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Managerial Identification of Competitors

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Despite extensive academic research on how to objectively identify competitors, relatively little is known about how managers identify competitors in practice.

In this study, authors Clark and Montgomery propose a cognitive framework for understanding how managers identify competitors. They report the results of two field studies. One is a qualitative study that asked respondents about their own industry or an industry in which they had recently worked. This yielded data from MBA students and managers on how they identify classes of competitors across a broad variety of industries. The second is a quantitative study that collected data from the Markstrat2 simulation game, where teams of subjects managed the marketing and research development strategy of one of five firms in a hypothetical consumer durable goods industry. For the purposes of this research, subjects filled out competitive identification forms during the course of the simulation.

Findings

Study 1 found that respondents named relatively few competitors. Further, respondents tended to rely on supply-based (i.e., what firms are and what they do) attributes more than demand-based (i.e., who customers are and what they do) attributes in categorizing target firms as competitors or noncompetitors. Across both studies, size, success, and threatening behavior were seen as significant, but not dominant, attributes in the competitor identification process.

In addition, respondents' experience played a significant role in these studies. In Study 1, respondents with longer tenure in their jobs gave fewer responses. In Study 2, as the game progressed, subjects paid more attention to target firm success and less to other attributes.

Implications

Overall, the studies suggest that the competitor category is characterized for managers by a relatively small number of successful firms that are sizable or that engage in threatening behavior.

Competitors tended to be defined in terms of supply-based attributes; when managers did talk about demand-based attributes, it was at a very broad level such as geographic scope of markets and overall customer perception of the firm (brand image, reputation). This suggests that customer needs and behaviors are not particularly "top of mind" relative to competitor characteristics. Further, that more expe-

rienced respondents used fewer attributes to describe competitors raises the question of whether these respondents are too narrow in their conception of competition. Both results could lead to the biased purchase or use of market research (if, for example, a manager only commissioned research on a particular competitive set of products).

The results also suggest that small/unsuccessful firms "look up" to large/successful firms in their industry. This asymmetry, while based on economic reality, may lead to managerial error in making and interpreting competitive moves and signals.

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Introduction

Competitor identification is a major component of any approach to formulating marketing strategy (e.g., Aaker 1995; Czepiel 1992; Day 1990; Sudharshan 1995). Understanding and developing an advantage against competitors is basic to strategy, drawing interest from not only the marketing literature but also from economics and strategy.

Competitor identification is an important area of study for three reasons. First, it is a necessary precursor to competitor analysis. Managers cannot, should not, and do not analyze all companies, but only those whom they identify as competitors or potential competitors. Second, competitor identification has figured prominently in objective research on establishing market structure and market boundaries, as outlined below. Third, competitor identification shapes what Porac and Thomas (1990) call the "cognitive oligopoly" managers construct as part of their mental models of the markets in which they compete.

Research on the objective market structure characterizing industries has pursued two approaches to competitor identification. The first is what we call the supply-based approach, classifying competitors based on attributes of the competing firm. This approach identifies competitors based on how similar firms are in terms of technology, strategy employed, products offered, etc. The well-developed strategic groups literature in management and economics (see McGee and Thomas 1992 and Thomas and Venkatraman 1988 for reviews) identifies competitors in this fashion, grouping together competitors with similar strategies.

The second approach is what we call the demand-based approach, classifying competitors based on the attributes of customers. This approach identifies competitors based on customer attitudes and behaviors, and has been an important research area in marketing (Day, Shocker, and Srivastava 1979). Firms whose offerings customers perceive as similar are seen as competitors, whether through customers' direct judgments of similarity, similarity in attitudes toward competing offerings, or behavior in the form of brand purchase patterns. Marketing has a rich tradition of examining markets from a customer perspective through attempts to identify product-market boundaries or competitive market structure (see Cooper and Inoue [1996] for a recent taxonomy of 31 studies in this area).

Compared to these two deep research streams, we know relatively little about how *managers* identify competitors. Practically speaking, since the competitor analysis managers conduct depends on the competitors they first identify, understanding how competitors are identified has tremendous potential significance. Academically, an understanding of how managers construe their competitive environment is highly relevant to any understanding of competitor interaction and should inform research on objective approaches to competitive market structure.

This research brings together the diffuse evidence regarding the process by which managers identify their competitors. Much work to date in this area is highly qual-

itative and/or limited to single-industry case studies. Our research objectives are to develop a psychological model of the competitor identification process, examine the attributes by which managers identify their competitors, and explore the structure and content of the "competitor" construct as it exists in managers' minds. We use a multimethod approach to test our hypotheses, conducting two studies of competitor identification using different techniques and samples. The first is a qualitative study, eliciting MBA students' and managers' explanations of how they identify classes of competitors using open-ended questions and content analysis. This study encompasses a broad variety of industries. The second is a quantitative study within the Markstrat2 simulation game (Larreche and Gatignon 1990) using objective game data to examine competitor identification.

Literature Review and Hypotheses

Competitor Identification as a Categorization Process

Consider a situation in which the manager of a particular firm, which we will call the *focal firm*, is observing other firms, which we will call *target firms*, to determine which of the target firms are competitors of the focal firm. How might we model such a cognitive process?

A number of studies have proposed that competitor identification is fundamentally a categorization process (e.g., de Chernatony, Daniels, and Johnson 1993; Porac and Thomas 1990). Porac and his colleagues (Porac and Thomas 1990, 1994; Porac, Thomas, and Baden-Fuller 1989; Porac et al. 1995) have developed an extensive research base that proposes managers define their competitors not individually, but by assigning themselves to a competitive category (see also Hodgkinson and Johnson 1994). All other members of the category then are perceived as competitors. As Porac and Thomas (1994) put it:

> Defining a business essentially entails matching a [focal] firm's characteristics to a category feature list and then using this match as a reference point around which competitive boundaries are cognitively constructed. . . . This inferred similarity would then be the basis for subjective competition. (p. 55)

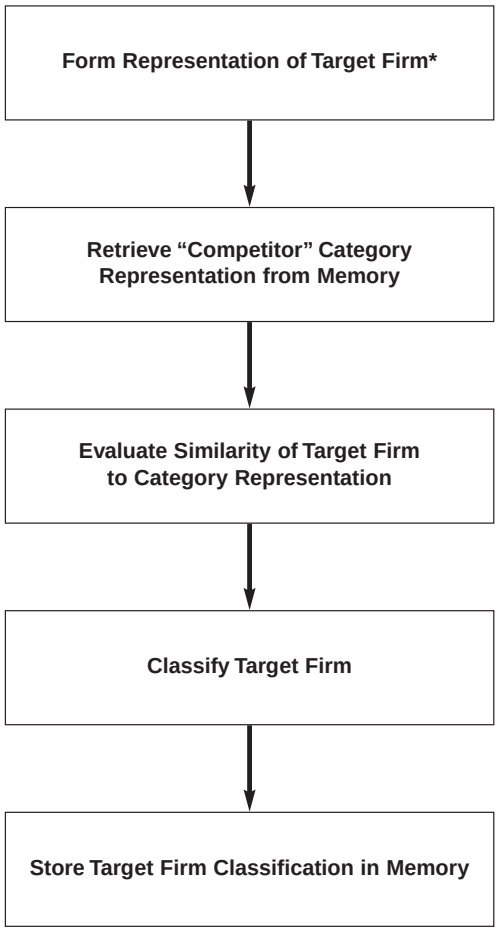
Evidence in cognitive and social psychology reveals that most categories are characterized by what is called "graded structure" (Barsalou 1992; Fiske and Taylor 1991). Graded structure occurs when some examples in the category are more representative of the category than others. Porac and Thomas (1990) argue that graded structure is likely to apply to competitor categorization, suggesting that some target firms will be more competitive with the focal firm than others. This intuitively matches our sense that companies face more and less important competitors. Czepiel (1992), for example, discusses "direct" and "less direct" competitors (p. 333). Day (1997) and others have discussed potential competitors, those who may represent a threat to the firm in the future, depending on the attractiveness of the firm's market and entry barriers. These are, in some sense, even less direct competitors. In measurement terms, one can think of a graded structure as representing continuous data (degree of competitiveness from more to less competitive). However, practically speaking we know that managers identify specific firms as "competitors" or "not competitors" (nominal data).

The nominal classification a manager expresses should be based on the underlying continuous process. Managers will array competing firms along a continuum based on relevant attributes. The nominal judgment "competitor" will be based on a cutoff point; above some continuous threshold, a manager will name a target firm a competitor, while below it, the manager will not. Following Porac and Thomas' (1990) suggestion that the border between "competitor" and "noncompetitor" will be indefi-

nite, we expect that the continuous threshold will vary by manager and by the situation in which the manager is analyzing competitors. For example, in long-range strategic planning, managers may be quite expansive in their definition of competitors, setting a low threshold that includes a broad range of target firms as "competitors" who represent a long-term threat. In more tactical situations, managers may focus on a smaller group of target firms who are likely to respond to a particular gambit.

Following a general model of categorization process from cognitive psychology and consumer behavior (e.g., Barsalou 1992; Cohen and Basu 1987) we suggest the following sequence would occur in categorizing other firms as "competitors." (See Figure 1.) First, a manager would form a mental representation of a given target firm using some set of attributes. Second, the manager would retrieve the competitor category representation. Third, the manager would evaluate the similarity of the target firm to the category representation (on a continuous basis). Fourth, the manager would draw inferences about the target firm (on a nominal basis: "it is/is not a competitor"), and finally, the manager would commit these inferences to memory, which will guide further action and information processing.

Figure 1. Schematic Model of Managerial Competitor Identification



* The target firm is the firm that a manager is evaluating to decide whether it is a competitor.

We might wish to know the answer to several questions suggested by this sequence. First, what are the attributes that managers use in representing target firms? Second, what is the content of the category representation to which the target representation is compared? Third, how is the comparison carried out? Finally, what are the consequences of classification in terms of organizational memory and competitive action? The present research focuses on the first two questions, examining the attributes used to define target and category representations and the content of the competitor category in terms of size and structure. We will address the latter issue first.

Size of the "Competitor" Category

There are a number of reasons to believe that managers will name relatively few competitors. Economically, there may be few competitors that matter in terms of a firm's outcomes. Scherer (1980) used 1972 Census of Manufactures four-firm concentration ratio data to conclude that approximately 43 percent of industries at the four-digit SIC code level may be characterized as oligopolies; 1992 data reveal a similar pattern. The number of firms that matter economically in the marketplace imposes a ceiling on the number of competitors managers are likely to name. (One should note that the number and identity of firms that matter will fluctuate over time and that prudent managers will track both current competitors and potential ones that may matter in the future.)

Cognitively, psychological research suggests individuals are unable to process information in units larger than approximately seven at once (the "magic number seven" plus or minus two, Miller [1956]). Lynch and Srull (1982), summarizing research in this area, conclude that "people either fail to recall any instances of a category or recall six or seven instances from each category that is accessed" (p. 21), and that this phenomenon appears robust to different category sizes. This suggests that we would see few competitors named regardless of industry concentration.

Evidence from the consideration set literature supports this hypothesis. One can argue that competitor identification is a consideration process in that the manager is considering whom he or she will analyze and plan against from a set of firms of whom the manager is aware. Firms in the larger awareness set represent not only those considered competitors, but also noncompetitors who, through perceived unwillingness or inability, are seen as nonthreatening. Narayana and Markin (1975) report mean consideration set sizes of 1.3-3.5 across four product categories, while the mean awareness set sizes in the same categories were 3.5-10.6. Hauser and Wernerfelt (1990) report mean or median consideration set sizes ranging from 2.0 to 8.1 across 23 empirical settings and 23 illustrative categories in the Assessor database. Supporting the notion of a psychological ceiling regardless of actual market structure, Hauser and Wernerfelt found the range of brands available across categories was much wider, 6-47 brands, than was the range in consideration set size.

In practice, a small collection of single-industry studies suggests managers name relatively few competitors. Gripsrud and Gronhaug (1985) interviewed managers of 51 grocery stores in a "small Norwegian town" and found that managers listed, on average, only 3.2 stores as competitors; the largest number of competitors named by any respondent was 7. De Chernatony, Daniels, and Johnson's (1993)

study of pump manufacturers for the North Sea oil industry revealed an average response of 5.0 competitors; the largest number named by any respondent was 9 out of 25 industry members the researchers could identify. Porac et al. (1995) found that managers of 88 Scottish knitwear manufacturers checked an average of 7.0 rivals of 261 possible firms in a list.

Because many industries objectively have few competitors and managers in all industries should be subject to the cognitive limitations noted above, we expect the vast majority of managers will name a small number of competitors. As the best psychological evidence suggests a ceiling of seven plus or minus two, we test the following hypothesis:

H_1: Managers of the focal firm will name a small absolute number of competitors (< 9).

Attributes Used in Competitor Identification

Supply- versus Demand-based Attributes. One way of classifying the attributes managers use to include or exclude firms from the competitive set is to use the supply-based (attributes of competing firms) versus demand-based (attributes of customers) distinction noted above.

Wisdom suggests managers should consider both supply and demand in competitor identification (e.g., Day 1990, 1997). However, previous evidence from cognitive studies of strategic groups and some psychological theory implies that managers are more likely to use supplier-based characteristics. Walton (1986) found that the most common features used to group financial institutions were (from most frequent to least frequent) products offered, firm performance, geographic scope, style, management caliber, distribution, firm size, age, and ownership (see also Reger and Palmer 1996). The cognitive taxonomy research discovers managerial taxonomies based on products offered (e.g., retailer, food retailer, grocery store; Hodgkinson and Johnson 1994; Porac and Thomas 1994; Porac et al. 1995). One should note that some of these studies elicit groupings in a way that probably biases respondents in favor of supplier-based attributes; nonetheless, the only demand-based attribute consistently appearing in this research is geographic scope, a relatively crude indicator of customer needs compared to the demonstrably sophisticated customer insights one may gain from market research.

One psychological mechanism behind this phenomenon is likely to be information availability. The business world tends to strongly favor product offerings (as opposed to customer benefits) as a way of classifying firms. From SIC codes to press accounts, much of the documentation of business is organized around the technology and products firms offer rather than the customers firms serve. In contrast, analyzing the attributes of the customers of competing firms may require expensive, time-consuming market research. Research in social cognition suggests that it is the most accessible data that are called upon to make a judgment, not necessarily the most diagnostic (Sherman, Judd, and Park 1989). Therefore, in directly asking managers about their businesses, we expect them to identify competitors on a supply-based (what firms are and what they do) rather than a demand-based (who customers are and what they do) perspective.

H_2: Managers of the focal firm will identify competitors more on the basis of supply-based attributes than on the basis of demand-based attributes.

Beyond the supply-demand distinction, one can further distinguish attributes in terms of whether they represent characteristics of actors in an environment or those actors' behaviors. Characteristics are long-term attributes that represent constraints or resources (e.g., a firm's size or a customer's gender), while behaviors represent the expression of those characteristics in the marketplace (e.g., a firm's strategy or a customer's purchase pattern). While we hypothesize broad use of supply-based attributes, following are three specific supply-based attributes, two characteristics and one behavior, we expect managers to use in arraying target firms as being more or less competitive with the focal firm, regardless of whether supply-based attributes dominate reasoning in general.

Target Firm Size. Firm size has been found to be an important characteristic in organizational research (for brief reviews, Chen and Hambrick 1995; Keats and Hitt 1988) and has often been used as a classification variable in strategic groups studies (e.g., Lewis and Thomas 1990; Porter 1979). In strategic terms, it has also been implicated as a predictor of important competitive processes and behaviors (Chen and Hambrick 1995; McKee, Varadarajan, and Vassar 1990), suggesting it should be a particularly relevant attribute in competitor identification. We expect managers will see larger firms as competitors for two reasons. First, larger firms are likely to have more resources. They may use these resources in a hostile fashion by attacking other firms, or may act as the benevolent "market leader" by, for example, establishing a pricing umbrella for other players in the industry or promoting the growth of the industry as a whole. Second, even unsuccessful large firms are likely to be highly salient to the perceiving manager. They will be reported on more by the press and investment analysts, and will have a substantial market presence which the perceiving manager must consider in making plans. Walton (1986) found that managers predominantly named large firms in identifying competitors in the financial services industry. Gripsrud and Gronhaug (1985) found that the "most important" grocery competitor named was significantly larger than average.

An alternate view of firm size is that it is not absolute size but similarity in size that should matter in competitor identification. When size is used in strategic groups research, for example, firms of similar size are typically grouped together (Porter 1979). Arguably firms should *choose* to compete with similar- or smaller-sized competitors on a resource basis, but in terms of identifying environmental threats or potential allies, large firms are clearly relevant because their actions, whether intended or not, can have a profound effect on the focal firm's business. Smaller firms in a general market will worry about their larger rivals, and even small firms in niche markets are vulnerable to large firms with the resources to break down the mobility barriers that make the niche defensible (e.g., Microsoft's ability to enter software niches). Therefore:

H_3: The larger a target firm is, the more likely it will be seen as a competitor by managers of the focal firm.

Target Firm Success. Target firm success is another important organizational characteristic that is likely to matter in competitor identification. Research has shown that previous success has important consequences for firms' strategic behavior and aspirations (Greve 1998; Miller 1994), suggesting it should be a critical element in competitor analysis. Walton (1986) found firm performance an important attribute in his study of competitor identification. Successful firms are likely to be seen as competitors for several reasons. First, they probably have the resources to be threatening to the focal firm, or have the ability to attract such resources; successful firms should be able to attract capital and labor regardless of their size. Successful firms are also presumably competent in deploying their resources in a way that unsuccessful firms are not. Because of this competence, successful competitors are the ones against which firms are most likely to benchmark (Tucker, Zivan, and Camp 1987). As with size, it may not be rational for a firm to choose to compete with a very successful competitor, but the potential threat these competitors represent and the potential opportunity to learn from them make it likely these firms will be closely observed.

H_4: The more successful a target firm is, the more likely it will be seen as a competitor by managers of the focal firm.

The relationship between firm size and firm success is complicated. While studies generally find that firm size is a relatively weak predictor of firm performance (Beard and Dess 1981; Capon, Farley, and Hoenig 1990; Gooding and Wagner 1985), current firm size is presumably the result of success at some point in the past. At any particular point in time there is likely to be an assortment of firms of different size and success levels, with the correlation between size and success varying by industry and measure used; industries subject to scale economies, for instance, are more likely to exhibit a strong size-performance relationship. Still, many industry histories provide evidence of situations where large firms are unsuccessful (e.g., the major U.S. airlines in the early 1990s) and small firms successful (e.g., Southwest Airlines in the early 1990s). Further, small, successful firms may be the ones most able in terms of skill and innovation to transform an industry (Soni, Lilien, and Wilson 1993), while large firms are saddled with inflexible resources that make it difficult for them to respond (e.g., MCI's original foray against AT&T). For these reasons, it is important to examine the two constructs separately.

Threatening Behavior by Target Firm. Finally, the degree of threat arising from the target firm's behavior seems likely to affect competitor identification. A large and growing literature attests to the importance of the threat represented by competitor actions or signals as an influence on a firm's perceptions and behaviors (Chen and Miller 1994; Heil and Robertson 1991; Heil and Walters 1993; Robertson, Eliashberg, and Rymon 1995). The same relationship should apply here. Specifically, target firm actions against a focal firm should influence the likelihood that the focal firm identifies that target firm as a competitor.

H_5: The more threatening target firm behavior the managers of the focal firm perceive, the more likely the managers of the focal firm will perceive the target firm as a competitor.

Study 1

Method and Data

Study 1 was a qualitative study in which we asked respondents about their competitors and how they identify them. Subjects consisted of 37 second-year MBA students and 20 executives. The former were students in an elective in marketing strategy; the latter were contacted through the Marketing Science Institute and executive education programs at Stanford University.[1]

Subjects were given a two-page open-ended survey, whose purpose was described as learning about how they thought about competitors. Subjects first identified a business unit (1) for which they worked or had worked and (2) for which they were "familiar" with the competitive situation as a frame of reference for responding to the survey.

The first question asked respondents to "list all other firms that competed with this business unit" at the time they worked there. This was designed to encourage an expansive definition of competition, and should work against supporting Hypothesis 1. Subjects were then asked to go back and mark each competitor on the list that they would describe as a "major competitor." To avoid biasing subject response in a particular direction, "major competitor" was not defined. Following this exercise, subjects were asked to choose one of the major competitors they had identified and "describe why" it was a major competitor of the business unit. They then performed the same task for a "minor competitor" and a "potential competitor" of the business unit.

Results

A reviewer notes that experience is likely to be an important determinant of the complexity of categorization schemes, a point supported by the extensive literature on expertise in consumer behavior (e.g., Alba and Hutchinson 1987), and that experience in a competitor identification task can be thought of in terms of both the respondent's job responsibility and length of time in this job. We examined both aspects of experience in these subjects.

Subjects' self-reported job titles were classified as marketing-related or not (marketing/customer service/general management or not), on the assumption that respondents with a marketing or general management background would be more likely to be involved with analyzing competitors than would those with other functional titles. Sixty percent of the MBA sample and 75 percent of the executive sample held marketing-related posts (difference not significant).

Subjects' self-reported tenure in this job was also analyzed. (Note this generally differs from total years of work experience—as we are examining their categorization of a particular competitive situation, it is tenure in that situation that is most theoretically relevant). Job tenure in the MBA sample ranged from 0.2 to 9.9 years, with a mean of 2.32; tenure in the executive sample ranged from 0.6 to 15.0 years,

with a mean of 4.85 (t-test of difference = 2.59, $p < .01$). We controlled for both these experience factors in all analyses of Study 1, and, following the advice of Greenberg (1987), used sample (MBA vs. executive) as a blocking factor.

Hypothesis 1 suggested that managers would identify fewer than 9 competitors. The mean total number of competitors named across all respondents was 6.46 (std. dev. = 2.46; 95 percent confidence interval [5.82, 7.10]), and the mean number of major competitors named was 3.07 (std. dev. = 1.90). The former total is significantly less than 9, as predicted by Hypothesis 1 ($t = 7.70$, $p < .001$). An ANOVA with number of competitors as the dependent variable and sample, job title, and tenure as independent variables revealed no significant effects for overall competitors named, major competitors named, or minor competitors named, suggesting Hypothesis 1 is robust across these factors.

Beyond this, we conducted a content analysis of the reasons subjects gave for naming particular firms as major, minor, or potential competitors. Each subject's responses were coded as to which attributes they used to define competitors. A comprehensive list of attributes that managers might use was compiled based on previous research and marketing strategy textbooks. The 38 categories, divided by whether they are supply- or demand-based attributes, are listed with a brief definition of each in the appendix. Two independent coders, blind to the hypotheses, were trained on a coding scheme using these categories. They jointly identified 501 responses across all subjects, for a mean of 8.79 per subject. Percentage agreement between the coders on assigning these responses to the 38 categories was 72 percent; a Perrault and Leigh (1989) reliability index, which accounts for the difficulty of coding responses on a 38-category scheme, is .84, indicating good reliability. Disagreements were resolved by discussion between the coders.

Aside from calculating the mean total number of responses per subject, we wanted to test for any differences within the population across competitor type (major, minor, potential) and experience. One might expect experienced respondents to have more complex category knowledge than inexperienced ones. We look at number of responses as a measure of category richness in this data (cf. Sujan, Sujan, and Bettman 1988).

We conducted a mixed-design ANOVA with number of responses as the dependent variable; sample, job title, and tenure as between-subjects factors; and competitor type (major, minor, potential) as a within-subjects factor. Four subjects who were unable to name a potential competitor were excluded from the analysis. Between subjects, we found a significant main effect for tenure ($p = .0418$), such that respondents with longer job tenure gave fewer responses. There was also a marginal main effect for sample ($p = .0726$) which was further qualified by a marginal two-way interaction between sample and job title ($p = .0534$): MBAs in marketing-related jobs tended to give more reasons than nonmarketers, while executives in marketing-related jobs gave fewer reasons. Small cell sizes suggest caution in interpreting this interaction. Within subjects, the only significant main effect was a main effect for competitor type ($p = .0026$). Mean number of responses decreased as subjects answered regarding less direct competitors (major = 3.53

responses, minor = 3.09, potential = 2.34), though contrasts suggest only the latter difference is significant (p = .0089). We will return to this effect in the discussion.

Hypothesis 2 suggested that subjects would be more likely to use supply-based attributes in identifying competitors than demand-based attributes. While one can distinguish the attributes of firms (e.g., their size, strategies, and skills) from the attributes of customers (e.g., their demographics, needs, and purchasing patterns), supply and demand can also be viewed in terms of the *perceptions* of firms as opposed to the *perceptions* of customers regarding the marketplace. Evidence suggests these views will often differ (de Chernatony, Daniels, and Johnson 1994; Deshpandé, Farley, and Webster 1993). For example, a firm may declare a particular positioning as its goal (e.g., "high quality producer") while customers may see the firm as not occupying that position. Here, we define supply- and demand-based attributes according to the perceiver. If an attribute is defined in terms of a firm's perception, as in a firm's intended market position, this is a supply-based attribute. If an attribute is defined in terms of a customer's perception, as in a customer's perception of the firm's market position, it is a demand-based attribute.

Across all 501 responses, 72 percent fell into one of the supply-based categories listed in the appendix. We used a logit model with type of response (supply or demand attribute) as the dependent variable and sample, job title, tenure, and competitor type, as described above, as the independent variables. No term in the model was significant except for a positive intercept term (chi-square = 40.57, df = 1, p < .0001), which indicates that the overall proportion of 72 percent differs significantly from 50 percent, and that this result is robust across sample, job title, job tenure, and competitor type. Hypothesis 2 is supported.[2]

Hypotheses 3, 4, and 5 suggest that larger competitors, more successful competitors, and competitors who behave in a more threatening way will be more likely to be seen as competitors, respectively. While we will test these hypotheses statistically in Study 2, a practical question is whether managers use these attributes in talking about competitors.

Table 1 presents the top 10 attributes by percentage of respondents mentioning the attributes. Size and competitive behavior both appear in the top 10, and success is tied for eleventh with 21 percent of respondents mentioning it. Note, however, that none of these attributes make the top 5. Rather, the dominant attributes mentioned are products offered, intended positioning of products, geographic scope of markets, resources used, and customer perception of firms (typically in terms of brand image). This suggests modest preliminary support for hypotheses 3, 4, and 5—the attributes are mentioned frequently, but do not dominate the list.

Table 1. Top 10 Attributes Mentioned in Identifying Competitors, by Percentage of Respondents Mentioning Attribute

Attribute	Percentage of Respondents
1. Products Offered	60%
2. Intended Product Positioning	51%
3. Geographic Scope of Markets*	46%
4. Resources Used	39%
4. Customer Perception of Firm	39%
6. Price	33%
7. Competitor Size (Relative and Absolute)	28%
8. Distribution	25%
8. Financial Strength	25%
10. Competitor Behavior	23%

* Underlined attributes are demand-based. All others are supply-based.

Study 1 Discussion

In Study 1, managers named relatively few competitors. While the mean was significantly less than 9, as hypothesized, the range of competitors named was from 2 to 13; 21 percent of respondents named 9 or more competitors. We suspect this partly reflects an industry concentration effect; unfortunately, we do not have a concentration variable with which to test this.

Leaving aside theoretical considerations, methodologically the number of competitors found may be sensitive to the task required. One can classify procedures as either recall, where managers name their competitors in response to an open-ended prompt (de Chernatony, Daniels, and Johnson 1993; Gripsrud and Gronhaug 1985), or recognition, where managers are given a list of firms to consider (Porac et al. 1995). Our "list" procedure is a recall task. A recall task naturally will produce a smaller list than a recognition task, which biases results in favor of our hypothesis. However, we believe that this choice of task is theoretically correct, as it produces a list of the competitors most accessible in memory which is likely to be the list that a manager actually considers on an everyday basis. While we have no conclusive evidence on this subject, we note that respondents did appear to list competitors in order of importance, suggesting that any competitors left off the list were likely to be inconsequential. For the 51 subjects who wrote out competitors in an identifiable list order, more of the major competitors checked appeared in the first half of the list than the second (difference = .73 competitors, $p < .005$); further, 75 percent of subjects named the first competitor they wrote down as a major competitor, while only 20 percent named the last listed competitor as a major competitor. Regardless, the finding that relatively few competitors were named holds across the wide variety of industries surveyed in Study 1.

That subjects articulated fewer responses for potential competitors than for minor competitors, and fewer for minor than major, is intriguing. It suggests the possibility that managers have the most developed category structures for major competitors, and least for potential competitors. This finding must be called suggestive,

however, for two reasons. First, we did not counterbalance the order of questioning (major, minor, potential) in the surveys. Second, coders were instructed to code responses that referred to current capabilities only, not capabilities that a target "might" or "should" develop in the future. This appears to have lowered the number of responses coded for potential competitors. On the other hand, that four subjects were unable even to name a potential competitor is consistent with the hypothesis that subjects' knowledge structures are less developed for potential competitors.

A second intriguing finding is the role of job tenure in number of responses articulated. More experienced managers offered fewer responses regarding why they identified the competitors they did, counter to the category richness explanation that we suggested above. A possibility is that more experienced respondents have a more parsimonious model of how to identify competitors. This may arise from a superior understanding of the situation—the discarding of factors previously proven irrelevant—or, more troubling, a lack of accessibility of the data underlying decisions of long standing, a point to which we will return in the general discussion.

As hypothesized, supply-based attributes were used more often than demand-based attributes across all competitor types and both samples. Regarding hypotheses 3 and 4, a limitation of Study 1 is that the codes for success and relative size did not display discriminant validity. There was substantial disagreement (64 percent) between coders on whether to code a reason related to market leadership or market share as relative size or success. Therefore, exact counts and ranks for success and size should be taken as suggestive only.

Study 2

Method and Sample

Study 2 was a quantitative study using the Markstrat2 simulation game as an empirical setting (Larreche and Gatignon 1990). Markstrat2 places teams of subjects in the position of managing the marketing and research and development strategy of one of five firms in a hypothetical multimarket consumer durable goods industry; for details on the game structure, see Gatignon (1987) and Larreche and Gatignon (1990). Markstrat has a long, successful history as a research setting for studies of managerial decision making (e.g., Clark and Montgomery 1996, 1998a; Curren, Folkes, and Steckel 1992; Glazer, Steckel, and Winer 1989, 1992; Lant and Montgomery 1987; Hogarth and Makridakis 1981). In our case, it gives us access to all firms in a competitor interaction over time, allowing us to examine both asymmetry and time-based effects of a variety of marketing actions using the wealth of objective data the game provides.

Subjects in the study came from two samples. The first consisted of a sample of MBA students taking an elective in marketing strategy. Sixty-one students were randomly assigned to 15 firms across three Markstrat industries, and played an eight-period game over the course of a month. The second sample consisted of 100 executives of a European multinational, grouped by the company into 20 firms across four Markstrat industries, who played a seven-period game as part of a six-day executive education program.

Dependent Variable

Data on competitor identification came from a "competitor analysis form" that subjects handed in with company decisions in periods 3, 6, and 8 (MBA sample) or periods 4 and 7 (executive sample).[3] It was filled out by each team member, and asked subjects to "allocate 100 points between the other firms in your industry to indicate how competitive they are with your firm." This constitutes the dependent variable in our analysis.

Independent Variables

All independent variables in the analysis were based on objective game data. The dependent variable for a given time period was regressed on independent variables from the previous period, following psychological evidence that recently used information is most likely to be retrieved in making judgments (Wyer and Srull 1989).

Size Variables. Hypothesis 3 suggests that the larger the target firm, the more a manager of the focal firm will see it as a competitor. The relationship between size and success is complicated in Markstrat. Measures of size such as assets or number of employees are unavailable, while measures such as unit sales are highly correlated with profit ($r = .83$ here). We therefore looked at the size of the firm's marketing effort as a measure of size that is relatively uncorrelated with success. While firm budgets are not directly observable by players on other teams, Markstrat

research reports provide information on number of new products and product modifications (hereafter "new products") offered, advertising spending, and number of salespeople, which we use as the basis for size variables below. These measures are all correlated at $r < .5$ with our success measure.

Success Variable. Hypothesis 4 states that the more successful the target firm, the more a manager of the focal firm will see it as a competitor. Markstrat firms in these samples were publicly ranked by two success variables: rank in net marketing contribution (a profit measure) and Sonite unit market share. These two variables were standardized and then summed (the rank measure was reverse-scaled for this purpose) to construct a two-item success scale in the analysis below. The two items are correlated .77, suggesting the scale has good reliability.

Competitive Behavior Variables. Hypothesis 5 claims that the more threatening a target firm's behavior, the more a manager of the focal firm will see it as a competitor. The multimarket nature of Markstrat suggested that we could distinguish threatening from nonthreatening competitive action by testing whether the target firm's action occurred in the focal firm's customer segments. Action in the focal firm's segments should be seen as more threatening, while action in other segments should be seen as less threatening. We examined this hypothesis by calculating the segments in which each firm competed. For each firm, we examined the Euclidean distance between customer perceptions of each Sonite brand and customer preferences in each segment for the two most important attributes, price and power, and assigned the brand to the nearest segment. As customer preferences in the Vodite market are undifferentiated, any firm with a Vodite product was considered to compete in that segment. We examine target firm advertising and new product introduction in the focal firm's segments as measures of threat behavior below.

Target Team Dummy Variables. Following advice in Greene (1990) in analyzing pooled cross-sectional and time series data, we examined a variety of industry, team, and time period dummy variables to account for heterogeneity in the sample. Only the target team variables proved significant. We include four dummy variables to account for target firm in all regressions below.

Analysis and Results

We use hierarchical regression models to test our hypotheses. The order of inclusion of variables is determined by the order of importance indicated by the results from Study 1. Note that some of our observations are likely to be correlated with each other, in that each subject rates multiple other teams over multiple time periods. Sharma (1996) cites research suggesting the actual alpha level in an empirical setting with correlated observations could be as much as 10 times the nominal level, and that the effect increases with sample size. Therefore, we follow his advice to use a more stringent alpha level than usual in our analysis. All tests conducted below will claim significance at a level of .005 rather than .05, and marginal significance at .01 rather than .10.

We begin with a model looking at gross size of the firm. This model is reported as Model 1 in Table 2. It includes the four target firm dummy variables noted above, plus variables for total target firm advertising, total target firm sales force, and total

number of new products introduced by the target firm in the previous period. As can be seen in the table, the overall model is significant, and all three of the size variables are positive and significant, as expected.

Table 2. Hierarchical Regressions—Perceived Competitiveness (n = 1327)

	Dependent Variable: Perceived Competitiveness				
Independent Variables[a]	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Total Target Advertising	0.00075*** (0.00010)	0.00085*** (0.00012)			
Total Target Salesforce	0.02374** (0.00814)	0.04574** (0.01214)	0.03880** (0.01177)	0.03799** (0.01162)	0.01108 (0.01113)
Total Target New Products	1.56987** (0.48528)	1.59561** (0.48380)			
Total Focal Advertising		-0.00030** (0.00011)	-0.00054*** (0.00011)		
Total Focal Salesforce		-0.03088** (0.01165)	-0.03744** (0.01121)	-0.04041** (0.01109)	-0.02562* (0.01069)
Total Focal New Products		-0.53058	-0.59650 (0.46687)	(0.45274)	
Target Adv. in Shared Segments			0.00129*** (0.00012)	0.00104*** (0.00013)	0.00056*** (0.00013)
Other Target Advertising			-0.00023 (0.00017)	-0.00005 (0.00017)	-0.00053** (0.00017)
Target New Products in Shared Segments			1.96302** (0.63341)	1.13342 (0.63987)	0.56838 (0.58764)
Other Target New Products			1.79672** (0.68825)	1.85669** (0.67906)	0.99734 (0.62616)
Focal Adv in Shared Segments				-0.00019 (0.00013)	-0.00014 (0.00013)
Other Focal Advertising				-0.00108*** (0.00016)	-0.00108*** (0.00016)
Focal New Products in Shared Segments				0.24039 (0.62324)	0.52229 (0.57102)
Other Focal New Products				-1.07930 (0.66765)	-0.79019 (0.61277)
Target Success					4.14787*** (0.28863)
Focal Success					1.65762*** (0.26611)
Number of Independent Variables	7	10	12	14	16
R^2	.1022	.1190	.1871	.2104	.3392

[a] Target Team dummy variables not reported; for total number of variables in the model, see "Number of Independent Variables." Entries in the table report regression coefficient with standard error in parentheses.

* p < .01, one-tailed **p < .005, one-tailed ***p < .0001, one-tailed

We next examine relative size versus absolute size. We do this by adding three variables corresponding to the *focal* firm's advertising, sales force, and number of new products offered. If absolute size of the target is all that matters, then the focal firm's efforts in marketing should be irrelevant to the competitive judgment. If, on the other hand, size of the target firm relative to the focal firm is what matters, then we would expect significant negative signs on the focal firm size variables, indicating that as focal firm size increases, it is less likely to see the target firm as a significant competitor.

Model 2 in Table 2 presents this regression. Model 2 improves fit significantly over Model 1 ($F_{3,1316} = 8.36$, $p < .0005$). Using our .005 significance standard, two of the three relative size coefficients, for advertising and sales force, are significant and negative, indicating that firms do take into account their own size to some extent in judging the competitiveness of others.

Following Hypothesis 5, threatening activities by a target firm should make a focal firm's manager more likely to see that target as a competitor. We now examine threat by looking at the target firm's activities in the segments it shares with the focal firm, not simply in general.

In models 1 and 2, the coefficients on target firm advertising and target firm new products treat all efforts as alike. By specifying a single coefficient for each, we define a linear constraint such that it is presumed that there is no difference between efforts in segments the target firm shares with the focal firm versus efforts in other segments. In equation form, the advertising constraint may be represented as follows:

$$\beta_1(\text{Total Target Advertising}) = \beta_1(\text{Target Advertising in Shared Segments} + \text{Other Target Advertising})$$

$$= \beta_2\,(\text{Target Advertising in Shared Segments}) + \beta_3\,(\text{Other Target Advertising}) \quad \text{if } \beta_2 = \beta_3$$

The same type of constraint applies to new product introductions. We test the threat hypothesis by relaxing these constraints.[4] If the overall fit of the model improves significantly, then we may reject the hypothesis that all efforts are alike in the focal firm manager's eyes. Hypothesis 5 suggests the coefficients on target firm efforts in the focal firm's segments should be positive, while the coefficients on other target efforts should be neutral or negative. This analysis essentially examines whether overall target firm size affects competitor identification, or only size in the focal firm's segments affects identification.

This analysis is presented as Model 3 in Table 2. In place of the target advertising and target new product coefficients, we now have two coefficients each, representing target advertising in shared segments versus other advertising, and target new products in shared segments versus other new products. Model 3 dramatically improves fit over Model 2 ($F_{2,1314} = 55.82$, $p < .0005$). Further, the coefficients on target advertising and new product introductions in shared segments are both positive and significant as hypothesized. Note, however, that while the other target advertising coefficient is not significant, as expected, the other target new products coefficient is

marginally positive, contrary to our hypothesis; perhaps new products in other segments are seen as a long-term threat to the focal firm, both in terms of potential repositioning and as a signal of general research and development capability.

As threat seems to matter in the absolute sense that amount of target effort in shared segments affects focal firm managers' perceptions, we can logically ask if relative threat matters by examining the *focal* firm's efforts in shared segments. In Model 4, we relax the implicit linear constraints on focal firm advertising and new product introductions just as we relaxed constraints on target firm activities in Model 3. If relative threat matters, then we expect the signs on focal firm advertising and new product development in the shared segments to be negative—the greater the focal firm's efforts, the less it considers target efforts in the segment threatening—while focal firm activities in other segments should not matter.

Model 4 significantly improves fit over Model 3 ($F_{2,1312} = 19.42$, $p < .0005$). However, the coefficients do not support a relative threat hypothesis. Rather the only significant new coefficient is on focal firm advertising in other segments (unshared with the target firm). The coefficient is negative, so that the more the focal firm advertises in unshared segments, the less it considers the target firm a competitor. One may think of this as an indicator of the focal firm's stakes in the shared segments; the more it advertises in other segments, the less important are the shared segments, making the target firm who shares those segments a less important competitor.

Next, we add two variables to account for success (Hypothesis 4) in the previous period. The first measures the target firm's success, using the two-item success scale described above. In keeping with our previous analyses, we also add a focal firm success measure; if relative success is what drives attributions of competitiveness, then we would expect a positive sign on target firm success, but a negative sign on focal firm success.

Model 5 presents the regression including the success variables. The model again significantly improves fit over the previous model ($F_{2,1310} = 128.80$, $p < .0005$). The target firm success coefficient is positive and significant, as expected in Hypothesis 4. The focal firm success coefficient, however, is also positive, although significantly smaller than the target success coefficient. In this analysis, the more successful the focal firm, the more it sees other firms as competitive. This contradicts the idea that successful firms may be blind to their environment (e.g., Miller 1994).

Finally, as experience was a relevant factor in Study 1, we tested for experience effects prior to accepting a final model. We do this by dividing our observations into early and late, using period 5 as the breakpoint (59 percent of observations are late using this classification). We then examine whether any effects differ from early to late periods by looking at multiplicative interaction terms between a late period dummy variable and the substantive variables of interest.

Our final model is presented in Table 3.[5] Once we account for time, only the advertising-related variables and the success variables remain significant as predictors of competitor identification. Summarizing the results from this model, we find

that Hypotheses 3, regarding size, is not supported, but Hypothesis 5, competitive threat, is supported for advertising expenditures. Target firm advertising in the focal firm's segments has a positive effect on the degree of competitiveness the focal firm perceives, while target firm advertising in other segments has a negative effect on perceived competitiveness. Rather than size overall, it is the size of target firm efforts in the focal firm's segments that matters in terms of perceived competitiveness. A significant negative time interaction term on target firm advertising in the focal firm's segments indicates the effect of advertising late in the game on respondents' identification is substantially reduced, but still statistically significant.

Hypothesis 4, success, is also supported. The more successful the target firm, the more it is perceived as a competitor of the focal firm; further, a significant positive interaction term suggests that the importance of target firm success increases as the game progresses. Finally, the positive sign on focal firm success suggests that the target firm effect is absolute, not relative.

Table 3. Perceived Competitiveness Regression (Final Model)
Dependent Variable = Perceived Competitiveness (n = 1327)
R^2 = .3636, F = 57.695, p < .0001

Variable	Parameter Estimate	Std. Error	t value	Prob > |t|	Standardized Estimate
Intercept	27.21804	1.52936	17.797	.0001	0.000
Target Team 2	-4.38762	1.44173	-3.043	.0024	-0.100
Target Team 3	-2.28070	1.25069	-1.824	.0684	-0.051
Target Team 4	-4.26837	1.33722	-3.192	.0014	-0.097
Target Team 5	-4.04260	1.40572	-2.876	.0041	-0.091
Target Adv. in Shared Segs.	0.00185	0.00024	7.676	.0001	0.512
Other Target Advertising	-0.00020	0.00016	-1.246	.2130	-0.038
Focal Adv. in Shared Segs.	0.00004	0.00013	0.334	.7386	0.012
Other Focal Advertising	-0.00105	0.00015	-7.107	.0001	-0.209
Target Success	2.37301	0.44256	5.362	.0001	0.253
Focal Success	1.13843	0.25634	4.441	.0001	0.121
Late Period Dummy	0.60569	1.49319	0.406	.6851	0.017
Late Period Target Success	2.20337	0.49528	4.449	.0001	0.187
Late Period Target Adv. in Shared Segs.	-0.00130	0.00024	-5.396	.0001	-0.401

An Analysis of Competitive Asymmetry

Another way to look at our hypotheses regarding firm size (H_3) and success (H_4) is to consider asymmetry in competitor identification, where Firm 1 identifies Firm 2 as a competitor, but Firm 2 does not identify Firm 1 as a competitor. If size and success matter in identification, this strongly implies that we should see asymmetry, and that it should be driven by differences in size and success. Large or successful firms will be seen as competitors by small or unsuccessful firms, but not vice

versa. The Markstrat environment allows us to examine asymmetry in competitor identification, which we do here by comparing the focal firm's rating of a target firm on the 100-point competitor item to the target firm's rating of the focal firm on the same item.

As asymmetry between groups is not an individual-level psychological phenomenon, we take the mean of the constant sum scale for perceived competitiveness across individuals for each focal firm in rating each target to equalize for differing numbers of respondents on different teams. We use the difference between one firm's rating of a second firm and the second firm's rating of the first as an indicator of asymmetry.[6] The mean difference (in absolute value) between focal and target firms' ratings of each other is 12.48 points on a 100-point scale (std. dev. = 9.96).

Given that we observe some asymmetry, is it driven by firm size and firm success? We test this using a hierarchical regression approach as in our previous analysis, but this time regress the difference between mean focal firm rating of target firm and mean target firm rating of focal firm on differences in size, threat, and success. The best model is presented in Table 4, and includes significant positive effects for differences in advertising, new product introductions, and success. The greater the target firm's efforts in advertising and new product introductions relative to the focal firm, the greater the positive difference between the focal firm's rating of the target firm and the target firm's rating of the focal firm, supporting Hypothesis 3. Note, however, that there is a significant negative time interaction term for new product introductions which eliminates the role of new products in judgment late in the game. Difference in target and focal firm success also positively predicts asymmetry, supporting Hypothesis 4: the greater the target firm's success relative to the focal firm, the more it is perceived as a competitor of the focal firm, and the less it perceives the focal firm as a competitor. Note the positive interaction term on success suggests this occurs more late in the game than early. Interestingly, Hypothesis 5 was not supported in the asymmetry analysis: size in the focal firm's segments was not significant relative to overall size.

Table 4. Asymmetry of Competition Regression Results
Dependent Variable = Focal Firm Rating of Target Firm - Target Firm Rating of Focal Firm
(n = 143)
R^2 = .4784, F = 20.790, p < .0001

Variable	Parameter Estimate	Std. Error	t value	Prob > |t|	Standardized Estimate
Intercept	-1.30260	1.60938	-0.809	.1264	0.000
Target Success - Focal Success	1.27506	0.68876	1.851	.0663	0.238
Target Advertising - Focal Advertising	0.00062	0.00025	2.531	.0132	0.209
Target New Pdts. - Focal New Pdts.	3.71001	1.48895	2.492	.0139	0.338
Late Period Dummy	0.41398	2.07120	0.200	.8419	0.013
Late Period Target Success - Focal Success	1.94923	0.74064	2.632	.0095	0.290
Late Period Target New Pdts. - Focal New Pdts.	-2.96942	1.68026	-1.767	.0794	-0.238

Study 2 Discussion

Study 2 was supportive regarding the success hypothesis, but evidence regarding firm size and threatening behavior were mixed. The individual-level analysis supported the threat hypothesis, but not size, while the asymmetry analysis supported size and not threatening behavior. Note again that we measured size in a very particular way in this study, and that it is more specific than the measure of size used in Study 1.

The role of experience again proved significant in Study 2. Regarding individual identification of competitors, advertising had a more substantial effect early in the game than late, while success had more of an effect late in the game than early. Similarly, in looking at the asymmetry analysis, new product introductions had a significant effect only early in the game, while the importance of success increased late in the game. Substantively, these results bear a tantalizing resemblance to the number of responses results for tenure in Study 1, where more experienced subjects gave fewer responses as to why they classified competitors. In Study 2, subjects appear to rely on a broader set of attributes early in the game, while focusing more on success to the exclusion of other attributes later.

A limitation of Study 2 is the use of a single-item scale as the dependent variable. While we were able to discuss the reliability of this scale in the asymmetry analysis, this is more difficult in the individual analysis. We did collect a binary variable ("At this point in the game, who are your main competitors?") at the same time as our continuous variable. A logistic regression using the binary variable as the dependent variable substantially confirms the continuous analysis.

General Discussion

Summary of Findings

Research Hypotheses. Regarding our hypotheses, Study 1 found that managers named relatively few competitors, supporting Hypothesis 1. This confirms and expands upon the single-industry studies that have characterized this area. Further, Study 1 revealed that respondents tended to rely on supply-based attributes more than demand-based attributes in categorizing target firms as competitors or non-competitors, supporting Hypothesis 2.

Size (H_3), success (H_4), and threat behavior (H_5) were seen across the two studies as significant, but not dominant attributes in the competitor identification process. In Study 1, while these three attributes were all mentioned frequently—in the top 11 out of 38 attributes—they were not among the most frequently used (top 5) attributes. In Study 2, success was supported at varying strengths over the course of the game (see below), while size and threatening behavior received partial support.

The Role of Experience. While not hypothesized in our original research, it is worth summarizing the role that experience played in these studies. In Study 1, experience, as measured by length of tenure in job, influenced the number of responses given for why subjects considered given firms as competitors. Respondents with longer tenure gave fewer responses. In Study 2, both individual and asymmetry analyses suggested that as the Markstrat game progressed, subjects paid more attention to target firm success and less to other attributes.

Implications

Allowing that we use a recall task that makes the results more likely, Study 1 suggests that managers have a restricted mental set regarding competitors in terms of number of competitors. It is important to emphasize that this is rational. Limited cognitive and organizational resources require that managers focus on a particular set of competitors. The fear is that managers may omit from their list target firms that they should consider. This will occur if managers name too few competitors in total, or a substantial number of the wrong ones.

Naming too few competitors is unlikely to matter in many circumstances. In many industries, the number of current competitors who have an impact on the firm is objectively limited. Further, the number of competitors named probably varies by situation, as noted earlier. Unit of analysis—e.g., business unit versus the corporate level—will also likely affect both the number and representation of competitors. Given cognitive limitations, naming too few competitors seems most likely to hurt the focal firm in more fragmented industries and in turbulent industries where emerging competitors go unnoticed until it is too late (cf. Hodgkinson 1997).

Given managers choose to name an adequate total number of competitors, do they choose the right ones? Here our data are somewhat more troubling. Competitors in our data tend to be defined in terms of supply-based attributes. Further, even

when managers do talk about demand-based attributes, it tends to be at a very broad level—the top two demand-based reasons given were geographic scope of markets and overall customer perception of the firm (brand image, reputation). The third most popular demand-based reason was an unspecified customer similarity—none of the remaining demand-based reasons were mentioned by more than 11 percent of respondents.

That managers used so few customer-based attributes is worrisome. Perhaps the lack of classification based on customer needs means that marketing myopia remains alive and well (Levitt 1960). This does not mean managers fail to collect or use market research data on customer needs and behaviors, but that these customer needs and behaviors are not particularly "top of mind" relative to competitor characteristics. Wyer and Srull (1989) propose that individuals recall only enough information to make a social categorization judgment, not all information; theirs and other work (Higgins and Stangor 1988; Sherman, Judd, and Park 1989) suggest that this subset of information is likely to be the most accessible in memory rather than the most diagnostic. Salience can have similar effects; Hutchinson and Alba (1991) note that salience of category attributes can overwhelm diagnosticity of those attributes, depending on the situation. To the extent that top-of-mind competitor characteristics lead to biased purchase or use of market research—e.g., by only commissioning research on a particular competitive set of products—then that competitor orientation could lead managers astray.

This is particularly problematic if more experienced managers have more entrenched viewpoints. Higgins and Stangor (1988) argue it is easier to recall a judgment (e.g., "competitor") than the context surrounding that judgment, and that the more distant in time the perceiver is from the original judgment, the harder it will be to recall context. This is consistent with our suggestive finding that more experienced respondents seemed to focus on fewer attributes to describe competitors. While this more parsimonious model can be true, assuming the original judgment was correct, changing business conditions make this seem unlikely in practice. The tales of managers who "knew" their business and then were completely surprised by a new competitor operating in a different way are legion (e.g., Slywotzky 1996).

Regarding content of the category "competitor," in broad terms the joint results of the two studies suggest that the competitor category is characterized by a relatively small number of successful firms that are sizable or engage in threatening behavior. Study 1 also suggests that product and position offerings, and geographic scope of markets play a role in the category representation. While we could not test this in our data, we would expect that firms offering similar products and having similar geographic scope will be more likely to be seen as competitors.

Finally, our findings on asymmetry suggest that small/unsuccessful firms "look up" to large/successful firms in their industry. On the one hand, this reflects the economic reality of relative resources. Note, however, that while we demonstrated that asymmetry objectively exists, we did not demonstrate that managers were *aware* of the asymmetry. Lack of awareness could lead to substantial mistakes in making and interpreting competitive moves and signals. In signaling terms, large, successful firms may have "loud" voices in that many others consider them important com-

petitors, while small, less successful firms have "quiet" voices. Loud firms probably should be careful what they say for fear that the message will go to unintended listeners. Quiet firms, on the other hand, should work to be sure that their intended listeners hear the signals they are sending.

Further Research

While we hypothesized that managers would name fewer than nine competitors, we found 21 percent of our sample named nine or more competitors. The cognitive process we proposed above suggests that managers first array competitors on a continuous basis and then name competitors using some threshold above which the firm would be a competitor. Allowing for concentration effects, some of our respondents may have been using more expansive thresholds than others. Research regarding what affects this threshold would be helpful. Even in an oligopoly, a manager might not name all competitors in the industry depending on such factors as task or unit of analysis.

That managers rely more on supply-based attributes to define and describe competitors begs for further research regarding why. Perhaps, this too is rational; from a strategic groups perspective, one might compare whether supply-based groups better predict performance than demand-based groups. Another perspective might see the dominance of supply-based attributes as a kind of fundamental attribution error (Ross 1977), where individuals attribute another's behavior more to personal characteristics than situational characteristics. In evaluating a competitor, the competitor's attributes (i.e., supply-based) may seem more important than attributes of the situation (i.e., demand-based). Information availability, as noted above, or salience of the competitor relative to the environment, may influence this phenomenon (see Fiske and Taylor 1991, pp. 67 ff., for a discussion of the salience of the actor relative to the environment).

The suggestive finding that managers in Study 1 gave fewer responses in describing potential competitors should be replicated in a study that does not include the limitations we noted in the Study 1 discussion. It is quite reasonable, and rational, to expect managers to have a more detailed knowledge structure about major competitors than potential ones. The question again lies in whether they are classifying major, minor, and potential competitors in a way that allows for effective analysis and decision making.

A potential asymmetry we could not explore in this research is the possible divergence between managerial views of competition and customer views of competition (cf. de Chernatony, Daniels, and Johnson 1994). Comparing managerial and customer attitudes in this fashion is an important research area, and one where marketing modelers and researchers interested in managerial cognition can fruitfully meet.

We note two further questions that should be addressed in fully understanding managerial identification of competitors. First, what is the process by which managers compare the target to the category? Second, what are the consequences of classification for organizational memory and competitive action? Regarding the latter question, competitor identification is likely to influence market research pur-

chase and use through framing of industry boundaries. It is likely to affect competitor interaction by its implicit shaping of the collection of players in the arena. It is also likely to affect further categorization decisions, as the history of category learning affects later choices: who a firm sees as a competitor may be influenced by who the firm has already seen.

Finally, we note that we, and the literature in general in this area, have discussed competitor identification as if competitors were always threats. These "threat competitors" endanger a focal firm's livelihood in varying degrees. However, there are other types of competitors that focal firms face. One we call an "aspiration competitor," to whom the focal firm looks as a model in terms of benchmarking and best industry practice. Following and imitating the aspiration competitor may be a way of improving performance. In addition, many firms, especially in high technology industries, now face what we call a "partner competitor," against whom the focal firm competes in some markets, but with whom it cooperates in other markets. Research in this area would be much enriched if we looked at competitor identification as more than just a unidimensional "threatening vs. nonthreatening" construct.

Conclusion

Competitor identification is a critical process both as a precursor to competitor analysis and as an implicit definition of product-market boundaries. This research brought together a diffuse literature on managerial identification of competitors under an organizing psychological framework of the categorization process managers might use. In two empirical studies, we demonstrated a focus on salient supply-based attributes in managerial identification. Demand-based (i.e., customer) characteristics were less often cited, and when cited were often broad rather than deep. These findings, combined with evidence on asymmetry in competitor perception, suggest that managers have mental sets regarding competitors that are restricted in ways that may not be optimal, with consequences for both competitor analysis and competitor interaction. Given the importance of the topic in practical terms, much further research is recommended to better understand the steps in competitor identification detailed in our framework.

Appendix. Competitor Identification Code Summary

Supplier Factors

Goals, Objectives

Refers to the competitor's goals or objectives.

Absolute Size

Refers to the competitor's absolute size in terms of dollar or unit sales, number of customers, number of employees, production capacity, or number of locations.

Relative Size

Refers to the competitor's size relative to the respondent's firm.

Competitor Growth

Refers to the growth of the competitor's business.

Financial Strength

Refers to the financial wherewithal of the competitor relative to the respondent's firm.

Age

Refers to the competitor's age relative to the respondent's firm.

Success

Refers to the competitor's level of performance in terms of profitability, market share, or performance relative to stated goals.

Resources Used

Refers to the competitor's use of particular resources, such as raw materials, suppliers, allies, facilities, employee skills, or process.

Technology Used

Refers to the competitor's use of technology, either in product development or in process.

Basic Strategy

Refers to the fundamental strategy of the competitor in very general terms.

Products or Services Offered

Refers to the specific product or service offerings of competitors, typically by industry-defined or functional categories (as opposed to customer benefits).

Product Positioning, Value Proposition

Refers to the product positioning or value proposition offered by the company. Rather than the functional or industry categories under "products offered," this code reflects explicit statements about the value or benefits the company intends to provide to the customer.

Pricing

Refers specifically to the pricing practice of the competitor.

Advertising and Promotion

Refers specifically to the communication practices of the competitor, whether through advertising, publicity, or personal communication via a sales force.

Distribution

Refers specifically to the distribution of the competitor's product.

Corporate Culture

Refers to the general company values underlying competitor activities.

Competitive Behavior

Refers to the respondent's perception of the way the competitor behaves in competing, which may or may not match customer perceptions (coded "threatening" and "nonthreatening").

Traditional Rival

Refers to the respondent's long-time relationship, if any, with the competitor.

Vertical Integration

Refers to the vertical integration of a competitor.

Business Environment

Refers to the evolution of the business environment in which the competitor operates, which might include political and legal, technological, physical, or economic factors.

Unspecified Supplier Similarity

Refers to a similarity or dissimilarity with the competitor that is unspecified.

Other Supplier Factor (specify)

Supplier reasons that represent specific reasons not accounted for by the supplier codes.

Demand Factors

Geographic Scope of Markets

Refers to geographic characteristics of customers.

Demographic Scope of Markets

Refers to demographic characteristics of customers such as age, income, gender, marital status, family size, urban/suburban/rural, industry, SIC code (industrial customer), education, occupation, or social class.

Psychographic Scope of Markets

Refers to the attitudes, opinions, interests, beliefs, or lifestyles of customers.

Size of Markets

Refers to the size of the competitor's target market—not the competitor's portion of that market—in terms of number of customers, number of units sold, or dollar sales.

Growth of Markets

Refers to the growth of a competitor's market, in terms of number of customers, number of units sold, or dollar sales.

Size of Customer (Industrial)

Refers to the size of customer company that an industrial competitor serves.

Customer Price Segments

Refers to customer segments separated by willingness to pay.

Profitability of Markets

Refers to the profitability of a competitor's markets in general.

Customer Needs/Wants

Refers to the specific benefits customers say they want in a product or service.

Consideration Set

Refers to customers who do or do not consider the competitor's products along with the respondent's products when purchasing in the product category.

Elasticity

Refers specifically to the relationship between the respondent's sales and the competitor's actions, or the competitor's sales and the respondent's actions.

Purchase Patterns

Refers specifically to the purchase patterns of customers regarding respondent's and competitor's products (e.g., substitute or complement products).

Customer Perception of Firms

Refers to general customer perceptions of firms and their products—code both product comments and comments on general company reputation with customers here, including brand image.

Customer Behavior

Refers to customer behavior patterns aside from purchase. This might include customer purchasing process or customer behavior characteristics relevant to the products.

Unspecified Customer Similarity

Refers to a similarity or dissimilarity between respondent's and competitor's customers that is unspecified.

Other Demand Factor (specify)

Demand reasons that represent specific reasons not accounted for by the demand codes.

Notes

1. The use of MBA students as subjects naturally raises the issue of the external validity of findings using student subjects. A thoughtful dialogue on this subject in the management literature (Gordon, Slade, and Schmitt 1986, 1987; Greenberg 1987) is helpful in this regard. While undergraduate students usually show substantive differences from nonstudents in their responses in management research (Gordon et al. 1986), the evidence on MBA students versus nonstudents is far less clear. Gordon et al. (1986) uncovered five studies that directly compared MBAs and nonstudents and found no substantial differences between the populations, leading them to suggest that results from MBA students might be able to approximate the results from nonstudents. We were able to locate three further studies with direct comparisons (Clark and Montgomery 1998b; Fredrickson 1985; Whitecotton 1996), of which only one (Fredrickson 1985) showed substantially different results across samples. Generally, Gordon et al. (1986) suggest that familiarity with the task is probably an important explanatory variable in student vs. nonstudent comparisons; we control for this in Study 1, and in Study 2 all subjects are equally experienced with the task.

2. Since there are more supplier-based codes (22) than demand-based codes (16) in the coding scheme, we also tested a more conservative null hypothesis that supplier and demand reasons would be distributed according to the proportion of the codes (57 percent supply, 43 percent demand). A chi-square test confirms that the finding of 72 percent supply is significantly greater than 57 percent (chi-square = 42.45, df = 1, $p < .001$).

3. Regarding a starting period of period 3, surveying subjects earlier in the game would likely produce unreliable results, as in the first period or two, they are learning game mechanics. Moore (1992) began to find significant signaling effects in as few as three rounds of competitive interactions, suggesting period 3 represented an adequate starting point. Unfortunately, we were unable to match periods exactly (3, 6, 8 vs. 4, 7) due to the tight scheduling of the executive sample.

4. We do not use sales force in this analysis as in virtually all observations, both target and focal firm have sales people in all three distribution channels.

5. In light of the possible relationship between firm size and success, on the advice of a reviewer we also examined a system of equations using seemingly unrelated regressions in which focal and target firm activities were predicted by previous period success. The results from these regressions were substantively identical to the results reported in tables 3 and 4.

6. While difference scores have attracted controversy because they are inherently less reliable than the reliability of the individual scores of which they are composed (Peter, Churchill, and Brown 1993), if we assume that the individual responses to this question across a team can be used to assess the reliability of

the composite (team mean) used in this analysis, we are able to calculate an approximate reliability for the difference score, which is .83 for the MBA sample and .84 for the executive sample, suggesting good reliability.

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