in a pioneering manuscript several systematic methods of designing segmentation studies in order to provide useful information for the purpose of evaluating alternative segmentation strategies.

This paper reports an effort to combine two of the more sophisticated segmentation bases, volume and marketing factor segmentation, in order to achieve the advantage of both. The former usually involves focus on the heavy user of a product. Its major advantage is that it inherently focuses on a large, lucrative market. Perhaps the best known among the volume segmentation approaches is Twedt's (1965) pioneering work which identified the "heavy half," those households above the median purchase level for a given product who account for 80-90% of total purchases. Even earlier, Crisp (1948) fostered the classic iceberg or 80-20 principle which states that about 80% of a product's sales volume is frequently obtained from 20% of whatever influence is being observed, be it the customers, products, or salesmen.

Marketing-factor segmentation uses consumer response as the basis for market segmentation. Its major advantage is that, by relying on the type and intensity of consumer response, the segmentation method itself helps select the type of marketing strategy that should be used. The marketing factor used in this study is deal proneness; that is, the propensity of some consumers to purchase products when they are offered on a "deal" basis. Examples of deals include coupons, introductory offers, additional merchandise bonuses, price-off labels, and so forth. The popularity of couponing and other forms of promotional dealing as an alternative to simple price reduction is evidenced by the millions of dollars spent each year by manufacturers of grocery products and the subsequent attention given to the dealing in various trade publications.¹

The ongoing rapid growth in sales promotional activities suggest that a reexamination of the underlying theoretical premises of such activities is warranted. Strang 1976 reports that already spending on sales promotion exceeds spending on ordinary advertising by some 50%. Estimates were made of a 36% increase in couponing, a major form of sales promotion in the year 1977 over 1976. There were 62.2 billion coupons issued in 1977.² This growth continues despite fears of misredemptions and the high costs (about an average of 33¢ per coupon redeemed in 1976) of this popular sales device.³ Much of what constitutes sales promotion may be classified in the "deal" category. Apparently, the "deal" is increasingly being regarded as an effective way of reaching important market segments, and has become a very important market factor type of market segmentation device.

Also, numerous studies in the academic journals (e.g., Carman, 1970, Blattberg and Sen, 1974 and 1976, Blattberg, Sen, Buesing, and Peacock, 1978, and Montgomery, 1971) have been made of this phenomenon, including its relationship to brand loyalty and a host of other response variables. The primary thrust of many of these efforts has been in the direction of demographic correlates in an effort to describe the deal-prone consumer (e.g., Webster, 1965, Winn, 1971, and Hackleman, 1973 and 1976), together with an analysis of the effectiveness of specific deal types (Hackleman, 1976).

We are testing here the possibility that, for certain products, the heavy user may also be deal prone. Cotton and Babb (1978) have found that promotional deals result in substantial increases in the level of purchase when the deal is offered, especially for highly familiar products involving routine buying. Still, this finding does not focus upon either the heavy user or the deal-prone consumer *per se*. Should the heavy user also tend to be deal prone, several advantages become available to the marketer. The major advantage is that the seller makes to a large market an offer which the buyer, being deal prone, finds "impossible to refuse." More soberly stated, the promotional method itself seeks out the target in a way analogous to that of a heat-seeking missile. The target market has an affinity for the promotional method.

DISCUSSION

There are logical grounds for expecting a positive correlation between heavy usage and deal proneness.

Firstly, Carman (1970) found evidence that heavy usage is inversely connected with brand loyalty. Deal proneness, again by definition, involves low brand loyalty. Thus, both segmentation criteria focus on consumers with low brand loyalty vis-a-vis the given product.

Secondly, heavy usage very likely involves frequent purchase. This maximizes opportunity for experimentation, which leads to trying products which are being "dealt." The resultant experience, in turn, raises consumer confidence in his own judgment, which reinforces low brand loyalty. For products which are functionally homogeneous, all this would cause the consumer, on economic grounds, to look for price reductions, which includes deals. And without regard to the deal-proneness of the purchaser, Cotton and Babb (1978) report dealing to be an even stronger volume stimulant than equivalent price reductions.

Thirdly, on economic grounds, light usage would involve "light" savings because of deals, which would make deals less important. Light users would ordinarily not make a strong effort to seek and find a deal for a product seldom purchased.

There are, however, several logical considerations that might indicate contrary conclusions. The heavy user is "in the market" for the product more often. Deals may not be available with equal frequency. This does not argue against the logic of the connection, but against the consumer's ability to operationalize it, and against the possibility of the correlation being discoverable. Secondly, the heavy user may operate on a requirement schedule which does not permit him to postpone his purchase until such time as a deal is available. The average users category, on the other hand, might include the highest proportion of deal-prone consumers since they will display the most rational shopping behavior and actively seek (and wait for) purchase premiums.

DATA AND METHODOLOGY

The study centers on the relationship between heavy users and deal prone consumers in the purchase of bar soap, which is a functionally, near-homogeneous product. (Bar soap has, despite its near-homogeneity, in fact, been found by Cunningham (1961) to be a product with some degree of brand loyalty.)

The data for the study was provided by consumer panels employed by the Market Research Corporation of America. The raw data records the purchases of bar soap by a probability sample of 6205 United States households over a two-year time span, thus yielding nearly 204,000 purchase records. Chief food buyers recorded the price paid, date of purchase, number of bars purchased and whether the purchase was made using a deal after journey to the marketplace. Using this data, three measures of "dealing" were constructed for each household:

$$(1) \quad \frac{\text{Total number of deal purchases}}{\text{Total number of purchases}}$$

This measure takes into account neither the price of the soap purchases nor the number of units purchases.

$$(2) \quad \frac{\text{Total dollar expenditures on deal purchases}}{\text{Total dollar expenditures on all purchases}}$$

This measure takes into consideration price differences but not package size or multiple unit purchases.

$$(3) \quad \frac{\text{Total number of bars purchased on a deal basis}}{\text{Total number of bars purchased}}$$

This measure does take into consideration multiple-unit purchases but not price fluctuations.

Dynamic deal proneness measures were next determined by first converting the above relative frequency measures to a monthly basis. Three different data matrices were generated, each having monthly entries of the relative frequencies. Factor scores were derived using procedures outlined by Cooley and Lohnes (1971) to obtain a deal proneness score for each household. (The detailed procedure for obtaining these scores is outlined in the Technical Appendix.)

The hypotheses being considered in this research suggest a non-monotonic relationship between usage rates and deal proneness. Consequently, a curvilinear model was applied to the 6205 observations. The general form of a parabolic bivariate model is:

$$Y = a + B_1X + B_2X^2$$

where Y = the estimate of the dependent variable
(deal proneness)

a = the estimate of the intercept

B_1 = the estimate of the first regression coefficient

B_2 = the estimate of the second regression coefficient

X = the independent variable (usage rate)

Three regression runs were conducted to determine the suitability of each dynamic deal proneness measure and usage rate measure: deal proneness measured in purchases against usage rate measured in purchase, deal proneness measured in dollars against usage rate measured in dollars, and deal proneness measured in units against usage rate measured in units.

RESULTS

The regression equations developed through the polynomial regression process are summarized in Table 1. The statistical parameters listed in Table 1 provide a description of the relationship between deal proneness and usage rate, together with an indication of the strength of that relationship. The positive value for the first coefficient, B_1 , indicates a direct positive relationship between the two variables. However, the negative sign on the second coefficient, B_2 , indicates that deal proneness increases at a decreasing rate as usage rate goes up. The pattern is strikingly similar for all three measures of deal proneness which were investigated, thus uncovering a non-monotonic relationship.

TABLE 1
SUMMARY OF POLYNOMIAL REGRESSION ANALYSIS
OF DEAL PRONENESS AND USAGE RATES

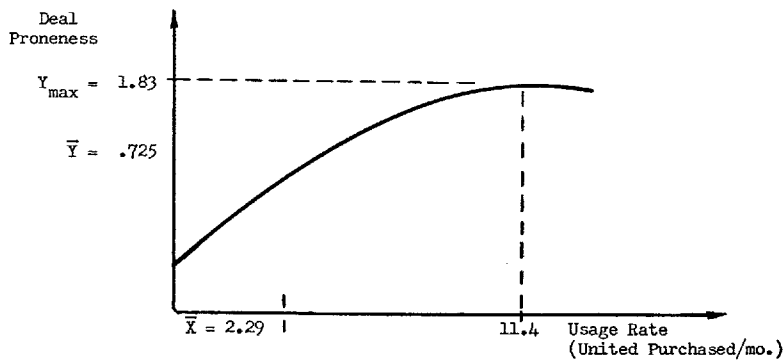
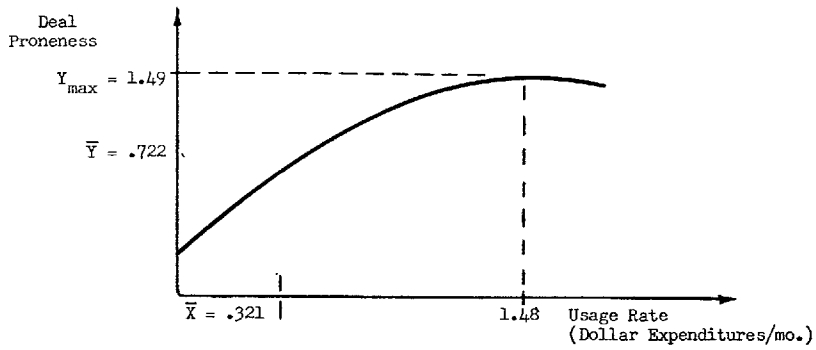
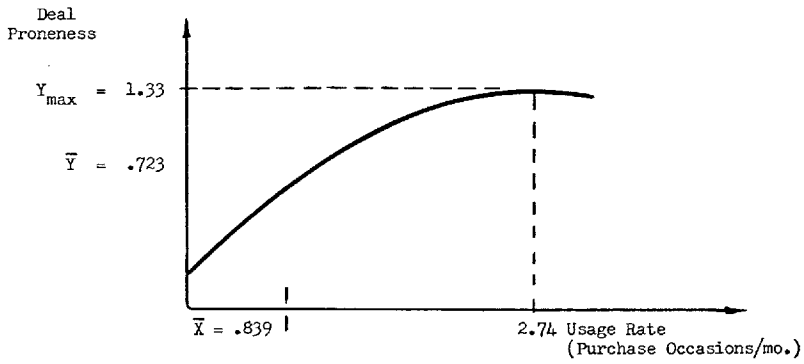
Measures of Dealing	Coefficient B_1 (Sign)	Coefficient B_2 (Sign)	Univariate F
Occasions/mo. $\bar{Y} = .723$	+* $\bar{X} = .839$ $\sigma_X = .688$	-*	549.1*
Dollars Spent/mo. $\bar{Y} = .722$	+* $\bar{X} = \$.32/\text{mo.}$ $\sigma_X = \$.29/\text{mo.}$	-*	501.7*
United purchased/mo. $\bar{Y} = .725$	+* $\bar{X} = 2.29 \text{ bars}$ $\sigma_X = 2.03 \text{ bars}$	-*	1039.9*

*Indicates Statistical Significance at $P < .001$

Figure 1 depicts the graphs of each of the three regression equations in

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FIGURE 1
DEAL PRONENESS AS A FUNCTION OF USAGE RATE



which deal proneness is plotted against usage rate. The illustrations show that light users of the product tend to be lower deal prone, whereas the heavy users are higher deal prone, regardless of which measure is employed. The mean usage rates were .84 purchase occasions per month, \$.32 per month, and 2.3 bars per month. On the other hand, the regression curves reveal that deal proneness does not peak until the usage rates climb to 2.74 occasions per month, \$1.48 per month, and 11.4 bars per month. These maxima represent usage rate values several standard deviations beyond the averages, indicating that despite the non-monotonic regression pattern, for all intents and purposes, deal proneness increases with product usage — a result opposite of Webster's (1965) findings. A linear bivariate model was also investigated, but a substantial reduction in the coefficient of determination occurred. Therefore, the heavy user is a deal prone consumer on the basis of how often the consumer goes to the market, how much is spent on the product, and the physical quantity carried from the store. However, since Webster did not specify which products he tested, it is not known whether he wrote of bar soap.

CONCLUSIONS AND IMPLICATIONS

All three of the measures of deal proneness employed here confirm the hypothesis that, in the case of bar soap at least, heavy users can be induced to purchase a given brand by the use of deals.

This situation has very considerable marketing implications. The fact that heavy users are deal prone provides the marketer with an approachable and profitable market segment. What is especially attractive is the condition that the very nature of the segmentation matter points to the solution of many promotional problems. The major outlines of an effective promotional strategy are settled. For example, the crucial question of what message should be used has already been settled—in a sense, ideally. While decisions concerning media choices still remain, even they are less difficult than under other market segmentation criteria. Research or experience can indicate the identity of the heavy user. A demographic and socioeconomic profile can then lead to a good definition of media requirements. A number of additional questions, however, must be answered before advantages can be taken from findings reported here.

It would be particularly important to isolate specific deal types which attract the deal prone, heavy user. The deal prone, heavy users also need to

be identified by their personal characteristics and other buyer behavior variables. Personal characteristics of consumers will undoubtedly differ from one product class to the next, perhaps even from one product brand to the next. Hence, considerable research remains to be completed before these results can become fully operational for marketing management. Still the implications of our results for marketers of other products are indeed important. Such products which are closely related to bar soap in a marketing sense are the next obvious areas for investigation. Frequently purchased, fairly homogeneous grocery products suggest themselves. Included would be other cleaning products, beverages, such as coffee and tea, oils, fats, desserts, and so on.

Much of the research on brand loyalty is related to the suggested research, since brand loyalty appears to be negatively related to deal proneness. However, such research was not pursued with deal proneness in mind. Brand loyalty research faltered because of difficulties in defining or measuring brand loyalty. Also, brand loyalty may be ambiguous, as Kotler (1976) has warned, since less loyal customers leave a given brand just when its sales begin falling at the tail end of its product life cycle. Hence, the proportion of brand loyal purchasers of a product will increase in the sales decline stage. The findings of previous brand loyalty research are, nevertheless, suggestive of product areas that might be investigated for deal proneness.

The results uncovered here also indicate that marketers of soap have been using good marketing logic in their frequent recourse to dealing. What remains to be accomplished is to achieve some definite findings which would match the particular type of deal promotion appropriate to the heavy user of a particular product. Such an approach is closely related to a study which has already shown that deal-prone consumers prefer specific types of deals over others. For example, Hackleman (1976) discovered that in-store specials, newspaper coupons, cents-off labels, and similar cash deals are more attractive to the deal-prone consumer than are deals in kind, such as free bonus merchandise which accompanies the purchase of the principal product. Our findings here indicate that similar results would apply to the heavy user as well.

In summary, an important relationship has been confirmed, that between deal proneness and heavy use of a product. This relationship can improve promotion of many products other than bar soap, should it be found to pertain to these other products. What remains to be determined is the identity of the other products and the types of deals which are particularly suited to their heavy users. In the case of bar soap the usage of the manufacturers for about a century have already refined the practice to an art.

NOTES

¹See for example, *Advertising Age*, April 21, 1975, p. 102, *Advertising Age*, February 7, 1975, p. 32, *Marketing News*, August 4, 1975, p. 5, *Advertising Age*, March 1, 1976, p. 46, and *Media Decisions*, August, 1975, pp. 68-74.

²Discussed specifically in *Media Decisions*, April 1, 1976, p. 10.

³Emphasized in *Advertising Age*, June 13, 1977, p. 71.

TECHNICAL APPENDIX

Eckart and Young (1936) originally showed that any complete $n \times N$ rectangular matrix can be resolved into the product of three other matrices:

$$Y = U\Gamma W \quad (2)$$

where U is an $n \times n$ orthogonal matrix (i.e., $U' = U^{-1}$ and $UU' = I$), W is an $N \times N$ orthogonal matrix, and Γ is an $n \times N$ diagonal matrix which contains principal roots as diagonal entries in the upper left corner area and zeros elsewhere. A matrix of lower and Y_r ($r < n$) can be reconstructed to approximate Y by using the first r left principal vectors of U , r principal roots in Γ , and r right principal vectors in W to obtain:

$$Y_r = U_r \Gamma_r W_r \quad (3)$$

A factor matrix A which contains factor loadings as entries is constructed by:

$$A = U_r \Gamma_r \quad (4)$$

and has dimensions $n \times r$. A factor scores matrix S from which the dynamic measures will emanate is merely the same as W_r . Therefore, Y_r can be rewritten

$$Y_r = A S \quad (5)$$

For computational purposes the data Y can be resolved by first post-multiplying it by its transpose Y' to obtain:

$$YY' = (R \Gamma W) \quad (W' \Gamma U') = U \Gamma^2 U' \quad (6)$$

YY' is called a cross-products matrix which is the square symmetric. The Matrix U contains the characteristics roots of YY' . Since Γ is a diagonal matrix, Γ^2 is also a diagonal matrix which entries representing the squares of the principal roots of Y . Each root will be derived knowing that:

$$S = W_r \quad (7)$$

$$\text{and } A = U_r \Gamma_r \quad (8)$$

$$\text{therefore, } Y_r = U_r \Gamma_r S_r \quad (9)$$

Solving for S_r we obtain:

$$S_r = \Gamma_r^{-1} U_r^{-1} Y_r \quad (10)$$

Therefore, a household's deal proneness score is a linear combination of the overt purchasing behavior over the entire 24 month sequence of purchase occasions. These scores depend on both the relative frequency of purchase on a deal basis and the pattern or trend of purchase.

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