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Market structure analysis using managerial judgments: Toward development and validation of an expert system for competitive strategy decisions

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MARKET STRUCTURE ANALYSIS USING MANAGERIAL JUDGMENTS: TOWARD DEVELOPMENT AND VALIDATION OF AN EXPERT SYSTEM FOR COMPETITIVE STRATEGY DECISIONS

by

Pallab Kumar Paul

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Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copy of the dissertation to the Graduate College.

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ABSTRACT

This research aims to develop and empirically validate an approach to using managerial judgments as a basis for competitive strategy decisions. Our premise is that by using structured elicitation methods that rely on the underlying logic of competitive market structure analysis (CMSA) models (e.g., perceived competitive similarities [PS] and forced choice [FC]), it may be possible to effectively extract and organize managers' knowledge of competitive relationships. Moreover, these judgments may be primed using competitive criterial cues such as brand image, features and usage situation. Based on psychological theories, we offer hypotheses (about how managerial judgments will be influenced by different elicitation methods and priming cues) which are tested in an experiment where subjects gained experience in a simulated market with a pre-specified structure (based on overall similarity [OS] of the products). We also test for experiential learning of this structure.

The findings suggest that unaided judgments did not change as a function of outcome feedback. However, structured judgments showed significant effect of both feedback and elicitation method. Initially, OS-based structure measures received high ratings, suggesting that subjects may have recognized the 'true' structure. However, with feedback, they placed greater emphasis on the usage situation-based measure which were more concrete in their extra-experimental experience. Relative to the PS method, the FC method helped subjects articulate better that the market was partitioned on the basis of OS. Also, subjects who gave FC judgments first, provided concordant judgments when given the PS method thereafter. In contrast, subjects' judgments were more susceptible to change when the method order was reversed. Thus, the FC judgments produced both more veridical and more stable perceptions of market structure.

Subject to study limitations, the findings provide a basis for incorporating even partially fallible managerial judgments in CMSA tasks (and toward development of an expert system). It shows how structured methods for eliciting such judgments can be meaningfully implemented and suggests that these methods may elicit both veridical and stable judgments of competitive relationships in a market. Moreover, the study examines the convergent validity of different methods and priming cues on managerial judgment as well as its potential biases and inconsistencies.

CHAPTER 1

INTRODUCTION

1.0 General Problem

With the increase in competition in today's market place it is imperative for firms to strive for competitive advantage through well-reasoned strategic, functional and program decisions (Abell and Hammond 1979; Kotler 1991). In order to make these decisions, managers need to understand and analyze the competitive structure of their markets, i.e., identify competitors and assess the nature and extent of competition between them (Day 1990). It is also important to recognize that this understanding of competitive relationships in the marketplace must be from the perspective of customers (Shocker 1986).

There is a fairly large literature on the analysis of the nature of competitive relationships in markets. Some of this has focused on the broader issues surrounding product-market definition (Day 1981). There is also a large marketing literature on various approaches to competitive market structure analysis (CMSA). These methods are typically based on multivariate statistical and psychometric scaling approaches and utilize consumer level judgmental or behavioral data (Shocker, Stewart and Zahorik 1990a).

As has been pointed out (Shocker, Stewart and Zahorik 1990b), there is no standard of truth (no "true" market structure) against which one may validate the results derived from a given CMSA exercise. Moreover, strict market partitions are not very meaningful and the interpretive basis of competitive relationships often change as a function of the level of analysis selected. Hence, despite attempts to impose both qualitative and quantitative structure on the problem, it is fairly clear that competitive market structure analysis remains an art form.

Managers often use CMSA to test a priori notions about competitive relationships using consumer level data (Urban, Johnson and Hauser 1984).

At the same time, managers make many decisions that rest on their assessment of the nature of future and potential competition. Often, the decisions being contemplated themselves may have a significant impact on existing patterns of competition. For example, the introduction of a new brand may alter the context in which brand judgments and choices are made. Changes in a firm's mix decisions may alter relationships among brands in a specific competitive category. Subtle shifts in customer tastes and preferences may also heighten the salience of new relationships among the products.

Market boundaries may change for each of these reasons and alter cross-product marketing impact and hence the definition of competitive categories. Past data, even if it is about direct consumer behavior or judgments, is unlikely to contain veridical information on such market structure dynamics as the events in question may not be within the consumers' experiential range. It is also costly and often infeasible to conceptualize and present a broad range of hypothetical alternatives to consumers to obtain primary data on their perceptions or preference judgments. For these reasons, managerial thinking about new marketplace actions cannot always await tests of the customer perspective.

Thus, managers must (and do) routinely make judgments regarding the consequences of their marketing decisions. The judgments are perhaps implicit and embed an experiential or even intuitive extrapolation of the pattern of competitive relationships that are observed in the marketplace. There is also the possibility that the judgments will embed an intuitive understanding or assessment of what may happen when the competitive context changes in the marketplace. If such judgments are elicited in a structure that imposes checks against both biases and inconsistency, the level of strategic insight may be significantly enhanced.

Commonly used models for competitive market structure analysis use both behavioral and judgmental data from consumers as inputs to develop measures of competition-relevant constructs (e.g., brand purchase probabilities or inter-brand proximities). The measures are then analyzed to extract the information they contain regarding market structure. The fundamental argument made in this dissertation is that the logical framework of these models can be adapted for formally eliciting and processing managerial judgments of competitive market relationships.

First, by using appropriately constructed questions, a researcher (or an expert system) can elicit judgments from which measures of purchase frequencies and transition (brand switching) probabilities can be calculated. Second, each of these measures can be used in conjunction with the corresponding analytical model to derive an assessment of market structure. One would expect that the imposed structure would generate consistency and reliability in these judgments. Further, by using a variety of models with different underlying conceptual frameworks and then comparing the elicited structures, one may develop a basis for validation of these market structures derived from managerial judgments.

The efficacy of such an approach rests on a number of factors. First, managers must possess knowledge beyond what is available in consumer level behavioral and judgmental data. Second, the methods used to elicit relevant judgments must be understood in terms of their potential priming and framing effects on managerial perceptions. Finally, the competitive structures derived from such judgments must be comparable within an unified conceptual framework so as to allow reliability and validity assessments.

In this dissertation, we develop and experimentally test such an approach. The framework of two common analytical models are adapted for elicitation of managerial judgments. Specifically, market structures

based on inter-brand distance measures derived from managerially-judged perceptual similarity and forced choice data are compared. In conjunction, the effects of three different types of judgment priming are also studied. We use brand image based priming, attribute/benefit based priming and usage situation based priming. The models and primes are chosen based on their popularity in CMSA tasks. (See Green, Carmone and Smith 1989; Urban, Johnson and Hauser 1984 for discussions of the models. Also see Shocker and Srinivasan 1979; Day, Shocker and Srivastava 1979; Srivastava, Alpert and Shocker 1984 for discussions of the substantive uses of such primes in CMSA studies).

Hypotheses are developed regarding how each specific judgment elicitation method and prime type may influence managerially-judged competitive relationships and the derived market structures. These are based on cognitive psychological theories on perceptual and priming effects. The hypotheses are tested in a laboratory experiment in which subjects learn and then judgmentally assess observed patterns of inter-brand competition in a simulated market. The judgments are elicited using the two analytical models and the three primes discussed previously. The data are then used to extract the implied market structure. Finally, we illustrate how these data may be used to assess the reliability and validity of competitive market structure analyses based on managerial judgments.

This study lays the ground work for formal comparisons and reconciliation of managerial judgment based and consumer level data based analyses of competitive market relationships. The conceptual development and empirical findings may serve as the basis for the subsequent development and validation of an expert system for aiding managers in competitive strategy decisions.

1.1 Competitive Strategy and Market Structure Analysis

A business competes in the markets it chooses to serve on the basis of a target market strategy. The strategy involves decisions about the markets to serve and customer segments to target (the arena), about positioning themes differentiating the business from competitors (advantage), about communication and distribution channels used to reach the market (access) and finally the appropriate scale/scope of tasks to be performed (activities) to succeed in the market place (Day 1990).

Strategic decisions such as market targeting and product or brand positioning as well as marketing program decisions need a thorough managerial understanding of the competitive partitions and relationships among the products/brands. In other words, effective strategies are market driven and being market driven implies a well-developed market definition. The market definition is basically captured in terms of a market structure, i.e., by defining a set of submarkets where within-submarket competition is much stronger than between-submarket competition. For example, the literature (see Kalwani and Morrison 1977) discusses brand-primary markets (buyers switch between alternative forms of the same brand, say freeze-dried and ground Maxwell House coffee) versus form-primary markets (i.e., buyers stay with a specific form, say ground coffee, but switching brands such as Folgers or Maxwell House).

Consider a case where the manager must decide how to position a new brand in the market. Market structure analysis permits the manager to identify and understand the submarkets and the products/brands competing (not competing) against each other. A new customer segment may be tapped by positioning the brand in a submarket where the manager does not have a brand. This also helps avoid unnecessary duplication and cannibalization. Also, marketing program decisions (e.g., pricing, promotion and distribution) would rely on this understanding of the competitive

relationships provided by a CMSA.

Researchers have addressed competitive market structure analysis from different perspectives. One approach (Day 1981; 1990) is top-down, in which the market is viewed from the supply-side, using knowledge about competitors, supply factors and firm resources. The firm sets its business definition and evolves target market strategies based on a match between the nature of market opportunities and company capabilities. Market analysis is conducted from a macro perspective and is geared to setting the broad strategic thrust of the business.

In contrast, a bottom-up approach to market structure analysis takes a demand-side (customer) perspective (Day, Shocker and Srivastava 1979). The market structure is derived from consumer responses (either behavioral or judgmental data) which are processed using analytical models (see Shocker 1986; Shocker, Stewart and Zahorik 1990b). For example, a CMSA may rest on behavioral data on brand switching. The frequency and the pattern of switches between brands/products is obtained from diary/scanner panel data and the product-market definitions are derived using a stochastic model of brand choice (e.g., Kahn, Kalwani and Morrison 1986). A number of other model based approaches have also been developed for analyzing such data (Grover and Srinivasan 1987; Schmittlein 1984). Cross-price elasticity measures derived from purchase data have also been used to gauge patterns of brand/product substitutability and complementarity (Lilien and Kotler 1983).

CMSA may also be based on judgmental data (i.e., information on consumer perceptions and preferences versus actual choices). Such data are collected by allowing consumers to reflect upon their likely behavior under some alternative marketplace configurations. For example, data on consumers' perceived overall similarity/substitutability among products/brands are commonly used as inputs to psychometric analyses.

Consumers rate the pairwise similarity of products and the proximity of the products are computed in a perceptual space. The configurations of these perceptual maps are used to derive meaningful submarkets (Green, Carmone and Smith 1989).

In another judgmental approach, consumers are asked choose an alternative brand/product when their favorite brand/product is unavailable. These data on forced choices are analyzed in the framework of the Luce choice model. The patterns of product substitution provide relevant insights into the structure of submarkets (Urban, Johnson and Hauser 1984). Other hybrid methods use a combination of survey based conjoint measurement and panel data on consumer preference structures to assess inter-brand substitutability (Bucklin and Srinivasan 1991).

There is some concern that competitive relationships revealed by judgmental data may not be acted on by consumers in real contexts. However, the concerns are mitigated by the fact that the method allows for examining current and potential competitive relationships beyond what may emerge from an analysis of consumer behavior under a limited range of available options. Similarly, considering alternative choices under a product deletion possibility may reveal different consumption criteria. In fact, such judgments can be made under different conjectural scenarios about the competitive context and the marketing mix. These advantages of using consumer level judgmental data in CMSA suggest the potential for using managerial judgments for CMSA within similar analytical frameworks.

1.2 The Need for Managerial Judgments

Although it is important to incorporate the customer's perspective into CMSA exercises, there are many associated operational problems. Even if only judgmental data are to be gathered, collecting primary data from consumers involves an a priori product-market definition. This implies specification of the set of products/brands to be compared, making

implicit or explicit assumptions about usage situations and judging degrees of appropriateness for substitution. It would be enormously expensive to make each such decision on the basis of primary consumer responses. Consequently, many of these decisions must be based on a priori managerial judgments.

Second, when asked questions about competition, consumers may focus on a narrow range of competitive relationships defined by current practice. Data elicited using structured questionnaires may miss non-traditional or unusual patterns of substitution (e.g., that coffee may compete with orange juice as a breakfast beverage). Although such broader or different competitive partitionings may be revealed in depth interviews or focus groups, these can also become quite expensive. One would require explicit probes to elicit such information and the specificity required to tap a broad range of possible competitive relationships may be infeasible in practice. Consequently, managerial judgment is often the only available recourse.

Third, behavioral data traces are often noisy and may not reflect the perceptions or behavior of the consumer. As any first course in panel data analysis teaches, such records are notoriously incomplete. Panelists often forget to record purchases or enter records incorrectly. The data also reflect household purchasing patterns and the purchases may reflect the consumption tastes of multiple members in a single household. These common problems limit the value of consumer level behavioral data for competitive market structure analysis and must be resolved using managerial input before analysis begins.

Fourth, managerial judgment is needed to clean up or edit the data set to make it ready for use as input to an analytical model. These involve judgments regarding data aggregation and adjustments for exogenous variables. Sometimes, the available information must be augmented by

managerial judgment before it can be analyzed or used for making decisions. For example, if effects of marketing mix variables are not carefully controlled or factored into the analyses, conclusions may be biased.

With the problems noted above, managerial judgment remains indispensable for competitive strategy decisions, even when CMSA is used to aid such decision making. The task requires managers to conceptualize current and potential competitive relationships in their markets. They must anticipate consumer reactions and develop pricing, promotional or distributional strategies consistent with such expectations (Kahn, Kalwani and Morrison 1986; Urban, Johnson and Hauser 1984). Given that managerial judgment is inevitably used in assessments of market structure, it is useful to recognize its strengths and weaknesses. It is also necessary to develop an approach to help managers articulate such judgments in reliable fashion and to validate them within a systematic framework. This dissertation attempts to make some progress toward that goal.

1.3 Issues in Using Managerial Judgments

The idea of using managerial judgments in models designed to aid managerial decisions is not new to the marketing literature. "Decision calculus" models developed in the sixties and seventies (Little 1970; Lilien and Kotler 1983) commonly use subjective judgments from managers as a basis for specifying and parameterizing market response models. However, consistent with the large literature on judgmental heuristics (see Kahneman, Slovic and Tversky 1984), research has found that such judgments may be biased and/or inconsistent and may adversely affect the quality of decision support that is provided by models based on them (Chakravarti, Mitchell and Staelin 1979; 1981).

The literature on human judgment and decision making processes suggests that information processing limitations and the use of biased and

inconsistent heuristics are not failures unique to naive decision makers, but pervade even the judgments of domain experts (Chi, Glaser and Farr 1989). These biases and inconsistencies may operate as managers encode market events and reason about their implications. For example, competitors with more visible or easily remembered marketing activity may be perceived as being more relevant. Unrelated but contemporaneous market share variations may produce the illusion of a competitive relationship. Biases may also stem from incomplete or selective retrieval of the encoded information due to accessibility problems. This may stem from differences in the cues or primes surrounding the retrieval situation.

Biases and inconsistencies in managerial market structure judgements due to the incorrect or incomplete encoding of competitive relationships may be difficult to remove directly. However, the use of multiple model based approaches to eliciting judgments can point up both consistencies as well as discrepancies for resolution and thus aid decision making (as in the sense of convergent and discriminant validity). The use of structured elicitation methods may directly overcome retrieval problems through use of multiple cues and also provide a basis for convergent and discriminant validity judgments.

1.4 Research Purpose and Theory

This research recognizes that managerial judgments are an indispensable part of competitive analysis. However, it emphasizes the importance of using systematic judgment elicitation procedures and multiple-method based validation of the elicited judgments. We advocate using structured methods to elicit such judgments because elicitation methods that rely on well-formulated analytical premises are more effective in organizing and extracting managers' knowledge. The built-in analytical logic of the elicitation questions and the processing methodology may enhance the consistency of the judgments and also serve to

debias them to some degree.

The formal research hypotheses were originally developed by considering two basic forms of market structure or market partitioning schemes discussed in the literature (e.g., Kalwani and Morrison 1977; Urban, Johnson and Hauser 1984). Brand based structures denote cases where products with the same brand-identity are clustered together irrespective of other feature similarities. Feature based structures are those where products with similar features are clustered together irrespective of brand identity. However, during the data analyses, additional indices were added to assess other plausible partitioning schemes that were relevant in the study scenario.

Consider a baseline case where judgments of competitive relationships are elicited from managers without imposing a particular analytical model. Such model-unaided managerial judgments may involve holistic processing of integral dimensions of the brands (Shepp 1989; Smith and Kemler Nelson 1984) and elicit a simple binary (two category) market structure based on family resemblance to a referent (Rosch and Mervis 1975). Therefore, it is expected that these unaided managerial judgments are more likely to yield a binary market structure with brand based partitions using managers' brand as a referent.

Two structured judgment elicitation methods (each associated with a CMSA technique) are developed and tested. The first approach focuses on eliciting managerial judgments of interproduct competition using the traditional dis(similarity) measures that are used for perceptual mapping methods. We argue that these inter-product distance judgments are based on selective attention to specific features (Smith and Evans 1989) and both distinctive and common features of products are used in making (dis)similarity judgments (Tversky 1977). Hence, these judgments of perceived competitive similarity are expected to be based on feature

comparisons between the manager's product and other products. Consequently, they are more likely to yield feature based structures with the manager's product's key features as the critical dimensions. The second approach elicits forced choice judgments from managers as a basis for measuring inter-product competition (Urban, Johnson and Hauser 1974). We argued that such judgments may focus attention on feature/benefit similarities between the deleted product and the other alternatives (Bettman, Capon and Lutz 1975; Currim 1982; Haley 1968). Hence, such judgments are also more likely to yield feature based structures.

Along with the above elicitation methods, the impact of three specific types of priming on managerial judgments (and hence the derived structures) are also be estimated. The CMSA literature (Srivastava, Alpert and Shocker 1984; Shocker, Stewart and Zahorik 1990a; 1990b) asserts that priming usage situations and key brand benefits may reveal important aspects of competitive relationships that may remain hidden under other approaches. These ideas are consistent with the decision framing literature (Kahneman and Tversky 1979; Tversky, Sattath and Slovic 1989) which discusses how judgments are influenced by framing or posing a problem in different ways.

We also examine how managers' judgments may vary depending on which aspects of current/potential competitive relationships are made salient by systematic priming. For example, priming a brand image during elicitation may focus a manager's attention on the shared brand images of products. The judgments elicited then may be consistent with brand based market structures. In contrast, priming attributes/benefits or usage situation may make product features more salient, swaying judgments toward feature based structures.

The reasoning outlined above suggests "natural" ways in which the specific elicitation methods and priming cues may sway a manager's

perceptions of competitive relationships. If the elicited market structures are highly consistent with the predictions above, one may conclude that the manager's perceptions of market structure are quite fluid. This may reflect problems with the manager's understanding or a market situation where the competitive relationships are indeed flexible. Such markets may allow for successful brand repositioning efforts. On the other hand, if the derived structures are relatively insensitive to method and priming influences, one may conclude that the perceived competitive structure is robust. This, in effect, is an approach to establishing the construct validity (Bohrenstedt 1984) of the measures of judged market structure.

This judgmentally derived market structure analysis can later be compared with the results of a CMSA performed with consumer level data. This brings us full circle to customer based validation of the derived structure. Basically, the methods proposed here point to how managerial judgments can formally guide and supplement empirical (consumer level) analysis toward a sounder understanding of competitive market structure.

1.5 The Empirical Study

The empirical component of this dissertation experimentally tests these ideas in a simulated market. Subjects (advanced MBA students) participated in a marketing game where they made sequential decisions for a brand in a simulated market. As background information, they were provided relevant information about the market (e.g., competitive sales and shares of brands, brand features and marketing decisions).

There were four phases to the study (see Figure 5.2). First, for six trial periods, subjects made advertising decisions for their brand and were given market share feedback for their own and competing brands. Shares fluctuated based on the brands' overall similarity with each other (see Figure 5.1). In the second phase, subjects were assigned randomly to

one of six study conditions (2 elicitation methods X 3 priming factors) in a between-subjects design. The two elicitation methods were perceived competitive similarity and forced choice, respectively. The three priming cues were brand image, attribute/benefit or usage situation. An additional baseline condition elicited judgments without an analytical model and without any priming.

In the third phase of the study, subjects made another six advertising decisions for their brand and received feed-back regarding the performance of their own and competing brands. Thereafter, in the fourth phase, competitive relationship judgments were elicited again. Two methods were used. The first method was the same as that used in the second phase of the study. This was followed by the remaining elicitation method. The priming factor was fixed for the same subject under both elicitation methods. In the baseline condition, the first method was unaided elicitation. For the second method, half of these subjects did the perceived competitive similarity task whereas the other half did the forced choice task. No priming cues were used for these tasks.

The judgments elicited in the second (Time 1) and the fourth (Time 2A and Time 2B) phases of the study were converted to indices of inter-product similarity and standardized within subject. These measures were mapped to the actual competitive relationships shown in Figure 5.1 such that each pairwise similarity implies the subject's perception of a specific type of competitive partition. These measured were analyzed first as a group and then individually as a function of the elicitation method used, the priming cues, and the interactions of these factors. Variation in these measures of market structure by study condition reflected the nature of the influence of the elicitation method and the priming cue on market structure judgments.

1.6 Findings

For each type of judgment, unaided or structured (elicited either by the perceived competitive similarity or forced choice methods), we examined the extent to which decision outcome feedback influenced perceptions. This examination was based on a comparison of the judgments elicited at Time 1 and Time 2A of the study. Also, we examined the extent to which both unaided and structured elicitation judgments were concordant across different elicitation methods. These analyses compared the judgments at Time 2A and Time 2B.

Comparing the unaided elicitation judgments at Time 1 and Time 2A showed that the unaided elicited judgments did not change as a function of decision feedback. The analyses of the individual market structure measures also provided supporting results. No evidence of discordance was found between the unaided judgments and the subsequent judgments elicited by alternative structured methods (i.e. comparing judgments at Time 2A and Time 2B). Both the MANOVA analysis of all the market structure measures together as well as analyses conducted with each measure individually, showed no main effects or interactions involving time. However, the analyses are not compelling due to low statistical power.

The MANOVA analysis of the structured elicitation judgments at Time 1 and Time 2A showed significant effects for both decision feedback and elicitation method. The priming cue manipulation was not significant. The analyses of the individual market structure measures showed several key effects. Initially (at Time 1) measures that incorporated overall similarity based structures received high ratings, suggesting that subjects may have recognized the role of overall similarity in market partitioning. They seemed able to discern that brand based and feature based structures were inappropriate characterizations of this market. However, outcome feedback may have confused the subjects in some respects

as the weight placed on the overall similarity measure dropped at Time 2A from its relatively high value at Time 1.

The subjects placed greater emphasis on the usage situation based measure. Perhaps usage situation based differences were more concrete in subjects' extra-experimental experience and influenced their judgments if they had difficulty interpreting the decision outcome feedback that they received. Together, the findings suggest that the subjects recognized the role of overall similarity in partitioning this market, even if they could not clearly pinpoint it. The decision feedback apparently did not help subjects to improve their understanding of the market partitioning role of overall similarity. Rather, the feedback may have confused them in that they placed greater weight on usage situation as the basis for market partitioning.

In comparing judgments between Time 1 and Time 2A, the significant method effect findings also show that relative to the perceived competitive similarity method, the forced choice method helped subjects articulate better that the market was partitioned on the basis of overall similarity. The measures that involved overall similarity (pure overall similarity, feature/overall similarity, and usage situation/overall similarity) received relatively higher scores when judgments were elicited using the forced choice method. This suggests that the forced choice method was either better at eliciting veridical judgments or alternatively, induced a bias toward judgments implying an overall similarity based partitioning. The present study did not permit a distinction between these two interpretations.

The analyses of the structured elicitation judgments at Time 2A and Time 2B supported the notion that the forced choice method helped subjects to articulate better the perceived role of overall similarity in partitioning the market. The data show that in this study the perceived

competitive similarity method was less able to elicit veridical perceptions of market structure. The analyses also showed that the subjects who gave forced choice judgments at Time 2A provided concordant judgments even when given the perceived competitive similarity method at Time 2B. In contrast, subjects' judgments were much more susceptible to change when first elicited by the perceived competitive similarity method and then by the forced choice method. Thus, the forced choice judgments produced both more veridical and more stable perceptions of market structure.

The findings are used to illustrate the validation procedure described earlier. Moreover, we outline how these findings may be used to develop a methodological approach to aiding managers in competitive strategy decisions. The research permits us to take a step toward developing an expert system with the capability of eliciting the judgments of competitive relationships using multiple methods, conducting the basic mapping analysis and reconciling the results.

1.7 Overview of Dissertation

This introductory chapter of the dissertation is followed by the literature review. In Chapter 2, we present a discussion of competitive strategy decisions including the role of competitive market structure analysis in such decisions. Chapter 3 discusses various popular approaches to competitive market structure analysis with consumer level data and shows how they may also be operationalized with managerial judgment. In Chapter 4, the object perception and framing literatures are invoked to develop hypotheses about how judgments of market structure may be influenced by the different elicitation methods and by the various priming cues at judgment. Chapter 5 describes the design of the empirical study along with an outline of the data collection procedure. The methodology used to analyze the data and results are reported in Chapter

6. Finally, in Chapter 7, we interpret and explain the results, draw the implications of the findings, discuss study limitations and outline directions for future research.

CHAPTER 2

COMPETITIVE STRATEGY AND MARKET STRUCTURE ANALYSIS

2.0 Competitive Strategy Decisions

A firm gains competitive advantage by carefully selecting target markets within a business definition, by adopting a generic target market strategy that is consistent with company capabilities and customer values and by implementing a marketing program that locks in a well-differentiated product position. In broad terms, these activities require a basic knowledge of customer and environmental factors in the market along with an understanding of the firm's rivals for the target customer. This involves knowing the competitors and their strengths and weaknesses in a strategic perspective termed a "competitor response profile" (Porter 1980).

This strategic (sometimes top-down) perspective on market competition is focused further by blending it with a bottom-up competitive market structure and definition exercise. Such an analysis helps the manager to categorize products/brands in separate (or overlapping) submarkets so that the products or brands within the same submarket are more competitive than those that belong to different submarkets. Although top-down and bottom-up approaches are designed from different perspectives, they both attempt to understand the current and potential basis for competitive advantage.

Both approaches rely heavily on managerial judgment to structure and interpret the analyses. In the following sections we will briefly review a few key concepts in competitive strategy formulation and relate them to the CMSA tasks. We will try to establish that regardless of whether a top-down or bottom-up perspective is taken, competitive analysis cannot be conducted meaningfully without significant managerial judgmental input.

2.1 Top-down Approaches

Top-down approaches define markets mainly from a managerial perspective. Abell and Hammond (1979) discussed the business definition concept in which a firm defines its activities in terms of its key customer groups, the customer functions (or needs) it meets and the technologies it uses to serve these customers. A business definition may serve as a lead-in to market definition. For instance, a market may be defined as a consumer segment with similar needs and characteristics which are strategically significant. For example, the U.S. auto market can be viewed simplistically as a two segment market - sporty looking cars for the younger generation and conservative looking cars attracting an older age group.

In other cases, a market may be defined with products performing similar functions or being used in different ways. Thus, a bike may compete with a motorcycle in the sense of serving transportation needs. Similarly, altogether different technologies may compete in the same market if they serve the same function or need (e.g., electronic and human surveillance systems). In fact, some other authors have argued that a particular level of production-distribution where a firm operates may also be an useful approach to market definition (Rothschild 1976).

Such flexible "top-down" perspectives allow SBU-level management to understand the capacity of a business unit to compete and apply resources to secure a sustainable competitive advantage" (Day 1981; 1990). In other words, this approach is built upon managers' knowledge about competitors, resources of the firm and supply factors. In this perspective, the factors of strategic importance include (1) the scope of the business definition; (2) the basis for the choice of currently served market; (3) the current and forecasted performance within the served market; (4) the firm's broad strategic thrust; and (5) new growth

opportunities within the firm's domain.

Although top-down approaches use secondary data available both inside and outside the firm, managers' judgments about the firm and its resources, market and its environment, customers and suppliers remain the main input in the strategic market analysis. For instance, industry or firm level data may not exist for assessing the firm's opportunity for growth into radically new or different products or markets. However, managers must nevertheless use their intuition to predict the outcomes of such moves in market performance terms.

2.2 Market Structure Concepts

Differences in customer needs and behavior are a basic fact in most markets. Thus, markets are not homogeneous but may be viewed as a collection of several heterogeneous submarkets each with a mass of relatively similar customers. Not all submarkets may be equally attractive to a business and hence the concepts of market segmentation and selection are a common recipe for optimal resource utilization. The process focuses attention on a few particular segments and allows better tuning of its product offering, pricing, promotion and distribution strategies.

2.2.1 Market Segmentation Analysis

Smith (1956) first noted the need for "adjustment of product and marketing effort to differences in consumer or user requirements." Frank, Massy and Wind (1972) provided an early conceptual and analytical formulation of the concept and the idea gained popularity as a basis for formulating differentiated marketing strategies. However, even as quantitative approaches to market segmentation proliferated, the need for qualitative assessments of the output became even more important. See for example the interpretation of the output of an automatic interaction detection (AID) analysis (e.g., Assael and Roscoe 1976).

Notwithstanding the fact that segmentation has been one of the most researched areas in marketing (see Wind 1978), there remains considerable controversy about the term segmentation (Dickson and Ginter 1987) and its meaning for asserting the existence of descriptive or managerially actionable partitions in the marketplace. One perspective that blends a managerial orientation with a descriptive consumer analysis orientation is offered by Wilkie (1986). According to him, market segmentation is a "managerial strategy that adapts a firm's marketing mix to fit best the various consumer differences that exist in a given market".

Market segmentation and market structure are conceptually canonical correlates. Competitive market structure may be assessed from overlapping groups of brands corresponding to different segments (e.g., Grover and Srinivasan 1987). Thus, even as knowledge of competitive market structure may be useful to decide on a segmentation strategy, knowledge of extant segments may be useful for determining the market's competitive structure. In other words, after all the consumer level data are analyzed, market segmentation involves a judgmental mapping of a descriptive market partitioning to a potentially actionable behavioral partitioning (Wind 1978; Wilkie 1986).

2.2.2 Product Differentiation and Positioning

Product differentiation implies that "a product offering is perceived by the consumer to differ from its competition on any physical or nonphysical product characteristic including price" (Dickson and Ginter 1987). The goal of a product differentiation strategy is to alter the perception of consumers in order to gain differential advantage in favor of the target brand relative to competition. As Day (1990) points out, products are differentiated so that they can create meaningful benefits for consumers. Available differentiation approaches include: (1)

capitalizing on brand equity; (2) providing improved quality, performance, service or technical assistance, (3) offering the convenience of a full product line, (4) widening distribution and (5) leading product innovation. Most of these activities have to be targeted to a customer segment (given their demographic, psychographic and behavioral characteristics).

Successful differentiation and positioning strategies also rest on an understanding of competitive relationships in the market. Although such studies typically involve a cross-classificational analysis of some form (Bass, Tigert and Lonsdale 1968), the data are inherently correlational. The causal attributions that drive the differentiation and positioning decisions must be made judgmentally by managers. In fact, new product design and product line management texts (e.g., Urban and Hauser 1980) provide some systematic heuristics for such analyses.

2.2.3 Product-Market Definition

One other competitive strategy concept worth discussing prior to moving on to bottom-up approaches for CMSA is the notion of a "product-market." This is defined as "the set of products judged to be substitutes, within those usage situations in which similar patterns of benefit are sought, and the customers for whom such usages are relevant" (Day, Shocker and Srivastava 1979). Thus, a product-market definition emphasizes a set of substitutes with respect to their usage situation or consumer characteristics. The perspective taken is flexible. For example, a sporty car may substitute for a family sedan for general transportation; whereas in a different usage situation (such as taking kids to school), it may not.

Urban, Johnson and Hauser (1984) note that a market is a combination of several submarkets. In a structured market, products in a submarket will be affected more by a change in strategy of any brand in

the submarket. In an unstructured market a change in strategy of any product would affect all other products in proportion to their respective market shares. For example, sporty versus family sedans presumably constitute different submarkets. Hence, if such a structure exists, a new sporty car will draw comparatively more share from existing sporty cars than from family sedans.

Thus, although a product-market definition focuses on usage situation based substitution, it embeds the notion of a market structure through the idea of selective substitution among a subset of products. Thus, even though a manager or an individual consumer may postulate any creative pattern of substitution among brands/products, the validity of this as a market structure must be borne out empirically either in more aggregate consumer judgments of substitutability or in the aggregate share draw numbers.

Similarly, an intuitive product-market definition developed by managerial judgment may be validated by examining whether related managerial judgments (of inter-brand similarity or share draws) consistently follow the market structure implications of that product-market definition. Moreover, the robustness of the product-market definition may be gauged by its ability to withstand other judgment primes that make salient different aspects of substitutability or similarity among the products or brands. This research develops and tests the logic of this approach to eliciting and validating managerial judgments of competitive relationships in the market.

2.3 Bottom-up Approaches

Traditionally, managerially guided top-down analyses of competition have been contrasted with bottom-up approaches that take a customer-oriented look at a product's market position and target segments. In this case, "the product or market manager focuses on anticipating and

reacting to shifts in the fine-grained structure of the market as a result of changes both in customers' requirements, needs and capabilities and in the ability of competitors to satisfy these changes" (Day 1981). This more micro view emphasizes customer analysis and also sometimes focuses on the effects of marketing mix variables on micro-level consumer behavior patterns (Day, Shocker and Srivastava 1979).

Most CMSA tools and methods are classified as examples of bottom-up market approaches. The primary feature is a customer-orientation that is reflected in judgmental or behavioral data from consumers. A model based analysis of the data points up the competitive relationships among the brands/products of interest. Proponents of these approaches claim that customers define competition in the market by the benefits they seek from products. Hence, data that capture customer perspectives on the interactions among usage situations, product features and customer characteristics are more reliable indicants of market response than managerial judgments (Day, Shocker and Srivastava 1979; Shocker, Stewart and Zahorik 1990a).

Although the merits of consumer level data are hard to debate, it is not always clear that such data, by themselves, provide full insurance against the pitfalls of competitive analysis. First, data quality is always an issue in any empirical exercise. For example, dairy/scanner panel data are often incomplete and contain incorrect entries. These sources of noise introduce potential error and weaken the power of any statistically based CMSA exercise.

Second, the data often mask causal factors in household purchases. Thus, a multiple brand purchase in a category on a single occasion is a common but difficult to interpret event in panel data. For example, a concurrent purchase of Folgers regular ground coffee and Nescafe decaffeinated instant coffee is difficult to represent in a purchase

string. Judgment must be exercised to properly reflect both the brands, the features and the temporal order of the purchase in the string. One must judgmentally resolve whether the purchase reflects multiple consumers in the household, differential preferences for product features by usage occasion or whether such households must be treated separately from other households in the panel.

Third, behavioral data may not always be readily available for certain product categories. Although one can easily characterize competition among various brands of appliances, a single household's purchases occur far too infrequently to permit a meaningful analysis. Other products have a variable frequency of usage (deodorants, suntan lotions) or can be inventoried (e.g., bathroom tissue). For such products, interpurchase times do not provide a very meaningful mapping to consumption patterns or competitive relationships (see Fraser and Bradford 1983; Shocker, Zahorik and Stewart 1984).

Finally, consumer behavior is limited to the range of options provided in the market and hence may not contain much information on future competitive relationships, particularly those that may be induced by new positioning attempts or by changes in the marketing mix. Judgmental data may offer such insights, but collecting them may require a fairly extensive effort articulating the competitive possibilities being investigated in a manner that respondents may react to. This may be quite costly and at times even infeasible. Moreover, collecting consumer judgments of competitive relationships requires a manager to specify the competitive set. Consequently, managerial judgment is not only beneficial for supplementing consumer level data, but may be quite indispensable for meaningful analysis.

While the advantages of consumer level data are widely discussed in the literature, the virtues of the analytical model that is embedded in

any given CMSA method are often not emphasized enough. This analytical model translates and interprets the judgmental or behavioral data on competition (e.g., an inter-brand similarity rating or a brand switching frequency) as a market structure. It imposes structure on the data, defines and develops measures of the key intervening constructs (e.g., inter-brand distance or transition probability) and provides (either mathematical or statistical) criteria for inference that help to discriminate between alternative market structures.

In addition to its value in processing consumer level data, the model could be a potentially valuable tool for systematic elicitation and processing of managerial judgments of competitive market relationships. The logic of the model provides a basis for checking the internal consistency (reliability) of the judgments. Moreover, by using different CMSA models that access competitive relationships using a variety of alternative constructs, it may be possible to assess the validity of such judgmentally derived market structures in a manner similar to what is advocated for construct validation exercises. This approach is particularly appropriate as market structure is, in any sense of the term, a latent or unobservable construct.

2.4 Summary

In summary, this chapter has argued that an implicit or explicit market definition or market structure analysis underlies most competitive strategy decisions. In top-down approaches, the managerial perspective is given some precedence and competitive relationships are viewed from the supply side or in terms of the firm's business definition or competitive capabilities. In contrast, bottom-up approaches formalize and test hypothesized competitive relationships on consumer level data. They usually feature an analytical model that defines and develops measures of key competitive constructs and translates and interprets these as a market

structure.

However, among other limitations, consumer level data contain limited information on potential competitive relationships. In contrast, managerial judgments may permit consideration of a broader range of current and potential competitive relationships and are indispensable in the development of a strong analysis of competitive market structure. Eliciting and processing managerial judgments of competitive market relationships in the formal reasoning framework of an analytical model may enhance its reliability. Further, by using multiple CMSA frameworks that rely on different competitive constructs, one may assess the validity of the judged market structure.

In the next chapter, we review some of the commonly used CMSA approaches and show how they may be operationalized using data derived from managerial judgment. The review is essentially selective and readers interested in a more comprehensive catalog of CMSA techniques are referred to Shocker, Stewart and Zahorik (1990a) and to the original sources cited therein.

CHAPTER 3

JUDGMENTAL ANALYSIS OF COMPETITIVE MARKET STRUCTURE

3.0 Analytical Approaches to Product-Market Planning

Although top-down approaches continue to be popular strategic thinking tools, marketing tasks such as segmentation, targeting, positioning and mix decision making are now significantly aided by insights obtained from consumer level data analysis (Urban and Hauser 1980; Lilien and Kotler 1983). As discussed earlier, currently available product-market definition and CMSA models are generally divided into two categories: those that utilize data on consumer behavior and those that utilize data on consumer judgments of competitive relationships (Shocker 1986).

CMSA approaches using behavioral data typically focus on records of consumer purchase or consumption behavior. The data usually are longitudinal records of household purchases from consumer diary or store scanner panels (Lattin and McAlister 1985). The key argument favoring such data is that they portray consumers' actual behavior, i.e., what they "really do". However, despite this advantage, the data are typically silent on the reasons underlying the behavior. Consequently, as discussed in the previous chapter, the data require significant interpretation. The data are also contextually limited, i.e., restricted to a particular set of conditions (e.g., the competitive set of products and the specific marketing mix configurations that were operative at the time the data were collected) and it is difficult to extrapolate from them to other conditions (e.g., for an altered competitive product set or different mix decisions). Hence, managerial judgment is needed to predict and project consumers' behavior under these changed conditions.

In contrast, CMSA approaches based on consumer judgments of competitive relationships rely on responses that either characterize current competitive relationships or judge likely behavior under posed

hypothetical situations. Such data are usually accompanied by explicit or implicit reasons for the judgments. Thus, the 'outcome-orientation' of behavioral measures is replaced by a 'process-orientation' and the competitive structure realized from the analysis of such data may incorporate such insights.

Notwithstanding these advantages, judgmental approaches are often faulted for some key limitations. Although judgments are more likely to reflect the perceptual possibilities, there is significant evidence of slippage in how well they ultimately map to behavior. A perceptual or attitudinal predisposition may not always map into purchase behavior. The phenomenon is easily interpretable when it is a function of specific contingencies such as a budget constraint or product availability (Fishbein and Ajzen 1975; Kalwani and Silk 1981). However, it is a significantly more complex issue when the effects reflect contextual differences between the judgment and the behavioral context (Upshaw 1984; Lynch, Chakravarti and Mitra 1991).

We have argued the case for incorporating managerial judgments into CMSA exercises as an approach to compensating for the limitations of consumer level data. At a minimum, managerial judgments add a critical additional perspective that can go beyond consumer data. However, as discussed, CMSA methods also offer the benefit of processing data/judgments through an analytical model that provides structured reasoning translating the behavioral/judgmental data into assessments of market structure. It stands to reason therefore that the basic inferential structure of the model can also be used as an elicitation and processing framework for managerial judgments.

In the following sections of this chapter, we present some common CMSA methods that are normally used to process both consumer level behavioral and judgmental data. We briefly overview each CMSA approach

and show the manner in which the method may be adapted to elicit and process managerial judgments.

3.1 CMSA Approaches Using Consumer Level Behavioral Data

Common CMSA approaches that use behavioral data include those that (a) focus on patterns of brand switching in a product category, (b) utilize data on interpurchase times in a product category and (c) use measures of cross-price elasticity. Each of these methods uses diary or scanner panel data and focuses on calculating from such data measures or indices that capture the degree and nature of the competition between the products in the set of interest.

3.1.1 Brand Switching Approaches

Several methods have been used for determining competitive relationships and product-market definitions using patterns of brand switching as the primary input. Carpenter and Lehmann (1985) use brand-switching (a surrogate choice measure) as a dependent variable in a logit model of mix effects. The patterns of cross product mix impact provide indices of market structure. In other models, the focus is on understanding the choice process itself as a basis for market structure (Rao and Sabavala 1981; Schmittlein 1984). Other researchers have looked for market structure directly in switching data (Grover and Dillon 1985; Grover and Srinivasan 1987) and still others develop zero, first and second order transition matrices as brand switching measures. These measures can then be used either as stochastic indices of proximity (Kalwani and Morrison 1977; Rubinson, Vanhonacker and Bass 1980) or as indicants of brand loyalty or variety seeking behaviors (Kahn, Kalwani and Morrison 1986).

Brand loyalty and variety seeking have been modeled by several authors (McAlister and Pessemier 1982; Givon 1984; Kahn, Kalwani and Morrison 1986). Kahn et al (1986) provide perhaps the most comprehensive

framework to date for analyzing these data. The authors focus on characterizing the theoretical zero, first and second order (binary) switching matrices corresponding to the notions of reinforcement and variety-seeking. They then show how (under a few aggregation assumptions) specific indices computed from the panel data could be used to infer both the order of the choice process as well as whether or not variety-seeking or reinforcement was involved. They also show how market structure may be inferred by examining these indices under alternative brand/product groupings.

Although a consumer level data based implementation of this CMSA method is fraught with many of the limitations discussed earlier, the model offers a theoretically reasoned path from switching behavior to inferences regarding market structure. The basic measures are transition probabilities calculated from panel data. Assessments of process order, reinforcement/variety seeking, and market structure are based on transformations and comparisons of these base transition probabilities.

Even though we do not empirically investigate this approach in this dissertation, a brief discussion of the application of this method could be useful. We argue that managerial judgments could be elicited and used to estimate the (normally empirically estimated) transition probabilities in the Kahn et al (1986) approach. For example, once a set of candidate brands have been defined, a manager could be asked to estimate a repeat purchase or a switching probability for different binary aggregations of the candidate brands. Moreover, these judgments could be posed for purchase histories of length zero, one and two (corresponding to the zero, first and second order model) to develop each of the indices normally computed with empirical data from consumer panels.

Note that managers may or may not have a complete grasp of each basic quantity that they are being asked to estimate. However, the

procedure embeds multiple signals for any given market structure inference. Thus, a consistency check is built into the process and this redundancy may be exploited to gauge the reliability of the elicited judgments. Once the judgments have been elicited, the computations and inference procedures for the CMSA can be done in standard fashion.

It is useful to note that the use of judgments automatically circumvents some of the problems encountered in implementing the corresponding exercise with consumer level data. Thus, handling multiple purchases, complementarity effects etc., are not problems at this level of abstraction. Moreover, the candidate set in the analysis may now be defined with significantly greater flexibility. These (typically thorny) data-related problems do not constrain the managerial judgment process.

Even as we argue that the use of managerial judgment may permit the analyst to capture a far broader spectrum of current as well as potential competitive relationships, we hasten to recognize the obvious limitation of this suggestion. Given our reliance on managerial judgment, we need to account for potential judgmental biases that may plague the process.

3.1.2 Interpurchase Times

Another CMSA approach uses interpurchase times computed from household level diary/scanner panel data as the basic input (Bass, Pessemier and Tigert 1969; Fraser and Bradford 1983). The basic assumption is that the timing of a brand purchase is influenced by the timing of prior purchases of other brands, if they belong in the same competitive set. On the other hand, interpurchase intervals for brands not in the same submarket are independent. Thus, Fraser and Bradford (1983) derived a measure of the expected difference in interpurchase times as an "index of revealed substitutability" between the brands. They computed empirical differences in the interpurchase times between the same

and different brands in a product category (coffee) and used the analysis to draw inferences regarding whether the coffee market was brand or feature primary.

Shocker, Zahorik and Stewart (1984) critiqued Fraser and Bradford's (1983) analysis suggesting problems with using interpurchase times to derive indices of market structure. Most of their criticisms stemmed from implementation issues such as omitting non-purchasing households, inability to handle rarely purchased items (e.g., durables), potential confounding due to bulk purchases for inventorying (e.g., for bathroom tissue) or due to items with variable usage frequencies (suntan lotion). Note that other problems that stem from a fixed store visit cycle become critical limitations if interpurchase times are used for market definition (versus for testing market structure).

Although the proposition is not tested in this dissertation, we argue that the logic for deriving market structure assessments from data on interpurchase times could be used with managerially judged differences in interpurchase times. For a candidate product set, managers may be asked to write hypothetical purchase sequences describing the behavior of representative households. Alternatively, diagnostic purchase patterns associated with varying values of the "index of revealed substitutability" (Fraser and Bradford 1983) could be developed for each brand pair in a set. A manager could then be asked to indicate the pattern(s) that would most likely depict a typical household's purchase behavior. Note that the "typical household" could be described in terms of a standard customer profile for a relevant segment. In principle then, with a carefully operationalized elicitation task, a CMSA approach based on interpurchase times could be developed using managerial judgments as input.

3.1.3 Cross-price Elasticities

An alternative behavioral measure of inter-brand substitutability is cross price elasticity. Consistent with its economic definition, cross-price elasticity is the percentage change in quantity demanded of product A as a function of the percentage change in price of product B. The basic notion is that if A and B are substitutable, demand changes for A as a function of price changes of B will be higher than if they are not substitutable or if A and B are complementary products (Lilien and Kotler 1983). Cross-price elasticities estimated from scanner data have been used as inter-brand proximity measures in spatial analyses of market structure (Vanhonacker 1984; Bucklin and Srinivasan 1991).

As with other behavioral data based CMSA approaches, the use of cross-price elasticities has been criticized for implementation-related difficulties. Clearly, data on price variations are hard to come by in stable markets and cross-price elasticities are difficult to isolate from empirical data in markets with many brands. The problem is particularly acute where price variations are accompanied by collinear changes in other mix variables. Thus, the problems are quite similar to those encountered in the specification of market response functions that incorporate competitive mix variables.

Managerial judgmental estimation of market response functions is clearly not a new idea and has been effectively advocated by proponents of decision calculus models (e.g., Little 1970; Lodish 1971). In these models, managers are asked to provide point estimates of market response variable (sales or share) as a function of the level of a decision variable. In a similar way, we can derive estimates of own-price and cross-price elasticities from managerial judgmental estimates of sales changes as a function of price changes. Such judgmental estimates may be fraught with biases and inconsistencies (see e.g., Chakravarti, Mitchell

and Staelin 1979; 1981). However, some of these issues are mitigated here in that managers typically are not asked to provide extreme estimates of price effects outside their experience.

We note the possibility of CMSA analyses with judgmentally assessed cross-price elasticities for the sake of completeness. However, we offer no hypotheses regarding the cognitive implications of the judgmental task nor do we conduct an empirical test of this approach in this dissertation.

3.2 CMSA Approaches Using Consumer Level Judgmental Data

We turn now to CMSA approaches that use consumer judgments of competitive relationships as input. One common approach here is the use of perceived similarity measures where the focus is on judgments of inter-brand proximities. A second, popular approach is the consideration of product deletion possibility where the focus is on what products are chosen when consumers are forced to pick a substitute product for an unavailable preferred product. Each method focuses on calculating an index that captures the degree and nature of the competition between the brands in the set of interest. We discuss each measure below.

3.2.1 Similarity Measures

Judgmental measures of perceived overall similarity are perhaps the most common input to CMSA exercises. Here, consumers are asked to indicate their judgments of how similar (or dissimilar) each pair of brands are in the set of interest. These interbrand proximity measures are then submitted to a spatial (e.g., nonmetric multidimensional scaling), non-spatial (e.g., hierarchical clustering) or hybrid (tree or overlapping clustering) form of representational analysis. The premise here is that products/brands which are proximal to each other on a product map or which cluster together are similar, substitutable and compete strongly with each other. The reader may examine Carroll (1976), DeSarbo

(1986) and Green, Carmone and Smith (1989) for discussions of these and other representational methods relevant for CMSA.

The typical output from such analyses are product-market representations that take the form of spatial maps, clustered groups or hierarchical trees. In a spatial representation, the products are points in a common continuous space whose axes are defined by relevant dimensions that may be interpreted in terms of the original product attributes (Jain and Etgar 1975; Wind 1977). In the more common clustering representations, the products are in distinct groups formed by the possession of distinct attributes or combinations of attributes (Hauser and Koppelman 1979). The clusters may be depicted as hierarchical trees (Srivastava, Leone and Shocker 1981; Rao and Sabavala 1981). Also, overlapping clustering is a hybrid approach in which products are permitted to belong to one or more of a set of identified clusters (Arabie, Carroll, DeSarbo and Wind 1981). See Appendix 3A for an overview of the technical aspects of these procedures.

There is a large literature on the representation of individual level similarity and preference judgments as hierarchical trees (Carroll 1976; Sattath and Tversky 1977; Tversky and Sattath 1979). Individual judgments of inter-product distances are translated into a tree representation. The products are described in terms of a discrete attribute structure and the competitive relationships between brands/products are defined as distances measured along the branches of the tree (Tversky and Sattath 1979). However, the mapping from these individual level models to aggregate competitive structure analysis is not straightforward and is not directly pertinent to our approach (see Hauser 1986).

The rich psychometric literature in this area offers many alternatives in terms of translating assumptions regarding aggregate

consumer perceptions and judgment of inter-product competitive relationships to a model of the judgments and a representation of the product market. There are significant theoretical and practical concerns about the interpretive mapping of distance judgments to robust assessments of competitive substitutability. Concerns also exist about the contextual stability of similarity and preference judgments. Nevertheless, there are a variety of standardized procedures for collecting such judgmental data from consumers (Green, Carmone and Smith 1989).

These established procedures may be followed to ask managers for their perceptions of inter-product similarity on rating scales. The set of methods then can be used to develop an appropriate spatial, non-spatial or hybrid representation of these judgments as a characterization of market structure. The researchers may seek the respondents' aid to interpret the dimensions of the representations as necessary. Alternatively, these similarity measures from the managers can be mapped to different possible competitive relationships in the market such that each pairwise similarity implies the manager's perception of a specific type of competitive partition. By putting these perceptions together, one may arrive at the complete market structure.

It is useful to distinguish between similarity on perception versus similarity on preference. When similarity is judged on perception, two products that are perceived similar overall (or on specific features) will be positioned proximally and viewed as competing. When similarity is judged on preference, the proximity indicates similar intensities of preference. However, the type of competition and substitution represented by each measure may be different and needs to be considered in analysis (see Shocker, Stewart and Zahorik 1990a). In our empirical exercise, we ask for managers' perceptual similarity assessments in terms of the intensity of direct competition. In other words, we stress similarity in

terms of substitutability as the criterion.

3.2.2 Product Deletion Possibility

Since substitutability is a fundamental notion in CMSA studies, some researchers ask consumers to directly judge the relative substitutability of brands in lieu of their preferred brand. These methods essentially compute judgmental switching frequencies among a set of brands defined a priori to be of interest. However, consumers are asked to choose a product when their favorite product is unavailable, so that the judgments directly incorporate substitutability. These "forced switching" patterns then provide a clearer understanding of the structure of the relevant submarkets (Urban, Johnson and Hauser 1984). The premise is that when the preferred brand is unavailable, consumers will select a product/brand that they perceive as substitutable or at least similar to it. The switching data then are interpreted as measures of similarity or substitutability. This then permits the identification of submarkets (i.e., a market definition or structure). Repeated elicitation of the judgments, deleting one product or brand at a time, provides a complete picture of the market.

This judgmental task is relatively easy to perform (Shocker 1986). Moreover, as Urban, Johnson and Hauser (1984) show, the brand switching patterns can be evaluated against the ratios predicted by an aggregate constant ratio model (ACRM) to determine whether or not a set of brand are in the same submarket. The model, an aggregate formulation of Luce's choice rule, asserts that the deletion (introduction) of a new brand into a homogeneous submarket will result in a realignment of shares such that each brand in the submarket gains (loses) share in proportion to its original share. Disproportional share changes are viewed as indicants of the submarket's heterogeneity and the existence of partitions in it. Appendix 3B presents an abstract of the basic logic of the procedure.

The forced choice approach to eliciting judgments is often criticized for implying that the purposes underlying substitutability notions spring from products and not vice-versa. Although there is no cognitive basis for this assertion, there is then a danger that consumer judgments in forced choice decisions consider only a narrow set of options. In such cases, the product-market definition elicited via this approach may be limited. A second (methodological) limitation is that the approach forces classifications into single submarkets and does not easily allow overlapping classifications.

Managerial judgments of their consumers' forced choice patterns may be elicited in the framework normally used for consumer judgments. As before, the idea is to capture the manager's perceived patterns of substitution of his/her own and related brands in the market. The data are of the same general nature as consumers' forced choice judgments, except that in this case, they are managerial imputations. Implemented with managerial judgments, the method retains its strengths. Its limitations may be addressed by a priori broadening the set of products/brands to be considered and by exploring further those cases where the data are consistent with the existence of multiple submarkets.

Note that the forced choice proportions may also be used to compute a managerially judged similarity (substitutability) index which may be used as input for a perceptual mapping analysis as discussed previously. Under another analytical approach, these managerially judged similarity measures can be mapped to pre-determined competitive relationships in the market and the appropriate market structure (as perceived by the manager) can be inferred. Conducting these analyses provide added power to the validation procedures. Measures obtained by different conceptual approaches can be processed through the same representational framework and the outputs compared.

In the next chapter, we analyze the broad features of the cognitive task imposed on managers for the perceptual similarity measures and product deletion possibility (forced choice) approaches and hypothesize how the task characteristics influence the managerial judgments elicited and the inferred market structure. Both these methods are investigated in this dissertation.

3.3 Cuing Managerial Judgments

So far, little has been said about the circumstances that are to surround the judgment elicitation tasks. This reflects the relatively sparse assessment of the natural cuing associated with such measurement procedures in the consumer level CMSA literature. Even though behavioral measures are arguably less fluid, the information processing contingencies leading to specific choices are not transparent in the data. The potentially more fluid judgmental methods may be systematically influenced by the cues provided at the time of judgment. It is therefore useful to consider a set of such cues and the evidence regarding their effects in the marketing literature.

We will consider three specific types of cuing that are substantively meaningful in view of the CMSA literature. As stated before, we examine two specific approaches to eliciting managerial judgments regarding the competitive relationships they perceive in their markets. In addition though, we also examine how these judgments are influenced by priming cues that urge the respondents to consider (a) relevant brand images associated with the products, (b) presence or absence of specific product features, and (c) potential substitution-in-use patterns.

3.3.1 Priming Product Images

Consumers making perceptual similarity judgments or responding to forced choice questions are often not instructed as to the dimensions

along which to judge similarity or to indicate an alternate choice. One possible criterion for comparison that could be provided for these judgments is the brand image of the available products. As the marketing CMSA literature offers relatively little guidance here (see Green, Carmone and Smith 1989; Shocker, Zahorik and Stewart 1990), in the next chapter we draw on the framing and object perceptions literature to speculate about the likely effects of such priming cues.

3.3.2 Feature based Priming

The priming of specific product features should result in the specific dimension being considered more as a basis for competition. Whether this consideration is actually reflected in the elicited judgment is an empirical question. In some cases, the elicitation method may cue consumers in brand based fashion. The overlay of a feature based cue may counteract the effects of the former cue and stabilize the judgments. On the other hand, it may confuse the respondent and produce unreliable judgments. These issues are discussed in greater detail in the next chapter.

3.3.3 Priming Substitution-in-Use

Substitution-in-use is a particularly important cue given its importance in customer based approaches to product-market definition and segmentation (Day, Shocker and Srivastava 1979; Srivastava, Alpert and Shocker 1984). In fact, these authors argue that usage-situation based substitution is the basis for product-market definition. Cuing managerial judgment with usage situational cues may focus the set of brands to be considered in the competitive set. However, the manner in which it may prompt finer-grained judgments of competitive partitions within a product-market definition will be discussed in the next chapter.

3.4 Summary

In this chapter we discussed the basic CMSA approaches and outlined how two of these may be implemented for eliciting managerial judgments of the competitive relationships in a product-market. The methods tap managerial judgments of (a) perceived competitive similarity and (b) forced choice probabilities in considering a product deletion possibility. We will also examine how these judgments are influenced when managers are cued to consider (a) brand images, (b) specific product features and (c) patterns of substitution-in-use. In the next chapter, we take a psychological perspective on these tasks and offer hypotheses regarding the relative likelihood of these judgments indicating brand based versus feature based market structures as a function of the elicitation method and the type of priming.

CHAPTER 4

RESEARCH HYPOTHESES

4.0 Research Issues

The preceding chapters developed a case for the use of managerial judgments in competitive market structure analysis. We discussed why such judgments are essential to capture the key current and potential competitive relationships that may not be contained in consumer level data. We also presented the conceptual advantages of eliciting such judgments within the analytical framework of basic CMSA models so as to structure the elements of managerial cognition that underlie such judgments.

Specifically, we implement two such CMSA methods in the empirical work conducted in this dissertation. These two methods tap managerial judgments of (a) perceived competitive similarity and (b) forced choice probabilities in considering a product deletion possibility. In order to test the robustness of the derived judgments, we test how such judgments are influenced by cues that ask managers to consider (a) brand images associated with the products; (b) specific product features and (c) patterns of substitution-in-use. The consistency of the competitive market structures derived under these conditions provide indications of both the reliability and validity of the managerial judgments.

4.1 Types of Market Structure Judgments

Relatively little is known about the manner in which such judgment elicitation tasks and cues would influence judgments. Consequently, we start from first principles and take a psychological perspective on the judgment tasks involved in each approach and develop our formal hypotheses. The literature (see e.g., Urban, Johnson and Hauser 1984) characterizes competitive market structure as being of two primary types: brand based or feature based. In its purest form, a brand based structure categorizes products by brand name irrespective of features. For example,

cars with different features (e.g., diesel or gasoline) are grouped by brand names (makes) such as Peugeot, Oldsmobile, Volkswagen etc. In contrast, a feature based structure categorizes products across brand-names by their possession (nonpossession) of one or more criterial features. Here, gasoline (diesel) cars would be grouped in the same competitive category regardless of make.

Operationally, however, competitive market structures derived either from consumer level data or managerial judgment are rarely partitioned so clearly. For example, products may vary in terms of their usage situations. Partitions that are based on usage situations may map onto those based on a specific feature or feature cluster. However, a manager's or a consumer's mental grouping may be most accessible in terms of the usage situation and the accessed partition may be difficult to categorize as purely feature based. In other situations, similarity on a feature cluster (perhaps configural) may result in the products being perceived as similar overall. Such overall similarity may not be easily resolved into the underlying feature set, but can be clearly distinguished from a brand based partitioning.

Finally, one may encounter cases where the market partitioning suggests overlapping criteria. For instance, products that appear similar overall may also be similar on features and/or usage situation. In such cases, the manager or the consumer may be unable to articulate the precise basis on which the partition occurs. Thus, the market structure may be confounded even though the products in the partition may be clearly identified. In this research, we deal with such contingencies by allowing other market partitions when the data are analyzed. However, the formal hypotheses are developed by presenting market structures in terms of degrees of a brand based versus feature based dichotomy. However, in cases where a more specific argument may be made, other structural forms

are invoked as needed.

In the following sections, we develop the conceptual basis for how specific judgment elicitation methods and cues may influence market structure judgments. The predictions are stated in terms of the relative likelihood that the judgments will indicate brand based versus feature based market structures conditional on a free underlying structure. The hypotheses regarding the properties of the judgment elicitation methods are derived from the literatures on cognitive processes underlying stimulus perception and categorization (e.g., Shepp and Ballesteros 1989). The hypotheses regarding cuing effects stem from the literatures on attention and framing effects (Kahneman 1973; Kahneman and Tversky 1984; Tversky and Kahneman 1981).

4.2 Managerial Judgment Elicitation Methods

Managerial judgments regarding the competitive relationships in a market may be elicited without the aid of an underlying analytical framework and without cuing any specific customer perspective. For example, managers may be asked to describe their "perception of the current and potential competitive structure of the market" or to indicate the "competitive submarkets that they recognize and which products are particularly competitive with each other and why ?" Note that this free elicitation question avoids cuing competing <u>brands</u> as might a question asking the manager to describe the "<u>brands</u> that compete with your product." Such a situation provides a baseline against which the effects of specific elicitation methods and cues may be considered.

Rosch and Mervis (1975) discussed the notion of family resemblance and argued that natural categories are usually determined by an overall family resemblance structure that had many attributes rather than a single critical or criterial feature. In other words, category membership is determined by clusters of attributes so that the same category members are

alike (different from members of other categories) in a general and overall sense, rather than in terms of a specific feature.

The family resemblance idea also points to a holistic process in category learning (Kemler-Nelson 1984; Smith 1989; Smith and Kemler-Nelson 1989). Overall similarity relationships predominate under such conditions and the stimuli are processed as integrals (wholes) as opposed to separable or separate stimuli (Shepp 1989). The holistic processing style is particularly manifested when there is no reason to cue selective attention to specific features. It is particularly contrasted to analytic processing where the component property relationships are more important (Kemler-Nelson 1989) and may be cued by prior knowledge or task structure.

In judgmental assessments of competitive market structure, where the elicitation task provides no prior structure, judged market partitions should reflect natural competitive categories in a manager's cognitive structure. In other words, these categories would be derived from the most common holistic perspective on the marketplace. The conditions imply no feature selection and without a criterial feature, overall similarity of products should decide their category membership. In particular, their own product being the most familiar stimulus in the set, we hypothesize that it will be used as the prototypical member or exemplar of the referent category. As a result, products similar overall to the manager's own will be categorized together. There being no task imposed structure for categorization, one would expect no finer distinctions to be drawn in the residual category. This leads to the first hypothesis:

> *H1: Competitive judgments unaided by a model or priming are more likely to yield a binary market structure with partitions defined on overall similarity, using the manager's product(s) as referent.*

Using the above as a baseline case, we now explore how managerial judgments of (a) perceived competitive similarity and (b) forced choice probabilities will influence judgments of market structure.

4.2.1 Perceived Competitive Similarity

In traditional similarity scaling methods, respondents are asked to judge how similar (or dissimilar) each pair of products are in the set of interest. These proximity measures are then submitted to a spatial, nonspatial or hybrid representational analysis (see Green, Carmone and Smith 1989). Eliciting managerial judgments of perceptual similarity (competitive structure) among a set of products would require task instruction involving careful consideration of the similarities and differences of product pairs. Even if no cue were provided to the basis for judgment, we would expect such judgments to involve deliberative comparisons of different products.

The psychology literature provides some support for this conjecture. Smith and Kemler Nelson (1984) showed that although multidimensional stimuli were initially processed holistically, subsequent considerations led to analysis on specific dimensions. Even when object classification were apparently based on overall similarity, analysis revealed the judgment to be based on similarity along a single dimension (Smith and Evans 1989). These authors also argued that such stimulus comparison are likely to be based on selective attention to specific features. These features determine categorization and both distinctive and common features of objects may be used in making similarity/dissimilarity judgments (Tversky 1977).

Translated to managerial judgments of market structure, these findings support the conjecture that managers' assessments of the perceived competitive similarity of different product pairs will involve deliberative comparison of the products on specific features. The most likely candidate feature(s) for judging inter-product competitive similarity may be the key feature(s) of the manager's own product. Consequently, these feature(s) will drive the judged market structure

which should be feature based. However, since feature similarity to the manager's product is the implicit cue to the similarity judgments, the feature based structure may be partially confounded by considerations of overall similarity to the manager's product. Formally then, the hypothesis is,

> *H2: Perceived competitive similarity judgments are based upon feature similarities between the manager's product and other products. They are more likely to yield structures that blend general feature similarity and overall similarity with the manager's product.*

4.2.2 Forced Choice Probabilities

The logic underlying the estimation of consumers' forced choice probabilities under a product deletion possibility was provided by Urban, Johnson and Hauser (1984). These data were then used in a test of specific hypothesized market structures. Translation of this procedure for use with managerial judgments involves asking respondents to subjectively estimate the proportions of a target product's typical consumers who would switch to specific alternative products if their favorite product was unavailable. The procedure could begin with the manager's own product and repeated for other products in the set.

With preferences clearly articulated (favorite product not available), our conjecture is that managers would estimate forced choice proportions based on the likelihood that the other product(s) would provide the same (similar) benefits or attributes. Thus, we expect the forced choice judgment to attend to the favorite product's attributes and benefits. That feature evaluations play a large role in judgments of substitutability is consistent with a long tradition of research on judgment (Bettman, Capon and Lutz 1975; Fishbein 1967; Wilkie and Pessimier 1973) and choice (Currim 1982; Corstjens and Gautschi 1986) as well as with the literature on benefit segmentation (Haley 1968). More formally, we argue:

H3: Forced choice judgments are based on feature/benefit similarities between the deleted product and other options, and more likely to yield feature based structures.

The reader should note that the specific product-market scenario is expected to determine which cues are most salient or accessible and receive the greatest weight in the judgments required under each method. The answer to this empirical question may vary situationally. The hypotheses above postulate the nature and direction in which the judgments are swayed by each elicitation method. Note that the specific product-market scenario may influence the relative stability of the market structure judgment in that competitive relationships may be more or less ambiguous. These were treated as stimulus calibration issues and were addressed through pretests during stimulus design.

4.3 Cuing Effects on Managerial Judgments

It is fairly well-known that preference judgments and choices show predictable variations depending on how the judgment or choice problem is framed. For example, Tversky and Kahneman (1981) found that decisions about adopting a treatment program varied by how logically equivalent outcomes were framed (as survival rates or mortality rates). Similar results were reported by McNeil, Pauker, Sox and Tversky (1982). Thaler (1980) found that identical price differences were perceived differently as a function of whether they were labeled as a cash discount or a credit card surcharge.

Framing phenomena that are often seen as "paradoxical" violations of presentation invariance (Griffin, Slovic and Tversky 1990) may be explained in terms of selectivity and limited capacity of memory and attentional processes (Kahneman 1973). The idea is that presentation formats, task structure and instructions (implicitly or explicitly) cue and prioritize the information base that comes into play in a judgment or decision. Such selective attention then naturally influences the decision

outcome. The outcome may be explained by the specific information set considered and is paradoxical only in context of the complete (or alternative) information set that could have been used.

The hypothesized effects of different judgment elicitation methods were based on premises regarding implicit judgment cuing effects. Note that each such elicitation method may be used in conjunction with an additional priming cue that selectively directs managerial attention to different aspects of competition. For instance, perceived competitive similarity judgments could be cued by asking managers to judge similarity on the basis of the usage situations encountered. The similarity judgment may then be influenced more by the retrieved usage occasions relative to other features of similarity such as specific shared attributes or brand image.

Other cues may similarly prime managerial judgments of competitive relationships in a market with corresponding effects on the derived market structure. The cues of substantive interest in this study are strategic brand images/concepts, product attributes/benefits and usage situations. For any judgment elicitation method, brand image/concept may be primed by asking the manager to provide the required judgment "keeping in mind the overall brand concept or image." One would expect that such a prime would selectively focus attention on holistic similarities in brand image and the resultant market structure would be more likely to be brand based.

By a similar logic, attributes/features may be primed by appending an instruction to "keep unique and common features in mind" at the time of judging the appropriate competitive relationship measures. One would expect that the prime would make salient the key attributes/benefits and channel managers to think of these as the primary inputs to the judgments of competitive relationships. Consequently, the market structure derived from these judgments is more likely to be feature based. Finally, usage

situations may also be primed during judgment elicitation as suggested above. Such priming may focus managers' attention on the product feature(s) that are correlated with usage situations and may ultimately produce judgments of competitive relations that weight these product features. The derived market structures are therefore more likely to be feature based. These arguments lead to the next prediction:

> *H4: Priming specific criteria during judgments of competitive relationships influences derived market structures as follows:*
>
> *(a) brand image/concept priming makes brand based structures more likely;*
> *(b) attribute/benefit priming makes feature based structures more likely;*
> *(c) usage situation priming makes feature based structures more likely.*

4.4 Method-priming Interactions

We have argued that judgments of competitive relationships and derived structures will be influenced by the specific judgment elicitation method and the specific criterion primed (cued). These effects may be additive main effects only. However, there is also a basis for postulating that the two factors may interact. In the absence of prior theory in the area, we will develop the arguments intuitively. It stands to reason that when judgments of competitive relationships are elicited without a structuring framework, they would be most susceptible to the priming cue effects illustrated in Hypothesis 4 above. Perceived competitive similarity judgments are also elicited in a fairly flexible structure. Therefore, the cuing effects predicted in Hypothesis 4 are more likely. In contrast, the forced choice method is more restrictive and less amenable to these priming effects. Therefore, we predict,

> *H5: The predicted effects of priming cues will be weaker for the forced choice methods relative to perceived competitive similarity methods and unaided elicitation.*

To examine other potential interactions, we first note that forced choice methods involve picking an alternative product when the favorite

first choice product is not available. We speculated earlier that this involves an assessment of substitutability based on a mental analysis of benefit/feature similarity of the focal product relevant to the referent, favorite product. This tendency would be accentuated if attributes/benefits are explicitly cued. Priming usage situations would also slant the judgment similarly toward features/benefits corresponding to specific usage situations. In both cases, therefore, the market structure judgments would be relatively more feature based. In contrast, brand image/concept priming focuses on more holistic concepts and in some sense directs attention away from the feature structure. Consequently, brand image/concept priming will attenuate the degree to which forced choice probability methods yield feature based structures. Formally:

> *H6: The degree to which the forced choice method yields feature based market structures will be attenuated by brand image/concept oriented priming and will be accentuated by usage situation and attribute/benefit oriented priming.*

4.5 Summary

This chapter has provided a conceptual basis for predicting how managerial judgments of competitive relationships in a market may be influenced by the specific method by which judgments are elicited and the cues provided at the time of elicitation. An unstructured elicitation approach is more likely to yield a binary market structure with partitions defined on overall similarity using the managers' product(s) as referent. On the other hand, the perceived competitive similarity method is more likely to produce structures that blend general feature similarity with overall similarity with the manager's product. On the other hand, the forced choice probability method is more likely to yield purely feature based structures.

In terms of the effects of the priming cues, brand image/concept cuing at the time of judgment elicitation is more likely to yield brand

based structures whereas attribute/benefit cuing and usage situation cuing are likely to result in feature based structures. Moreover, cuing is likely to interact with the judgment elicitation method, accentuating/attenuating the additive main effects. Table 4.1 summarizes these predictions.

It should be noted that these method and cuing effects are expected to occur when managers have a fairly fluid perception of market structure. However, should managers' market structure judgments be robust and consistent with some fixed and underlying pattern of competitive relationships, the judgments should not be influenced by method or cuing to any significant degree. This logic serves as the basis for interpreting the reliability and validity of these competitive market structure analyses that are based on managerial judgments. In the next chapter, we present a study designed to test these hypotheses and to illustrate the framework for the assessments of reliability and validity that must accompany such an effort.

CHAPTER 5

RESEARCH METHODOLOGY

5.0 Experimental Studies of Managerial Decisions

The preceding chapters emphasized the need for managerial judgments in competitive market structure analysis. We illustrated approaches to formally eliciting such judgments within the framework of existing analytical CMSA models and offered hypotheses regarding how such elicitation methods would direct managerial judgments of competitive relationships. We also presented hypotheses regarding the effects of specific priming cues at the time such judgments are elicited. The conceptual framework also showed how the market structures derived from such judgments could be validated in a traditional construct validity framework.

This chapter outlines the design and procedures of an experiment conducted to test these hypotheses. It also illustrates how managerial judgment based market structures may be validated in this framework. We begin by discussing a few issues concerning the limitations of laboratory studies of managerial decision making in situations where domain expertise effects are at issue. In marketing exemplars of such studies (e.g., Chakravarti, Mitchell and Staelin 1979; 1981; Glazer, Steckel and Winer 1989) an experimental scenario (game) simulates a 'real world' situation that managers supposedly face everyday. The simulation is believed to capture the essential "reality" of an environment and one assumption is that subjects' behavior, following training, mimics that of experts in that problem domain.

There are several potential problems with these assumptions. First, the elements of expert knowledge in a domain are difficult to pin down (see Chi, Glaser and Farr 1989). First, like any model, a simulated environment typically cannot fully represent a problem domain. This creates situations where specific aspects of expert knowledge that

facilitate dealing with the unrepresented features become less useful and sometimes counterproductive. This may make a substantive expert less effective in a simulation. Second, even if a scenario mimics the structure of the real environment, one can rarely replicate a manager's inventory of "broken leg cues" (Blattberg and Hoch 1990). Such cues are most often acquired incidentally and may have strong contingent effects on decisions. For example, a manager's specific knowledge of a competitor's cash flows may predict weak retaliatory capability and justify an otherwise unusual action. Finally, using non-experts (e.g., MBA students) introduces problems in generalizing the findings beyond the immediate study domain. Such subjects may not possess the knowledge and skills set that substantive experts use to function in their own domains.

Each of these problems complicates the study of expert decisions in a laboratory environment. However, there are some mitigating factors that make laboratory experiments useful for understanding the basic features of managerial decision behavior. First, a model that represents the essential features of an environment allows calibration of the quality of decision behavior against a known model of "truth." This is useful for understanding the ways in which managers' representations of the simulated domain vary from the simulated reality. Second, although contingencies have important influences on outcomes in most real-life decision environments, our interest here focuses on managerial responses to structural features that characterize the major conceptual variations in competitive markets. A lab study permits us to develop these variations in relatively uncontaminated form. Finally, in this specific study, we test hypotheses that rest on basic category learning principles and are illustrating construct validation principles in a managerial decision making context. The simulated market has a relatively simple structure corresponding to well-known product competition principles and learning

occurs with systematically controlled feedback. The elicited judgments about the simulated domain then reflect the quality of learning generated. Support for the conjectures and successful illustration of the validation approach provides a basis for a more general application.

5.1 Experiment Overview

The managerial decision scenario developed for the study asked subjects to role play a "brand advertising manager" in a hypothetical coffee market. The market comprises of six products (two variants each of three brands, A, B and C). Subjects managed and made decisions for the two variants of brand A and decisions for the other products were preprogrammed. As background, subjects were given company and product history, data on product market shares and descriptions of product features, usage situations and the nature and extent of marketing activities. This common hypothetical scenario was designed to control for individual differences in knowledge about product competition in the coffee market. Although subjects brought their general knowledge and problem solving skills to the study, specific knowledge about the simulated market was acquired through the feedback and learning mechanisms operating in the scenario.

5.1.1 Subjects

A total of 74 subjects were recruited from two pools of advanced MBA students at the University of Arizona and at the University of Denver. The mean age of the subjects was 28 years and 33% were female. 47% and 21% of the subjects had undergraduate degrees in Business and Engineering, respectively. 63% had at least one year of prior industry experience and 53% held full-time positions. All the subjects had taken at least one course covering marketing management and competitive analysis issues and had a substantive understanding of the study domain.

Open-ended questions were used to assess subjects' perceptions of their extra-experimental knowledge of the coffee market. Consistent with the findings of past structural analyses of the coffee market (e.g., Fraser and Bradford 1983), subjects perceived that the available coffees could be differentiated on the basis of form (i.e., instant/regular, ground/beans, decaffeinated/regular etc.) or brand (i.e., Folgers, Maxwell House etc.). Existing coffee brands were also perceived as cultivating or occupying images that appealed to 'traditional values', convenience, gourmet quality or simply 'good feelings.'

Caffeine content, flavor, taste and price were perceived as the primary differentiating attributes. The subjects also perceived usage situation differences between coffees consumed early in the morning, anytime during the day versus after-dinner. Thus, subjects were generally consistent in their perceptions of currently available coffee relative to pretest subjects whose opinions influenced the design of the experimental scenario. These features and usage situation differences were also perceived as among the most successful and meaningful bases of differentiation among real brands in the marketplace. Thus, these pre-measured subject perceptions suggest that they would not have found the experimental scenario at variance with their general experience.

The participants were not compensated directly but had the opportunity to win one of four $250 prizes awarded on the basis of their performance in a market share forecasting task embedded in the decision making game. Subjects with the lowest mean absolute percentage error in their market share forecasts over all twelve decisions won the awards. Note that ability to predict market share changes as a function of advertising decisions was central to understanding the structure of the simulated market.

5.1.2 The Experimental Market

The simulated coffee market had three brands (A, B and C) each with two variants: A1 and A2; B1 and B2 and C1 and C2. The variants were positioned differently in a two dimensional space. One dimension of the space was a coffee attribute (richness) at three levels, low, high and very high. The second dimension was a usage situation variable at three levels (suitable for breakfast, between meals and after dinner). Although not explicitly described, the usage situation was signalled by a cluster of features (strength, caffeine content and country of origin) appropriate for the usage occasions described.

Figure 5.1 provides a schematic description of the market. Brand A, variant 1 (Product A1) was described as being of low richness and suitable for drinking between meals (a low strength, low caffeine-content, Central American blend). Product A2 was described as being of high richness and suitable as a breakfast coffee (high strength, high caffeine-content blend of African and Latin American coffee). Product B1 was described as being of high richness and suitable for drinking between meals (a low strength, low caffeine-content, Central American blend) whereas B2 was low in richness and an after dinner coffee (very low strength, very low caffeine-content, Indonesian blend). Product C1 was of high richness and was also an after-dinner coffee (a very low strength and caffeine-content Indonesian blend), whereas product C2 was of very high richness and suitable as a breakfast coffee (high strength and caffeine-content blend of African and Latin American coffees). The descriptions were developed using terminology drawn from the advertising literature of a local gourmet coffee store (See 'The Great Coffee Company Case', Appendix 5A).

If market structure perceptions were brand based, products A1 and A2 would be seen as substitutable and in competition with products B1 and

B2 and C1 and C2 respectively. From brand A's perspective, a binary structure would see the market as divided into an A partition (A1 and A2) and an "other" partition (B1, B2, C1 and C2). A finer analysis would further separate the B and C partitions. These competitive partitions would ignore the feature and usage situation distinctions.

If market structure perceptions were feature based, the products' level of richness would define the market partitions. Thus, the partitions would be A1 and B2 (low richness); A2 and C1 (high richness) and B1 and C2 (very high richness). Usage situation would provide a different market partition. These would be the after-dinner coffees (B2 and C1); the between meals coffees (A1 and B1) and the breakfast coffees (A2 and C2). The usage situation variable was suggested indirectly and operationalized as a feature cluster, so that the variable was needed to be abstracted beyond a single feature. This was done to allow examination of the effects of cuing by usage situation on market structure judgments.

As Figure 5.1 shows, specific product positions also created three logical partitions based on overall proximities (subject to intuitive scaling choices made in the diagram). These partitions included A1 and B2; A2 and C2; and B1 and C1. The actual market share variations in this simulated environment were based on these overall similarity partitions. Thus, the "true" competitive partitions were A1/B2, A2/C2 and B1/C1. For each submarket s, consisting of products i and j, the market share of each product was given by:

$$MS_i\ (s) \;=\; \exp\ \{AS_i(s)\}/[\{\exp\ AS_i(s)\} + \{\exp\ AS_j(s)\}]$$

where MS and AS represent market share and advertising share respectively in the partition of the two products.

Note that this simple within-partition market-share model preserves the aggregate constant ratio rule (ACRM) and retains the normal definition of a competitive partition (submarket) provided by Urban,

Johnson and Hauser (1984). It is also interesting that this pattern would only be revealed by analyzing the relationship between B1 and C1. A singleminded focus on A1 and B2 may suggest that competition is feature (richness) based. However, analysis of A2 or products C2 or B1 would reveal inconsistencies. Similarly, a focus on A2 and C2 alone may suggest a market partitioning based on usage situation. A focus on A1 or products B2 or C1 would reveal the limitations of this usage situation model. However, these limitations would be evident only if the subjects consistently processed the available data and decision experience.

In the initial scenario (Appendix 5A), subjects also received six periods of bimonthly data on productwise advertising expenditures, advertising share, sales and market share. The data were developed by applying some basic industry parameters (see Appendix 5B) to the submarket share response function shown earlier. However, the underlying data generating model was masked by reporting the sales, share, and expenditure data for the overall six product market (rather than by partition or submarket). These data on market activities and sales and share movements of the products in this initial period also reflected the market partitioning described earlier.

For the scenario to be accepted as a meaningful market depiction, it was necessary that subjects not be domain experts. Thus, high levels of extra-experimental expertise could have led subjects to override the manipulations embedded in the experimental scenario. Responses to the pre-measurement questionnaires administered to the subjects showed that this was unlikely to be a problem. Subjects were not particularly knowledgeable about the coffee market in their professional capacity and only moderately knowledgeable as consumers ($\bar{x}$ = 2.12 and 3.25, respectively; 1 = have little/no knowledge and 7 = have a lot of knowledge). Most subjects were also not heavy coffee drinkers ($\bar{x}$ = 1.73

cups/day) and did not frequently change the brand of coffee that they bought or consumed ($\bar{x}$ = 2.72; 1 = rarely and 7 = frequently). These data suggest that the subjects would be amenable to follow the scenario described and that extra-experimental knowledge levels were not so high as to override the manipulations that were intended in the study.

5.2 Experimental Conditions

A diagram showing the experimental conditions and study design is provided in Figure 5.2. Following orientation to the study, subjects went through a first stage of six sequential advertising decisions, D_1-D_6. Each episode involved market response outcome feedback. Following these six decisions, subjects provided market structure judgments (Time 1). After these judgments were elicited, they participated in a second stage of six more advertising decisions, D_7-D_{12}. Finally, they provided market structure judgments again. These were elicited using two different methods (Time 2A and Time 2B). The priming cues used during the elicitation of market structure judgments also varied systematically.

The study conditions were defined by the judgment elicitation method and priming cue used. For Group 1 (the baseline condition), the market structure judgments at Time 1 and Time 2A were elicited unaided (i.e., no formal cues were provided and no structured elicitation method was used). At Time 2B, these subjects' market structure judgments were elicited using either perceived competitive similarity or forced choice method. Groups 2 and 3 were given the brand image cue. For Group 2, the primary elicitation method (at Time 1 and Time 2A) was perceived competitive similarity, whereas for Group 3 it was forced choice. At Time 2B, the groups switched elicitation methods to forced choice and perceived similarity, respectively. Groups 4 and 5 were given the feature cue. The judgment elicitation methods for these two groups were patterned as for Groups 2 and 3 respectively. Groups 6 and 7 were given the usage

situation cue. The judgment elicitation methods for these two groups were also patterned as for Groups 2 and 3 respectively.

Thus, the design permits a comparative examination of the effects of the elicitation method (perceived similarity or forced choice) and the type of cuing (brand image/concept, attribute/benefit, or usage situation) on the subjects' market structure judgments. The comparisons of interest in this 2 x 3 factorial design are as follows. The judgments at Time 1 show the subjects' baseline understanding of the market at Time 1, (i.e., following exposure to the scenario and feedback from their first six advertising decisions). A comparison between the judgments at Time 1 and Time 2A show how the judgments changed based on the feedback from the second task decisions (holding fixed the method and cue). Finally, a comparison between the judgments at Time 2A and Time 2B permits a consistency check across elicitation methods, i.e., a convergent validity check. The judgments provided by the baseline group are analyzed separately.

The subjects were assigned randomly to the seven experimental groups. Groups 2-7 each had ten subjects (except Group 5, which had nine subjects). The baseline group had fourteen subjects, with eight and six subjects respectively in Groups 1A and 1B.

5.3 Procedure

Subjects were run individually as they played the game against a preprogrammed computer. Each subject was given "The Great Coffee Company" case as an exercise. On Day 1, following an introductory recruiting and orientation briefing, subjects were given the basic case (Appendix 5A). Subjects were given time overnight to study and assimilate the scenario and familiarize themselves with the case and the data provided. The scenario provided a relatively neutral and balanced introduction to all three dimensions of competition (overall similarity, feature-identity and

usage situation) to avoid biasing the subjects during training. Nevertheless, before reading the case, subjects completed a questionnaire (Appendix 5C) which measured their perceptions of the coffee market (from a consumer's perspective) so that potential biases could be accounted for.

The experiment itself was conducted in four phases (see Figure 5.2). In the first phase (Day 2), subjects made six advertising decisions with feedback following each decision (see Appendix 5D for sample of decision form and feedback output given to the subjects). This feedback included their own and competitive advertising and sales and share data in the six product "market" and was generated using the market simulation equations described above and in Appendix 5B. Following this set of decisions, in phase two, subjects provided judgments of competitive relationships using an elicitation method and a specific priming cue depending on which one of the seven study conditions to which they were randomly assigned. The cuing instructions and the questions used to elicit the judgments are shown in Appendix 5E.

On Day 3, subjects made another six advertising decisions with outcome feedback (phase three). In the fourth and final phase of the study, subjects again provided judgments of competitive relationships using the same elicitation method-cue combination as before. They then repeated the task using the other remaining judgment elicitation method (holding the cue constant). The baseline group performed the task first unaided as before and then with one of the two elicitation methods (without a cue provided). The specific elicitation method used was counterbalanced across subjects in the study conditions. After completing these judgment tasks, all subjects completed a task analysis questionnaire (Appendix 5F) and then were debriefed.

5.4 Summary

This chapter described the experiment used to empirically test the hypotheses developed in Chapter 4. Advanced MBA student subjects made advertising decisions that influenced market share in a simulated coffee market. The market embedded an actual structure (based on the products' overall similarity) on the basis of which market shares varied. Other possible dimensions of competition (feature based, brand based and usage situation based) also existed. Following six trial decisions that allowed the subjects to become familiar with the competition in this simulated market, their judgments were elicited using a specific combination of elicitation method and priming cue. Thereafter, they made six additional decisions and their market structure judgments were elicited again using specific combinations of elicitation methods and priming cues dictated by the study design. Task perceptions data were collected prior to debriefing subjects.

In the next chapter, we discuss the procedure of analyzing the data and present the results pertaining to the hypotheses mentioned in Chapter 3.

CHAPTER 6

ANALYSIS AND RESULTS

6.0 Overview

As described in Chapter 5, the true competitive partitions that determined shares in the simulated market were based on the overall similarity of the products. These partitions included products A1 and B2, A2 and C2, and B1 and C1. The scenario for the simulation game described potential partitions based on brand names, a primary feature (richness) as well as a feature cluster corresponding to usage situation. Subjects made decisions in this market and then provided market structure judgments, first at the end of six decisions (Time 1) and then twice at the end of twelve decisions (Time 2A and Time 2B). The experimental groups are identified by the combination of judgment elicitation method (unaided:UE, perceived competitive similarity:PS, or forced choice:FC) and priming cue (none:N, brand image:I, attribute:A, or usage situation:U) used. A summary table is given below for a quick reference:

Group	# of Subjects	Elicitation Method/Cue Time 1	Elicitation Method/Cue Time 2A	Time 2B
1A	8	UE/N	UE/N	PS/N
1B	6	UE/N	UE/N	FC/N
2	10	PS/I	PS/I	FC/I
3	10	FC/I	FC/I	PS/I
4	10	PS/A	PS/A	FC/A
5	9	FC/A	FC/A	PS/A
6	10	PS/U	PS/U	FC/U
7	10	FC/U	FC/U	PS/U

This chapter first provides an overview of the data collected and the analysis approaches used. We first report the basic task reactions data to establish the inherent quality of the experimental data. We then present the analyses of the learning patterns exhibited by the subjects in the study, the biases in judged market structure associated

with the different elicitation methods and the priming cues. Finally, we discuss the consistency of the judged market structure across elicitation methods and priming cues.

6.1 Task Reactions

Subjects were administered a task reactions questionnaire after they had completed the study. Subjects found the task quite involving ($\bar{x}$ = 5.04; 1 = not involving and 7 = very involving) and interesting ($\bar{x}$ = 4.92; 1 = uninteresting and 7 = very interesting). They rated their level of participation effort as quite high ($\bar{x}$ = 5.14; 1 = high effort and 7 = lot of effort). They also reported that they completed the market structure assessment tasks quite carefully ($\bar{x}$ = 5.21; 1 = not carefully and 7 = quite carefully). These data suggest that the subjects took the tasks quite seriously.

Turning to measures of general task comprehension and the perceived difficulty of responding to the market structure assessment questions, we see a somewhat different picture. First, subjects rated their understanding of the patterns of product competition to be moderate ($\bar{x}$ = 3.89; 1 = poor and 7 = strong). Second, the subjects also reported that their profitability and market share forecasting performances ($\bar{x}$ = 4.71 and 4.32, respectively; 1 = much worse and 7 = much better) were only moderately better relative to other participants. Low standard errors (0.13 and 0.17, respectively) associated with both means suggest that this was a fairly stable perception for all subjects.

Finally, subjects also reported some difficulty ($\bar{x}$ = 3.51; 1 = difficult and 7 = easy) in responding to the market structure elicitation questions at the end of six decisions. However, at the end of the twelve decisions, both elicitation approaches were rated as significantly easier ($\bar{x}$ = 4.27 and 4.45, respectively; 1 = difficult and 7 = easy) by comparison ($p<0.10$ for both cases). Although the subjects

reported improved task understanding with greater experience, the moderate comprehension levels reported need to be kept in mind when interpreting the results.

6.2 Data Overview

Market structure judgments were collected from subjects on three occasions (Time 1, Time 2A and Time 2B). These judgments were the basic dependent variables in the analyses conducted. As shown before in Appendix 5E, the perceived competitive similarity method was used to obtain a series of fifteen pairwise competitive intensity judgments from subjects. Ten point scales (1 = no direct competition, 10 = intense direct competition) were used. Based on the product descriptions and the market configuration (Figure 5.1), each such judgment indicated a specific type of market partitioning (see Appendix 6A). For example, perceived competition between A1 and A2, B1 and B2, and C1 and C2 indicates a judgment that the market is brand-structured. The summary table below shows the correspondences for a quick reference:

Judged Market Structure	Competitive Similarity Measure
Brand based	A1-A2; B1-B2; C1-C2
Feature based	A1-B2; A2-C1; B1-C2
Usage situation based	A1-B1; A2-C2; B2-C1
Overall similarity based	A1-B2; A2-C2; B1-C1
Feature/Overall Similarity based	A1-B2
Usage situation/overall similarity based	A2-C2
Non-diagnostic	A1-C1; A2-B2; A1-C2 B2-C2; A2-B1

Note that only if B1 and C1 are judged to be competitive, can one be certain that overall similarity is perceived as the basis of market structure. A2-C2 competition may indicate perceptions of a market structure based on either overall similarity or usage situation. Similarly, perceived competition between A1 and B2 may confound

perceptions of structures based either on overall similarity or features. Hence, these judgments were additional indicants of the degree of subjects' understanding of the true market structure in the simulation. Note also that a number of the comparisons were nondiagnostic, in that they could not be interpreted in the context of our scenario. These were also analyzed separately for signals of perceived market partitions that had not been anticipated.

The fifteen pairwise judgments provided by each subject were transformed to a set of z-scores. The appropriate z-scores (see Appendix 6A) were averaged to develop a measure of the extent to which a subject believed that the market was partitioned in a specific way. In other words, to develop a measure of a subject's perception of the "brand-structuredness" of the market, we averaged the z-transformed A1-A2, B1-B2, and C1-C2 scores (assuming that they are perceptually equivalent). This average z-score was the dependent measure of perceived "brand-structuredness" for the subject. Similar within-individual, average "z-score" measures were developed for each type of perceived structure.

In the forced choice method, subjects provided thirty judgments of the extent of switches from each product (if unavailable) to the other five products. These judgments may be viewed as measures of competitive substitutability that allow for asymmetries between products. The two judgments for a given product pair were averaged to obtain a pairwise similarity (substitutability) matrix similar to that for the perceived competitive similarity method. Average "z-score" measures for each type of perceived structure were developed from these data (see Appendix 6A).

When judgments were elicited unaided by a formal structure, subjects provided a written description of the perceived market in their own words. Three independent judges who were blind to the hypotheses

coded these data. The judges were three Assistant Professors of Marketing all of whom had significant experience in the theory and methods of market structure analysis. Each judge was given the scenario and a coding sheet (see Appendix 6B) describing the seven different types of structures above. An eighth category, "binary structure," covered cases where subjects indicated only one partition grouping two products on the basis of overall similarity away from the remaining four (i.e., partitions of the form of A1-B2 and A2-B1-C1-C2; A2-C2 and A1-B1-B2-C1; B1-C1 and A1-A2-B2-C2; and A1-A2 and B1-B2-C1-C2).

The judges then rated the extent to which a subject's qualitative market description fitted the eight structures above (1 = Not at all; 7 = Entirely). In a first pass, the inter-judge correlations between the ratings ranged between 0.30 and 0.36. Following this, the judges worked together to develop a consensus rating for each case. These ratings were transformed to z-score measures of market structure perceptions as before. The data were analyzed separately to test Hypothesis 1.

6.3 Analysis Procedures

The study design permits a comparative examination of the effects of the elicitation method (perceived competitive similarity or forced choice) and the type of cuing (brand image/concept, attribute/benefit or usage situation) on the subjects' market structure judgments. The basic comparisons in this 2 x 3 factorial design are as follows. The Time 1 judgments show the subjects' baseline understanding of the market structure following exposure to the scenario and feedback from the first six advertising decisions. A comparison between the judgments at Time 1 and Time 2A show how the judgments changed based on the feedback from the second six decisions (holding fixed the method and cue). Finally, a comparison between the judgments at Time 2A and Time 2B

permits a consistency check across elicitation methods, i.e., a test of convergent validity of the market structure judgments.

Data from the unaided (Group 1A and Group 1B) and structured (Groups 2-7) elicitation tasks were analyzed separately. The nondiagnostic measures were excluded from all analyses. The first set of analyses examined the z-transformed market structure ratings developed from the judges' coding of the unaided elicitation data. A repeated measures MANOVA was used to examine these data for (a) evidence of learning (Time 1 and Time 2A) and (b) concordance across elicitation methods (Time 2A and Time 2B). In follow-up analyses, each of these measures was analyzed separately using a repeated measures ANOVA. These univariate analyses permitted the examination of learning and concordance respectively for each measure individually.

The data from the structured elicitation tasks were analyzed similarly for learning. The six sets of z-transformed market structure ratings for Time 1 and Time 2A were together subjected to a repeated measures MANOVA as a function of the two-level method factor, the three-level priming cue factor and their two way interactions. Separate method and cue effects were also assessed within each time period. This analysis was followed by separate univariate analyses for each of the six measures as a function of the factors noted.

Finally, to test for concordance between market structure judgments elicited by different structured methods, the z-transformed market structure ratings for Time 2A and Time 2B were subjected to a similar repeated measures MANOVA as above. Note that the independent variables in this analysis were a two-level method-order factor (perceived competitive similarity followed by forced choice or vice-versa), a three-level cuing factor as before and their two way interactions. Following this, separate univariate analyses were also conducted for each of the six

measures.

We begin by discussing the results for the unaided elicitation data. For each substantive issue, learning and concordance, the MANOVA results are presented first followed by the separate univariate tests for each of the market structure measures. Discussion of the structured elicitation data follow. We first discuss evidence of learning in these measures using the MANOVA and the separate ANOVA analyses of the data for Time 1 and Time 2A. Finally we discuss the evidence for concordance based on the MANOVA and the separate univariate analyses for the data obtained at Time 2A and Time 2B. Finally, we address the formal study hypotheses that were stated in Chapter 4 using pertinent results from the analyses described.

6.4 The Unaided Elicitation Data

6.4.1 Evidence of Learning Effects

To test for learning from decision feedback, the z-transformed market structure ratings developed from the judges' coding of the unaided elicitation data were analyzed first (Group 1A and Group 1B together). In the first part of this analysis, the seven sets of z-scores (excluding the nondiagnostic case, but including the binary brand structuredness measure) collected at Time 1 and Time 2A (see Table 6.2) were together submitted to a multivariate, repeated measures analysis of variance (i.e., in a doubly multivariate analysis of variance format). As the MANOVA results in Table 6.1 show, the time factor effect was not significant ($F(7,7)=1.581$, $p>0.250$). This indicates that the unaided market structure judgments did not change as a function of decision feedback. However, the power of the test is low given the rather small sample size of 14.

The repeated measures analyses for each of the seven market structure measures are presented next. Table 6.2 provides a tabulation of the means of each measure for Time 1 and Time 2A. Tables 6.3-6.9 show the

ANOVA's comparing these means. The mean z-score for the usage situation based structure measure was higher in Time 2A following decision feedback than at Time 1 (0.544 versus 0.080). However, due to the low power of the test this difference did not reach statistical significance. However, the means suggest that these unaided judgments may have given greater weight to a usage situation based structure following decision feedback. A significant decline ($F(1,13)=7.82$, $p<0.015$) from Time 1 to Time 2A in the mean z-scores for the usage situation/overall similarity measure (1.036 versus 0.505) suggests that outcome feedback may have misled the subjects. No other differences were significant. Overall, the data do not show evidence of learning from decision feedback.

6.4.2 Concordance across Elicitation Methods

In the second part of this analysis, six sets of z-scores (excluding the nondiagnostic and the binary brand cases) collected at Time 2A and Time 2B were submitted to a doubly multivariate analysis of variance. The analysis was conducted for subjects in Group 1A and Group 1B together to examine possible differences between unaided elicitation and structured elicitation (perceived competitive similarity or forced choice). (The binary structure measure was dropped since it was not developed for the structured elicitation cases). As the MANOVA results in Table 6.10 show, the structured elicitation methods (Time 2B) did not differ significantly from the unaided elicitation judgments at Time 2A ($F(6,8)=0.839$, $p>0.550$).

Table 6.11 presents the means of each measure for each time period. Tables 6.12-6.17 show the ANOVA's comparing these means between Time 2A (unaided elicitation) and Time 2B (structured elicitation based on perceived competitive similarity or forced choice methods). None of these individual measures showed differences between the unaided elicitation and the structured elicitation judgments. Although the tests had low power,

there was no evidence that the structured and the unaided elicitation produced discordant judgments.

Table 6.18 provides means for the six comparable market structure measures at Time 2A and Time 2B (separated by Group 1A and Group 1B). Tables 6.19-6.24 show the ANOVA's comparing these means for each measure. Although they were in the unaided elicitation condition at Time 2A, subjects in Group 1A and Group 1B were given different structured elicitation methods at Time 2B. Specifically, Group 1A received the perceived competitive similarity (PC) method and Group 1B received the forced choice (FC) method. Thus Group 1A and Group 1B represented the two levels of a method order factor (level 1 = UE/PC, level 2 = UE/FC).

The between-subjects method order factor was significant only for the brand based structure measure ($F(1,12)=16.13$, $p<0.002$). The mean z-scores for the brand based structure were higher at Time 2B relative to that with unaided elicitation at Time 2A (-0.504 versus -0.894 for the PS group and 0.369 versus 0.250 for the FC group). The increase was somewhat greater for the PS versus the FC method. Finally, no individual market structure measure showed significant differences between Time 2A and Time 2B (Tables 6.19-6.24). Subject to statistical power limitations, these data provided no evidence of discordance between the unaided elicitation and the structured elicitation judgments (using either the PS or the FC methods).

It is instructive to compare the relative weights assigned by the subjects in this condition to the different market structure measures. This is reflected in the means tabulated in Tables 6.2 and 6.18. At Time 1, most weight was placed on the usage situation/overall similarity measure (1.036) followed by the feature/overall similarity measure (0.478). Thus, these judgments appear to confound the true overall similarity based structure with feature and usage situation based

partitions. Note however, that the mean z-scores for the pure usage situation and feature structure measures are low (0.080 and -0.438, respectively). This suggests that the subjects recognized the role of overall similarity in partitioning this market, even though they could not pinpoint its contribution.

However, the results also suggest that outcome feedback may have confused the subjects. Relative to Time 1A, they seemed to discount the role of overall similarity at Time 2A and shift their judgments in favor of the usage situation based structure. The structured elicitation methods had different effects at Time 2B. The perceived competitive similarity measure produced judgments focusing on usage situation. The forced choice method had ambiguous effects.

6.5 The Structured Elicitation Data

6.5.1 Evidence of Learning Effects

To test for differential learning effects of decision feedback on subjects in the structured elicitation conditions, the z-transformed market structure ratings developed from the perceived competitive similarity and forced choice judgments were analyzed first. The six sets of z-scores (excluding the nondiagnostic case) collected at Time 1 and Time 2A from subjects in Groups 2-7 were together submitted to a doubly multivariate analysis of variance as a function of the between groups elicitation method and priming cue manipulation, within subject time manipulation, and relevant interaction terms. As the MANOVA results in Table 6.25 show, there were no significant interactions of method x cue ($F(12,96)=0.684$, $p>0.75$); method x time ($F(6,48)=1.391$, $p>0.20$), or cue x time ($F(12,96)=1.019$; $p>0.40$). The main effect of cuing was also not significant ($F(12,96)=0.469$, $p>0.90$).

The elicitation method however has a significant effect ($F(6,48)=3.524$, $p<0.006$). Specifically, when forced choice was used as an

elicitation method, subjects scored higher for most of the dependent measures (structure measures) than when perceived competitive similarity was used as an elicitation method (Table 6.26). The data also show a significant effect of time ($F(6,48)=2.803$, $p<0.020$) denoting that these structured judgments changed as a function of decision feedback. The means associated with the cuing manipulation are shown in Table 6.27. As reported above, these means were not significantly different from each other.

6.5.1.1 Learning Effects on Individual Measures

Repeated measures analyses of variance were also conducted on the six individual z-score measures of market structure collected at Time 1 and Time 2A as a function of the elicitation method, priming cue manipulations, time and their interactions. These analyses indicate the effects of decision outcome feedback as a function of the manipulations.

Tables 6.28 and 6.29 show the analysis of variance results and the means for the brand based structure measure. The mean z-score for this measure dropped significantly from 0.116 to -0.063, ($F(1,53)=3.89$, $p<0.054$) from Time 1 to Time 2A. This suggests that outcome feedback may have enabled subjects to discern to a greater extent that this was not the correct underlying market partitioning. A significant method by time interaction was also present ($F(1,53)=4.62$, $p<0.036$). For the perceived competitive similarity (PS) method, the mean z-score dropped from 0.195 to -0.175 whereas for the forced choice (FC) method the mean was unchanged (0.034 versus 0.053). Thus, there was evidence of learning for subjects who gave PS judgments, but not for subjects who gave FC judgments. No other effects were significant.

Tables 6.30 and 6.31 indicate the ANOVA results and the means for the feature based structure measure. There is a significant method by cue by time interaction on this measure ($F(2,53)=3.27$, $p<0.046$). Outcome

feedback either left subjects unaffected or taught them to discount a feature based market partitioning to a greater extent, except when the forced choice method is used in conjunction with a feature cue (mean z-score increased from -0.100 at Time 1 to 0.232 at Time 2A). No other main effects or interactions were significant.

The ANOVA results and the means for the usage situation based structure measure are shown in Tables 6.32 and 6.33. None of the main effects or interactions were significant. By contrast, the analysis for the overall similarity based structure measure (Tables 6.34 and 6.35) showed that the main effect of the elicitation method was significant ($F(1,53)=10.62$, $p<0.002$). The scores for the forced choice method (0.879 and 0.596 at Time 1 and Time 2A, respectively) were consistently higher than that for the perceived competitive similarity method (0.217 and 0.033 at Time 1 and Time 2A, respectively). Thus the forced choice method may have been more effective in helping subjects identify the actual structure (overall similarity based) of the simulated market. There was also a significant effect of time ($F(1,53)=7.83$, $p<0.007$). Apparently, even though the subjects initially understood the role of overall similarity in the market, the decision outcome feedback may have misled them as they lowered these scores to 0.310 at Time 2A from 0.542 at Time 1.

Elicitation method ($F(1,53)=8.01$, $p<0.007$) was a significant influence on the feature/overall similarity based structure measure (Tables 6.40 and 6.41). For the forced choice method, subjects thought the market structure was more feature/overall similarity based than in the case of perceived competitive similarity method (mean z-scores were 0.750 and 0.573 versus -0.066 and -0.125, for Time 1 and Time 2A, respectively). This suggests that the forced choice method may have helped subjects articulate a better understanding of the actual structure of the market. The only other significant effect was the cue by time interaction

($F(2,53)=2.44$, $p<0.097$). Decision feedback over time did not influence this measure significantly.

Finally, for the usage situation/overall similarity based structure measure, elicitation method also had a significant effect ($F(1,53)=10.66$, $p<0.002$). See Tables 6.38 and 6.39 for the ANOVA results and the means. The forced choice method again helped subjects to better articulate their understanding of the actual competitive structure of the market relative to the perceived competitive similarity method. The mean z-scores for forced choice method were 1.638 and 1.286 while for perceptual method they were 0.715 and 0.469, for Time 1 and Time 2A, respectively. These scores also changed over time ($F(1,53)=4.38$, $p<0.041$), but the outcome feedback seemed to have misled the subjects as the mean z-scores went down (from 1.169 at Time 1 to 0.871 at Time 2A).

In summary, the findings suggest that subjects did recognize the role of overall similarity in partitioning this market. The z-scores for structures based on overall similarity, feature/overall similarity and usage situation/overall similarity were higher than those for other structures (see Table 6.26). Furthermore, decision outcome feedback had significant effect for the measures of structures based on brand similarity, overall similarity, and usage situation/overall similarity. The mean rating for brand similarity based structure dropped over time suggesting that subjects came to realize that it was not the correct partitioning. However, outcome feedback seemed to confuse subjects in some respects as the weight on the overall similarity related measures dropped from their initial higher values. Perhaps the usage situation based structure was more concrete in subjects' extra-experimental experience, as although all other structure measures dropped over time, subjects placed more weight on the measures indicating the usage situation based structure at Time 2A.

The results also suggest that relative to the perceived competitive similarity method, the forced choice method helped subjects articulate better that the market was structured by overall similarity. For both Time 1 and Time 2A, mean z-scores for structures based on overall similarity, feature/overall similarity, and usage situation/overall similarity were much higher when the forced choice method was used. Finally, as the interactions showed, on occasion the effects varied in magnitude and direction depending on the specific method-cue combination.

6.5.2 Concordance across Elicitation Methods

In order to gauge concordance across elcicitation methods, the six sets of z-scores (excluding the nondiagnostic case) collected from the subjects in Groups 2-7 at Time 2A and Time 2B were submitted together to a doubly multivariate analysis of variance. The independent variables in this analysis were the elicitation method order (PS-FC or FC-PS), the priming cue manipulation, time and the relevant interaction terms. The MANOVA results in Table 6.40 show that neither the method nor the type of cue had significant effects ($F(6,48)=1.80$, $p>0.10$ and $F(12,96)=0.691$, $p>0.75$, respectively). Moreover, the two vectors of judgments at Time 2A and Time 2B did not differ ($F(6,48)=1.188$, $p>0.30$). None of the interactions were significant. Table 6.41 and Table 6.42 present the means of the various structure measures by levels of the method order and cue manipulations respectively. Although the comparisons show no evidence of discordance between Time 2A and Time 2B, this failure to reject the null hypothesis is not very compelling given the small sample sizes for the individual contrasts.

6.5.2.1 Concordance Effects on Individual Measures

Following the MANOVA tests, repeated measures ANOVA's were also conducted for the six separate market structure measures. In each case, the method order (PS-FC versus FC-PS), the priming cue, time, and

their relevant interactions were used as independent variables. These results are discussed next.

Table 6.43 and Table 6.44 show the ANOVA results and the means for the brand based structure measure. There was a marginally significant effect of the priming cue ($F(1,53)=2.57$, $p<0.086$), Specifically, the usage situation cue had a significant greater effect relative to the other cues. This finding is somewhat counterintuitive in that a brand based structure was elicited to a greater extent when the usage situation cue was primed. Perhaps subjects inferred that specific brands in this market catered to specific usage situations. In any case, this perception was at variance with the true overall similarity based partitioning of the market.

The ANOVA results and the means for the feature based structure measure are shown in Tables 6.45 and 6.46. A significant difference was found between the two method order conditions (PS/FC versus FC/PS) ($F(1,53)=5.30$, $p<0.025$). Specifically, subjects in PS/FC condition judged the market to be less feature based at Time 2B than at Time 2A (-0.281 versus -0.164). The judgments of subjects in FC/PS group remained unchanged (-0.020 and -0.049). There was also a significant method order by cue interaction ($F(2,53)=3.95$, $p<0.025$). It is interesting to note that both at Time 2A and Time 2B, feature based structures were judged more likely when the attribute cue was used for subjects in the FC-PS condition.

The usage situation based structure measure did not reveal any significant main effect or interaction (Tables 6.47 and 6.48). The only significant effect found for the overall similarity based structure measure (Tables 6.49 and 6.50) was that of method order ($F(1,53)=5.41$, $p<0.024$). Both at Time 2A and Time 2B, subjects in the FC-PS condition provided high ratings for the overall similarity based structure measure.

This suggests that the subjects in this condition were able to articulate fairly veridical judgments of market structure regardless of the elicitation method used or the cue primed. However, subjects in the PS-FC condition did not exhibit this level of understanding of the market structure. The absence of significant time or method order x time interactions suggest that the judgments were concordant across time period (and changed method).

The results for the feature/overall similarity based structure measure (Tables 6.51 and 6.52) showed very similar patterns. This measure, which incorporates the veridical overall similarity based structure, was higher for subjects in the FC-PS condition both for Time 2A and Time 2B. The judgments were generally concordant across time period and changed method as indicated by the nonsignificance of the main and interaction effects involving time.

Finally, the ANOVA results and the means for the usage situation/overall similarity based structure measure are reported in Tables 6.53 and 6.54). Method order was again found significant ($F(1,53)=3.86$, $p<0.055$). The FC-PS subjects also had higher ratings on this measure suggesting that they were able to grasp in part the underlying overall similarity based structure of the market. The usage situation/overall similarity based structure measure was significantly influenced by time ($F(1,53)=4.10$, $p<0.048$). In other words, responses at Time 2A and Time 2B varied by elicitation method. But since half of the responses at Time 2A were elicited by the perceived competitive similarity method and the other half by the forced choice method (vice versa at Time 2B), we analyzed each of the method order groups (1 and 2) separately to test for concordance between the elicitation methods (see Table 6.44 for means).

Subjects in the method order 2 condition (forced choice first and perceived competitive similarity second) showed no significant differences between their mean z-scores at Time 2A and Time 2B ($F(6,23)=0.920$, $p<0.498$) (Table 6.55). These findings suggest that subjects in the FC-PS condition showed concordant judgments over time and across changed methods. By contrast, subjects in the method order 1 condition (perceived competitive similarity first and forced choice second) reported significantly different perceptions of the market structure ($F(6,24)=3.305$, $p<0.016$). Further analyses showed that the significant changes occurred in the mean z-scores for brand based structure (PS:-0.175, FC:-0.021, $t=-1.96$, $p<0.059$), feature based structure (PS:-0.164, FC:-0.281, $t=1.78$, $p<0.085$), and usage situation/overall similarity based structure (PS:0.469, FC:0.921, $t=-2.61$, $p<0.014$). This signifies a lack of concordance over time and across elicitation methods for these (PS/FC) subjects.

These findings suggest that the forced choice method may be more robust than the perceived competitive similarity method. Thus, subjects who received the forced choice method first, generally maintained their ratings when their judgments were later elicited by the perceived competitive similarity method. By contrast, subjects whose judgments were elicited by the perceived competitive similarity method first, reported changed perceptions of the competitive structure when forced choice method was later used to elicit their judgments. Specifically, consistent with the findings of the learning analyses, higher scores for overall similarity based structure measures were obtained for the forced choice method relative to the perceived competitive similarity method at Time 2A (see Table 6.10). This relatively veridical perception of market structure was maintained even when the perceived competitive similarity approach was used at Time 2B.

In summary, the forced choice method appeared to enable subjects to better articulate their understanding of the underlying market structure as indicated by the consistently higher z-scores for measures indicating structures based on overall-similarity, feature/overall similarity, and usage situation/overall similarity. By contrast, the perceived competitive similarity method was less successful in eliciting perceptions of structure that were veridical. Moreover, subjects had given judgments using the forced choice method provided concordant judgments even when a different (PS) method was used subsequently. By contrast, the judgments were more susceptible to change when first elicited by the perceived competitive similarity method and then by the forced choice method. Thus, it appears that the forced choice method elicited both more veridical and more stable judgments of market structure.

6.6 Hypothesis Tests

Having completed the general discussion of the analyses conducted with the data on market structure judgments, we now turn to testing the formal hypotheses offered in Chapter 4. We discuss each hypothesis in sequence.

6.6.1 Hypothesis 1

Hypothesis 1 stated that competitive judgments unaided by a formal elicitation method and without a priming cue are more likely to yield a binary market structure with partitions defined on overall similarity using the manager's products as referents. Operationally, this implies that we would expect specific binary structures such as A1A2/B1B2C1C2, or A1B2/A2B1C1C2, or A2C2/A1B1B2C1, or B1C1/A1A2B2C2 where the partitions are defined on overall similarity with the manager's products A1 and/or A2 serving as referents.

The test was conducted by examining the ratings assigned by the three judges to the unaided elicitation judgments. In particular we looked at the mean z-score for the measures of the binary structures indicated above. As Table 6.2 shows, the mean z-scores for this structure measure was low on both at Time 1 and Time 2A (-0.837 and -0.828 respectively) relative to the scores for other structure measures. These data do not support Hypothesis 1. Interestingly, the unaided elicitation judgments placed the greatest weight on the usage situation/overall similarity structure measure (means were 1.036 and 0.505 for Time 1 and Time 2A, respectively).

6.6.2 Hypothesis 2

Hypothesis 2 stated that perceived competitive similarity judgments are likely to be based upon feature similarities between the manager's products and other products. They are more likely to yield structures that blend general feature similarity with overall similarity with the manager's product. Operationally, this implies that the measure of a structure that confounds feature and overall similarity is likely to be higher for the perceived competitive similarity method relative to the forced choice method.

The test was conducted by examining the mean z-scores for the structure measure confounding feature and overall similarity both at Time 1 and Time 2A. As Table 6.26 shows, for the perceived competitive similarity method, the mean z-scores were -0.066 for Time 1 and -0.125 for Time 2A. In contrast, these scores were 0.750 and 0.573 for the forced choice method. Table 6.36 shows that the main effect of elicitation method was significant at $p<0.007$. However, the direction of the difference was opposite to that hypothesized. Neither the time main effect nor the method x time interaction was significant.

6.6.3 Hypothesis 3

Hypothesis 3 stated that forced choice judgments are based on feature/benefit similarities between the deleted product and other options and are more likely to yield feature based structures. Operationally, this implies that the measure of a feature based structure will be higher for the forced choice method relative to the perceived competitive similarity method.

The hypothesis was tested by examining the mean z-scores for the feature based structure measure both at Time 1 and Time 2A. As Table 6.26 shows, the measure had low mean z-scores at Time 1 for both the perceived competitive similarity and forced choice methods (-0.144 and -0.060). The means were not significantly different ($F(1,53)=0.62$, $p>0.40$). The mean z-scores for Time 2A showed an identical pattern. The two methods both produced low mean z-scores for the feature based structure measure (-0.164 and -0.020) and these were not significantly different either ($F(1,53)=2.064$, $p>0.15$). Thus there was no support for Hypothesis 3.

Given these counterintuitive pattern of results for H2 and H3, we also examined the measures of overall similarity structure as well as the measure confounding usage situation and overall similarity. For each measure and for each time period, the forced choice method had a higher mean z-score than the perceived competitive similarity method. Thus, the respective means for the overall similarity measure in Time 1 were 0.879 and 0.217 ($F(1,53)=14.019$, $p<0.001$). In Time 2A, they were 0.596 and 0.033 ($F(1,53)=5.845$, $p<0.019$). Also, the respective mean z-scores for the usage situation/overall similarity measures in Time 1 were 1.638 and 0.715 ($F(1,53)=10.723$, $p<0.002$). In Time 2, they were 1.286 and 0.469 ($F(1,53)=6.244$, $p<0.016$). Thus, even though the results were unexpected, they are consistent in that the forced choice elicitation method

consistently produces judgements favoring an overall similarity structure. In the context of the underlying market partitioning mechanism (overall similarity based) in this study, the forced choice method produced more veridical judgments of market structure than the perceived competitive similarity measure.

6.6.4. Hypothesis 4

Hypothesis 4 predicted that priming specific criteria during elicitation of judgments of competitive relationships would influence derived market structures. Specifically, we expected that brand image/concept priming is more likely to affect judgments toward brand based structures, attribute/benefit priming toward feature based structures and usage situation priming toward feature based structures (that pertain to usage situation).

Operationally this implies that the brand based structure measure would have the highest mean z-score when the brand cue is primed relative to when other cues are primed. Similarly, the feature based structure measure would have its highest mean z-score when an attribute cue is primed relative to when other cues are primed. Finally, it was expected that the usage situation based structure measure would have its highest mean z-score when the usage situation cue is provided relative to when other cues are provided.

Table 6.27 summarizes the mean z-scores for each structure measure examined as a function of the three cues. As Table 6.28 shows, there was no significant main effect for type of cue on the brand based structure measure. Interactions involving the cue factor were also not significant. Thus, the first part of H4 does not receive support. Also, as shown in Table 6.30, there was no significant main effect for type of cue on the feature based structure measure. Thus, this part of the hypothesis is also not supported. Finally, as Tables 6.32 and 6.33 show,

the mean z-scores for the usage situation based structure generally conformed to the hypothesized pattern. However, the cuing main effect was not significant ($F(2,53)=0.25$, $p>0.75$). Thus, these analyses shown do not support the cuing biases that were predicted by Hypothesis 4.

6.6.5 Hypothesis 5

As discussed in the above tests of Hypothesis 4, none of the predicted priming cue effects on market structure judgments were significant. Also, none of the measures showed a significant method x cue interaction effect. Hence, Hypothesis 5 which predicted a stronger cuing effect for the perceived competitive similarity method relative to the forced choice method also received no support.

6.6.6 Hypothesis 6

Hypothesis 6 predicted that the degree to which the forced choice method will yield feature based market structures will be attenuated by brand-concept/image oriented priming and will be accentuated by usage situation and feature oriented priming. Operationally, this implies that for the forced choice method, the feature based structure mean z-scores will be lower for brand image priming than that of either feature or usage situation oriented priming.

As Table 6.30 implies, there was a significant triple interaction involving method, cue and time on the feature based structure measure. For the forced choice method, the mean z-scores in the various cue conditions (Table 6.31) were not significantly different at Time 1 ($F(2,62)=1.06$, $p>0.35$). For Time 2A, the mean z-scores were ordered partially as predicted with that for attribute based priming (0.232) being the highest. However, contrary to the hypothesis, the usage situation mean (-0.328) was the lowest. Thus, support for Hypothesis 6 was mixed.

6.7 Summary

This chapter discussed the analyses conducted for the data collected in the experiment described in Chapter 5. Subjects' ratings were first standardized and these z-scores were then transformed into measures for their perception of several possible submarkets. The first set of analyses examined the z-transformed market structure ratings developed from the judges' coding of the unaided elicitation data for evidence of learning (Time 1 and Time 2A). A MANOVA analysis was first conducted for the set of measures as a whole and then individual repeated measures ANOVA's were conducted for each measure. The two-level method factor, the three-level priming cue factor and their two way interactions were used as predictors.

In the second set of analyses, the z-transformed market structure ratings for Time 2A and Time 2B (unaided elicitation data) were examined for concordance. As before, the analysis first examined the set of measures as a whole. This was followed by repeated measure analyses of variance for each measure individually as a function of a two-level method-order factor (perceived competitive similarity/forced choice and forced choice/perceived competitive similarity, respectively), a three-level cuing factor, and their two way interactions. Additional t-tests and contrasts were performed to examine specific differences between mean z-scores of the various market structure measures for different combinations of cue and method.

Examination of decision feedback effects (i.e., comparing the judgments at Time 1 and Time 2A using MANOVA analyses of all market structure measures together showed that the unaided elicitation judgments did not change as a function of decision feedback. The repeated measures analyses of the individual measures also showed little or no evidence of learning. Taken together, the findings suggest that the subjects did

recognize the role of overall similarity in partitioning this market, even if they could not pinpoint it. It appears that decision feedback did not help the subjects to improve their understanding of the market partitioning role of overall similarity. Rather, the decision feedback appears to have confused them to the extent that they placed greater weight on usage situation as the basis for market partitioning.

No evidence of discordance was found between the unaided judgments and the subsequent judgments elicited by alternative structured methods (i.e., comparing judgments at Time 2A and Time 2B). Both the MANOVA analysis of all the market structure measures together as well as the repeated measures analyses conducted with each measure individually, showed no main effects or interactions involving time. However, this evidence is not compelling in view of the low statistical power of the analysis.

The MANOVA analysis of the structured elicitation judgments at Time 1 and Time 2A showed that both decision feedback and elicitation method had significant effects. By contrast, the priming cue had no significant effects. The repeated measures analyses of the individual market structure measures showed several important effects. Subjects seemed to have recognized the role of overall similarity in partitioning the simulated market. The mean z-scores for the structure measures based on overall similarity, feature/overall similarity as well as usage situation/overall similarity were higher than those for other measures. The subjects were also able to discern that brand based and feature based structures were not appropriate characterizations of this market.

However, it also appears that outcome feedback confused subjects in some respects as the weight placed on the overall similarity measure dropped at Time 2A from its relatively high value at Time 1. Correspondingly greater emphasis was placed on the usage situation based

measure. Perhaps the usage situation based measure was more concrete in subjects' extra-experimental experience and influenced their judgments if they had difficulty interpreting the decision outcome feedback that they received. The findings also showed that relative to the perceived competitive similarity method, the forced choice method helps subjects articulate better that the market was partitioned on the basis of overall similarity. This suggests that the forced choice method is either better at eliciting veridical judgments or alternatively, induces a bias toward judgments implying an overall similarity based partitioning. The present study did not permit a distinction between these two interpretations.

Finally, the analyses of the structured elicitation judgments at Time 2A and Time 2B reinforce the notion that the forced choice method permits subjects to articulate better the perceived role of overall similarity in partitioning the market. By contrast, the perceived competitive similarity method was less successful in eliciting veridical perceptions of market structure in this study. Moreover, subjects who gave forced choice judgments at Time 2A provided concordant judgments even when given the perceived competitive similarity method at Time 2B. In contrast, subjects' judgments were much more susceptible to change when first elicited by the perceived competitive similarity method and then by the forced choice method. Thus, it appears that the forced choice judgments yielded more veridical and more stable perceptions of market structure.

The general absence of priming cue effects on judgments was surprising. The formal hypotheses offered in Chapter 4 also did not receive much support. Nevertheless, the findings raise several interesting issues about how managerial judgments may be used in market structure analysis. Structured elicitation methods influence such judgments and may have differential ability to elicit veridical judgments

in a given context. Moreover, managers' judgments exhibit different levels of stability depending on the elicitation method used.

In the next chapter, we discuss the study limitations and also explain and interpret the study results. We present the implications of the findings for the use of managerial judgments in market structure analysis and suggest directions for future research.

CHAPTER 7

CONCLUSION

7.0 Overview

The goal of this dissertation was to explore managerial abilities to judgmentally assess the competitive relationships in their product markets. We explored the possibility of improving such judgments by eliciting them within the framework of formal competitive market structure analysis approaches. We also explored how such market structure judgments may be influenced by priming cues available at the time of such judgments. Formal hypotheses regarding such effects were developed in Chapter 4.

The preceding chapter presented the findings of the empirical study designed to test these hypotheses. We explained the nature of the data collected, how they were transformed for analysis, the specific analyses conducted and the findings of each. In this chapter, we recapitulate the specific findings and develop their implications for the research issues addressed. Finally, we temper these implications with a description of the study limitations and suggest direction for future research.

7.1 Study Findings

Two types of market structure judgments were examined in the study. The first type involved judgments that were not formally structured (i.e., unaided elicitation). The second type, referred to as the structured elicitation judgments, were based on either the perceived competitive similarity method or the forced choice method. For each type of judgment, we examined the extent to which decision outcome feedback influenced perceptions. This examination was based on a comparison of the judgments elicited at Time 1 and Time 2A of the study. Also, we examined the extent to which both unaided and structured elicitation judgments were concordant across different elicitation methods. These analyses compared

the judgments at Time 2A and Time 2B.

Comparing the unaided elicitation judgments at Time 1 and Time 2A showed that the unaided elicitation judgments did not change as a function of decision feedback. There was no significant effect of time in these analyses. The repeated measures analyses of the individual market structure measures also provided supporting results. No evidence of discordance was found between the unaided judgments and the subsequent judgments elicited by alternative structured methods (i.e., comparing judgments at Time 2A and Time 2B). Both the MANOVA analysis of all the market structure measures together as well as the repeated measures analyses conducted with each measure individually, showed no main effects or interactions involving time. However, this evidence is not compelling in view of the low statistical power of the analysis.

The MANOVA analysis of the structured elicitation judgments at Time 1 and Time 2A showed significant effects for both decision feedback and elicitation method. The priming cue manipulation was not significant. The repeated measures analyses of the individual market structure measures showed several important effects. Initially, measures that incorporated overall similarity based structures received high ratings, suggesting that subjects may have recognized the role of overall similarity in market partitioning. The subjects seemed able to discern that brand based and feature based structures were not appropriate characterization of this market. However, outcome feedback may have confused subjects in some respects as the weight placed on the overall similarity measure dropped at Time 2A from its relatively high value at Time 1.

Correspondingly greater emphasis was placed on the usage situation based measure. Perhaps usage situation based differences were more concrete in subjects' extra-experimental experience and influenced their judgments if they had difficulty interpreting the decision outcome

feedback that they received. Together, the findings suggest that the subjects recognized the role of overall similarity in partitioning this market, even if they could not pinpoint it. It appears that decision feedback did not help the subjects to improve their understanding of the market partitioning role of overall similarity. Rather, the feedback appears to have confused them to the extent that they placed greater weight on usage situation as the basis for market partitioning.

In comparing judgments between Time 1 and Time 2A, the significant method effect findings also show that relative to the perceived competitive similarity method, the forced choice method helped subjects articulate better that the market was partitioned on the basis of overall similarity. In other words, the measures involving overall similarity (pure overall similarity, feature/overall similarity, and usage situation/overall similarity) received relatively higher scores when judgments were elicited using the forced choice method. This suggests that the forced choice method was either better at eliciting veridical judgments or alternatively, induced a bias toward judgments implying an overall similarity based partitioning. The present study did not permit a distinction between these two interpretations.

The analyses of the structured elicitation judgments at Time 2A and Time 2B supported the above notion that the forced choice method allowed subjects to articulate better the perceived role of overall similarity in partitioning the market. The data show that in this study the perceived competitive similarity method was not as successful in eliciting veridical perceptions of market structure. Moreover, these analyses also showed that the subjects who gave forced choice judgments at Time 2A provided concordant judgments even when given the perceived competitive similarity method at Time 2B. In contrast, subjects' judgments were much more susceptible to change when first elicited by the

perceived competitive similarity method and then by the forced choice method. Thus, the forced choice judgments seem to have produced both more veridical and more stable perceptions of market structure.

The formal hypotheses in Chapter 4 received little support. Although the unaided elicitation method was expected to encourage managers to report a binary competitive structure, there was no support for this hypothesis (Hypothesis 1). Subjects' rating for hypothesized binary structure was the lowest, while the rating for the usage situation/overall similarity based structure was highest (similar to structured elicitation methods). Thus, even with the unstructured elicitation approaches, the judgments appeared to be sensitive to usage situation/overall similarity criteria. Whether this stemmed from a preference for analytical processing of the market information or feedback or instead, simply from extra-experimental experience, remains unclear.

Hypotheses 2 and 3 predicted the nature of influence of the elicitation methods. Specifically, perceived competitive similarity judgments were expected more likely to yield structures blending general feature similarity with overall similarity with the manager's product, whereas forced choice judgments were expected to yield feature based structures. Neither hypotheses was supported.

The priming of cues during the judgment elicitation process (Hypothesis 4) was expected to have impact on the judgments. Brand image priming, attribute priming and usage situation priming were believed more likely to generate brand based, feature based and usage situation structures, respectively. However, the results did not support these hypotheses. Also the effect of priming cues were not different for the perceived competitive similarity method versus the forced choice method (Hypothesis 5).

According to Hypothesis 6, the degree to which forced choice methods yield feature based market structures should have been attenuated by brand image oriented priming and accentuated by usage situation and attribute oriented priming. For the responses elicited after six decisions, there were no differences in the feature based market structure scores due to the priming cues. But for the responses elicited after twelve decisions, as predicted, these scores were highest for attribute priming relative to the other types of priming cues. However, contrary to the hypothesis, usage situation priming produced one of the lowest scores for the feature based market structure measure.

7.2 Implications

This dissertation has argued that an implicit or explicit market definition or market structure analysis underlies most competitive strategy decisions. The common approach to competitive market structure analysis is to hypothesize competitive relationships among the brands in a market and then to test them on consumer level data. The analytical models developed for this purpose organize the data and help reveal the competitive relationships for managerial interpretation.

Although consumer level data provide a critical basis for developing and testing market structure, the incorporation of managerial judgments into such analyses may provide additional insights that are either not contained in the data or are masked by other data quality problems. Consequently, we argued that using managerial judgments would be useful for improving the potential quality of such analyses and the decisions that rest on them.

We outlined an approach to the formal elicitation of managerial judgments as an input to available analytical models for market structure analysis. Specifically, we showed how managerial judgments of perceived competitive similarity between products and forced choice

probabilities could be elicited within the framework of corresponding models that had been developed for CMSA tasks. We provided hypotheses regarding how these methods and associated priming cues (brand image, features and usage situations) might influence judgments of competitive relationships among the products. An experiment was designed to provide a test of these hypotheses.

The results have a number of implications for managers and behavioral decision theorists. First, managers appear to be capable of using this baseline understanding of these markets and decision outcome data to provide the judgments essential for competitive market structure analysis. However, gauging from the performance of the subjects in this study, it may be difficult for managers to assess such relationships directly from aggregate share data. This is because market share changes due to direct competition within a market partition may be masked by other changes in overall market share as a function of competition across partitions.

First, despite the limited data and the constraints of an experimental environment, our subjects were able to reject as inappropriate several plausible (but incorrect) market partitioning schemes such as the brand and feature based partitionings. Rather, their judgments suggest that they recognized the key aspects of the actual competitive relationships even though they could not explicitly isolate the overall similarity based structure that was driving competition in this experimental market. This bodes well for the use of managerial judgments in competitive market structure analysis.

Unfortunately however, the decision outcome feedback appeared to confuse our subjects. Although their ratings of usage situation/overall similarity based structure was high, their overall similarity based structure ratings declined with feedback. Thus, their

judgments appeared to move away from the veridical structure to one based on usage situation. It is possible that subjects turned to their extra-experimental understanding of competition in the coffee market when they were unable to interpret the aggregate market share movements. Thus, the value of managerial judgments as inputs to market structure analysis may rest on the clarity with which managers can interpret market level feedback and also integrate it with other information.

Second, the results showed that the elicitation methods were differentially effective in helping managers reveal their understanding of the underlying market structure. The forced choice method was found to be more effective than the perceived competitive similarity method in eliciting veridical judgments in this study. However, the findings may also reflect the possibility that the forced choice method elicits judgments that are biased toward an overall similarity based structure. This issue cannot be resolved in this study, but needs to be addressed in future work.

Third, the study findings also suggest that structure judgments elicited using the forced choice method remained stable when the perceived competitive similarity approach was used immediately afterward. However, when the methods were used in the reverse order, the judgments appeared to change. These data suggest that the degree of convergent validity observed in market structure judgments may be influenced by the order in which specific structured elicitation approaches are used.

Fourth, the hypotheses derived based on the cognitive psychology literature received little or no support in this study. Perhaps the complexity of even this simulated environment was such that the findings in the literature did not translate in straightforward fashion. The caveat follows that managerial judgments of competitive relationships in the real world may be even more complex and may be driven

by prior knowledge and contingent information that may be far more involved that what was observed in this study.

Finally, subject to the study limitations, overall it appears there is something to be gained by incorporating even partially fallible managerial judgments in competitive market structure analysis. This study has shown that such methods can be meaningfully implemented and when used in structured fashion can help assess competitive market structure in useful ways. Used in a multiple method based convergent validation oriented framework, such analysis may be very useful. The findings here suggest that further investigations of managerial judgment elicitation procedures is likely to prove quite useful.

7.3 Limitations of the study

Several limitations must have tempered the conclusions of this study. First, one may have reservations about the simulation game's ability to reflect a 'real world' situation. These issues were discussed in detail in Chapter 5. It is our view that so long as such simulations can capture the essential 'reality' of a competitive market, can mimic the managerial task and reflect their judgments, such concerns may be reduced. Although we attempted to simulate 'real world' competition, the experiment clearly had limitations in this regard. Even though the subjects expressed satisfaction with the quality of the description of the simulated market that was provided, the quality of calibration against the 'real world' remains undetermined. The fact that decision feedback confused the subjects is perhaps a signal of limitation in this regard.

Second, the sample size in this study is a key limitation. Given the specific nature of this experiment and the need for advanced M.B.A. student subjects, the pool was rather limited. This limited the power of the statistical tests. For these reasons, tests of concordance of these judgments are not very compelling.

Third, limitations may exist regarding the generalizability and external validity of the findings. Despite their interest and involvement in the game, the subjects were not substantive experts and their behavior may not reflect how experienced managers make decisions in real world contexts. The results are also dependent on the situation described in the simulation case and may not be extendable to other situations.

Fourth, the market structure in this experiment was driven by overall similarity. Even though the forced choice method performed better than the perceived competitive similarity method in this study, the generalizability of this finding to markets partitioned on different criteria remains an open question.

Finally, we attempted to provide equal and impartial importance to all dimensions of competition (brand image based, feature based, usage situation based, and overall similarity based) in the description of the competition in this market. Pretests with the study scenario did not reveal any limitations in this regard. However, it appears that the experimental subjects were more influenced by the usage situation criterion. Whether this stemmed from some aspects of feedback or simply from subjects' extra-experimental knowledge, remains unclear. A similar problem may have contributed to the lack of significant priming cue effects. Unfortunately, our failure to include checks on this manipulation precludes us from commenting on these findings (or lack thereof).

7.4 Future research

The findings provide guidelines for future studies that explore managerial learning and decision making in competitive strategy situations. Besides competitive market structure analysis, managerial judgmental processes can be traced for other strategy decisions (such as

market segmentation, targeting, product positioning). Little is known about managerial cognitive mechanisms that are used in day-to-day marketing decision-making. A natural extension of this study would be to focus on these processes and to find out in what ways, if any, they differ from the general findings of the general cognitive psychology literature.

Only two types of structured elicitation methods were used in this study. Other methods, that are based on estimates of brand-switching probabilities or interpurchase times or cross-price elasticities could also be tested in future work. The current scenario embedded an overall similarity based market structure. Future studies could work with scenarios that embed a manipulation of the underlying market structure. Such studies would permit inferences regarding the ability of specific methods to recover the veridical structure of the market.

Head-to-head comparisons could be conducted for CMSA's that are based on managerial judgments versus consumer data. This would provide important insights in CMSA research. One possibility is managerial judgment can replace consumer level data in certain cases, whereas in some other cases consumer data may be proved more useful. Sometimes, probably they should be used in tandem for a better understanding of the competition in the market.

Finally, this research is part of a program that aims to develop a behaviorally based expert system for aiding managers in competitive strategy decisions. This research project has developed and provided an initial test of the conceptual basis for such a system. The findings provide the empirical foundations for market structure analysis based on managerial judgments and show how such an analysis could be subjected to the traditional tests of internal consistency, reliability and validity that are embedded in any strong market measurement system.

Although the formal expert system software development was not part of this dissertation, some of the stimuli developed here could form the core of future software modules for eliciting expert judgment. We envision later software that will have the capability of comparing the judgmental analysis discussed here to the traditional empirical analysis based on consumer level data. At some point, the system could aim for the capability of recommending competitive positioning and mix decisions based on a set of "strategy rules" in the system's knowledge base.

APPENDIX 3A

TECHNICAL DETAILS OF SELECTED COMPETITIVE MARKET STRUCTURE ANALYSIS APPROACHES

Perceived Competitive Similarity Methods

A popular way to develop a competitive market structure analysis is to use consumers' judgments about the (dis)similarity of products in a perceptual or preference space. Multidimensional scaling approaches are a common method for analyzing such data. The resulting perceptual or preference maps provide insights into the competitive relationships among the products.

The technical details of MDS and other data scaling approaches are widely disseminated in the literature (see Green, Carmone and Smith 1989; Kruskal and Wish 1978 ; Arabie, Carroll and DeSarbo 1987). MDS methods can be categorized broadly in fully metric, fully nonmetric and nonmetric scaling methods. In the fully metric method, data on the similarity/dissimilarity between pairs of products are ratio-scaled distances which are used as input to develop an output configuration whose interpoint distances are proportional to the input. On the other hand, for fully nonmetric method, the input data are ordinal or rank-order data which produce a rank order of the projections of each point on each dimension on the perceptual space. Finally, a nonmetric method uses rank order input data to produce metric solutions.

In the typical application, consumers are asked to rank order every possible product pair under consideration based on the (dis)similarity between the components of each pair. This data, in the form of a proximity matrix is used as input to a computer program (INDSCAL/KYST/ALSCAL) for individual level analysis or MDSCAL for aggregate level analysis. The program output is a perceptual map which locates the products under consideration at different points in a multidimensional space. The dimensions of the space are usually interpreted as composite attributes/features/other characteristics along which the products are compared and are positioned distinctively. The relative orientation of the products serves as a guide to the competition among them and is a representation of market structure.

The above discusses spatial representations. However, depending on the perceptual structure hypothesized, the proximities data may also be subjected to nonspatial (hierarchical) clustering or other hybrid forms of analysis (tree fitting models) using commonly available algorithms. These approaches are also observed in standard texts (Green, Carmone and Smith 1989) along with easily accessible algorithms for implementation.

The methodology is operationalized with managerial judgment in a manner very similar to that used for collecting consumer data. Managers are asked to provide their judgments of customer perceived (dis)similarity among the products in the set being considered. These responses can then be analyzed using MDSCAL and interpreted in essentially the same manner as consumer level similarity data on market structure. Relatively little is known about how these methods may influence consumer judgments of competitive market relationships. Thus, this application to managerial judgment mapping is likely to provide insights into the psychological properties of these scaling techniques.

APPENDIX 3B

TECHNICAL DETAILS OF SELECTED COMPETITIVE MARKET STRUCTURE ANALYSIS APPROACHES

Forced Choice Probability Methods

Urban, Johnson and Hauser (1984) developed a procedure for testing competitive market structures that utilizes the market partitioning logic of an aggregated form of the Luce's choice axiom termed the aggregate constant ratio model (ACRM). The technical details of the model are outlined below.

The method begins with a priori hypotheses regarding the market's competitive structure. Each hypothesized grouping of products (in terms of submarkets) is tested one at a time. The tests are based on data pertaining to aggregate probabilities of consumers switching to alternative products in the situation where their favorite product is not available. Thus, if n_i is the number of consumers who chose product i when all products were available and $n_i(s)$, the number of consumers out of n_i, who formerly chose product i but who now choose a product from submarket s (product i is no longer available), then the probability of choosing i out of the submarket s is given by:

$$\hat{P}_i(s)=n_i(s)/n_i$$

Now, $P_i(s)$ may also be calculated as:

$$\Sigma m_j/(1-m_i) \qquad \text{(for all j in s and for } j\neq i)$$

where m_j is the market share of product j and m_i = market share of product i (to be deleted later). Note that m_i can be calculated as $n_i/\Sigma n_i$.

With empirical data, a one tailed z-test may be conducted to determine if there is any difference between $\hat{P}_i(s)$ and $P_i(s)$. Thus:

$$Z=\{\hat{P}_i(s)-P_i(s)\}/\{P_i(s)(1-P_i(s)/n_i\}^{1/2}$$

If $\hat{P}_i(s)$ is greater than $P_i(s)$, then i belongs to the submarket s, whereas if $\hat{P}_i(s)$ is less than or equal to $P_i(s)$, then i does not belong to the submarket s. Thus a specific hypothesized market structure can be tested for each product i. Finally, an aggregate test (across all products treated as i at a time) will indicate if the hypothesized market structure is significantly better than a hypothesis of no structure. Note of-course that support may be simultaneously found for multiple hypothesized structures.

To operationalize this approach with managerial judgment, managers are asked to provide their estimates of the proportion of consumers of a specific brands that will choose a set of other brands in a submarket when the preferred brand is unavailable. These responses are essentially judgmental estimates of $\hat{P}_i(s)$. These may be compared to the $P_i(s)$ values determined from the brands' market share data. Inferences about the hypothesized market structure then rest on the empirical logic outlined earlier.

APPENDIX 5A

THE GREAT COFFEE COMPANY

Les Curtis could hardly believe his ears after taking the phone call from John Jermier, C.E.O. of "The Great Coffee Company" (GCC) three days before Christmas in 1990. He had the distinct impression that his interview with GCC two weeks ago had gone quite well, but the starting offer as the company's new 'Brand Advertising Manager' seemed too good to be true. After getting his M.B.A. from the Graduate School of Business at the University of Denver, Curtis had been working for the last couple of years as a Brand Assistant for a major consumer packaged goods company. Although his present job had important responsibilities, the new job implied total control over the GCC's brand advertising policies and budgets. Clearly, this offer was a major career opportunity.

After a short vacation in Mexico, Curtis joined GCC. His new coworkers were friendly and cooperative and things were apparently going quite well. Jermier had stopped in to see him after he started and seemed to pay a fair amount of attention to his ideas and plans at marketing and planning meetings. As brand advertising manager, Les was responsible for advertising management at GCC. His responsibilities included setting advertising policies and objectives, selecting target markets, choosing messages and media, making budget recommendations and deciding the specific promotion mix for GCC's product line that included two major gourmet coffees. Both were sold under the same brand name and will be called A1 and A2 to avoid identification with real brands.

Life does have a way of becoming complicated however. One evening, in early July, 1991, Les found himself biting his fingernails in anxiety as he examined the latest market report. Although his advertising push for brand A2 had clear impact in the market, Brand A1 had shown significant sales and share losses despite having held its expenditure levels. The furrows on his forehead deepened as he muttered to himself: "This company just has to get a better handle on what is driving its sales and market share. I am not sure that we know exactly what products each of our coffee products A1 and A2 are competing with. How are our marketing efforts working and who are we taking share from or losing share to? God alone knows what our advertising dollars are doing for us, or even if they are doing anything at all! I am afraid that one of these days the competition will do something consistent and aggressive and our comfortable profit margin will blow up in our faces." Lately, this concern had become somewhat pervasive and he was feeling an uncanny pessimism gnawing at him. Even though the overall performance numbers were not showing any untoward trends, he did not feel in control and that bothered him a lot.

COMPANY HISTORY

The Great Coffee Company (GCC) had been importing, blending, packaging and marketing gourmet coffee for over fifty years in the southwestern United States. They were one of the oldest and best known marketers of quality coffees in this region and had their headquarters in Albuquerque, New Mexico. Their primary markets covered the states of New Mexico, Arizona, Colorado, Utah, Nevada and part of California. At one time, GCC had enjoyed a fairly large share and maintained a high profile in its regional market. They were regular sponsors of regional events such as the rodeo, balloon festivals and Indian markets. The GCC Comedy Hour, a popular radio show during the fifties and the sixties had also made GCC a household name among southwestern gourmet coffee drinkers.

The company went through some troubled times in the early 1980's, when increasing TV costs made it difficult for GCC to maintain competitive exposure levels. Moreover, major consumer packaged goods marketers began absorbing the regional manufacturers and brands, gaining coast to coast distribution and packaging facilities through a large number of local and regional operating bases. This strong regional distribution, coupled with national advertising support, enabled the national brands to compete aggressively. For a while, it became very hard for the independent regional manufacturers like GCC to maintain a media presence comparable with those of major national companies. However, after penetrating the regional markets to desired levels, the national companies ceased to be aggressive and had settled down to a fairly predictable pattern of competitive behavior. Thus, product development in this mature industry involved predictable periodic introduction of new varieties of coffee (usually mundane brand extensions). Manufacturers generally avoided price competition and dealing and promotional activity was limited mainly to coupons offered to the trade and consumers at predictable periods over the year. Although there were some fluctuations in bimonthly advertising expenditures, the average spending levels were fairly consistent in this market.

By judiciously targeting its regional markets where its franchise was strong, GCC continued to maintain a respectable presence. Management was satisfied with its current market position and until recently was unwilling to move aggressively. Since the industry was mature and was characterized by stable competitive practices, GCC's marketing decisions were mainly reactive. The company had always been very particular about following industry norms. It took care to maintain prices and trade margins at competitive levels and engaged in only nominal levels of trade and consumer promotions. The idea was not to mess with the big boys but mainly to go along and get along.

Like other competitors in these regional markets, the company offered co-operative advertising support to retailers. These retailers, mostly specialty (gourmet coffee) stores, acted as the main distribution system for GCC and its major competitors. These co-operative advertising activities, coupled with TV and radio advertising, constituted the company's as well as its competitors' advertising program. Recognizing its limited scope, GCC always viewed itself is being a nicher in the gourmet coffee segment in its region. However, the niche was profitable enough to attract some of the national coffee brands who had positioned specific products that competed in this regional market. Two competitors (Companies B and C) had also introduced two products each (B1 and B2, C1 and C2) in this region. Although, they were all technically "gourmet coffees," Les wondered which of these were his real competition.

ORGANIZING BRAND ADVERTISING AT GCC

Following his arrival, Les had focused on learning the ropes in the brand management arm of the company. However, in a few weeks, he had become convinced that GCC did not really have a good grasp of the factors affecting its market performance. Very little systematic data or research was available for sales or performance tracking. He believed that the company urgently needed to assess the effects of its marketing mix decisions on its sales and market share. Such an assessment would serve as a basis for determining how to invest its resources more optimally. Although he wished he had an overall assessment of the effects of GCC's marketing mix on its sales and market share, as the brand advertising manager, Les was most concerned about GCC's advertising and its effects.

He wondered how market share might respond to varying advertising expenditures. He wondered how much sales or share GCC would lose (gain) and to (from) which of the other products in the market. Answers to questions such as these would help him position and target his products better and make more efficient use of GCC's advertising and promotional resources.

Tracking Market Performance

As a first step, Curtis tried to put a market share and advertising tracking system in place. He assigned Angelica Julien, a recently hired Brand Assistant, to develop an information base on GCC's sales, market share and advertising spending. Angelica did a very good job of developing the data. She tracked down some advertising agency data on costs of network and spot TV, GCC's radio advertising and retail co-operative advertising spending. Using this information and other industry records, she came up with some estimates of GCC's and competitors' advertising expenditures and shares in this market. These data are shown in Table 1. Also, by drawing primarily on in-house shipment and spending information as well as on Nielsen store audit data on retail sales of GCC and competitive brands, she had developed bi-monthly sales and market share data going back to July 1990 (see Table 2). Les was very pleased with the progress made in this area and made a mental note to praise her performance and reward her well during her next performance appraisal.

The data in Table 1 show some interesting patterns. In the past year, GCC had advertised at the average rate of $831,000 per bi-monthly period, although the expenditures had fluctuated between $680,000 and $978,000. This corresponded to an average advertising share of 40.2 percent, though bimonthly shares ranged from 33 to 47 percent. The most recent period (May-June 1991), GCC had advertised a total of $859,000 for about an average advertising share of 40.3 percent. Overall market share was also about 40.2 percent, about as high as it had been during 1990-91 (see Table 2).

However, there was cause for concern even in these overall performance data. Although product A2 had performed strongly (gaining 23.1 percent market share), product A1 had shown an unexpected drop to 17.1 percent even though its advertising budget and share had not changed at all. Les was not sure what explained these market data. He wondered if there was something systematic about this or whether the problem was simply within the range of normal bimonthly fluctuations. Les felt that the aggregate data provided only a limited understanding of how specific products were competing with each other and whether there were any specific submarkets where competition was particularly intense. "I think I better brush up on that market structure analysis stuff that I had in the Product Management course I took three years ago," he thought. "Am I really competing only against all the national brands (B1, B2, C1 and C2), or only some of them - are A1 and A2 cannibalizing each other?"

THE COMPETITION

Following the structural changes of the eighties, the gourmet coffee market in the southwestern United States had settled down to some degree of stability in its marketing practices. GCC marketed several variations of gourmet coffee in the south-west region under the brand name GCC. However, its two primary products A1 and A2 received the most marketing attention. advertising expenditure was directed toward these two variations. Based on the data collected by Angelica Julien, the two products held about 39% of the six product market in this region. Coincidentally, the two products held about equal market shares.

Companies B and C, both national marketers, were GCC's primary competitors in the region. Each had two products in the market. Company B's two products (B1 and B2) held about 29% market share, again split about equally between the two products. Company C's two products (C1 and C2) held about 32 percent share between them. Of the two, C1 was newer and held only about 10 percent share. C2, the more established brand, held the leading share in the market (though not by much) since 1985, following the onslaught of the national marketers.

THE PRODUCT

Spurred by a growing consumer interest in variety and exotic fares, coffee manufacturers in the US had responded with products that industry analysts termed the "Great Flavor Hunt." More and more people experimented with "gourmet" coffee and developed a distinctive taste away from what they viewed as standard "run-of-the-mill" coffee. Estimated at about fifteen percent of all coffee drinkers, they were wiling to pay a price premium and seemed to particularly enjoy shopping at specialty stores where they felt they were assured high quality, fresh coffee. Manufacturers such as GCC who had offered established pre-packaged "gourmet" coffees were often the trusted choice of this flavor conscious segment.

Although gourmet coffees had clearly arrived as a distinct product-market in this region, it was less obvious how the various gourmet coffee products competed with each other. GCC had been around for fifty years and was a well-known name. Brand A products had a particularly strong franchise among a consumer group that liked to see themselves as emphasizing quality and traditional values. The GCC brand A 'image' was thus based on the appeal of long-lasting tradition - a somewhat conservative positioning that the company had implicitly promoted over the years. Still, Les wondered perhaps some change was warranted in this image over time.

Brand B, with newer products, obviously could not compete head-on against the GCC positioning and image. It had therefore attempted to target newer, emergent values, and life-styles. Consistent with a much written-about trend in the early eighties, they had focused on the emerging 'yuppie' identity, which, among other proclivities, was known to have a soft corner for newer designs and fashion trends. Hence, company B ad campaigns stressed such values and associated brand B products with a life-style and consumption symbolism marked by 'beemers' and 'Polo' shirts. Although this was not based on any formal brand image studies, Les believed that the brand B projected identity was quite well-recognized in the market.

The positioning and image cultivated by company C for its brands was somewhat unusual. Their ad agency had worked on an action-oriented appeal that cut across the usual life-style and value segments. Their messages characterized brand C buyers as people on the go, not hung up on tradition (unlike the associations prompted by GCC (brand A) advertising). At the same time, they spurned the 'excessive' consumption symbolism stressed by brand B advertising.

Although the ad campaigns were communicating clear images for each brand, Les was not sure that these correlated consistently with buying patterns and brand switching behavior. He looked at his own (GCC) brands A1 and A2. As coffees go, they were two rather different products. Yet, both were promoted under a 'traditional' image. Les did not find that an A1 buyer would buy A2 simply because the two brands were both advertised with a 'traditional' image. He suspected that the features of the two

products may also strongly influence purchases. He felt somewhat uneasy about the implications of this for GCC's future advertising strategy.

The Gourmet Gazette, an independent publication based in Tucson, Arizona had conducted a study in January 1991 comparing the different gourmet coffee products available in the southwestern region. Although they had focused mainly on the marketplace in Arizona, they had compared and contrasted the pre-packaged gourmet coffee products available in that regional market. Their report provided descriptions of the six major products (A1, A2, B1, B2, C1 and C2) "from the perspective of the discriminating coffee drinker."

All six variations had been rated 'excellent' by "The Gourmet Gazette" tasters. Each had the taste characteristics of top-quality beans without any detrimental off-flavors. The beans had a strong complement of positive flavor attributes, including a slight floral scent and hints of ripe fruit. They also shared a sharp note with a fleeting hint of green-coffee-beans. Their 'clean' acid bite did not linger, and each had a touch of bitterness and astringency. The Gazette experts also described each coffee in terms of a number of dimensions that they had tested. For example, the strength of each coffee was evaluated based on taste after adding about one and one-half tablespoons of coffee per five-ounce cup. The caffeine content of a five-ounce cup was also analyzed separately.

Excerpts from these descriptions are given below:

A1: "a distinctive blend of the best Central American coffees. A pleasing cup for those who prefer their coffee light and low richness, less than full-bodied flavor. Light roasted, low strength, low caffeine content, a magical brew."

A2: "a macho rich blend of African and Latin American beans, this cup is not for the light coffee drinker. A strong, high caffeine content, dark roast for the highly adventurous."

B1: "a traditional blend of high richness Central American coffees, this is still a relatively low strength, low caffeine content brew. Light roasted, it makes a smooth cup."

B2: "very low strength, very low caffeine and low richness, Indonesian beans, light, mellow roast for those with a subtle palate.

C1: "a high, full-bodied richness unusual in Indonesian blends, a very low strength and low caffeine, a light roast for those with a taste for mild adventure."

C2: "supercharged, very high richness, high strength and high caffeine-content blend of African and Latin American coffees, this cup talks to you."

The Gazette article also noted the importance of appropriate roasting. A coffee made from the very best beans could be marred by overroasting (a 'dark', charred flavor) or by underroasting (a strong 'raw green' taste). Each of the six products of interest to Les had received favorable ratings and none were noted as tasting either strongly bitter or acidic or either tarry smoky, pruney or fermented. Not all the coffees evaluated had received such rave reviews. In some cases, the reviewers

had been extraordinarily catty and called some products "a foul muddy brew with a taste like denatured turpentine."

Les felt quite positively about the continued favorable reception to GCC products, but did not feel that the descriptions clearly indicated the key competitive relationships among the products in this market. All the products being gourmet coffees, price was also not a discriminator. All six products were sold in one pound bags and cost about the same ($5.50 on average) which translated to 10 cents a cup. GCC's gross margin was about 40% of sales and Les believed that this number was perhaps a little bit higher than the margins enjoyed by the other brands (see Table 3).

The Gazette article had conducted an informal poll in the Southern Arizona area, focusing on the coffee drinking habits of a group of survey respondents whom they had polled at various gourmet coffee shops. The study found that people noted differences in the type of coffee that they preferred to drink in the morning (with breakfast), between meals (at work) and in the evening (after dinner). Richness preferences also varied among gourmet coffee drinkers. Some preferred a less full-bodied, weaker flavor, others liked their brew rich and flavorful and some preferred in-between levels. Les Curtis wondered whether these differences in preferences had something to do with how the six products competed in the market. He made a mental note to examine the data that Angelica had put together and also wondered if he should conduct some consumer surveys of his own.

UNDERSTANDING COMPETITION AND ADVERTISING STRATEGY

As he thought more about the issues, Les became convinced that if he could understand the relationship between the advertising dollars he spent on his products and the resulting sales and market shares, he would be a lot closer to cracking the competitive market structure puzzle. "After all," he felt, "if my advertising increased my sales at the expense of another product or set of products, it makes sense to believe that we compete in the same submarket. Perhaps this simple logic is all there is to it. But with all products changing advertising expenditures and sales and market shares also changing, it is difficult to figure out what the specific cross-product effects are."

Thinking he would find something helpful in them, he looked at his old advertising and product management texts. Although the texts did provide some fairly informative discussions and scholarly analyses of advertising effects on market share, they seemed somewhat theoretical. He just wished he had paid a little more attention in class and done some hands-on projects with Professor Paul Loeb-Paul, his old marketing instructor at the Business School of University of Denver

A few sleepless nights later, Les set up an appointment with Professor Loeb-Paul to seek his advice. He believed that Professor Loeb-Paul, a well known advertising expert who had also consulted extensively with consumer goods firms, would be able to offer words of wisdom in this area. Les spent about two hours with the old Professor and presented a brief description of his own and his competitors' products, advertising strategies, pricing formulae, distribution systems and their respective market shares for the last one and half years.

Based on his experience in the soft-drinks industry, Professor Loeb-Paul indicated that competitive market structure was a very elusive concept, but that competition between products could rest on similarities in brand image, substitutability on the basis of shared features, or even on the basis of appropriateness for specific usage situations. Sometimes, competing products may be similar overall even though they do not share

specific features exactly.

Although he did not know the specifics of the coffee market, Professor Loeb-Paul indicated that he believed Les was on the right track. He suggested that Les focus on the features of the products themselves and then on how the marketing activities of one product affected another. When Les showed him the data that Angelica had gathered, he became excited and muttered something about conjoint analysis and logit models and then became silent. Realizing that the old Professor had probably had enough stress for one day, Les Curtis graciously took his leave and returned to GCC.

On another day, Les went to a specialty coffee store and just stood around and talked to customers as they came in. He asked them about their favorite brands and what other brands of gourmet coffee they had tried. he was pleased that of the twenty shoppers he met, nine asked for brands A1 or A2. The A1 buyers thought that B2 was also a pretty good coffee whereas the A2 buyers seemed to share a similar opinion about C2. He wished that GCC customers would always stick to GCC products. But, he thought, the coffees were rather different and maybe it made sense that customers were consistent in their preference for coffees of specific types.

"Maybe I should think some more about what all this means," he muttered to himself. "Perhaps Angelica and I could discuss this over lunch tomorrow. She is really bright and a lot of fun to talk to, even about things other than competition in the coffee market!"

TABLE 1: ADVERTISING IN THE GOURMET COFFEE MARKET

Period	Industry Advt. $ ('000)	Productwise Advertising Share (%)						Productwise Advertising Expenditure $ ('000)					
		A1	A2	B1	B2	C1	C2	A1	A2	B1	B2	C1	C2
Jul-Aug'90	2,000	21.0	18.0	17.5	14.0	7.5	22.0	420	360	350	280	150	440
Sep-Oct'90	2,038	29.4	18.6	11.4	9.0	7.4	24.2	599	379	232	183	151	493
Nov-Dec'90	2,069	23.1	16.8	19.4	12.1	3.5	25.1	478	348	401	250	72	519
Jan-Feb'91	2,070	25.3	16.0	17.2	5.8	14.6	21.1	524	331	356	120	302	437
Mar-Apr'91	2,091	18.1	14.9	17.6	14.2	7.5	27.7	378	312	368	297	157	579
May-Jun'91	2,127	18.1	22.3	22.6	15.1	4.1	17.8	385	474	481	321	87	379

TABLE 2: MARKET SHARE AND SALES IN THE GOURMET COFFEE MARKET

Period	Industry Sales $ (mils)	Productwise Market Share (%)						Productwise Sales $ (millions)					
		A1	A2	B1	B2	C1	C2	A1	A2	B1	B2	C1	C2
Jul-Aug'90	10.000	19.3	19.0	15.0	15.8	10.0	21.0	1.93	1.90	1.50	1.58	1.00	2.10
Sep-Oct'90	10.074	18.9	20.9	14.0	11.1	11.4	23.7	1.90	379	232	183	151	2.39
Nov-Dec'90	10.195	21.2	19.1	13.9	15.5	7.0	23.3	2.16	348	401	250	72	2.38
Jan-Feb'91	10.217	20.5	16.4	17.3	10.9	16.0	18.9	2.09	331	356	120	302	1.93
Mar-Apr'91	10.272	21.1	17.0	12.0	18.8	8.1	23.0	2.17	312	368	297	157	2.36
May-Jun'91	10.476	17.1	23.1	15.6	15.7	7.8	20.7	1.79	474	481	321	87	2.17

TABLE 3: GROSS AND NET MARGINS FOR GCC PRODUCTS A1 AND A2

Period	Product-wise sales ($ millions)		Gross margins ($ thousands)		Margin net of advertising ($ thousands)		
	A1	A2	A1	A2	A1	A2	Total
Jul-Aug'90	1.93	1.90	772	760	352	400	752
Sep-Oct'90	1.90	2.11	760	844	161	465	626
Nov-Dec'90	2.16	1.95	864	780	386	432	818
Jan-Feb'91	2.09	1.68	836	672	312	341	653
Mar-Apr'91	2.17	1.75	868	700	490	388	878
May-Jun'91	1.79	2.42	716	968	331	494	825

APPENDIX 5B

DEVELOPMENT OF THE SIMULATION GAME PARAMETERS

1. The data for the first six bi-monthly periods (July-August, 1990 to May-June, 1991:given to the subjects with the case) were generated using the following basic parameters:

Period Zero:

Overall six product industry sales:	$10,000,000
Overall six product advertising:	$ 2,000,000
Sales share of submarket (A1,B2):	35%
Ad share of submarket:	35%
Ad shares within submarket:	A1: 60%; B2: 40%
Sales share of submarket (C1,B1):	25%
Ad share of submarket:	25%
Ad shares within submarket:	C1: 30%; B1: 70%
Sales share of submarket (A2,C2):	40%
Ad share of submarket:	40%
Ad shares within submarket:	A2: 45%; C2: 55%

Other Base Data Periods:

Industry sales growth rate per period:	0.1% to 2.0%(random)
Industry ad growth rate per period:	0.1% to 2.0%(random)
Submarket sales share change per period:	-5% to +5% (random)
Submarket ad share change per period:	-5% to +5% (random)
Ad share change within submarket per period:	-25% to +25%(random)

For each submarket consisting of products i and j, the market share of each product was given by:

$$MS_i(s) = \exp\{AS_i(s)\}/[\{\exp AS_i(s)\} + \{\exp AS_j(s)\}]$$

where MS and AS represent market share and advertising share respectively of the products in the partition.

For actual numerical values generated using these parameters, see the tables in Appendix 5A.

2. The data for periods 7 through 18 (July-August, 1991 to May-June, 1993 were developed similarly, except, in this case the advertising budgets for A1 and A2 came from the subjects.

2a. Industry sales growth rate per period was between 0.1% and 2.0% with a base sales of $10.476 million at period 6. Industry sales figures for periods 7-18 were generated using the following compounded growth rates (chosen at random):

Period 7 :	1.54%	Period 13:	0.72%
Period 8 :	0.53%	Period 14:	0.74%
Period 9 :	1.42%	Period 15:	1.32%
Period 10:	0.11%	Period 16:	0.10%
Period 11:	1.71%	Period 17:	1.80%
Period 12:	1.78%	Period 18:	1.06%

2b. Submarket sales share change per period was between -5% and 5% with base sales shares of 35% (A1,B2); 25% (B1,C1); and 40% (A2,C2). Submarket sales volumes were calculated applying the following percentages (chosen from a random number table) to the industry sales volume data generated above.

	Submarket A1,B2	Submarket B1,C1	Submarket A2,C2
Period 7	36.6	25.1	38.3
Period 8	30.6	24.5	44.9
Period 9	31.1	23.9	45.0
Period 10	30.1	24.9	45.0
Period 11	37.8	23.5	38.7
Period 12	38.5	22.3	39.2
Period 13	33.2	29.9	36.9
Period 14	33.0	23.5	43.5
Period 15	35.9	23.6	40.5
Period 16	35.1	25.4	39.5
Period 17	31.1	29.8	39.1
Period 18	39.1	23.2	37.7

2c. Advertising decisions for A1 and A2 were provided by the subjects. The change in advertising dollars per period for other products was within +/- 25% of a base of $350,000 (B1); $280,000 (B2); $150,000 (C1); and $440,000 (C2). Using a random number table, following advertising expenditures for B1,B2,C1 and C2 were generated for periods 7-18:

	Advertising expenditures ($ in thousands)			
	B1	B2	C1	C2
Period 7	301	232	181	514
Period 8	350	303	155	342
Period 9	411	330	177	423
Period 10	403	302	143	387
Period 11	341	231	116	356
Period 12	324	275	121	506
Period 13	421	293	163	482
Period 14	343	256	179	462
Period 15	430	280	147	367
Period 16	348	301	151	356
Period 17	311	245	159	487
Period 18	376	287	159	346

2d. Now, with the two advertising budgets for A1 and A2 from the subjects for each sequential period and using the numbers from the table above, the advertising shares for each product in each submarket were calculated. Then each product's market share within the submarket was computed using the following equation:

$$MS_i\ (s) = \exp\{AS_i(s)\}/[\{\exp AS_i(s)\} + \{\exp AS_j(s)\}]$$

where MS and AS represent market share and advertising share respectively of the products (i and j) in the partition.

2e. These submarket share percentages were applied to the submarket sales volumes calculated in step 2b to arrive at each product's sales volume. Also, each product's market share for a particular period was computed dividing the industry sales volume by individual product's sales volume for that period.

2f. A contribution margin of 0.4 was applied to compute the profitability of A1 and A2, using the following equation:

Profitability ($) = 0.4 x sales ($) - advertising budget ($)

2g. Error in market share forecast was calculated using the following equation:

$$\text{percentage error} = \text{abs}[(MS_{at} - MS_{pt})/MS_{pt}]$$

where MS_{at} = actual market share for product A1 (A2) for period t
MS_{pt} = predicted market share for product A1 (A2) for period t

APPENDIX 5C

PREMEASUREMENT QUESTIONNAIRE

Before you begin, we would like you to indicate your own perceptions of coffee products currently available in the market. Please answer the questions below to the best of your ability. As we are interested in your subjective opinions, we encourage you to respond to each question even if you are not sure that your answers are based upon formal knowledge. Thus, you are not expected to already have the perspective of a marketing executive in the coffee industry. You may answer the following questions even from the viewpoint of a consumer.

1. Please list below what comes to mind as the chief varieties of coffee products currently available in the market.

2. Briefly describe what you perceive are the primary brand images and positions being occupied and cultivated by the various coffee products currently available in the market.

3. Briefly describe the features (attributes) that you perceive as differentiating the various coffee products currently available in the market.

4. Briefly describe any usage situation based differences that you perceive among the coffee products currently available in the market.

5. Briefly describe any other approaches or bases that you perceive as being used to differentiate the coffee products currently available in the market.

6. Briefly describe what you believe are the most meaningful ways in which the coffee products available in the market are being differentiated.

7. Briefly describe what you believe are the most <u>successful</u> ways in which the coffee products available in the market are being differentiated.

8. In your professional capacity, how knowledgeable would you say you are about marketing and other commercial aspects of:

(a) the coffee industry

Have little or no knowledge	1	2	3	4	5	6	7	Have a lot of knowledge

(b) the beverage industry

Have little or no knowledge	1	2	3	4	5	6	7	Have a lot of knowledge

(c) the consumer packaged goods industry

Have little or no knowledge	1	2	3	4	5	6	7	Have a lot of knowledge

9. In your role as a consumer, how knowledgeable would you say you are about the various coffee products available in the market?

Have little or no knowledge	1	2	3	4	5	6	7	Have a lot of knowledge

Appendix 5C cont'd

10. How much coffee do you drink on a typical day?

( ) <1 cup ( ) 1-2 cups ( ) 3-6 cups ( ) >6 cups

11. How rarely or frequently do you change the brand of coffee that you buy or consume?

Rarely 1 2 3 4 5 6 7 Frequently

12. Do you have any specific preferences about either the variety or the brand name of the coffee that you drink? Please use the space below to describe any such preferences.

13. We would now like you to provide the following information about yourself for classification purposes. The information will not be used to identify you in any published report of the study.

(a) Name: _____ Age: ____ Sex: ____

(b) Previous degrees and field of study:

Undergraduate _____
Graduate _____

(c) Current student status:

( ) 1st yr MBA ( ) 2nd yr MBA ( ) Evening MBA
( ) Other, please state _____

(d) Please indicate below the number of graduate and undergraduate courses that you have taken (including ones you are taking now) in each of the following areas:

Marketing ___ Advertising ___ Forecasting ___
Strategy ___

(e) Work experience:

Current employer _____

Position/Title _____

Current industry _____ No. of years ___

Previous jobs:

Industry	Position	No. of years
_____	_____	_____
_____	_____	_____
_____	_____	_____

THANK YOU FOR YOUR HELP. WE WOULD NOW LIKE YOU TO CAREFULLY REVIEW THE GREAT COFFEE COMPANY CASE, WHICH IS ENCLOSED.

APPENDIX 5D

DECISION FORM

Participant name: _____

Decision period: _____ (Months: _____)

	Product A1	Product A2
Advertising budget ($)	_____	_____
Expected market share (%)	_____	_____

Environmental assumptions:

Participant signature _____ Date _____ Time _____

Appendix 5D cont'd

FEEDBACK FORMAT

Participant name: _____

Decision period: _____ (Months: _____)

Your advertising budgets for this decision period were:

Product A1: $ _____

Product A2: S _____

Sales in gourmet coffee market in this decision period:

Industry sales ($)	GCC's sales ($)			Competitors' sales ($)			
	A1	A2	Total	B1	B2	C1	C2
_____	___	___	___	___	___	___	___

Market share in gourmet coffee market in this decision period:

GCC's market share (%)			Competitors' market share (%)			
A1	A2	Total	B1	B2	C1	C2
___	___	___	___	___	___	___

GCC's profitability in this decision period:

Gross Profitability ($)			Profitability net of advertising ($)		
A1	A2	Total	A1	A2	Total
___	___	___	___	___	___

Your market share forecast for this decision period were:

Product A1 = ___% (Percentage error = ____%)

Product A2 = ___% (Percentage error = ____%)

APPENDIX 5E

ELICITATION QUESTIONS FOR JUDGMENTS OF COMPETITIVE RELATIONSHIPS

1. Unaided Elicitation

Consider the coffee market described in "THE GREAT COFFEE COMPANY" simulation game. We are interested in your perception of the **current competitive structure** of that market based on your experience so far.

In the space below, please indicate the competitive submarkets that you recognize and which products are particularly competitive with each other and why.

2. Perceived Competitive Similarity Method without Any Priming Cue

Consider the coffee market described in "THE GREAT COFFEE COMPANY" simulation game. We are interested in your perception of the **current competitive structure** of that market based on your experience so far.

Using a scale where 1 = No direct competition and 10 = Intense direct competition, please indicate the degree to which you believe that each pair of products compete with each other.

For instance, if you believe that A1 and A2 are not in direct competition, this pair should get a rating of 1. On the other hand, if you perceive that A1 and A2 are in intense direct competition, this pair should receive a rating of 10. Other intermediate degrees of competition should receive ratings that lie between these numbers.

Products	Rating	Products	Rating	Products	Rating
A1 & A2	_____	A1 & B1	_____	A1 & B2	_____
A1 & C1	_____	A1 & C2	_____	A2 & B1	_____
A2 & B2	_____	A2 & C1	_____	A2 & C2	_____
B1 & B2	_____	B1 & C1	_____	B1 & C2	_____
B2 & C1	_____	B2 & C2	_____	C1 & C2	_____

3. Perceived Competitive Similarity Method with Brand Image Priming

Consider the coffee market described in "THE GREAT COFFEE COMPANY" simulation game. We are interested in your perception of the **current competitive structure** of that market based on your experience so far. While answering the following question(s), please keep in mind the **overall brand image** of each of the products.

Using a scale where 1 = No direct competition and 10 = Intense direct competition, please indicate the degree to which you believe that each pair of products compete with each other.

For instance, if you believe that A1 and A2 are not in direct competition, this pair should get a rating of 1. On the other hand, if you perceive that A1 and A2 are in intense direct competition, this pair should receive a rating of 10. Other intermediate degrees of competition should receive ratings that lie between these numbers.

Products	Rating	Products	Rating	Products	Rating
A1 & A2	_____	A1 & B1	_____	A1 & B2	_____
A1 & C1	_____	A1 & C2	_____	A2 & B1	_____
A2 & B2	_____	A2 & C1	_____	A2 & C2	_____
B1 & B2	_____	B1 & C1	_____	B1 & C2	_____
B2 & C1	_____	B2 & C2	_____	C1 & C2	_____

4. Perceived Competitive Similarity Method with Attribute/Benefit Priming

Consider the coffee market described in "THE GREAT COFFEE COMPANY" simulation game. We are interested in your perception of the **current competitive structure** of that market based on your experience so far. While answering the following question(s), please keep in mind the **unique and common features** of each of the products.

Using a scale where 1 = No direct competition and 10 = Intense direct competition, please indicate the degree to which you believe that each pair of products compete with each other.

For instance, if you believe that A1 and A2 are not in direct competition, this pair should get a rating of 1. On the other hand, if you perceive that A1 and A2 are in intense direct competition, this pair should receive a rating of 10. Other intermediate degrees of competition should receive ratings that lie between these numbers.

Products	Rating	Products	Rating	Products	Rating
A1 & A2	_____	A1 & B1	_____	A1 & B2	_____
A1 & C1	_____	A1 & C2	_____	A2 & B1	_____
A2 & B2	_____	A2 & C1	_____	A2 & C2	_____
B1 & B2	_____	B1 & C1	_____	B1 & C2	_____
B2 & C1	_____	B2 & C2	_____	C1 & C2	_____

Appendix 5E cont'd

5. Perceived Competitive Similarity Method with Usage Situation Priming

Consider the coffee market described in "THE GREAT COFFEE COMPANY" simulation game. We are interested in your perception of the **current competitive structure** of that market based on your experience so far. While answering the following question(s), please keep in mind the **corresponding usage situations** of each of the products.

Using a scale where 1 = No direct competition and 10 = Intense direct competition, please indicate the degree to which you believe that each pair of products compete with each other.

For instance, if you believe that A1 and A2 are not in direct competition, this pair should get a rating of 1. On the other hand, if you perceive that A1 and A2 are in intense direct competition, this pair should receive a rating of 10. Other intermediate degrees of competition should receive ratings that lie between these numbers.

Products	Rating	Products	Rating	Products	Rating
A1 & A2	_____	A1 & B1	_____	A1 & B2	_____
A1 & C1	_____	A1 & C2	_____	A2 & B1	_____
A2 & B2	_____	A2 & C1	_____	A2 & C2	_____
B1 & B2	_____	B1 & C1	_____	B1 & C2	_____
B2 & C1	_____	B2 & C2	_____	C1 & C2	_____

6. Forced Choice Method without Any Priming Cue

Consider the coffee market described in "THE GREAT COFFEE COMPANY" simulation game. We are interested in your perception of the **current competitive structure** of that market based on your experience so far.

For each row below, consider 100 customers for whom you believe that the product listed first is the favorite product. Assume that this product is permanently withdrawn or becomes unavailable in this market. Please estimate what proportion of these customers would switch to each one of the five alternative products that would remain. Please remember that the number of customers estimated for the five products sums to 100.

For instance, let us consider 100 customers for whom product A1 is the favorite product. Now, if you estimate that in the absence of product A1, 20 customers will switch to product A2, 20 to product B1, 20 to product B2, 20 to product C1 and 20 to product C2, your response should be stated as:

A1 A2 20 B1 20 B2 20 C1 20 C2 20

If you estimate that in the absence of product A1, all 100 customers will switch to B2, your response should be stated as:

A1 A2 0 B1 0 B2 100 C1 0 C2 0

100 customers of Favorite Product	Number expected to switch to Alternative Products				
A1	A2 _____	B1 _____	B2 _____	C1 _____	C2 ____
A2	B1 _____	B2 _____	C1 _____	C2 _____	A1 ____
B1	B2 _____	C1 _____	C2 _____	A1 _____	A2 ____
B2	C1 _____	C2 _____	A1 _____	A2 _____	B1 ____
C1	C2 _____	A1 _____	A2 _____	B1 _____	B2 ____
C2	A1 _____	A2 _____	B1 _____	B2 _____	C1 ____

7. Forced Choice Method with Brand Image Priming

Consider the coffee market described in "THE GREAT COFFEE COMPANY" simulation game. We are interested in your perception of the **current competitive structure** of that market based on your experience so far. While answering the following question(s), please keep in mind the **overall brand image** of each of the products.

For each row below, consider 100 customers for whom you believe that the product listed first is the favorite product. Assume that this product is permanently withdrawn or becomes unavailable in this market. Please estimate what proportion of these customers would switch to each one of the five alternative products that would remain. Please remember that the number of customers estimated for the five products sums to 100.

For instance, let us consider 100 customers for whom product A1 is the favorite product. Now, if you estimate that in the absence of product A1, 20 customers will switch to product A2, 20 to product B1, 20 to product B2, 20 to product C1 and 20 to product C2, your response should be stated as:

A1 A2 20 B1 20 B2 20 C1 20 C2 20

If you estimate that in the absence of product A1, all 100 customers will switch to B2, your response should be stated as:

A1 A2 0 B1 0 B2 100 C1 0 C2 0

100 customers of Favorite Product	Number expected to switch to Alternative Products				
A1	A2 _____	B1 _____	B2 _____	C1 _____	C2 ____
A2	B1 _____	B2 _____	C1 _____	C2 _____	A1 ____
B1	B2 _____	C1 _____	C2 _____	A1 _____	A2 ____
B2	C1 _____	C2 _____	A1 _____	A2 _____	B1 ____
C1	C2 _____	A1 _____	A2 _____	B1 _____	B2 ____
C2	A1 _____	A2 _____	B1 _____	B2 _____	C1 ____

8. Forced Choice Method with Attribute/Benefit Priming

Consider the coffee market described in "THE GREAT COFFEE COMPANY" simulation game. We are interested in your perception of the **current competitive structure** of that market based on your experience so far. While answering the following question(s), please keep in mind the **unique and common features** of each of the products.

For each row below, consider 100 customers for whom you believe that the product listed first is the favorite product. Assume that this product is permanently withdrawn or becomes unavailable in this market. Please estimate what proportion of these customers would switch to each one of the five alternative products that would remain. Please remember that the number of customers estimated for the five products sums to 100.

For instance, let us consider 100 customers for whom product A1 is the favorite product. Now, if you estimate that in the absence of product A1, 20 customers will switch to product A2, 20 to product B1, 20 to product B2, 20 to product C1 and 20 to product C2, your response should be stated as:

A1 A2 20 B1 20 B2 20 C1 20 C2 20

If you estimate that in the absence of product A1, all 100 customers will switch to B2, your response should be stated as:

A1 A2 0 B1 0 B2 100 C1 0 C2 0

100 customers of Favorite Product	Number expected to switch to Alternative Products				
A1	A2 _____	B1 _____	B2 _____	C1 _____	C2 ____
A2	B1 _____	B2 _____	C1 _____	C2 _____	A1 ____
B1	B2 _____	C1 _____	C2 _____	A1 _____	A2 ____
B2	C1 _____	C2 _____	A1 _____	A2 _____	B1 ____
C1	C2 _____	A1 _____	A2 _____	B1 _____	B2 ____
C2	A1 _____	A2 _____	B1 _____	B2 _____	C1 ____

9. Forced Choice Method with Usage Situation Priming

Consider the coffee market described in "THE GREAT COFFEE COMPANY" simulation game. We are interested in your perception of the **current competitive structure** of that market based on your experience so far. While answering the following question(s), please keep in mind the **corresponding usage situations** of each of the products.

For each row below, consider 100 customers for whom you believe that the product listed first is the favorite product. Assume that this product is permanently withdrawn or becomes unavailable in this market. Please estimate what proportion of these customers would switch to each one of the five alternative products that would remain. Please remember that the number of customers estimated for the five products sums to 100.

For instance, let us consider 100 customers for whom product A1 is the favorite product. Now, if you estimate that in the absence of product A1, 20 customers will switch to product A2, 20 to product B1, 20 to product B2, 20 to product C1 and 20 to product C2, your response should be stated as:

A1 A2 20 B1 20 B2 20 C1 20 C2 20

If you estimate that in the absence of product A1, all 100 customers will switch to B2, your response should be stated as:

A1 A2 0 B1 0 B2 100 C1 0 C2 0

100 customers of Favorite Product	Number expected to switch to Alternative Products				
A1	A2 _____	B1 _____	B2 _____	C1 _____	C2 ____
A2	B1 _____	B2 _____	C1 _____	C2 _____	A1 ____
B1	B2 _____	C1 _____	C2 _____	A1 _____	A2 ____
B2	C1 _____	C2 _____	A1 _____	A2 _____	B1 ____
C1	C2 _____	A1 _____	A2 _____	B1 _____	B2 ____
C2	A1 _____	A2 _____	B1 _____	B2 _____	C1 ____

APPENDIX 5F

TASK REACTIONS QUESTIONNAIRE

We would now like to obtain your reactions to various aspects of the exercise in which you just participated. Please answer each of the following questions as appropriate.

1. Overall, how involving did you find The Great Coffee Company simulation game?

Not involving	1	2	3	4	5	6	7	Very involving

2. Overall, how interesting did you find The Great Coffee Company simulation game?

Uninteresting	1	2	3	4	5	6	7	Very interesting

3. Overall, how would you rate the level of participation effort you put into The Great Coffee Company simulation game?

Little effort	1	2	3	4	5	6	7	Lot of effort

4. How do you rate your understanding of the patterns of product competition (competitive structure) described in The Great Coffee Company case?

Poor	1	2	3	4	5	6	7	Strong

5. In this study, you were asked to express your perception of the market's competitive structure using two different approaches. One of these approaches was used twice, once at the end of six decisions and then again at the end of 12 decisions. How difficult or easy was it to express your perceptions using this approach?

(a) At the end of 6 decisions?

Difficult	1	2	3	4	5	6	7	Easy

(b) At the end of 12 decisions?

Difficult	1	2	3	4	5	6	7	Easy

6. Relative to the above method, how difficult or easy was it to express your perceptions of the market's competitive structure using the other approach at the end of 12 decisions?

Difficult	1	2	3	4	5	6	7	Easy

Appendix 5F cont'd

7. Overall, how carefully did you complete the three competitive structure assessment questionnaire above?

Not carefully	1	2	3	4	5	6	7	Quite carefully

8. A market has a well-defined competitive structure when it can be divided into partitions or submarkets in which a defined set of products compete with each other but not with products outside the partitions. How well/poorly defined is the competitive structure in the market described in The Great Coffee Company case?

Very well	1	2	3	4	5	6	7	Very poorly

9. One may distinguish three types of competitive structures illustrated below for The Great Coffee Company situation:

- A brand-based structure where the market is divided based on brand names into submarkets that include all products offered under the same brand name.

Brand A (A1 and A2)	Brand B (B1 and B2)	Brand C (C1 and C2)

- A feature-based structure where the market is divided based on specific features into submarkets that include all products that share that feature (e.g., richness).

Very high richness (B1 and C2)	High richness (A2 and C1)	Low richness (A1 and B2)

- A usage-situation based structure where the market is divided based on usage situations into submarkets that include all products that have a common usage situation (e.g., time of use).

Morning (A2 and C2)	Between meals (A1 and B1)	After dinner (B2 and C1)

Based on these descriptions, to what extent who you say that the competitive structure in the market described in The Great Coffee Company case is or is not:

(a) brand-based:

Not at all	1	2	3	4	5	6	7	Entirely

(b) feature-based:

Not at all	1	2	3	4	5	6	7	Entirely

(c) usage-situation based:

Not at all	1	2	3	4	5	6	7	Entirely

10. How do you rate your own profitability performance relative to other participants in The Great Coffee Company simulation game?

Much worse 1 2 3 4 5 6 7 Much better

11. How would you rate your own market share forecasting performance relative to other participants in The Great Coffee Company simulation game?

Much worse 1 2 3 4 5 6 7 Much better

Please write down your name in the space below so that we may identify and relate task responses to the other data that you have provided in this study.

Name: _____

THIS COMPLETES THE QUESTIONNAIRE AND THE STUDY. WE WILL TABULATE THE STUDY RESULTS AND DETERMINE THE WINNERS OF THE COMPETITION AND THE AWARDS WILL BE ANNOUNCED SHORTLY. WE REQUEST THAT YOU DO NOT DISCUSS THE STUDY PROCEDURES AND RESULTS WITH YOUR CLASSMATES UNTIL THE TIME THAT THE AWARDS ARE ANNOUNCED.

WE THANK YOU FOR YOUR COOPERATION AND PARTICIPATION IN THIS STUDY.

APPENDIX 6A

DEVELOPMENT OF DEPENDENT MEASURES

For the **perceived competitive similarity method,** subjects provided a 15-cell matrix (see Appendix 5E) which was standardized within each subject. Using these z-scores, the following structure measures were developed (on the basis of the design of the simulated coffee market, see Figure 5.1):

Structure Measures	Mean of the z-scores from the cells reflecting perceptual similarity of the following products:		
Brand based	A1 & A2	B1 & B2	C1 & C2
Feature based	A2 & C1	A1 & B2	B1 & C2
Usage situation based	B2 & C1	A1 & B1	A2 & C2
Overall similarity based	B1 & C1	A1 & B2	A2 & C2
Feature/overall similarity based	A1 & B2		
Usage situation/overall similarity based	A2 & C2		
Non-diagnostic	A1 & C1 B2 & C2	A2 & B2	A1 & C2 A2 & B1

Appendix 6A cont'd

For the **forced choice method,** subjects provided a 30-cell matrix (see Appendix 5E) which was standardized within each subject. Using these z-scores, the following structure measures were developed (on the basis of the design of the simulated coffee market, see Figure 5.1):

Structure Measures	Mean of the z-scores from the cells reflecting switching probability between the following products (from - to):					
Brand based	A1 - A2	B1 - B2	C1 - C2	A2 - A1	B2 - B1	C2 - C1
Feature based	A1 - B2	A2 - C1	B1 - C2	B2 - A1	C1 - A2	C2 - B1
Usage situation based	B2 - C1	A1 - B1	C2 - A2	A2 - C2	B1 - A1	C1 - B2
Overall similarity based	B1 - C1	C2 - A2	A1 - B2	B2 - A1	A2 - C2	C1 - B1
Feature/ overall similarity based	A1 - B2			B2 - A1		
Usage situation/ overall similarity based	C2 - A2			A2 - C2		
Non-diagnostic	A2 - B1	C2 - A1 B2 - A2	A2 - B2 C2 - B2	B2 - C2 A1 - C2	C1 - A1 B1 - A2	A1 - C1

APPENDIX 6B

RATING SHEET FOR JUDGES

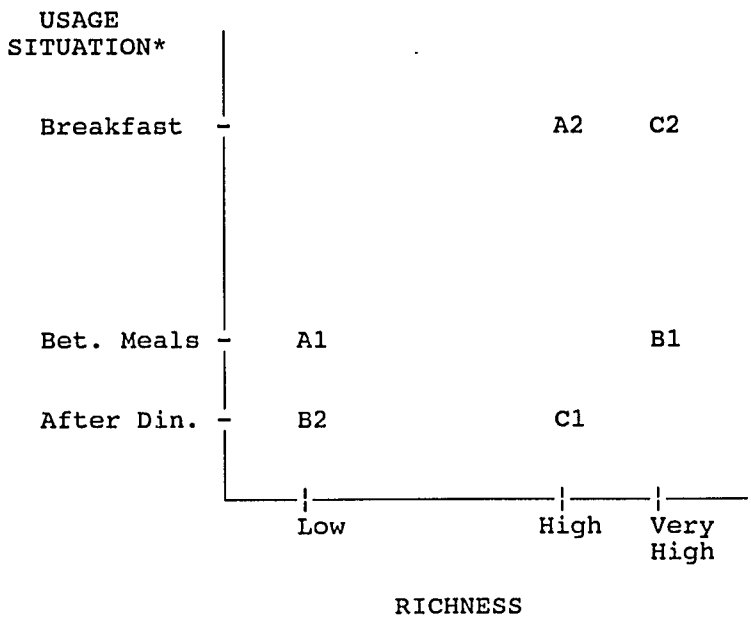
TIME 1: JUDGE:

STRUCTURE	RELATIONSHIPS AMONG PRODUCTS	YOUR RATING (1= NOT AT ALL; 7 = ENTIRELY) Subject #1 . . . . . Subject #76
BRAND BASED	A1A2 B1B2 C1C2	
FEATURE BASED	A1B2 A2C1 C2B1	
USAGE SITUATION BASED	A2C2 A1B1 B2C1	
OVERALL SIMILARITY BASED	A1B2 A2C2 B1C1	
FEATURE/OVERALL SIMILARITY BASED	A1B2	
USAGE SITUATION/OVERALL SIMILARITY BASED	A2C2	
BINARY BRAND BASED	A1A2 B1B2C1C2 A1B2 A2C2B1C1 A2C2 A1B2B1C1 B1C1 A1B2A2C2	
NON-DIAGNOSTIC	Anything that excludes above relationships	

Note: A similar form was used at Time 2A.

FIGURE 5.1

DESIGN OF SIMULATED COFFEE MARKET



* Usage situation is defined in terms of a cluster of features consisting of strength, caffeine content and country of origin.

Competitive Partitions:

Feature (Richness):	Low (A1, B2) High (A2, C1) Very High (B1, C2)
Usage Situation:	Breakfast (A2, C2) Between Meals (A1, B1) After Dinner (B2, C1)
Overall Similarity:	(A1,B2) (B1,C1) (A2,C2)
Brand:	(A1,A2) (B1,B2) (C1,C2)

FIGURE 5.2: DIAGRAMMATIC REPRESENTATION OF EXPERIMENTAL DESIGN

Premeasurement Task	Exposure to the Case	Subject Groups		Phase 1: Ad Decisions	Phase 2: Judgment Elicitation Method/Cue, Time 1	Phase 3: Ad Decisions	Phase 4: Judgment Elicitation Method/Cue, Time 2A	Phase 4: Judgment Elicitation Method/Cue, Time 2B	Task Assessment
		R	GROUP 1A	D_1 D_2 D_3 D_4 D_5 D_6	UE	D_7 D_8 D_9 D_{10} D_{11} D_{12}	UE	PS/N	
			GROUP 1B	D_1 D_2 D_3 D_4 D_5 D_6	UE	D_7 D_8 D_9 D_{10} D_{11} D_{12}	UE	FC/N	
			GROUP 2	D_1 D_2 D_3 D_4 D_5 D_6	PS/I	D_7 D_8 D_9 D_{10} D_{11} D_{12}	PS/I	FC/I	
			GROUP 3	D_1 D_2 D_3 D_4 D_5 D_6	FC/I	D_7 D_8 D_9 D_{10} D_{11} D_{12}	FC/I	PS/I	
			GROUP 4	D_1 D_2 D_3 D_4 D_5 D_6	PS/F	D_7 D_8 D_9 D_{10} D_{11} D_{12}	PS/F	FC/F	
			GROUP 5	D_1 D_2 D_3 D_4 D_5 D_6	FC/F	D_7 D_8 D_9 D_{10} D_{11} D_{12}	FC/F	PS/F	
			GROUP 6	D_1 D_2 D_3 D_4 D_5 D_6	PS/U	D_7 D_8 D_9 D_{10} D_{11} D_{12}	PS/U	FC/U	
			GROUP 7	D_1 D_2 D_3 D_4 D_5 D_6	FC/U	D_7 D_8 D_9 D_{10} D_{11} D_{12}	FC/U	PS/U	

Notes:

1. R: Randomization of subject assignment to groups.
2. D: Sequential advertising decisions made by the subject (subscript denotes the decision number) along with a forecast for market-share associated with decision. Immediate outcome feedback was given to the subject following each decision.
3. Market structure judgments were elicited using three methods: UE-Unaided Elicitation (unaided by a formally structured method); PS-Perceptual Similarity Method; & FC-Forced Choice Method.
4. Four priming cues were provided during elicitation of market structure judgments: N-No Cue; I-Brand Image/Concept cue; F-Feature/Benefit cue; & U-Usage Situation cue.
5. Judgments elicited at Times 1 & 2A used identical methods for each group. Judgments elicited at Times 2A & 2B used two methods sequentially—the order being either Perceptual Similarity-Forced Choice or vice versa. Baseline groups 1A & 1B varied by the method used at Time 2B to elicit judgments.

Table 4.1

SUMMARY OF HYPOTHESES

Condition		Predicted Structure
Elicitation Method Main Effects:		
- Unaided	H1:	Binary partitions on overall similarity using the manager's product as referent.
- Perceived Competitive Similarity	H2:	Feature based, blending general feature similarity and overall similarity with the manager's product.
- Forced Choice Probability	H3:	Feature-based structures.
Primary Cue Main Effects:		
- Brand Image/Concepts	H4a:	Brand based.
- Attribute/Benefit	H4b:	Feature based.
- Usage Situation	H4c:	Feature based.
Method-Priming Interactions:		
- H5: Primary effects weakest for forced choice, followed by perceived competition similarity, followed by unaided elicitation.		
- H6: Feature based structure of forced choice method		
- accentuated by brand image/concept priming.		
- accentuated by usage situation priming.		
- accentuated by attribute/benefit priming.		

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Unaided Elicitation case)

Table 6.1: Summary MANOVA: All seven structure measures

Test involving "Time" within-subject effects:

	Test	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Time	Wilks λ	0.387	1.581	7.0	7.0	0.280

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Unaided Elicitation case)

Table 6.2: Mean z-scores for individual structure measures

	Time 1 (After 6 decisions)	Time 2A (After 12 decisions)
	Unaided Elicitation	Unaided Elicitation
Brand based structure	-0.040	-0.240
Feature based structure	-0.438	-0.162
Usage situation based structure	0.080	0.544
Overall similarity based structure	-0.080	-0.162
Feature/overall similarity based structure	0.478	0.466
Usage situation/overall similarity based structure	1.036	0.505
Binary market structure	-0.837	-0.828

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Unaided Elicitation case)

Table 6.3: Summary ANOVA: Brand similarity based structure measures

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	4.41	13	0.34		
Time	0.28	1	0.28	0.83	0.380

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Unaided Elicitation case)

Table 6.4: Summary ANOVA: Feature similarity based structure measures

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	5.07	13	0.39		
Time	0.53	1	0.53	1.37	0.263

Table 6.5: Summary ANOVA: Usage situation similarity based structure measures

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	6.91	13	0.53		
Time	1.51	1	1.51	2.84	0.116

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Unaided Elicitation case)

Table 6.6: Summary ANOVA: Overall similarity based structure measures

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	6.57	13	0.51		
Time	0.05	1	0.05	0.09	0.765

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Unaided Elicitation case)

Table 6.7: Summary ANOVA: Feature/overall similarity based structure measures

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	20.36	13	1.57		
Time	0.00	1	0.00	0.00	0.980

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Unaided Elicitation case)

Table 6.8: Summary ANOVA: Usage situation/overall similarity based structure measures

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	3.28	13	0.25		
Time	1.97	1	1.97	7.82	0.015

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Unaided Elicitation case)

Table 6.9: Summary ANOVA: Binary brand based market structure measures

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	1.06	13	0.08		
Time	0.00	1	0.00	0.01	0.941

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Unaided Elicitation case)

Table 6.10: Summary MANOVA: All six structure measures

Test involving "Time" within-subject effects:

	Test	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Time	Wilks λ	0.614	0.839	6.0	8.0	0.573

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Unaided Elicitation case)

Table 6.11: Summary of mean z-scores for individual structure measures

	After 12 decisions	
	Time 2A Unaided Elicitation	Time 2B Structured Elicitation
Brand based structure	-0.240	-0.005
Feature based structure	-0.162	-0.011
Usage situation based structure	0.544	0.557
Overall similarity based structure	-0.162	0.190
Feature/overall similarity based structure	0.466	0.062
Usage situation/overall similarity based structure	0.505	0.851

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Unaided Elicitation case)

Table 6.12: Summary ANOVA: Brand similarity based structure measures

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	4.10	13	0.32		
Time	0.39	1	0.39	1.23	0.288

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Unaided Elicitation case)

Table 6.13: Summary ANOVA: Feature similarity based structure measures

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	5.20	13	0.40		
Time	0.16	1	0.16	0.40	0.539

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Unaided Elicitation case)

Table 6.14: Summary ANOVA: Usage situation similarity based structure measures

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	2.05	13	0.16		
Time	0.00	1	0.00	0.01	0.935

Table 6.15: Summary ANOVA: Overall similarity based structure measures

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	4.89	13	0.38		
Time	0.86	1	0.86	2.30	0.153

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Unaided Elicitation case)

Table 6.16: Summary ANOVA: Feature/overall similarity based structure measures

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	12.79	13	0.98		
Time	1.14	1	1.14	1.16	0.301

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Unaided Elicitation case)

Table 6.17: Summary ANOVA: Usage situation/overall similarity based structure measures

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	9.93	13	0.76		
Time	0.84	1	0.84	1.10	0.314

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Unaided Elicitation case)

Table 6.18: Summary of mean z-scores for individual structure measures

	After 12 decisions		
	Time 2A	Time 2B	
	Unaided Elicitation	Perceived Competitive Similarity	Forced Choice
Brand based structure	-0.894 0.250	-0.504 ---	--- 0.369
Feature based structure	-0.436 0.044	-0.005 ---	--- -0.016
Usage situation based structure	0.662 0.456	0.739 ---	--- 0.420
Overall similarity based structure	-0.528 0.113	0.009 ---	--- 0.325
Feature/overall similarity based structure	0.387 0.525	-0.471 ---	--- 0.461
Usage situation/overall similarity based structure	0.296 0.662	1.056 ---	--- 0.697

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Unaided Elicitation case)

Table 6.19: Summary ANOVA: Brand similarity based structure measures

Tests involving between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	5.18	12	0.43		
Method Order	6.97	1	6.97	16.13	0.002

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	3.98	12	0.33		
Time	0.44	1	0.44	1.34	0.269
Method Order by Time	0.13	1	0.13	0.38	0.549

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Unaided Elicitation case)

Table 6.20: Summary ANOVA: Feature similarity based structure measures

Tests involving between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	9.19	12	0.77		
Method Order	0.38	1	0.38	0.49	0.496

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	4.78	12	0.40		
Time	0.24	1	0.24	0.59	0.456
Method Order by Time	0.41	1	0.41	1.04	0.328

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Unaided Elicitation case)

Table 6.21: Summary ANOVA: Usage situation similarity based structure measures

Tests involving between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	8.28	12	0.69		
Method Order	0.47	1	0.47	0.69	0.424

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	2.03	12	0.17		
Time	0.00	1	0.00	0.02	0.898
Method Order by Time	0.02	1	0.02	0.13	0.724

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Unaided Elicitation case)

Table 6.22: Summary ANOVA: Overall similarity based structure measures

Tests involving between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	13.60	12	1.13		
Method Order	1.57	1	1.57	1.38	0.262

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	4.70	12	0.39		
Time	0.96	1	0.96	2.45	0.143
Method Order by Time	0.18	1	0.18	0.46	0.510

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Unaided Elicitation case)

Table 6.23: Summary ANOVA: Feature/overall similarity based structure measures

Tests involving between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	18.90	12	1.57		
Method Order	1.96	1	1.96	1.24	0.287

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	11.71	12	0.98		
Time	1.46	1	1.46	1.49	0.245
Method Order by Time	1.08	1	1.08	1.11	0.313

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Unaided Elicitation case)

Table 6.24: Summary ANOVA: Usage situation/overall similarity based structure measures

Tests involving between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	17.85	12	1.49		
Method Order	0.00	1	0.00	0.00	0.995

Test involving "Time" within-subject effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	9.03	12	0.75		
Time	1.08	1	1.08	1.44	0.253
Method Order by Time	0.90	1	0.90	1.20	0.295

Table 6.25: Summary MANOVA: All six structure measures

Tests involving between-subjects effects:

	Test	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Method by cue	Wilks λ	0.849	0.684	12.0	96.0	0.763
Cue	Wilks λ	0.892	0.469	12.0	96.0	0.928
Method	Wilks λ	0.694	3.524	6.0	48.0	0.006

Test involving "Time" within-subject effects:

	Test	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Method by cue by time	Wilks λ	0.753	1.216	12.0	96.0	0.283
Cue by time	Wilks λ	0.787	1.019	12.0	96.0	0.438
Method by time	Wilks λ	0.852	1.391	6.0	48.0	0.237
Time	Wilks λ	0.741	2.803	6.0	48.0	0.020

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Structured Elicitation case)

Table 6.26: Summary of mean z-scores for individual structure measures

	Time 1 (After 6 decisions)			Time 2A (After 12 decisions)		
	Method 1 (PS)	Method 2 (FC)	Mean	Method 1 (PS)	Method 2 (FC)	Mean
Brand based structure	0.195	0.034	0.116	-0.175	0.053	-0.063
Feature based structure	-0.144	-0.060	-0.102	-0.164	-0.020	-0.093
Usage situation based structure	0.266	0.531	0.396	0.519	0.527	0.523
Overall similarity based structure	0.217	0.879	0.542	0.033	0.596	0.310
Feature/overall similarity based structure	-0.066	0.750	0.402	-0.125	0.573	0.218
Usage situation/overall similarity based structure	0.715	1.638	1.169	0.469	1.286	0.871

Note: PS = Perceived Competitive Similarity method.
FC = Forced Choice method.

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Structured Elicitation case)

Table 6.27: Summary of mean z-scores for individual structure measures

	Time 1 (After 6 decisions)				Time 2A (After 12 decisions)			
	Cue 1 (Brand Image)	Cue 2 (Attribute)	Cue 3 (Usage Situation)	Mean	Cue 1 (Brand Image)	Cue 2 (Attribute)	Cue 3 (Usage Siutation)	Mean
Brand based structure	0.133	0.065	0.148	0.116	-0.022	-0.259	0.081	-0.063
Feature based structure	0.039	-0.163	-0.186	-0.102	-0.075	-0.017	-0.183	-0.093
Usage situation based structure	0.292	0.388	0.508	0.396	0.570	0.446	0.549	0.523
Overall similarity based structure	0.610	0.538	0.480	0.542	0.264	0.260	0.402	0.310
Feature/overall similarity based structure	0.686	0.212	0.298	0.402	0.159	0.325	0.166	0.218
Usage situation/ overall similarity based structure	1.124	1.162	1.219	1.169	0.917	0.659	1.025	0.871

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Structured Elicitation case)

Table 6.28: Summary ANOVA: Brand similarity based structure measures

Tests of between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	29.59	53	0.56		
Method	0.02	1	0.02	0.04	0.844
Cue	0.94	2	0.47	0.84	0.437
Method by Cue	0.54	2	0.27	0.48	0.620

Tests involving 'Time' within-subject effect:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	12.61	53	0.24		
Time	0.93	1	0.93	3.89	0.054
Method by Time	1.10	1	1.10	4.62	0.036
Cue by Time	0.30	2	0.15	0.62	0.541
Method by Cue by Time	0.06	2	0.03	0.12	0.888

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Structured Elicitation case)

Table 6.29: Mean z-scores for brand based structure measure

	Time 1 (After 6 decisions)			Time 2A (After 12 decisions)		
	Method 1 (PS)	Method 2 (FC)	Mean	Method 1 (PS)	Method 2 (FC)	Mean
Cue 1 (Brand image)	0.231	0.035	0.133	-0.083	0.038	-0.022
Cue 2 (Attribute)	0.232	-0.120	0.065	-0.334	-0.175	-0.259
Cue 3 (Usage situation)	0.123	0.172	0.148	-0.109	0.271	0.081
Mean	0.195	0.034	0.116	-0.175	0.053	-0.063

Note: PS = Perceived Competitive Similarity method.
FC = Forced Choice method.

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Structured Elicitation case)

Table 6.30: Summary ANOVA: Feature similarity based structure measures

Tests of between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	13.04	53	0.25		
Method	0.41	1	0.41	1.66	0.204
Cue	0.57	2	0.28	1.15	0.325
Method by Cue	1.03	2	0.52	2.10	0.133

Tests involving 'Time' within-subject effect:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	4.41	53	0.08		
Time	0.01	1	0.01	0.08	0.780
Method by Time	0.04	1	0.04	0.42	0.518
Cue by Time	0.35	2	0.18	2.11	0.131
Method by Cue by Time	0.54	2	0.27	3.27	0.046

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Structured Elicitation case)

Table 6.31: Mean z-scores for feature based structure measure

	Time 1 (After 6 decisions)			Time 2A (After 12 decisions)		
	Method 1 (PS)	Method 2 (FC)	Mean	Method 1 (PS)	Method 2 (FC)	Mean
Cue 1 (Brand image)	-0.022	0.099	0.039	-0.211	0.062	-0.075
Cue 2 (Attribute)	-0.219	-0.100	-0.163	-0.241	0.232	-0.017
Cue 3 (Usage situation)	-0.190	-0.182	-0.186	-0.039	-0.328	-0.183
Mean	-0.144	-0.060	-0.102	-0.164	-0.020	-0.093

Note: PS = Perceived Competitive Similarity method.
FC = Forced Choice method.

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Structured Elicitation case)

Table 6.32: Summary ANOVA: Usage situation similarity based structure measures

Tests of between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	31.50	53	0.59		
Method	0.50	1	0.50	0.85	0.362
Cue	0.30	2	0.15	0.25	0.780
Method by Cue	0.69	2	0.35	0.58	0.561

Tests involving 'Time' within-subject effect:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	11.07	53	0.21		
Time	0.44	1	0.44	2.13	0.151
Method by Time	0.50	1	0.50	2.41	0.126
Cue by Time	0.36	2	0.18	0.86	0.428
Method by Cue by Time	0.13	2	0.06	0.30	0.741

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Structured Elicitation case)

Table 6.33: Mean z-scores for usage situation based structure measure

	Time 1 (After 6 decisions)			Time 2A (After 12 decisions)		
	Method 1 (PS)	Method 2 (FC)	Mean	Method 1 (PS)	Method 2 (FC)	Mean
Cue 1 (Brand image)	0.071	0.512	0.292	0.532	0.608	0.570
Cue 2 (Attribute)	0.349	0.432	0.388	0.568	0.311	0.446
Cue 3 (Usage situation)	0.378	0.637	0.508	0.458	0.639	0.549
Mean	0.266	0.531	0.396	0.519	0.527	0.523

Note: PS = Perceived Competitive Similarity method.
FC = Forced Choice method.

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Structured Elicitation case)

Table 6.34: Summary ANOVA: Overall similarity based structure measures

Tests of between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	54.97	53	1.04		
Method	11.01	1	11.01	10.62	0.002
Cue	0.02	2	0.01	0.01	0.992
Method by Cue	0.13	2	0.06	0.06	0.941

Tests involving 'Time' within-subject effect:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	11.26	53	0.21		
Time	1.66	1	1.66	7.83	0.007
Method by Time	0.08	1	0.08	0.39	0.536
Cue by Time	0.40	2	0.20	0.94	0.397
Method by Cue by Time	0.55	2	0.28	1.30	0.282

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Structured Elicitation case)

Table 6.35: Mean z-scores for overall similarity based structure measure

	Time 1 (After 6 decisions)			Time 2A (After 12 decisions)		
	Method 1 (PS)	Method 2 (FC)	Mean	Method 1 (PS)	Method 2 (FC)	Mean
Cue 1 (Brand image)	0.250	0.970	0.610	-0.078	0.608	0.264
Cue 2 (Attribute)	0.156	0.962	0.538	0.102	0.435	0.260
Cue 3 (Usage situation)	0.246	0.713	0.480	0.074	0.730	0.402
Mean	0.217	0.879	0.542	0.033	0.596	0.310

Note: PS = Perceived Competitive Similarity method.
FC = Forced Choice method.

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Structured Elicitation case)

Table 6.36: Summary ANOVA: Feature/overall similarity based structure measures

Tests of between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	94.75	53	1.79		
Method	14.31	1	14.31	8.01	0.007
Cue	0.79	2	0.40	0.22	0.802
Method by Cue	2.37	2	1.19	0.66	0.519

Tests involving 'Time' within-subject effect:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	20.99	53	0.40		
Time	0.97	1	0.97	2.45	0.123
Method by Time	0.00	1	0.00	0.01	0.940
Cue by Time	1.93	2	0.97	2.44	0.097
Method by Cue by Time	0.38	2	0.19	0.47	0.625

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Structured Elicitation case)

Table 6.37: Mean z-scores for feature/overall similarity based structure measure

	Time 1 (After 6 decisions)			Time 2A (After 12 decisions)		
	Method 1 (PS)	Method 2 (FC)	Mean	Method 1 (PS)	Method 2 (FC)	Mean
Cue 1 (Brand image)	0.392	0.981	0.686	-0.181	0.518	0.159
Cue 2 (Attribute)	-0.365	0.854	0.212	-0.112	0.811	0.325
Cue 3 (Usage situation)	-0.169	0.427	0.298	-0.082	0.414	0.166
Mean	-0.066	0.750	0.402	-0.125	0.573	0.218

Note: PS = Perceived Competitive Similarity method.
FC = Forced Choice method.

Table 6.38: Summary ANOVA: Usage situation/overall similarity based structure measures

Tests of between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	108.68	53	2.05		
Method	21.87	1	21.87	10.66	0.002
Cue	0.75	2	0.38	0.18	0.833
Method by Cue	1.37	2	0.68	0.33	0.718

Tests involving 'Time' within-subject effect:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	33.48	53	0.63		
Time	2.77	1	2.77	4.38	0.041
Method by Time	0.11	1	0.11	0.17	0.682
Cue by Time	0.65	2	0.33	0.51	0.601
Method by Cue by Time	1.33	2	0.66	1.05	0.357

COMPARATIVE MARKET STRUCTURES FOR TIME 1 AND 2A
(Structured Elicitation case)

Table 6.39: Mean z-scores for usage situation/overall similarity based structure measure

	Time 1 (After 6 decisions)			Time 2A (After 12 decisions)		
	Method 1 (PS)	Method 2 (FC)	Mean	Method 1 (PS)	Method 2 (FC)	Mean
Cue 1 (Brand image)	0.524	1.725	1.124	0.428	1.407	0.917
Cue 2 (Attribute)	0.754	1.615	1.162	0.527	0.805	0.659
Cue 3 (Usage situation)	0.867	1.571	1.219	0.451	1.599	1.025
Mean	0.715	1.638	1.169	0.469	1.286	0.871

Note: PS = Perceived Competitive Similarity method.
FC = Forced Choice method.

Table 6.40: Summary MANOVA: All six structure measures

Tests involving between-subjects effects:

	Test	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Method order by cue	Wilks λ	0.815	0.859	12.0	96.0	0.591
Cue	Wilks λ	0.847	0.691	12.0	96.0	0.756
Method order	Wilks λ	0.816	1.800	6.0	48.0	0.119

Test involving "Time" within-subject effects:

	Test	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Method order by cue by time	Wilks λ	0.827	0.797	12.0	96.0	0.652
Cue by time	Wilks λ	0.825	0.809	12.0	96.0	0.640
Method order by time	Wilks λ	0.824	1.171	6.0	48.0	0.139
Time	Wilks λ	0.871	1.188	6.0	48.0	0.329

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Structured Elicitation case)

Table 6.41: Summary of mean z-scores for different structure measures

	After 12 decisions					
	Time 2A			Time 2B		
	Method Order 1 (PS - FC)	Method Order 2 (FC - PS)	Mean	Method Order 1 (PS - FC)	Method Order 2 (FC - PS)	Mean
Brand based structure	-0.175	0.053	-0.063	-0.021	-0.158	-0.088
Feature based structure	-0.164	-0.020	-0.093	-0.281	-0.049	-0.167
Usage situation based structure	0.519	0.527	0.523	0.542	0.579	0.560
Overall similarity based structure	0.033	0.596	0.310	0.162	0.617	0.386
Feature/overall similarity based structure	-0.125	0.573	0.218	-0.212	0.603	0.189
Usage situation/overall similarity based structure	0.469	1.286	0.871	0.921	1.301	1.108

Note: PS - FC = Method order was Perceived Competitive Similarity followed by Forced Choice.
FC - PS = Method order was Forced Choice followed by Perceived Competitive Similarity.

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Structured Elicitation case)

Table 6.42: Summary of mean z-scores for individual structure measures

	After 12 decisions							
	Time 2A				Time 2B			
	Cue 1 (Brand Image)	Cue 2 (Attribute)	Cue 3 (Usage Situation)	Mean	Cue 1 (Brand Image)	Cue 2 (Attribute)	Cue 3 (Usage Siutation)	Mean
Brand based structure	-0.022	-0.259	0.081	-0.063	-0.071	-0.323	0.118	-0.088
Feature based structure	-0.075	-0.017	-0.183	-0.093	-0.176	-0.081	-0.240	-0.167
Usage situation based structure	0.570	0.446	0.549	0.523	0.510	0.649	0.526	0.560
Overall similarity based structure	0.264	0.260	0.402	0.310	0.376	0.423	0.361	0.386
Feature/overall similarity based structure	0.169	0.325	0.166	0.218	0.113	0.296	0.163	0.189
Usage situation/ overall similarity based structure	0.917	0.659	1.025	0.871	1.092	1.284	0.957	1.108

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Structured Elicitation case)

Table 6.43: Summary ANOVA: Brand similarity based structure measures

Tests of between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	31.69	53	0.58		
Method Order	0.04	1	0.04	0.08	0.783
Cue	2.98	2	1.49	2.57	0.086
Method Order by Cue	0.04	2	0.02	0.03	0.969

Tests involving 'Time' within-subject effect:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	8.63	53	0.16		
Time	0.02	1	0.02	0.13	0.718
Method Order by Time	0.97	1	0.97	5.95	0.018
Cue by Time	0.06	2	0.03	0.19	0.828
Method Order by Cue by Time	0.52	2	0.26	1.59	0.213

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Structured Elicitation case)

Table 6.44: Mean z-scores for brand based structure measure

	Time 2A			Time 2B		
	Method Order 1 (PS - FC)	Method Order 2 (FC - PS)	Mean	Method Order 1 (PS - FC)	Method Order 2 (FC - PS)	Mean
Cue 1 (Brand image)	-0.083	0.038	-0.022	-0.025	-0.118	-0.071
Cue 2 (Attribute)	-0.334	-0.175	-0.259	-0.333	-0.313	-0.323
Cue 3 (Usage situation)	-0.109	-0.271	0.081	-0.295	-0.059	0.118
Mean	-0.175	0.053	-0.063	-0.021	-0.158	-0.088

Note: PS - FC = Method order was Perceived Competitive Similarity followed by Forced Choice.
FC - PS = Method order was Forced Choice followed by Perceived Competitive Similarity.

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Structured Elicitation case)

Table 6.45: Summary ANOVA: Feature similarity based structure measures

Tests of between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	11.04	53	0.21		
Method Order	1.11	1	1.11	5.3	0.025
Cue	0.58	2	0.29	1.38	0.260
Method Order by Cue	1.64	2	0.82	3.95	0.025

Tests involving 'Time' within-subject effect:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	4.53	53	0.09		
Time	0.17	1	0.17	1.98	0.165
Method Order by Time	0.05	1	0.05	0.59	0.445
Cue by Time	0.01	2	0.01	0.06	0.940
Method Order by Cue by Time	0.36	2	0.18	2.10	0.132

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Structured Elicitation case)

Table 6.46: Mean z-scores for feature based structure measure

	Time 2A			Time 2B		
	Method Order 1 (PS - FC)	Method Order 2 (FC - PS)	Mean	Method Order 1 (PS - FC)	Method Order 2 (FC - PS)	Mean
Cue 1 (Brand image)	-0.211	0.062	-0.075	-0.398	0.046	-0.176
Cue 2 (Attribute)	-0.241	0.232	-0.017	-0.200	0.051	-0.081
Cue 3 (Usage situation)	-0.039	-0.328	-0.183	-0.245	-0.234	-0.240
Mean	-0.164	-0.020	-0.093	-0.281	-0.049	-0.167

Note: PS - FC = Method order was Perceived Competitive Similarity followed by Forced Choice.
FC - PS = Method order was Forced Choice followed by Perceived Competitive Similarity.

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Structured Elicitation case)

Table 6.47: Summary ANOVA: Usage situation similarity based structure measures

Tests of between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	33.05	53	0.62		
Method Order	0.01	1	0.01	0.02	0.898
Cue	0.00	2	0.00	0.00	1.000
Method Order by Cue	0.80	2	0.40	0.64	0.529

Tests involving 'Time' within-subject effect:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	6.80	53	0.13		
Time	0.05	1	0.05	0.39	0.536
Method Order by Time	0.01	1	0.01	0.08	0.776
Cue by Time	0.40	2	0.20	1.56	0.220
Method Order by Cue by Time	0.04	2	0.02	0.14	0.868

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Structured Elicitation case)

Table 6.48: Mean z-scores for usage situation based structure measure

	Time 2A			Time 2B		
	Method Order 1 (PS - FC)	Method Order 2 (FC - PS)	Mean	Method Order 1 (PS - FC)	Method Order 2 (FC - PS)	Mean
Cue 1 (Brand image)	0.532	0.608	0.570	0.499	0.521	0.510
Cue 2 (Attribute)	0.568	0.311	0.446	0.715	0.576	0.649
Cue 3 (Usage situation)	0.458	0.639	0.549	0.411	0.640	0.526
Mean	0.519	0.527	0.523	0.542	0.579	0.560

Note: PS - FC = Method order was Perceived Competitive Similarity followed by Forced Choice.
FC - PS = Method order was Forced Choice followed by Perceived Competitive Similarity.

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Structured Elicitation case)

Table 6.49: Summary ANOVA: Overall similarity based structure measures

Tests of between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	73.83	53	1.39		
Method Order	7.54	1	7.54	5.41	0.024
Cue	0.08	2	0.04	0.03	0.973
Method Order by Cue	0.58	2	0.29	0.21	0.814

Tests involving 'Time' within-subject effect:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	6.42	53	0.12		
Time	0.18	1	0.18	1.45	0.234
Method Order by Time	0.08	1	0.08	0.67	0.416
Cue by Time	0.22	2	0.11	0.91	0.408
Method Order by Cue by Time	0.03	2	0.01	0.11	0.895

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Structured Elicitation case)

Table 6.50: Mean z-scores for overall similarity based structure measure

	Time 2A			Time 2B		
	Method Order 1 (PS - FC)	Method Order 2 (FC - PS)	Mean	Method Order 1 (PS - FC)	Method Order 2 (FC - PS)	Mean
Cue 1 (Brand image)	-0.078	0.608	0.264	0.127	0.625	0.376
Cue 2 (Attribute)	0.102	0.435	0.260	0.290	0.571	0.423
Cue 3 (Usage situation)	0.074	0.730	0.402	0.070	0.652	0.361
Mean	0.033	0.596	0.310	0.162	0.617	0.386

Note: PS - FC = Method order was Perceived Competitive Similarity followed by Forced Choice.
FC - PS = Method order was Forced Choice followed by Perceived Competitive Similarity.

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Structured Elicitation case)

Table 6.51: Summary ANOVA: Feature/overall similarity based structure measurs

Tests of between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	116.08	53	2.19		
Method Order	17.14	1	17.14	7.83	0.007
Cue	0.86	2	0.43	0.20	0.823
Method Order by Cue	0.86	2	0.43	0.20	0.822

Tests involving 'Time' within-subject effect:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	13.77	53	0.26		
Time	0.03	1	0.03	0.10	0.752
Method Order by Time	0.10	1	0.10	0.37	0.546
Cue by Time	0.01	2	0.01	0.03	0.973
Method Order by Cue by Time	0.19	2	0.10	0.37	0.692

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Structured Elicitation case)

Table 6.52: Mean z-scores for feature/overall similarity based structure measure

	Time 2A			Time 2B		
	Method Order 1 (PS - FC)	Method Order 2 (FC - PS)	Mean	Method Order 1 (PS - FC)	Method Order 2 (FC - PS)	Mean
Cue 1 (Brand image)	-0.181	0.518	0.169	-0.404	0.630	0.113
Cue 2 (Attribute)	-0.112	0.811	0.325	-0.120	0.757	0.296
Cue 3 (Usage situation)	-0.082	0.414	0.166	-0.111	0.438	0.163
Mean	-0.125	0.573	0.218	-0.212	0.603	0.189

Note: PS - FC = Method order was Perceived Competitive Similarity followed by Forced Choice.
FC - PS = Method order was Forced Choice followed by Perceived Competitive Similarity.

Table 6.53: Summary ANOVA: Usage situation/overall similarity based structure measures

Tests of between-subjects effects:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	141.19	53	2.66		
Method Order	10.29	1	10.29	3.86	0.055
Cue	0.02	2	0.01	0.00	0.997
Method Order by Cue	3.15	2	1.57	0.59	0.557

Tests involving 'Time' within-subject effect:

Source of Variation	SS	DF	MS	F	Sig. of F
Within Cells	22.35	53	0.42		
Time	1.73	1	1.73	4.10	0.048
Method Order by Time	1.30	1	1.30	3.09	0.085
Cue by Time	2.35	2	1.18	2.79	0.070
Method Order by Cue by Time	0.37	2	0.19	0.44	0.645

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Structured Elicitation case)

Table 6.54: Mean z-scores for usage situation/overall similarity based structure measure

	Time 2A			Time 2B		
	Method Order 1 (PS - FC)	Method Order 2 (FC - PS)	Mean	Method Order 1 (PS - FC)	Method Order 2 (FC - PS)	Mean
Cue 1 (Brand image)	0.428	1.407	0.917	0.967	1.217	1.092
Cue 2 (Attribute)	0.527	0.805	0.659	1.247	1.325	1.284
Cue 3 (Usage situation)	0.451	1.599	1.025	0.550	1.365	0.957
Mean	0.469	1.286	0.871	0.921	1.301	1.108

Note: PS - FC = Method order was Perceived Competitive Similarity followed by Forced Choice.
FC - PS = Method order was Forced Choice followed by Perceived Competitive Similarity.

COMPARATIVE MARKET STRUCTURES FOR TIME 2A AND 2B
(Structured Elicitation case)

Table 6.55: Summary MANOVA: All six structures measures

Test involving "Time" within-subject effects:

Time Effect for	Test	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Method Order 1 (PS-FC)	Wilks λ	0.548	3.305	6.0	24.0	0.016
Method Order 2 (FC-PS)	Wilks λ	0.806	0.920	6.0	23.0	0.498

Note: PS - FC = Method order was Perceived Competitive Similarity followed by Forced Choice.
FC - PS = Method order was Forced Choice followed by Perceived Competitive Similarity.

REFERENCES

Abell, Derek F. (1980), Defining the Business: The Starting Point of Strategic Planning, Prentice-Hall, Englewood Cliffs, NJ.

_____ and John S. Hammond (1979), Strategic Market Planning: Problems and Analytical Approaches, Prentice-Hall, Englewood Cliffs, NJ.

Arabie, Phipps, J. Douglas Carroll, Wayne DeSarbo and Jerry Wind (1981), "Overlapping Clustering: A New Method for Product Positioning," Journal of Marketing Research, XVIII (August), 310-317.

Assael, Henry and A. Marvin Roscoe Jr. (1976), "Approaches to Market Segmentation Analysis," Journal of Marketing, 40, 4 (October), 67-76.

Bass, Frank M., Edgar A. Pessemier and Douglas J. Tigert (1969), "A Taxonomy of Magazine Readership Applied to Problems in Marketing Strategy and Media Selection," Journal of Business, 42, 3 (July), 337-363.

_____, Douglas J. Tigert and Ronald T. Lonsdale (1968), "Market Segmentation: Group Versus Individual Behavior," Journal of Marketing Research, V (August), 264-270.

Bettman, James R., Noel Capon and Richard J. Lutz (1975), "Multiattribute Measurement Models and Multiattribute Attitude Theory: A Test of Construct Validity," Journal of Consumer Research, 1 (March), 1-15.

Blattberg, R.C. and S.J. Hoch (1990), "Database Models and Managerial Intuition: 50% Model + 50% Manager," Management Science, 36, 8, August, 887-893.

Bucklin, Randolph E. and V. Srinivasan (1991), "Determining Interbrand Substitutability through Survey Measurement of Consumer Preference Structures," Journal of Marketing Research, 28, 1, February, 58-68.

Carpenter, Gregory S. and Donald R. Lehmann (1985), "A Model of Marketing Mix, Brand Switching, and Competition," Journal of Marketing Research, XXII (August), 318-329.

Carroll, J.D. (1976), "Spatial, Non-Spatial, and Hybrid Models for Scaling," Psychometrika, 41, 439-463.

Chakravarti, Dipankar, Andrew Mitchell and Richard Staelin (1979), "Judgment Based Marketing Decision Models: An Experimental Investigation of the Decision Calculus Approach," Management Science, 25 (March), 251-263.

_____, _____ and _____ (1981), "Judgment Based Marketing Decision Models: Problems and Possible Solutions," Journal of Marketing, 45, Fall, 13-23.

Chi, Michele T.H., Robert Glaser and M.J. Farr (1988), The Nature of Expertise, Hillsdale, Erlbaum, NJ.

Corstjens, Marcel L. and D.A. Gautschi (1983), "Formal Choice Models in Marketing," Marketing Science, 2 (Winter), 19-56.

Currim, Imran S. (1982), "Predictive Testing of Consumer Choice Models Not Subject to Independence of Irrelevant Alternatives," Journal of Marketing Research, XIX (May), 208-222.

Day, George S. (1981), "Strategic Market Analysis and Definition: An Integrated Approach," Strategic Management Journal, July-September, 281-300.

_____ (1990), Market Driven Strategy: Processes for Creating Value, The Free Press, New York, N.Y.

_____, Alpert D. Shocker and K. Srivastava (1979), "Customer-Oriented Approaches to Identifying Products Markets," Journal of Marketing, 43, 4 (Fall), 8-20.

DeSarbo, Wayne S., R.L. Oliver, and G. De Soete (1986), "A Probabilistic Multidimensional Scaling Vector Model," Applied Psychological Measurement, 10, 79-98.

Dickson, Peter R. and James L. Ginter (1987), "Market Segmentation, Product Differentiation, and Marketing Strategy," Journal of Marketing, 51 (April), 1-10.

Fishbein, M. (1967), "Attitude and the Prediction of Behavior," in M. Fishbein (ed.), Readings in Attitude Theory and Measurement, New York:Wiley.

_____ and I. Ajzen (1975), Belief, Attitude, Intention and Behavior:An Introduction to Theory and Research, Reading, Mass: Addison-Wesley.

Fraser, Cynthia and John W. Bradford (1983), "Competitive Market Structure Analysis: Principal Partitioning of Revealed Substitutabilities," Journal of Consumer Research, 10 (June), 15-30.

_____ and John W. Bradford (1984), "Competitive Market Structure Analysis: A Reply," Journal of Consumer Research, 11 (December), 842-847.

Frank, R. E., W. F. Massy and Y. Wind (1972), Market Segmentation, Prentice-Hall, Englewood Cliffs, N.J.

Givon, Moshe (1984), "Variety-Seeking through Brand Switching," Marketing Science, 3, 1 (Winter), 1-22.

Glazer, Rashi, Joel H. Steckel, and Russell S. Winer (1989), "The Formation of Key marketing Variable Expectations and Their Impact on Firm Performance: Some Experiential Evidence," Marketing Science, 8, 1 (Winter), 18-34.

Goldberg, L. R. (1970), "Man Versus Models of Man: A Rationale Plus Some Evidence for A Method of Improving on Clinical Inferences," Psychological Bulletin, 73, 6, 422-432.

Green, Paul E., Frank J. Carmone and Scott M. Smith (1989), Multidimensional Scaling: Concepts and Applications, Allyn and Bacon, Needham Heights, MA.

Grover, Rajiv and William R. Dillon (1985), "A Probabilistic Model for Testing Hypothesized Hierarchical Market Structures," Marketing Science, 4, 4 (Fall), 312-335.

_____ and V. Srinivasan (1987), "A Simultaneous Approach to Market Segmentation and Market Structuring," Journal of Marketing Research, XXIV (May), 139-53.

Haley, Russell I. (1968), "Benefit Segmentation: A Decision-Oriented Research Tool," Journal of Marketing, 32 (July), 30-35.

Hauser, J.R. (1986), "Agendas and Consumer Choice," Journal of Marketing Research, 23 (August), 199-212.

_____ and F.S. Koppelman (1979), "Alternative Perceptual Mapping Techniques:Relative Accuracy and Usefulness," Journal of Marketing Research, November, 495-506.

Jain, Arun and Michael Etgar (1975), " How to Improve Antitrust Policies with Marketing Research Tools," in Combined Proceedings of the American Marketing Association, ed. Edward W. Mazze, Chicago: AMA.

Kahn, Barbara E., Manohar U. Kalwani and Donald G. Morrison (1986), "Measuring Variety-Seeking and Reinforcemant Behavior Using Panel Data," Journal of Marketing Research, XXIII (May), 89-100.

Kahneman, D. (1973), Attention and Effort, Englewood Cliffs, Prentice-Hall, NJ.

_____ and Amos Tversky (1974), Science, 1124.

_____ and _____ (1979), "Prospect Theory:An Analysis of Decision under Risk," Econometrica, 47, 2 (March), 263-291.

_____ and _____ (1984), "Choices, Values and Frames," American Psychologist, 24, 4 (April), 341-350.

Kalwani, Manohar U. and Donald G. Morrison (1977), "A Parsimonious Description of the Hendry System," Management Science, 23, 5

_____ and Alvin J. Silk (1982), "On the Reliability and Predictive Validity of Purchase Intention Measures," Marketing Science, 1 (3), 243-286.

Kemler-Nelson, D.G. (1984), "The Effect of Intention on What Concepts are Acquired," Journal of Verbal Learning and Verbal Behavior, 23, 734-759.

_____ (1989), "The Nature and Occurrence of Holistic Processing," in Object Perception: Structure and Process, eds. B.E. Shepp and S. Ballesteros, Hillsdale, Erlbaum, NJ, 357-386.

Lattin, James M. and Leigh McAlister (1985), "Using a Variety-Seeking Model to Identify Substitute and Complementary Relationships Among Competing Products," Journal of Marketing Research, XXII, August, 330-339.

Lilien, Gary L. and Philip Kotler (1983), Marketing Decision Making: A Model-Building Approach, Harper and Row, New York, N.Y.

Little, John D.C. (1970), "Models and Managers: The Concept of A Decision Calculus," Management Science, 16, 8, April, B466-B485.

Lodish, L.M. (1971), "CALLPLAN: An Interactive Salesman's Call-planning System," Management Science, 18, 4, Part II, December, P25-P40.

Lynch Jr., John G., Dipankar Chakravarti and Anusree Mitra (1991), "Contrast Effects in Consumer Judgments: Changes in Mental Representations or in the Anchoring of Rating Scales?" Journal of Consumer Research, 18, 3 (December), 284-297.

McAlister, Leigh and Edger Pessemier (1982), "Variety Seeking Behavior: An Interdisciplinary Review," Journal of Consumer Research, 9,December,311-322.

McNeil, Barbara J., Stephen G. Pauker, Harold C. Sox, Jr., and Amos Tversky (1982), "On the Elicitation of Preferences for Alternative Therapies," New England Journal of Medicine, 306, 1259-1262.

Porter, Michael E. (1980), Competitive Strategy: Techniques for Analyzing Industries and Competitors, The Free Press, New York, N.Y.

Rao, Vithala R. and Darius Jal Sabavala (1981), "Inference of Hierarchical Choice Processes from panel Data," Journal of Consumer Research, 8 (June), 85-96.

Rosch, Eleanor and Carolyn B. Mervis (1975), "Family Resemblances: Studies in the Internal Structure of Categories," Cognitive Psychology, 7, 573-605.

Rothschild, William E. (1976), Putting It All Together: A Guide to Strategic Thinking, Amacon, New York, NY.

Rubinson, Joel R., Wilfried R. Vanhonacker and Frank M. Bass (1980), "On 'A Parsimonious Description of the Hendry System'," Management Science, 26, 2 (February), 215-226.

Sattath, S. and Amos Tversky (1977), "Additive Similarity Trees," Psychometrika, 42, 319-345.

Schmittlein, David C. (1984), "Assessing Validity and Test-Retest Reliability for 'Pick K of N' Data," Marketing Science, 3, 1 (Winter), 23-40.

Shepp, Bryan E. (1989), "On Perceiving Objects: Holistic Versus Featural Properties" in Object Perception: Structure and Process, eds. B.E. Shepp and S. Ballesteros, Hillsdale, Erlbaum, NJ, 203-233.

Shocker, Allan D. (1986), "Competitive Relationships Must Be Viewed from Customer Perspectives," Marketing Educator, Fall, 4-6.

_____ and V. Srinivasan (1979), "Multiattribute Approaches for Product Concept Evaluation and Generation: A Critical Review," Journal of Marketing Research, XVI (May), 159-180.

_____, David W. Stewart and Anthony J. Zahorik (1990a), "Determining The Competitive Structure of Product-Markets: Practices, Issues, and Suggestions," Journal of Managerial Issues, II, 2(summer), 127-159.

_____, _____, and _____ (1990b), "Modeling Competitive Market Structures:Practices, Problems, Promise," in The Interfaces of Marketing and Strategy, eds. George Day, Barton Weitz, and Robin Wensley, JAI Press, Greenwich, CT.

_____, Anthony J. Zahorik and David W. Stewart (1984), "Competitive Market Structure Analysis: A Comment on Problems," Journal of Consumer Research, 11 (December), 836-841.

Slovic, P., D. Griffin and A. Tversky (1990), "Compatibility Effects in Judgment and Choice," in Insights in Decision Making: A Tribute to Hillel J. Einhorn, ed. R. M. Hogarth, Chicago: University of Chicago Press, 5-27.

Smith, Wendell (1956), "Product Differentiation and Market Segmentation as Alternative Marketing Strategies," Journal of Marketing, 21, July, 3-8.

Smith, J. David (1989), "Analytic and Holistic Processes in Categorization." in Object Perception: Structure and Process, eds. B.E. Shepp and S. Ballesteros, Hillsdale, Erlbaum, NJ, 297-323.

Smith, Linda B. and Paul Evans (1989), "Similarity, Identity, and Dimensions: Perceptual Classification in Children and Adults." in Object Perception: Structure and Process, eds. B.E. Shepp and S. Ballesteros, Hillsdale, Erlbaum, NJ, 325-356.

Smith, J. David and Deborah G. Kemler Nelson (1984), "Overall Similarity in Adults' Classification: The Child in All of Us," Journal of Experimental Psychology: General, 113, 1, 137-159.

Srivastava, Rajendra K., Mark I. Alpert and Allan D. Shocker (1984), "A Customer-Oriented Approach for Determining Market Structures," Journal of Marketing, 48 (Spring), 32-45.

_____, Robert P. Leone and Allan D. Shocker (1981), "Market Structure Analysis: Hierarchical Clustering of Products Based on Substitution-in-Use," Journal of Marketing, 45 (Summer), 38-48.

Thaler, Richard (1980), "Toward A Positive Theory of Consumer Choice," Journal of Economic Behavior and Organization, 1 (march), 39-60.

Tversky, Amos (1977), "Features of Similarity," Psychological Review, 84, 4 (July), 327-352.

_____ and Daniel Kahneman (1981), "The Framing of Decisions and the Psychology of Choice," Science, 211, 30 (January), 453-458.

_____ and S. Sattath (1979), "Preference Trees," Psychological Review, 86, 542-573.

Upshaw, Harry S. (1984), "Output Processes in Judgment," in Robert Wyer and Thomas Srull (eds.), Handbook of Social Cognition, Vol. 3, 237-256.

Urban, G.L. and J.R. Hauser (1980), "Market Definition and Entry Strategy," in Design and Marketing of New Products, Prentice-Hall, Englewood Cliffs, NJ, 79-121.

_____, Philip L. Johnson and John R. Hauser (1984), "Testing Competitive Market Structures," Marketing Science, 3, 2 (Spring), 83-112.

Vanhonacker, W.R. (1984), "Structuring and Analyzing Brand Competition Using Scanner Data," Working Paper, Columbia University.

Wilkie, William (1986), Consumer Behavior, Wiley and Sons, New York, NY.

_____ and E.A. Pessemier (1973), "Issues in Marketing's Use of Multi-Attribute Models," Journal of Marketing Research, 10 (november), 428-441.

Wind, Yoram (1977), "The Perception of A Firm's Competitive Position," in Behavioral Models for Market Analysis, F. M. Nicosia and Y. Wind, eds., The Dryden Press, New York, 163-181.

____ (1978), "Issues and Advances in Segmentation Research," Journal of Marketing Research, XV, August, 317-337.