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# Consideration Set Influences on Consumer Decision-Making and Choice: Issues, Models, and Suggestions

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## *Abstract*

This paper affords a stylized view of individual consumer choice decision-making appropriate to the study of many marketing decisions. It summarizes issues relating to consideration set effects on consumer judgment and choice. It discusses whether consideration sets really exist and, if so, the factors that affect their composition, structure, and role in decision-making. It examines some new developments in the measurement and modeling of consideration set effects on decision-making. The paper concludes with suggestions for needed research.

Most contemporary accounts of human decision-making give a prominent role to simplification. This extends not only to the "process" presumedly used by the decision-maker in reaching a decision, where simplification acknowledges the decision-maker's efforts to make his/her task easier and more functional, but also to the *models* of that process proposed by those who study decision-making (Wright 1975). Simple models are to be preferred because they are tractable, a fact that is particularly important when the analyst's task is to make predictions for large numbers of consumers. On the other hand, many behavioral scientists have questioned the adequacy of such models as explanation since they often find a process

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that is too complex to be modeled simply. Human decision-making is still not well enough understood (as indicated by a large amount of ongoing research) to clarify the distinction between the process of decision-making and models used to represent that process. The distinction remains ambiguous so that even what some researchers call "process" may only be their more sophisticated model rather than some revelation of "truth." All one can often say with assurance is that one model appears more "realistic" than another.

Explanation and prediction are both critically important to marketing, because of the inherent desire of marketers to take actions which will be differentially accepted by potential customers. We focus on the individual decision-maker and develop a stylized "process" by which this individual arrives at a choice. The decisions we emphasize are separable and discrete and will be assumed to have well-defined boundaries, *i.e.*, they have weak future implications. (We avoid situations which tie decisions together such as "I'll scratch your back if you scratch mine" behavior, where one decision creates concurrent or future obligations with respect to another). We concentrate largely upon decisions made by choosing from alternatives which are actively processed or considered at or near the time of decision. This permits us to ignore most information search in real time; but the past search used to establish an information base is recognized. What results is a view of individual consumer choice decision-making appropriate to the study of many marketing decisions and consistent with much literature.

## 1. A model of brand consideration

Our characterization of decision-making is based upon hierarchical or nested sets of alternatives which, save for the first, are processed by the decision-maker prior to choice. (See Nedungadi (1987) for a more detailed discussion of such a model of sequential choice.) The *universal set* refers to the totality of all alternatives (usually branded products or services) that could be obtained or purchased by any consumer under any circumstance. Alternatives in the universal set may be irrelevant to or unobtainable by a given consumer. This set merely provides a starting point (*i.e.*, the set of all goods and services) from which sets of greater interest may be constructed by the decision-maker, either accidentally or purposefully.

As its name implies, the *awareness or knowledge set* consists of the subset of items in the universal set of which, for whatever reason, a given consumer is "aware" (whether they "come to mind" on a given occasion or not) and which are believed appropriate for the consumer's goal(s) or objectives. Knowledge of the items in this set is presumed to reside in individual long-term memory; any item could potentially be selected for processing. [If decision-making is not entirely based on information in active memory, the awareness set may also include those items that the individual may perceive or encounter in the (external) decision-making context (*e.g.*, brands on supermarket shelves) at the time of decision.

This set of external alternatives can provide an additional source of items to the decision-maker when information about them is processed and can also serve to cue information in memory.]

It is from the awareness set that the focus of our concern, the *consideration set,* evolves. A consideration set is purposefully constructed and can be viewed as consisting of those goal-satisfying alternatives salient or *accessible* on a particular occasion. While an individual may have knowledge of a large number of alternatives, it is likely that only a few of these will "come to mind" for a relevant use or purpose. [Narayana and Markin (1975) offer a classification of aware brands *not considered* into two additional sets, termed *inert* (*i.e.,* brands that customer may be aware of but not have processed or given serious consideration) and *inept* (*i.e.,* alternatives the customer may be aware of but would not consider buying because of previous unfavorable experience or information or high satisfaction with existing choices). It should be noted that, as these sets are not part of the "process" by which the consumer arrives at choice on a specific occasion, they are not included in our model.]

The decision-maker need not, and typically does not, possess the same level of knowledge about each alternative in any set. More information may be acquired once it is realized a decision is to be made, but often a decision will reflect only the available information about alternatives. Further, since consideration sets are formed for a purpose, they should also be affected by factors of context such as intended usage (Ratneshwar and Shocker 1991) and prompting by existing retrieval cues (Nedungadi 1990a). Since they are goal-driven, the alternatives in the consideration set need not even be members of the same nominal product class; they merely have to possess characteristics suitable for the intended purpose(s) (Barsalou 1985, Park and Smith 1989, Ratneshwar and Shocker 1991). [A goal such as gift-giving may include diverse items such as cameras, watches, pens, etc. as alternatives. These options satisfy criteria such as "the recipient would be expected to enjoy them" and they fall within a desired price range.]

As depicted here, the consideration set is dynamic both within and across usage occasions. The consumer processes his/her options in working memory, adding or deleting as necessary. Additional elements may be recalled or encountered during the decision process itself. For instance, a store at which the consumer encountered particularly rude service may "come to mind," but can be removed from consideration with little deliberation. Further, some accessible items may hardly be worthy of serious further evaluation. Thus, the consideration set may evolve until the consumer decides to make a final choice. It may be created anew on each decision occasion or possibly even be largely irrelevant if no active processing occurs prior to choice (*e.g.,* under routinized response behavior).

Because of its dynamic nature, it is sometimes useful to define another, closely related set in more static terms. In this interpretation, the *choice set,* is defined as the final consideration set, *i.e.,* the set of alternatives considered immediately prior to choice. If, as hypothesized, entry to the consideration set reflects effort (*i.e.,* cost)- benefit trade-offs (Hauser and Wernerfelt 1990), then the choice set

should consist of fewer, more highly differentiated alternatives, selected from the (total recall) consideration set.

Figure 1 illustrates the nesting of the sets defined above. This figure follows the convention of depicting latent constructs in ovals and items directly observable or measurable in rectangular boxes. The process of nesting from a bigger to a smaller set does not necessarily imply sequencing, since certain set formations may occur simultaneously. Finally, we also allow for feedback (dotted lines) since experience can teach and thus affect those alternatives considered as well as those chosen at later times.[1] Our understanding of consumer choice is aided by such a simplification framework. The hierarchical or nested nature of this model of decision-making helps focus attention on those factors which control passage from one stage to another. Different processes may be involved in moving from awareness to consideration and from consideration to choice (Nedungadi 1990a). Re-

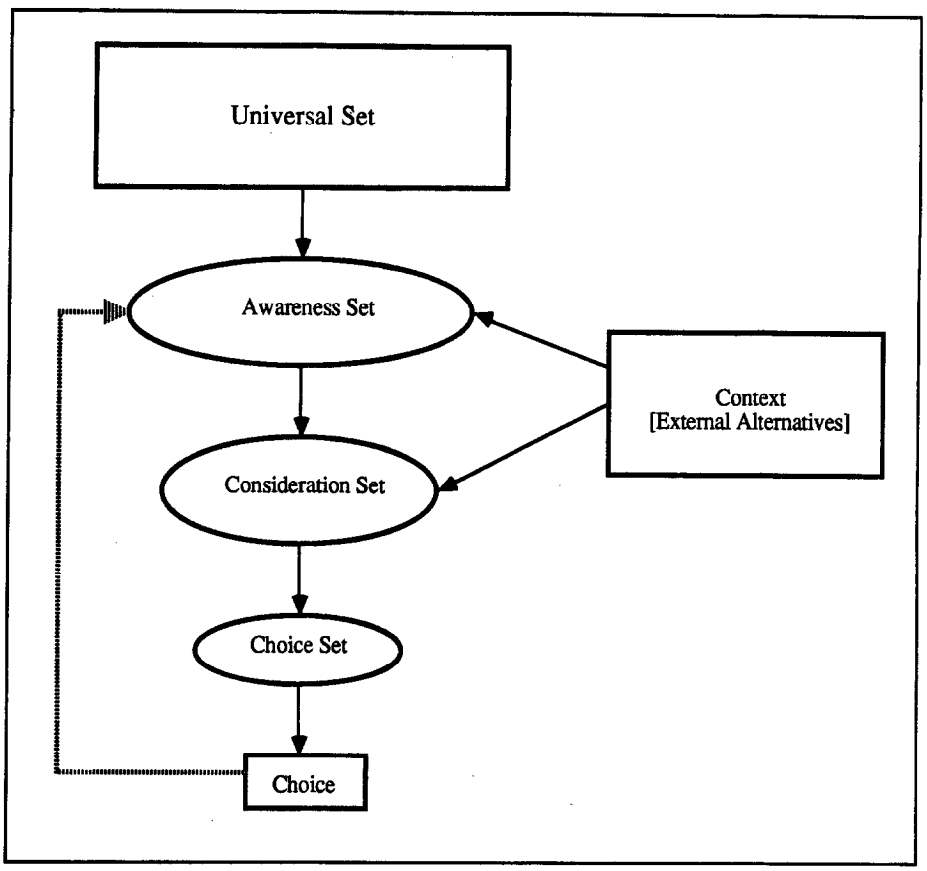


*Figure 1.* A model of individual choice.

searchers, for example, have postulated non-compensatory models for determining the composition of a choice set and compensatory models for evaluating options in the set in order to make a choice (Wright and Barbour 1977; Bettman 1979; Gensch 1987). This implies that certain product characteristics or levels are necessary for that item to be *considered at all* (non-compensatory) and that trade-offs are made only within this range of acceptable attribute levels and/or with and between less critical attributes.

The sets and their definitions given above are not universal in the literature. Brown and Wildt (1987) compare five different operational definitions of concepts similar to the consideration set. Some authors do not distinguish between consideration and choice sets and use "consideration set" for both constructs. Howard and Sheth (1969) used the concept of the *evoked set* and defined it as "those brands the buyer considers when he (or she) contemplates purchasing a unit of the product class (p. 416)." This definition is closest to what we have termed the choice set. Others (*e.g.*, Silk and Urban 1978) have used a more inclusive definition for evoked set that would include what Narayana and Markin (1975) refer to as the inert and inept sets. Regardless of their precise definition, nested sets have commonly been used to characterize consumer decision-making. Most previous definitions, however, have not examined the precise role of these sets in the dynamic process by which the individual arrives at a choice decision (Nedungadi 1987).

## 2. Evidence for consideration sets

Consideration and choice sets are not directly observable. However, there are many arguments that could be used to support the existence of the nested process described above. Hauser and Wernerfelt (1990) and Roberts and Lattin (1990) provide recent reviews of research relevant to understanding the role and rationale for consideration sets. They note that the existence of consideration sets is a logical outcome of theories in economics and psychology and has strong empirical support, much of it reviewed in their two papers. Research in the economics of information search suggests that consumers will continue to search for information as long as the expected marginal returns from that search exceed the marginal cost of further searching. In psychology, differentiation between long- and short-term memory is consistent with a reduction process of the type assumed here, where items relevant to an immediate purpose are retrieved from storage and made accessible. "Phased" decision strategies have been suggested as characteristic of human decision-making in a number of contexts where consumers have to cope with complexity (Wright and Barbour 1977; Bettman 1979). The consumer is conceptualized as first filtering the available alternatives using relatively simple criteria and then undertaking detailed analysis of this reduced set. Different decision models (*e.g.*, non-compensatory and compensatory, respectively) have been used to characterize the two stages (Gensch 1987).

Hauser and Wernerfelt (1990) summarize the evidence regarding size of consideration set for each of a large number of product categories (assuming that all entries considered come only from the same nominal product category). They cite a range in mean (or median) from 2 – 8 with most set sizes in the range of 3 – 6 (p. 394). While admittedly circumstantial, this evidence suggests that most people consider far fewer than the total number of brands available, providing evidence that most consideration (choice) sets are small.

More direct evidence for the existence of consideration and choice sets is provided by the work of Nedungadi (1990a) and Ratneshwar and Shocker (1991). Nedungadi was able to demonstrate an effect on probability of choice by changing the probabilities of brand consideration, without altering brand evaluations, by differential prompting of brands in product categories with known structures. Ratneshwar and Shocker examined the nature of categorization of products in memory. Their Study 3 provided evidence that the presentation of different specific usages cued different "typical" products. They reasoned that usage was a proxy for consumer goals or purposes and that different goals would cause different sets of products within the broad category (*e.g.*, snack foods) to be considered.

Finally, researchers using the "substitution-in-use" approach to product-market structure (Srivastava, Alpert, and Shocker 1984) have found a high level of agreement among subjects in the products they would consider for different (specified) uses, suggesting that when usage and awareness are controlled for there may be some similarity in the content, and possibly the structure, of consideration sets. Taken together, these findings suggest that consideration sets are (i) real, (ii) dynamic, changing with time and occasion, and (iii) affected by consumer contexts and purposes.

## 3. Alternative models of consideration set formation and change

Both Hauser and Wernerfelt (1990) and Roberts and Lattin (1990) propose models of effort versus gain which deal with the question of how consideration sets are formed and revised over time. Hauser and Wernerfelt express the probability of inclusion of a brand in a consideration set as a trade-off between costs and benefits. These include costs of information search and thinking about and evaluating the brand and the evaluation of the benefits or utility from including the brand in the consideration set for a particular consumption occasion. Their model is dynamic across (but not within) occasions because the content of the consideration set can evolve as costs and benefits change over time, possibly leading to items being removed from the set. Their model does not purport to be "the process" consumers use to form consideration sets, but merely a "reasonable representation of the results of individual-specific and situation-specific judgments (p. 398)." They postulate two stages to consideration set formation: Prior to detailed evaluation consumers use informal, heuristic means to gather information. This information is used to screen alternatives prior to the more detailed, systematic eval-

uation of their costs versus benefits. Hauser and Wernerfelt test their model in an aggregate manner by predicting the distribution of consideration set size in different product classes.

Roberts and Lattin, propose a similar model and find support for it at the individual level. In their model some processing is necessary to make the preliminary effort versus gain calculations which screen candidates for entry; such effort being "wasted" if the entry is rejected. Also their framework implies that all members of a product class are screened for possible inclusion, a contention that is probably not supportable empirically. Finally, their analyses, as well as those of Hauser and Wernerfelt, are organized around nominal product classes and do not provide for the heterogeneous consideration sets that can be implied by usage-driven goals.

Swait (1984) and Ratneshwar and Shocker (1991) viewed consideration and choice sets as arising out of the constraints imposed by individual goals and other personal circumstances interacting with available alternatives and other environmental factors (*e.g.*, social considerations). Swait proposed a typology of constraints to individual urban travel that encompasses a) household, b) societal, and c) personal constraints. There are two major categories of household constraints: physical constraints are exemplified by such factors as residential location and resource availability (*e.g.*, household income, automobile ownership) and the individual's status or role within the household (related to lifestyle or stage in the life cycle) which may lead to differential access to alternatives (*e.g.*, children even of driving age may not have primary access to a car). Societal constraints are those imposed by availability of alternatives (which presume consumers are not able to create their own options). Personal constraints relate to individual tastes and preferences and to the role that the individual permits others to have on their decisions. Personal constraints also include objective restrictions such as possession of a driver's license.

Laurent and Lapersonne (1990) identify what they term a "comparison set." It suggests the possibility that other products in the awareness set may affect the consumer's decision even though they are not considered for choice. For example, price-quality trade-offs or features may serve to facilitate choice among alternatives that, say, are more affordable (*e.g.* a retailer places a national brand next to the store's private label to communicate greater value; a realtor acquaints a client with a more expensive home to position the less expensive ones he/she expects to eventually sell). An individual may consider alternatives that others wish him/her to consider, even though the individual would not otherwise have selected them for inclusion. This presumably occurs in industrial buying or family buying circumstances where the decision-maker is acting as an agent for others or otherwise needs to justify his decision to others (Simonson 1989).

Black (1990) has reviewed much of the literature dealing with choice set formation in the context of consumers' retail store choice behaviors. In this context, research has linked choice set characteristics to characteristics of the decision-maker or of the outlets. Socioeconomic characteristics (*e.g.*, household income,

educational level, percent single-family housing) which affect range of travel and level of demand and/or outlet characteristics (*e.g.*, travel distances of outlets from customers, outlet's level of promotion) are used in descriptive models. Such approaches assume reasonably stable consideration sets, since the presumed causal factors are themselves stable.

## 4. Role of consideration sets in models of consumer decision-making and choice

Most individual-level models of brand choice have ignored effects of the consideration set and focused instead on the role of brand evaluations in determining choice from within a given, researcher-specified set of alternatives. Arbitrary specification of such alternatives is possibly one of the factors which gives rise to "violations of the so-called Independence from Irrelevant Alternatives (IIA)" phenomenon in which a new alternative added to a set draws sales disproportionately from alternatives more similar to it, rather than proportionately (to choice probability) from all alternatives in the set (Wiley 1990). Prior determination of the consideration set, which results in restricting a choice model to considered alternatives only, should improve the predictability of choice models (Hauser and Gaskin 1984; Silk and Urban 1978). For example, Hauser (1978) uses a goodness-of-fit statistic to argue that the consideration set accounts for 78% of the explainable uncertainty in choice data while a logit model based upon consumer preference accounts for only 22%.

For marketing models, then, a practical benefit from the incorporation of consideration sets is more accurate prediction from choice models that recognize the two stages involved (Silk and Urban 1978; Hauser and Gaskin 1984; Gensch 1987; Fotheringham 1988). [Perceptual mapping models also appear to benefit from incorporation of consideration sets (Katahira 1990). Further, the concept of a consideration set is also useful to marketers as it can aid in defining a market and investigating its structure (Urban, Johnson, and Hauser 1984; Ratneshwar and Shocker 1991).] In particular, one of the more useful modeling formats is discrete-choice analysis. Its purpose is to model a choice from a mutually exclusive, collectively exhaustive set of alternatives (*e.g.*, McFadden 1984; Ben-Akiva and Lerman 1985), *i.e.* what we have termed a choice set. Most of the discrete choice methods and applications treat the choice set as given or predictable deterministically (*i.e.*, either an alternative is available or not). While this may be a reasonable assumption in certain instances, it is not in general. Neither is the related assumption, often made, that all individuals have the same choice set. An individual's choice set depends upon that individual's specific environment – which reflects not only objective constraints (*e.g.*, his/her socio-economic characteristics and the attributes of the alternatives), but also subjective ones related to his/her attitudes and perceptions. Choice sets themselves are latent in the sense that they cannot be imputed with certainty on the basis of observational data. Such a conclusion implies that a more realistic model of individual choice behavior would treat choice set generation as probabilistic.

Manski (1977) suggested that the entire choice problem be expressed probabilistically as:

$$P_n(i) = \sum_{C \varepsilon G(i)} P_n(i|C) P_n(C|G) \quad (1)$$

Where $P_n(i)$ is the probability of individual n choosing alternative i;

$P_n(i|C)$ is the probability of individual n choosing alternative i given that the choice set is C (*e.g.*, a random utility model);
$P_n(C|G)$ is the probability of C being the choice set of individual n;
G is the set of all possible choice sets; and
G(i) is the set of all elements of G that contain alternative i.

Expression (1) reflects a two-stage choice paradigm:

(i) probabilistic choice from a given choice set, $P_n(i|C)$; and
(ii) a probabilistic choice set generation model, $P_n(C|G)$

A high degree of complexity is implied by (1) since the number of possible choice sets is very large. Swait and Ben-Akiva (1987) describe *a priori* restrictions used by researchers to reduce the dimensionality of the choice set generation problem. They also suggest a behavioral theory of random constraints to explain the probabilistic nature of choice sets and provide an approach to parameterizing choice set models. Their idea of "random constraints" is based upon the fact that different individuals are expected to have varying perceptions of the degree to which an operative constraint limits their access to certain alternatives (*e.g.*, the maximum acceptable walking distance to a subway stop is likely to vary across individuals).

The Ben-Akiva and Boccara (1990) model is in this tradition. They formulated a probabilistic latent choice set model, which they test in an empirical study. Their choice set model includes explicit representation of choice set constraints (*i.e.*, criteria choice sets must satisfy for feasibility). Analysis is carried out at the level of the individual and explicitly considers his/her heterogeneous situational constraints and preferences. The choice models are specified to explain observed behavior as a function of both latent factors and observable characteristics. Their constraint-based approach to choice set formation postulates that at the first stage of the choice process the individual excludes from further consideration available alternatives not meeting certain criteria. This stage is non-compensatory. Thus a change in an attribute of an alternative can have two separate effects: an availability effect (is it in the choice set?) and a substitution effect (if it is in the choice set, will it be chosen?). Implementation of their framework involves both observables (socio-economic characteristics, product attributes, attitudes and perceptions of availability, knowledge of actual choices) and latent variables (essentially the unobservable constraints that determine availability of alternatives). Their

main thesis is that latent variables can be inferred from observed indicators. Their research demonstrates the efficiency gains (in terms of increased precision of parameter estimates) from using, jointly with preference data, indicators of choice set formation. Substantial difficulty in estimating these models may hinder their future use, however.

## 5. Marketing issues and research implications from the consideration set concept

Our observations of consumer decision-making, organized as they are around the relations among distinct sets and processes, focus attention on the important role played by factors such as consumer goals or usage intentions. Novak (1990) and Ratneshwar and Shocker (1991) recognized the potential importance of usage or purpose in affecting the formation and content of consideration and choice sets (Study 3 in Ratneshwar and Shocker (1991) provides empirical support). Novak as well as Bhargava (1990) have raised as questions for research whether or not factors of intended usage affect choice set formation in the same manner as they affect consideration set formation? More generally, are the factors which affect movement from awareness to consideration different from those which affect movement from consideration to the choice set? Such research could hold importance for marketing managers interested in improving the likelihood that their products get considered. The cueing of specific product alternatives by contacts with friends and acquaintances or with promotional and other marketing activity (*e.g.*, sales personnel) may also affect retrieval from memory and thus the formation of choice sets. Nedungadi (1990a) has identified accessibility (ease of retrieval) and preference as two potentially important factors in this process. *Ex post* knowledge of the composition of each set may permit inferences about the criteria used to determine which products will be included in the consideration set and, possibly also, the criteria for final choice.

Bhargava (1990) has also raised issues regarding the ability of an alternative that has once been rejected to re-enter the choice set at a later time. For reconsideration, do entry or exit criteria have to change or do perceptions of the alternative? Additionally, research might contrast the structure of consideration sets of "experts" with those of novices. Experts may be "opinion leaders" for certain types of decisions and their influence might extend to criteria for entry and exit as well as to the specific content and structure of followers' consideration sets. The distinction between consideration sets of leaders and followers could shed light upon the feasibility of using such sets, or their mode of construction, as means for segmenting customers (or for possibly *identifying* opinion leaders or experts).

Somewhat different specific (micro) usage situations have been shown to elicit similar brands and products for consideration across individuals, implying that it may be feasible to create a taxonomy of usage types (macro-usages) based upon their important attributes or characteristics (Srivastava, Leone, and Shocker

1981). The fact that many specific usages can elicit similar consideration sets increases the relevance of the usage construct to marketers. It may not be necessary to consider more than a small fraction of the many idiosyncratic usages to make use of the construct. Promotional cueing of a specific situation, as representative of its type, may automatically suggest other micro-situations and/or allow different consumers to relate. While these generalizations are consistent with the Srivastava, Leone, and Shocker research, more specific studies are necessary to investigate the extent of such generalizability. And, finally, although consideration sets were defined at the individual level, aggregate sets (*e.g.*, formed from the union of individual sets and based upon a defensible rationale for aggregating individuals, such as common usage relevance) may prove useful in determining competitive product-markets (Ratneshwar and Shocker 1991). The linkage of consideration sets to product-market structure may suggest a fruitful approach to understanding why the structure of specific markets is as it is and help managers decide how easy or difficult it will be to change that structure.

Novak (1990) has hypothesized that usages themselves have structure. Some types are more important or dominant or occur more frequently than others. He has asked what are the more appropriate forms (*e.g.*, tree, spatial, network) for representing this structure of usages? At what level (*i.e.*, products or brands)? Once defined at the individual level, how can such structures best be aggregated? To investigate such effects, we need also to investigate the validity of aggregate measures of usage importance. Additional issues involving the relation of usage situations and consideration sets pose topics for possible research. Do the number of specific (micro) usage situations encountered by an individual affect the long term stability of consideration sets and the structure among brands within them? Does the number of brands appropriate for a usage situation affect the stability of the consideration or choice sets?

An obvious research question is to examine the role that marketing actions play (or can play) in both the formation of consumer purpose(s) in specific situations and in the association of specific products or brands with those purposes. To a considerable extent consumers self-select many of the situations they will encounter when they make fundamental choices of such things as career and lifestyle (Snyder 1981). But the process is far from predetermined and seems amenable to influence by marketing actions. Moreover, associations of specific products with particular purposes are learned responses and thus amenable to influence by marketing actions (*e.g.*, product design, selection of product positioning and imagery, selection of price levels, and distribution intensity). Promotion can educate as well as remind. Product/service features, value for the money, and quality help distinguish an alternative and make it more (or less) probable that the brand will enter the awareness and consideration sets of those consumers who find the features attractive for their purposes.

Consideration and choice sets may be expanded through marketing strategies such as "product bundling," where normally separate products are sold together for a single price. The primary product may be one already in an individual's

consideration set, but the "tie-in" products often are not. Recent theoretical and empirical developments lend support to the influence on consideration and choice sets of such a marketing strategy. Thaler (1985) described forms of "mental accounting" by which gains will have their maximum effect when accounted for separately, but perceived losses may be minimized by lumping them together. These predictions follow directly from the assumption of a value function that is concave in the domain of gains and convex in the domain of losses. Thus a product bundle, consisting of separately packaged features (gains), together with a total cost (loss) lumped into a single sum, may be evaluated favorably by consumers. This was confirmed in a study by Gaeth, Levin, Chakraborty, and Levin (1991) in which consumers inspected real product bundles (electronic typewriter – calculator pairs or VCR – videocassette tape pairs) and evaluated them on a number of dimensions. Not only were bundles perceived to be worth more than the sum of their parts, but product bundles were evaluated more favorably than the use of comparable cash rebates.

Much research dealing with consideration sets has focused upon descriptive aspects (notably size) and ignored their specific content and structure. Nedungadi (1990a) has been an exception, using structure to predict the effects of "prompting" on the formation of the choice set. Ratneshwar and Shocker (1991) have demonstrated different content and structure of consideration sets as a function of intended usage. The structure of such sets as a function of order of entry of the alternatives in the set has been demonstrated at an aggregate level by Hauser and Wernerfelt (1990). These connections in turn suggest that opportunities may exist for examining such topics as the correspondence between the similarity of brands within nominal product categories and their joint appearance in consideration sets; the aggregation of consideration sets as the basis for developing a product-market definition and structure; and the role of "order of learning" (*i.e.*, order of entry at the individual level) on the structure of consideration sets. Srivastava, Leone, and Shocker (1981) and Ratneshwar and Shocker (1991) have also provided evidence that consideration sets could include products with different physical characteristics (but which deliver the functional benefits required by a particular usage). This suggests new research may be needed to examine consideration set size, rather than basing evidence upon questions presuming single product categories as was done in the findings summarized by Hauser and Wernerfelt (1990).

## 6. Research issues/needs in modeling consideration sets and consumer choice

It seems clear that different decision contexts could necessitate different models of decision-making. Choice may precede consideration set formation in cases where acquisition of experience or learning about alternatives is important. Some decision-makers may not be satisfied with the alternatives they have and may seek

additional ones or may need to search to assure themselves of the adequacy of the alternatives already identified. We have emphasized choices based upon information in memory, yet many decisions combine memory factors with information acquired in real time. Decision-making may proceed differently when a choice set consists of both (*e.g.*, mixed choice tasks, Lynch, Marmorstein, and Weigold, 1989). How does differing depth of knowledge regarding the choice alternatives affect choice? What factors affect the depth of knowledge acquired regarding alternatives (*i.e.*, when individuals search for information regarding choice alternatives, do they acquire the same information about each or do they make inferences about missing information)? Should, as Johnson (1984) has argued, decision-making be modelled differently when the consideration set consists of items from different nominal product classes *i.e.*, so-called "non-comparable" alternatives? An investigation of the existing literature on consumer judgment and choice might be able to produce a taxonomy of decision contexts providing insight into the decision models appropriate to each category.

The modeling efforts we noted above, with the exception of Swait and Ben-Akiva (1987) and Ben-Akiva and Boccara (1990), depend upon valid identification of choice sets. What are the best measureable criteria to use short of asking individuals to self-report? Is there evidence that choice sets can be reliably predicted from demographic or other data about the decision-maker? Nedungadi (1990b) has questioned whether constructs such as choice sets and consideration sets are even meaningful to respondents. If they are not, how valid will questions be which ask for self-reports? He has asked whether consideration sets exist in long-term memory and are retrieved as needed or are simply constructed on the spot? If well defined consideration or choice sets do not exist, can the multi-stage decision model still serve as a useful paradigm? Consider, for example, a model where non-compensatory rules are used to narrow down the set of alternatives and a compensatory decision rule is employed to arrive at the final choice. The boundaries between the stages of this model are not well-defined; yet, an empirical version of such a model with latent consideration (or choice) sets could be uniquely estimated. Is such a model more "realistic" than a single stage model? Do such generalizations provide useful insights and better predictions? Finally, how should a model of consideration- (and choice-) set *formation* be specified?

What happens in prediction of consumer choice when choice sets are moderately misspecified? [For example, in calibrating conjoint models, an individual is typically asked for preferences or choices from among a set of researcher-specified alternatives, *i.e.*, the alternatives are usually not those the subject would have considered him/herself.] Are models calibrated on the basis of "choices" from musspecified sets still valid? [To minimize misspecification is, of course, a major reason for being interested in the construction of choice sets at the individual decision-maker level.] The limitations of choice model estimation which ignored the problem of individual choice set specification (*e.g.*, by assuming everyone chose from the same set or that the choice set was the complete set of available alternatives) was recognized early. For instance, in the transportation choice lit-

erature Stopher (1980) and Williams and Ortuzar (1982) offer empirical verification of the inconsistency in parameter estimates that can arise when individual choices sets are misspecified. Swait (1984) provides a theoretical backing to these empirical findings by presenting a specification error analysis for a binary choice situation in which the analyst ignores the fact that some individuals are captive to one alternative. Swait is able to conclude that misspecification leads to biased parameters. A review of the literature on modeling choice set formation in the context of discrete-choice models (which considers ignoring the issue, deterministic choice sets, probabilistic choice sets with and without prior restrictions such as captivity, and use of random constraints) is found in Boccara (1989).

It seems also clear that the relation of consideration sets to choice itself is influenced by the nature of the choice task. Laurent and Lapersonne (1990) have suggested that circumstances arise where a choice or consideration set may consist of only a single product/service alternative. This can happen when products are infrequently purchased, costly or risky "experience goods" (where one may not be able to judge their quality or suitability prior to purchase and use), or complex goods comprising many elements or auxiliary services (which may be another example of an experience good). These circumstances are more likely in industrial marketing decisions than in the packaged goods domain, where much of the decision research has been conducted. Only one supplier may be available and therefore the choices may involve the terms and conditions of the relationship, only incidentally including whether to have a relationship at all. They also suggest circumstances where a major decision objective may be learning about alternatives to aid future decision-making (*e.g.*, acquiring experience with a prospective vendor to assess the quality of his service or consistency of product performance) or to guide search activity (which clearly also involves decision-making). In these cases the product choice may precede the formation of a consideration set. Or the choice may no longer be among products, but among vendors (*e.g.*, the decision-maker may have decided to purchase a particular make of automobile and the choice is now from whom to purchase it).

Laurent and Lapersonne's ideas serve to illustrate some of the complexity that awaits those who seek to develop models of consideration set formation and consumer decision-making. It points out once again that the process may be different for different kinds of decisions. Research which creates a taxonomy of decision-making contexts may be necessary before one can meaningfully decide what kind of model or framework to use to explain or describe decisions of that type. The examples used serve to provide some evidence that in certain contexts decisions may be interrelated with each other and, therefore, in empirical work attention needs be paid to defining the boundaries of the decision. Some decisions may be constrained by the inherent nature of the choice alternatives (*e.g.*, "experience goods" require prior consumption in order to provide the personal experience necessary to enter the consideration sets of future choice occasions). Or the consequences of earlier decisions may constrain later choices, say, by affecting experience with or ownership of certain options or creating a desire to confirm the

correctness of the earlier choice. Finally the anticipation of future decisions may affect current choices (*e.g.*, when one traces through the consequences of a decision or works from ends back to means).

## 7. Conclusion

This paper has undoubtedly been more successful at raising issues than suggesting answers, but this is testimony to the complexity of decision-making and the limits to our present understanding. The arena of consideration and choice set effects on consumer decisions remains a fruitful one for research and this paper has tried to provide some direction. Discussion of these issues revealed much collective wisdom and experience, but was also limited by individual perspectives. Much of our thinking is based upon the nuances of particular decision arenas, which colored the assumptions made regarding what was and was not important. Some of that inconsistency may remain in the present discussion, despite assiduous effort to control it. The need for a taxonomy of decision contexts remains a priority area for research. Such a taxonomy would enable a more precise understanding of the constraints which affect consideration set formation and change and the choice decisions that follow.

## Note

1. One difficult issue is the incorporation of such feedback within a tractable modeling framework. For instance, "awareness" itself is a matter of degree and the completeness of one's knowledge regarding product alternatives can differ both across alternatives and time and be affected by learning and experience. Understanding the differential roles that internal (e.g., education regarding more appropriate criteria) and external (e.g., changed environmental circumstance) criteria play in such a possibility affords only a beginning.

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