Preference of Relevant Others and Individual Choice Models

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Despite a growing number of studies involving husband-wife decision making (Davis, 1970; Ferber, 1973; Ferber and Lee, 1974; Davis and Rigaux, 1974 and Munsinger, Weber and Hansen, 1974 to mention just a few), a recent review of the literature on decision making within the household (Davis, 1975) concludes that the view of consumers as individual decision makers is still very much alive.

This lopsided focus on the individual, which is clearly evident in most applied consumer research studies can be the result of a belief that the individual is the appropriate unit of analysis. This may be the case if one assumes that the individual makes his purchase and consumption decisions independent of the influence of others or alternatively that his decisions reflect his perceptions of the preference of others and their relative importance to his decision. This latter approach is implicit in most of the consumer behavior studies which tend to focus on the housewife as the representative purchasing agent of the household. Alternatively, one may recognize that the unit of analysis should be the household or any combination of members within it, but given the conceptual and methodological problems involved in moving from the individual to the multi-person unit of analysis (not to mention the extra costs involved in collecting such data), the researcher is willing to settle for the analysis of consumer behavior at the individual level.

Since the purchase and consumption behavior of individuals is rarely done independently of the influence of others, it is desirable to change the unit of analysis in consumer research from the individual to the "buying center" (those members of the family and other individuals involved in the purchase decision). Having identified the members of the buying unit, ideally, one would like to examine the dynamics of the purchase and consumption decision processes among the relevant members of the buying center. Given, however, the complexity and cost of such an undertaking2, a somewhat less ambitious approach would be to examine explicitly the influence of relevant others on the purchase decision of a decision maker within the buying center.

The importance of the influence of relevant others on an individual purchase behavior has long been recognized in the consumer behavior and marketing literature. Coulson (1966), for example, stated: "Other members of the family exert considerable influence on the housewife in making brand decisions." Similarly, the organizational buying behavior literature has recognized the fact that most organizational purchase decisions are influenced by various members of the buying center and that purchasing agents attempt to take into consideration the preferences of the other members of the buying center (Wind, 1967 and Webster and Wind, 1972).

Examination of the influence of relevant others on a decision maker's buying decisions cannot explain the dynamics of the interaction among the members of the buying center, but if measured in a rigorous way may provide answers to questions such as:

- How important is the preference of relevant others on a decision maker's choice behavior?
- Do individuals differ with respect to the importance of the influence of others on their decisions?

Current approaches to the measurement of influence have not succeeded in providing rigorous answers to the above questions and have been isolated from most of the recent developments in individual choice models (Green and Wind, 1973). It is, therefore, the purpose of this paper to review briefly the existing approaches to assessing the impact of relevant others on a person's decision and to suggest an approach, based on recent developments in choice models, for quantifying the relative importance of preferences of relevant others.

THE CURRENT RESEARCH APPROACHES

Three major approaches have been utilized in the study of the influence of relevant others:

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1 For a detailed discussion of the concept of a "buying center" see Wind (1967).

2 Some initial thoughts concerning the various conceptual and methodological issues involved in the analysis of multi-person purchase and consumption decisions see Wind (1975).
1. Direct questioning of a decision maker. This type of research is the most commonly used (e.g. Blood and Wolfe, 1960; Davis, 1970) and can vary in a number of ways. It may involve only one respondent, or in somewhat more comprehensive studies (especially those concerned with family buying decisions), both parties—the influencer and the influenced. A typical line of questioning in these studies is concerned with a person's perception of the degree of influence a relevant other had or has on his purchase decision. These studies are often indistinguishable from those where the assessment of the identity of the decision maker (i.e., whether a given purchase decision was made exclusively by wife, mainly by wife, equally by husband and wife, mainly by husband or exclusively by husband). Occasionally, the researchers who attempt to assess the degree of influence of relevant others use some form or another or projective techniques.

2. The second approach to assessing the influence of relevant others is based on a two-step interview procedure. This approach is distinct from the direct interviewing procedure, and is based on a "Before-After" experimental design in which the preference of a relevant other serves as the experimental stimulus. The extent of influence of the relevant other is hence determined by the change in the original choice, or the respondent's indication whether he would be likely to change his decision given new information on the preference of a relevant other.

In a recent study of purchase decisions among 120 couples in 6 metropolitan areas, wives and husbands were asked, in a personal interview, to make independent brand choices (one among five) in each of 12 product categories. Once they made their choice they were presented with information on their spouse's choice and were asked to indicate, in cases in which their choice was not congruent with their spouse's choice, their willingness to change their initial choice to the one made by their spouse. The results of this study are presented in Table 1.

Examination of these results suggest that with
respect to these twelve product classes, wives are more likely to change their choice than husbands. Yet, both husbands and wives vary considerably in their likelihood of changing depending on the specific product class. This type of data does not reveal, however, in any direct way the magnitude of the impact that the spouse's preference has on the wife's or husband's choice.

3. The third approach to assessing the influence of relevant others on a person's decisions is based on observation. Two major types of observational studies have been employed in this context:

(a) A laboratory experiment in which husband and wife or other relevant decision-making unit are brought together and asked to arrive at a decision (solve a purchase problem). The discussion among the members of the decision-making unit is recorded and influence patterns inferred. Kenkel (1961) and Mishler and Waxler (1968), for example, used such an approach to assess the pattern of interaction (and influence) between husbands and wives.

(b) A protocol approach in which an observer is recording each of the steps a person goes through in making a purchase decision. This latter approach was utilized, for example, in a study of organizational buying decisions (Wind, 1967) and revealed the conditions under which by users and purchasing managers affected the purchasing decisions of purchasing agents.

These approaches are subject, however, to a number of measurement problems relating to questions such as: How to overcome in the direct questioning approach the possible bias due to the subjects' suppression, forgetting or other reasons? how to assure in observational studies the interjudge reliability? and how to overcome very low correlation among various measures of influence? (Turk and Bell, 1973; Olson and Robursky, 1972; and Davis, 1971). In addition to these measurement problems a major limitation of the three approaches is that they do not provide information on the relative importance of the influence of relevant others. The typical conclusion from these studies is that relevant others do affect the purchase decision, yet no insight is gained into the relative importance of this influence. It is the purpose of this paper to outline two related approaches which can provide the necessary quantitative information on the relative importance of others' influence on the purchasing decisions of an individual decision maker.

THE PROPOSED APPROACHES

The two proposed approaches are based on the utilization of conjoint measurement procedures (Krantz et al., 1971, Green and Wind, 1973). Conjoint measurement is concerned with determining the separate contributions of a set of independent variables to a dependent variable, when the dependent variable is expressed only ordinarily. In recent years conjoint measurement procedures have been applied to a wide range of consumer behavior studies (Green and Wind, 1975). Common to these applications were (a) the utilization of "product related" independent variables such as product features, price, product availability, brand name and the like, and (b) a task requiring the respondent to rank or rate various combinations of these factors based on his (her) preference (or other desired criteria).

In terms of our particular problem (of how to determine the relative importance of relevant others to the individual's choice behavior), let us consider two changes in the conventional conjoint measurement design which corresponds to the two suggested approaches.

The basic premise of these approaches, to the measurement of the importance of the preference of relevant others on an individual's choice behavior, is that the preference of a relevant other may be treated as an argument of the evaluation function, i.e. in evaluating a product offering, consumers take explicitly into account not only the product features and benefits, but also the reaction of others toward the purchase or use of the product.

If we also assume that an additive composition model applies to this case, then conjoint measurement enables us to find the part-worth contribution of each factor level, expressed in common unit but arbitrary origin, so that their additive combination yields a scale for the various profiles that minimizes a well defined badness of fit measure—stress (Kruskal, 1965). Kruskal's algorithm finds, iteratively, a monotone function of the response variable whose interval scale values are most concordant with the prescribed model.

To illustrate the model, let us consider the following example: A researcher is interested in finding out the relative importance that a husband's preference has on his wife's choice of a specific telephone service. First, assume that the telephone features considered are:

Telephone design: 1. regular telephone
2. slim line telephone
3. designer telephone

Maintenance service available within:
1. One day
2. 2–3 days
3. 4–5 days

Price:
1. 20% below the current price
2. same as the current price
3. 20% above the current price

Contract term:
1. Lease the telephone and pay a monthly leasing charge
2. Buy the telephone
Up to this point, if the researcher is interested in finding out the scale values of each of these factor levels, when they are not considered separately but rather in various combinations, the research design is a straightforward conjoint measurement study in which respondents receive a subset of all possible combinations following a $3^3 \times 2$ fractional factorial design. (Green 1974) and asked to rank or rate them with respect to their likelihood of accepting the specific offerings.

Given, however, that the researcher's interest is in the quantitative impact of the spouse's preferences on the respondent's choice behavior, two approaches can be followed:

The One Stage Conjoint Measurement Approach

This approach considers the preference of a relevant other as another factor and simply adds it to the original set of factors. In the telephone study, for example, the following factor was added:

Husband's preference: 1. strong preference (likes)
2. indifferent
3. does not prefer it (dislikes)

Adding this factor to the original four factors led to a $3^4 \times 2$ design. Of the 162 possible combinations, 18 combinations of the five factors were developed following a fractional factorial design and presented in a personal interview to 32 married women in the Philadelphia area. The respondents were asked to examine the 16 combinations and place them in one of three categories according to the likelihood that they would want to obtain (buy or lease) the specific offering. Following this assignment into three categories, they were asked to rank the combinations in each pile from most preferred to least preferred, and then to review them and make sure that the complete rank order accurately presented their evaluation of all 16 combinations.

The $32 \times 18$ data matrix was aggregated leading to an aggregate ranking which in turn was submitted to the MONANOVA program (Kruskal, 1965). Figure 1 presents the partial contribution to overall utility for each factor level. An examination of these results reveals that the spouse's pref-

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3 Each of the 18 profiles presented one of the three possible reactions of the husband to the specific combination of the four other factors. No attempt was made to present a consistent preference pattern for the husband across all 18 combinations. This procedure is justified only if the respondents react to each profile independently without attempting to infer from the husband's reaction to the 18 combinations his part-worth utility functions for the other four factors and levels. The nature and magnitude of the results suggest that this independence assumption did hold in this case.
ference is the second most important factor in determining a wife's choice of a telephone offering. The most important fact is apparently price (which may be somewhat biased due to the way in which price was presented in this study) followed by the spouse's preference, maintenance, telephone design and the contract terms. The interesting finding concerning the spouse's preference is that positive preference (liking) or indifference have quite similar small positive impact on the overall utility of the respondent. A spouse's negative preference (disliking) is, however, associated with a very significant disutility.

To increase our confidence in the results and given the small sample size which precluded a more conventional cross validation procedure, eight MONANOVA runs were conducted using randomly generated numbers. The highest and lowest utility for the “random” respondents for each of the factors and levels are presented in Figure 1 as the dotted lines. Examination of the range and flatness of these utility functions vs. the ones obtained from the respondents further supports our earlier conclusions.

The Two Stage Conjoint Measurement Approach

The preceding approach may lead to a number of attribute combinations which the respondent may perceive as unreasonable or as inconsistent with his (her) perceptions of his (her) spouse preferences. To overcome this limitation in the context of the preceding approach one has to contrive a somewhat artificial task situation which may affect the validity of the results. An alternative approach which overcomes this limitation and reduces the artificiality of the task by stating not only the preference of the spouse but also the reasons for the position, is thus presented next.

This approach is also based on the measurement of preference via conjoint measurement, but it differs from the preceding one in a number of ways:

1. The stimulus set does not include the preference of others as one of the factors. (i.e. the stimulus is limited to product related attributes).
2. The preference of relevant others is viewed as a “scenario” under which the respondents evaluate the set of attributes.
3. The interview involves a two stage procedure following a simple “Before–After” experimental design.

Such a design involves seven major steps which are discussed in the context of a second telephone study:

1. Developing a set of 12 combinations of the four factors (telephone design, maintenance service, price and contract terms) following a fractional factorial design.
2. Administration of the task, as in the preceding approach, to a new sample of 26 women in the Philadelphia area.

3. This task resulted in a data matrix of 26 x 12 which were submitted to the MONANOVA program. Individual utilities were calculated and the respondents were clustered according to the similarities of their utilities for the four factors. Three segments were identified:

   (a) A price sensitive segment
   (b) A service conscious segment who prefers leasing over buying the equipment
   (c) A segment preferring designer telephones even at a relatively high price

4. Having identified each individual preference structure, spouse preference statements were developed. These statements were designed to present the respondents with a conflicting position to their own. For example, if an individual indicated high preference for low price telephones, the “spouse preference” was presented as preference for a somewhat more expensive designer telephone with associated reasons on the advantages of having a designer telephone. All together three spouse preference situations were developed:

   (a) High preference for high price designer telephone (presented to the price sensitive segment).
   (b) Delayed maintenance service and lower cost (presented to the service conscious segment).
   (c) Low price regular telephone (presented to the design segment).

5. A second interview was conducted, a few days later, with the same respondents. Each respondent received a statement describing “his spouse preference” and reason for it. Following the presentation of this experimental treatment the respondents were asked to reevaluate the original stimuli and rank them again from most to least preferred.

6. The data from this second task were submitted to the MONANOVA program and a second set of utilities calculated for each individual.

7. A comparison of the “before” and “after” utilities (at the individual and segment level provides a measure of the degree of influence of the spouse (as a relevant other) on the individual’s choice behavior. Figure 2 illustrates this type of output by presenting the results for the price sensitive segment. These results suggest that exposure to husband's preference for a high price designer telephone increase the wives’ preference for designer phone (from .04 to .20), decreased their initial very high price sensitivity (from .77 to .64) while not affecting too much their utilities for the other two factors.
DISCUSSION

In the preceding section we proposed two new approaches for the quantification of the effect of a relevant person's preferences on the choice behavior of a decision maker. These approaches, which are based on the utilization of conjoint measurement, were illustrated in a somewhat simplified situation with very small nonrepresentative samples. Whereas the substantive findings should, therefore, be viewed only as illustrative ones, the pilot studies do serve, however, as an example for the feasibility of explicitly incorporating the preference of a relevant other in a decision maker's choice process.

The type of applications described in this paper can be extended to handle individual differences among respondents. With large samples utilizing the first approach one can develop the scale values at the individual level, and use these data for the clustering of respondents based on the commonality of their scale values. Alternatively, the individual scale values can be utilized as predictor variables in explaining the behavior of a priori segments. In the second—experimental—approach the change in utilities can be analyzed at the individual level segmenting the respondents based on their commonality with respect to both their initial position and direction and magnitude of change. In the example presented in Figure 2 one could further segment the price sensitive segment into those who changed their evaluation of the various factors and those who did not change it. (Note, that Figure 2 presents an aggregate response for the given segment).

* The relative importance of each factor is determined by the range of utilities for this factor as a percentage of the range for all the factors. Note, that all utilities are expressed in common unit which enables one to compare the utility ranges of the various factors. (For further discussion of this see Green and Wind, 1973 and 1975).
The experimental approach can be extended to cover more than a single respondent. Collecting data from both husband and wife for example, may increase the realism of the experimental stimulus since the wife may think that the statement covering the preference of her spouse is his actual preference.

The utilization of conjoint measurement for the quantification of the effect of preference of relevant others on a decision maker's choices is conceptually applicable to all those consumer and organizational buying situations in which the decision maker is, or may be, affected by the preferences of some relevant other or others.

Consumer behavior

The sociological, social psychological and consumer behavior literature abound with theories and findings on the important role of relevant others (reference groups, peer groups) on a person's decisions and behavior. Following the procedure suggested here, the specific role of the relevant others and their relative importance can be assessed quantitatively.

Family behavior

The family as the unit of analysis is receiving increasing attention by consumer researchers and sociologists. As in the pilot studies presented here, it is now possible to incorporate the spouse's preference and the preference of other family members, such as children, as explicit arguments in the decision maker's choice model or as covariates in the analysis.

Organizational buying behavior

Most organizational buying decisions are carried out by purchasing agents who buy goods and services for other users. Given that in many situations there are multiple users (such as R&D engineers and production managers) who may have conflicting objectives, the industrial marketer has to know the relative importance of each influencer. For example, imagine the case of an insurance company which wants to sell a policy for partnerships. In this case it is quite important for the insurance company to determine the relative importance of the other partner's preference on the decision of the purchasing agent whether to purchase the new insurance policy or not.

Public policy

In making strategic public policy decisions, quite frequently it is essential to consider the reactions of other groups such as unions, pressure groups, Congressmen, consumer groups, and the like. In formulating a multi-attribute policy (and especially when establishing the relative importance of a set of criteria), researchers can incorporate in an explicit manner the range of possible reactions of relevant others and applying a conjoint measurement study (using the policy makers as respondents) establish the relative importance of these other influencers.

Conclusions

In these and other possible situations in which it is important to determine the relative importance of the preference of relevant others on a decision maker's choices, conjoint measurement procedure can be employed. In these cases, the preference of the relevant others can be established by either of the two proposed approaches. Following the first approach the preference of relevant others is viewed as another factor in a set of multi-attribute alternatives. When evaluated by respondents and submitted to a conjoint measurement algorithm, one obtains the partworth contribution of the preference of relevant others to the overall utility associated with the specific dependent variable.

In the two stage experimental approach, the preference (and reasons for it) of the relevant others may vary experimentally to reflect varying degrees of conflict with the decision maker initial position. Similarly, one can vary the identity of the relevant other either by (1) identifying a known person or role such as "wife", or a specific person identified by name or (2) specifying the characteristics of a person. These characteristics can be selected following a fractional factorial design of relevant characteristics such as the nature of relationship to the subject (e.g. authority), relevant knowledge, sex, etc.

In all cases—the experimentally controlled (1) reasons for preference, (2) the nature or magnitude of conflict between the subject's original position and the position of the relevant other, and (3) the characteristics of the relevant other—utilizing the two stage conjoint measurement approach provides insights not only on the magnitude of influence but also on the reasons for accepting or rejecting such influence. This approach is conceptually more appealing than the first one yet it is somewhat more costly and time consuming from a data collection point of view. (Although one can design it in such a way as to avoid the need for two separate interviews and collect both the "before" and "after" evaluation at the same time.)

Relying on conjoint measurement analysis suggests that the procedures outlined here suffer from the general limitations of conjoint measurement and

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5 If one decides to control experimentally the characteristics of both the stimuli and subjects, a useful approach would be the development of a Superordinate factorial design using the COSEG or CANDELINC models for the analysis of the data. For a discussion of this design and models see Green, Carroll and Carmone (1975).

6 A one step interview can be facilitated if one uses a laboratory setting.
especially the lack of a statistical inferential apparatus (Green and Wind, 1973). Furthermore, it does not provide guidelines for the selection of appropriate levels of the factor "preference of relevant others." the correct wording of such a stimulus nor the selecting and wording of the experimental treatment representing the degree of conflict of this preference with the decision maker's initial position and the specific reasons given for the position of the relevant other.

Despite these limitations, the proposed procedures and especially the two stage experimental approach suggests an exciting new way of quantifying the effect of the preference of relevant others on a decision maker's choice behavior.

REFERENCES


